NRA

Severn-Trent Region

FLOOD DEFENCE

TECHNICAL LIAISON MANUAL

(Guidelines for Land Drainage Consenting & Planning Liaison)

4th Edition

Produced by:

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PREFACE TO FOURTH EDITION

This is the fourth edition of these Guidelines. The first was issued in 1986 by the Severn Trent Water Authority under the title "Guidelines for Land Drainage Consenting and Planning Liaison".

In 1991, the document was extensively amended and extended in its coverage to become the Flood Defence Development Control Manual, and to reflect the policies and duties of the National Rivers Authority.

The third edition encompassed the new legislation which came into force on 1 December 1991.

This fourth edition has been further enhanced and amended and includes nationally adopted policies where they have been formulated. The document has also been retitled to become the Flood Defence Technical Liaison Manual to avoid confusion with documents produced by Planning Liaison.

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1. INTRODUCTION

1 INTRODUCTION

1.1 The Flood Defence Technical Liaison Manual

1.1.1 The purpose of this document is to provide a reference work for the National Rivers Authority's Flood Defence staff who carry out technical liaison and development control duties. In particular, it provides guidelines to enable a consistent and best practice approach for staff involved with matters relating to Land Drainage Act and Water Resources Act Consents and Local Authority Planning Application consultations.

1.1.2 Where practicable, and for convenience, the needs and policies of the other NRA functions are referred to, but this document is not intended to replace the need for internal liaison on specific issues.

1.1.3 **The document is for internal use only**, but recognises the need to provide outsiders with statements of NRA Flood Defence policies and requirements. Information sheets contained herewith as an Appendix are available for general circulation.

1.1.4 This document has been produced in chapters covering individual topics and, whenever possible, repetition has been avoided. Whilst every effort has been made to make each chapter self contained, there will inevitably be occasions when staff need to consult a number of references within the manual. A subject index has been included to assist with this.

1.1.5 It is envisaged that this document will require periodic review and amendment to remain valid.

1.2 Objectives of the Manual

1.2.1 The main objectives of this Manual are:

(i) to provide guidelines so that a consistent and rational approach is adopted to consenting and planning liaison throughout the region.

(ii) to ensure that the actions of Flood Defence staff are compatible with current Government guidance and the policies of all functions of the NRA.

1.3 Objectives of Consenting and Planning Liaison

1.3.1 In his introduction to "The New Rivers and Wildlife Handbook" published in 1994 by RSPB, NRA and RSNC) the RT Honourable John Major, MP writes:-

> "There is now greater recognition that the apparently conflicting pressures of nature conservation and river management can be met at one and the same time by working with rather than against nature. Such an approach is a clear application of the principles of sustainable development; ensuring that the actions we take today protect the environment for tomorrow's generations".

1.3.2 This approach is reflected in the main objectives of Flood Defence consenting and planning liaison which can be summarised as follows:-

(i) **To preserve and protect floodplains and to control development in flood risk areas**

Few rivers have sufficient channel discharge capacity to contain all likely flood flows. In these circumstances, extra discharge capacity is provided by flow across the floodplain. Balancing storage in the floodplain helps to attenuate the size of the peak flood. All floodplains are considered an essential part of the river system and as such need to be preserved to avoid the enhancement of floods downstream. Development likely to reduce the floodplain discharge capacity or the balancing effects in the floodplain should be opposed.

(ii) **To prevent changes in surface water runoff to watercourses which would create or exacerbate flooding problems**

The NRA will object to a proposed development where the increased surface water run-off will cause new flooding problems or exacerbate existing land drainage problems, unless agreed improvements are carried out to the receiving watercourse.

(iii) **To avoid damage or impediment to efficient drainage in watercourses**

There would be an objection to any proposal that could cause impediment to flow unless compensatory works are undertaken. Surface water outfalls into watercourses need to be carefully designed and sited to avoid erosion damage or obstruction to flows in the watercourse. Bridge and culvert openings have to be of sufficient size and positioned to avoid unnecessary afflux at flood times. Pipe and cable crossings have to be sited to avoid obstruction both in the watercourse and across any associated floodplain.

(iv) **To allow for any necessary future improvement or enhancement to the watercourse drainage system**

Watercourses may have to be regraded and/or resectioned to restore or improve their hydraulic capacity. Where necessary, floodbanks may have to be built or reconstructed to contain flood flows or alternatively to ensure hydraulic effectiveness of floodplain areas. It is essential that development along the rivers and floodplains does not interfere with any likely future improvements to the drainage system.

(v) **To prevent the creation of obstructions limiting access both along watercourses and to associated drainage works**

Regular maintenance is essential if the full hydraulic capacity of the system is to be preserved. Access along the banks of the watercourses is important and should be preserved wherever possible and necessary. This is particularly important if access is likely to be required in floodtimes to operate sluices or penstocks along the river or to carry out emergency repairs.

(vi) **To ensure that good engineering principles have been adopted for structures built in or close to the watercourse**

Whilst the NRA can accept no responsibility for structural design, the collapse of any structures in or close to the river is undesirable. The NRA should be satisfied with the engineering principles and hydraulic capacity of any proposals before giving Consent. The precise siting of structures should be established, as well as the materials to be used, and the methods of construction to be employed in order to ensure that these are compatible with our nature conservation responsibilities.

(vii) **To ensure that consenting and planning liaison is implemented taking into account the NRA's conservation, recreation and amenity duties**

Under Section 16(1) of the Water Resources Act 1991 (WRA 91) and Section 12(1) of the Land Drainage Act 1991 (LDA 91) there are three duties which arise when the NRA is formulating its own proposals or considering proposals from other parties.

(a) to TAKE INTO ACCOUNT any effect which proposals would have on the beauty or amenity of any rural or urban area or on any flora, fauna and geological or physiographical features of special interest and on buildings, sites and objects of archaeological, architectural or historic interest.

(b) to HAVE REGARD to the desirability of protecting and conserving buildings, sites and objects of archaeological, architectural or historic interest.

[This duty imposes a more positive requirement than (a) to consider whether, and if so how, such places or objects should be protected and conserved and will usually call for specialist advice]

(c) to EXERCISE ANY POWER conferred on it (so far as may be consistent with the purposes of any enactment relating to the NRA

functions) with respect to the proposals AS TO FURTHER the conservation and enhancement of natural beauty and the conservation of flora, fauna and geological and physiographical features of special interest.

In assessing proposals, the NRA should attempt to categorise the likely conservation effects as either beneficial, neutral or harmful.

Particular care must be taken when assessing proposals for culverting and other structures and channel works to ensure that these do not conflict with the NRA's conservation, recreation and amenity duties.

(viii) **To fulfil the above objectives while taking into account the requirements of other functions of the NRA**

In considering consent applications and planning consultations it must be ensured by internal liaison that the proposals are not in conflict with the interests of other functions of the NRA.

1.4 The NRA's Regulatory Role

1.4.1 The principal powers and duties of the Flood Defence function of the NRA are set out in the Land Drainage Act 1991 (LDA 91) and the Water Resources Act 1991 (WRA 91).

1.4.2 In accordance with Section 105(1) WRA 91, the National Rivers Authority has the responsibility for general supervision over Flood Defence throughout its region. Regulatory control is exercised by:

(i) Vetting and consenting proposals for work affecting watercourses (Direct Control).

(ii) Planning consultation with local authorities (Indirect Control).

(iii) Advising the general public.

1.4.3 Under current legislation, Land Drainage powers and responsibilities remain shared between the National Rivers Authority, Local Authorities, Internal Drainage Boards, Navigation Authorities, other private and public bodies (eg British Rail) and riparian owners.

1.4.4 It is beyond the scope of the current edition of this manual to explain in detail the Land Drainage powers and responsibilities of the bodies with such powers. (The reader is referred to the publication entitled "Land Drainage and Flood Defence Responsibilities" published by the Institution of Civil Engineers in 1993).

1.4.5 It is assumed that the reader is familiar with the concept of "Main River" and the Authority's Main River Policy. It is worth noting, however, that generally a riparian owner's responsibilities under Common Law remain unaltered irrespective of the Main River status of a watercourse. (See Section 21(1) LDA 91 and Section 107 WRA 91).

1.4.6 The NRA's direct control over proposed works is far stronger on Main Rivers (Section 109 WRA 91) than on Ordinary Watercourses (Section 23 LDA 91), since the erection or alteration of any structure on Main River requires Consent. Severn-Trent Region also has Byelaws (Section 34, LDA 76) which control most operations likely to affect drainage interests along Main Rivers. (Note: our existing Byelaws made under Section 34 LDA 76 remain in force by virtue of Schedule 2 of the Water Consolidation (Consequential Provisions) Act 1991. Any new or replacement Byelaws will be subject to Schedule 25(5) WRA 91). In some instances District Councils will have their own land drainage byelaws relating to some ordinary watercourses in their area.

1.4.7 In addition to exercising direct control through consenting procedures, the NRA also attempts to indirectly control proposed works through its planning consultations with local authorities. The advice given to planning authorities and developers by the NRA, in relation to Development Plans and individual planning applications, is particularly important in attempting to control works likely to have adverse affects where our own legislation is inadequate.

1.4.8 Although in most cases it is possible to ensure effective control over works proposed in, or associated with, Main River by exercising consenting powers, in the case of

floodplains or ordinary watercourses, consenting power is considerably limited, and greater emphasis has to be placed upon exercising control over works on these watercourses through the NRA's liaison with planning authorities.

1.4.9 Arguably, use of the planning system to control activities which can be controlled under other (eg land drainage) legislation is a mis-use of the planning system. Until recently, these controls had been seen as, and kept, quite separate. Recent policy guidance has however recognised the relevance of flood defence, pollution control, water resources and other NRA concerns, to land use planning. We should no longer hesitate to ask for refusals or conditions relating to our functions.

1.4.10 This approach is seen in, for example the Government White Paper "This Common Inheritance (Cmnd 1200, September 1990). Whilst referring specifically to pollution control the philosophy equally applies to other NRA functions when it says:-

> "Planning control is primarily concerned with the type and location of new development and changes of use. Once broad land uses have been sanctioned by the planning process, it is the job of pollution control to limit the adverse effects that operations may have on the environment. But in practice there is common ground. In considering whether to grant planning permission for a particular development, a local authority must consider all the effects, including potential pollution; permission should not be granted if that might expose people to danger. And a change in an industrial process may well require planning permission as well as approval under environmental protection legislation."

In PPG 12: Development Plans and Regional Planning Guidance (DoE, February 1992) the point is made even more forcefully:-

> "Development plans are required to include land-use policies and proposals for the improvement of the physical environment. Policies and proposals should aim to protect and enhance an environment regarded as being of high quality, and to improve a poor environment, for example, by reclaiming contaminated and derelict land so that it can be brought back into use more quickly and reduce pressure on green-field sites. They may also include policies designed

to control pollution and to limit and reduce nuisances such as noise, smells and dirt. Planning policies should also reflect coastal protection, flood defence and land drainage issues, which may influence the location of new development, and the need to protect water quality. More detailed policies on these aspects are set out in other PPGs and Government guidance."

1.5 The Need for a Consistent and Rational Approach

1.5.1 If the NRA is to exercise effectively its general supervisory role over land drainage matters throughout the region, it is important that its policies in relation to Land Drainage Consents and planning consultations with local authorities should be consistent and soundly based, and that these should be applied uniformly throughout the region.

1.5.2 A general awareness and understanding of the policies and objectives of the NRA by Local Authorities, other organisations and the general public will also help the quest for acceptance and implementation of these policies.

1.5.3 If the maximum benefit from consenting is to be achieved, then it is important that every effort is made to identify all works requiring Consent and, having identified them, adopt consistent and rational principles when issuing Consents. Such factors as: the flow to be catered for in the watercourse, the size and position of culverts and bridge openings, the size and layout of surface water outfalls, the clearance above or below the bed of the watercourse for pipeline or cable crossings, the height of floor levels above flood level, should all be dealt with using common standards and methods of approach.

1.5.4 In considering proposals for Consent, the NRA has to take into account not only its own interests but also those of the applicant and other interested parties. Planning comments and consenting conditions could place considerable financial burdens on the applicant or in some cases could result in large parcels of land becoming sterile with a considerable loss to the local community. The possibility of planning appeals or arbitration should be borne in mind when considering the consent conditions in such cases.

1.5.5 It is intended that these guidelines should assist the Flood Defence function in carrying out its duties in a logical, fair, consistent and proper manner.

2. PLANNING LIAISON

2 PLANNING LIAISON

2.1 Introduction

2.1.1 The NRA is a statutory consultee of the Local Planning Authorities (County and District Councils, National Parks, Urban Development Corporations) for planning applications and development plans. The LPA's are not obliged to incorporate NRA requirements in decisions or plans but must consider them.

2.1.2 Town and Country Planning legislation has been described as "a seething cauldron of Planning Acts, Rules, Regulations, Orders, Circulars and Policy Guidance Notes". It is beyond the scope of this document to even attempt to summarise the legislation which governs planning controls, but the underlying principles have been explained which cover the vast majority of circumstances that will be of interest to the NRA.

2.1.3 This chapter looks at the Flood Defence needs of the NRA and the mechanisms for liaison with the Planning Authorities. No attempt is made to include other NRA functions, although clearly their comments and interests form part of the unified response to the planners.

2.1.4 The NRA Severn-Trent Region's Planning Liaison activity is managed by the Planning Sections of the Water Resources and Planning Department with Flood Defence and other Sections and Departments being consulted prior to response to the Local Authorities. This should not prevent Flood Defence staff from maintaining direct lines of communication with Local Authority Planning Officers, in order that individual applications can be discussed, so long as the Planning Sections are kept informed and notified of formal changes etc.

2.1.5 The NRA receives large numbers of pre-planning enquiries, mainly from large developers seeking to avoid wasted fees for unsuccessful planning applications. The handling of pre-planning enquiries and the giving of advice to the general public, together with effective planning liaison with local authorities, should result in fewer planning appeals.

2.2 The Planning Process

2.2.1 The Local Authority planning process has two closely related elements namely:-

a) Development Plans (structure plans, unitary development plans, district-wide local plans, minerals local plans and waste local plans).

b) Development Control (individual planning applications)

2.3 Development Plans

2.3.1 The system consists of STRUCTURE PLANS and UNITARY DEVELOPMENT PLANS PART I which set out a broad framework for the development and other use of land for a county or metropolitan district, and LOCAL PLANS and UNITARY DEVELOPMENT PLANS PART II which carry forward the policies and general proposals of the structure plan in greater detail.

2.3.2 Structure plans and UDP's Part I are prepared by the County Planning Authorities or MDC's respectively. These plans take account of national and regional policies as they affect the physical and environmental planning of the area concerned. They do not deal with individual property or show the precise boundaries of areas where particular policies are to apply.

Local plans and UDP's Part II, on the other hand, allow local detailed planning issues to be examined and serve as a guide for developers, public utilities, and others concerned with the development or other use of land.

2.3.3 Development Plans require lengthy and expensive preparation and, once adopted, form the most important consideration on which individual planning applications are determined. Nevertheless, proposals which do not conform to a Development Plan may still be permitted if other factors outweigh the requirements of the Plan.

2.3.4 Planning Authorities have a duty to publicise their draft plan proposals to provide an opportunity for representations and to consider those representations whether from

individuals or organisations prior to preparation, deposit and adoption of the finalised plan.

2.3.5 Model Policies

It is vital that the NRA responds to plan consultations, and persuades Local Planning Authorities to adopt NRA policies as their own in Development Plans.

A National document entitled 'Guidance Notes for Local Planning Authorities on the methods of protecting the Water Environment through Development Plans' first published in January 1994 is included as Appendix 6(A). This document contains a set of statements regarding the NRA's functions and is intended as a guide for Local Planning Authorities. The statements are in a form which can be replicated in Local Authorities' Development Plans, and for this reason are sometimes referred to as "model policies".

2.3.6 Area Flood Defence staff should liaise closely with Planning Section staff to ensure that appropriate representations are made to Planning Authorities. Generally, the consultation/liaison process between Local Authorities and the NRA over Development Plans is very similar to that for Development Control as covered in the remainder of this chapter.

2.4 Development Control

2.4.1 The present day system of development control by the granting or refusal of planning permission for development has evolved from the 1947 Town and County Planning Act. The most recent consolidation of the legislation is the 1990 Town and Country Planning Act, now amended by the Planning and Compensation Act 1991.

2.4.2 Section 55(1) of the 1990 Act defines "Development" as "the carrying out of building, mining, engineering or other operations in, on, over or under land or the making of any material change in the use of any buildings or other land". Building operations now includes demolition of buildings, but most types of demolition will either be excepted in the General Development Order, or be permitted development.

2.4.3 Section 55(2) of the 1990 Act lists 7 "exemptions" or "permitted development" which might otherwise be considered to fall within the definition.

(1) Works of maintenance having no material effect on the external appearance of the building;

(2) Works of maintenance by Highway Authorities;

(3) Street repairs following underground investigations by Local Authorities or Statutory Undertakers;

(4) The use of buildings or land within the curtilage of a dwelling for purposes "incidental to the enjoyment of the dwelling" concerned;

(5) The use of land or buildings for Agriculture or Forestry;

(6) Changes of Use allowed by the Use Classes Order 1987.

(7) The demolition of any building specified by direction of Secretary of State.

2.4.4 For the avoidance of doubt Section 55(3) then goes on to list two activities which do constitute development

a) Sub-division of a single dwelling and
b) Deposition of waste materials.

2.4.5 Agricultural buildings and activities can clearly have a significant impact on river floodplains but are generally exempt from Local Authority Planning controls. Some control does exist however through our own direct Land Drainage Act/Water Act powers, which also extends into the NRA's Land Drainage Byelaws.

2.5 Other Planning Terms

In liaising with Local Authority planners, Flood Defence staff will inevitably come across matters involving National Parks, Simplified Planning Zones, Enterprise Zones and a variety of planning terms like planning gain, twin tracking, bad neighbour development etc. These are beyond the scope of this document but suffice it to say that the principles of planning liaison, if implemented as set out herewith, will apply to such matters.

2.6 Arrangements with the Local Authorities for Planning Liaison

2.6.1 There are 16 County Councils and 85 District Councils whose areas are wholly or partly within the Severn-Trent Region. Table 1 lists County and District Councils by Area.

2.6.2 Local Planning Authorities are required in determining planning applications, to have regard to the provisions of the development plan and to any other material considerations, which of course includes the representations of the NRA as far as they concern the use or development of land. Although the LPA do not have to take notice of what the NRA say or ask for, they have to be able to show that the representations were carefully and responsibly considered. Paragraph 16 of the DoE Circular 30/92 "Development and Flood Risk" says that the LPA should be ready to explain its reasons to the NRA if it decides not to follow advice received as a result of consultation on an application.

2.6.3 Where consultation is not required by law, it is advisable in the public interest that there should be close co-operation between Planning Authorities and the NRA. Consultation is a two way process and benefits all parties involved.

2.6.4 Formal liaison on planning matters between NRA Head Office and DoE, MAFF, WO, Local Authority representatives such as AMA, ADC, ACC etc occurs on an as necessary basis. There are also routine meetings of these bodies known as the National Planning Forum. The NRA is represented by the Chairperson of its National

TABLE 1

NATIONAL RIVERS AUTHORITY - SEVERN-TRENT REGION

LOCAL PLANNING AUTHORITIES WITHIN THE LIAISON BOUNDARIES CATCHMENT MANAGEMENT AREAS

UPPER SEVERN HAFREN HOUSE SHREWSBURY	LOWER SEVERN RIVERSMEET HOUSE TEWKESBURY	UPPER TRENT SENTINEL HOUSE FRADLEY	LOWER TRENT TRENTSIDE NOTTINGHAM
DISTRICT COUNCILS	DISTRICT COUNCILS	DISTRICT COUNCILS	DISTRICT COUNCILS
Bridgnorth Bromsgrove Dudley Glyndwr Leominster Meirionnydd Montgomery North Shropshire Oswestry Radnor Shrewsbury South Shropshire Wrekin Wrexham Maelor Wyre Forest	Bristol Cheltenham Cherwell Cotswold Coventry Daventry Forest of Dean Gloucester Malvern Hills Northavon Redditch Rugby South Herefordshire Stratford Stroud Tewkesbury Warwick West Oxon Worcester Wychavon	Birmingham Cannock East Staffordshire Hinckley & Bosworth Lichfield Newcastle North Warwickshire Nuneaton Sandwell Solihull South Staffordshire Stafford Staffordshire Moorlands Stoke-on-Trent Tamworth Walsall Wolverhampton	Amber Valley Ashfield Bassetlaw Blaby Bolsover Boothferry Broxtoe Charnwood Derby Derbyshire Dales Doncaster Erewash Gedling Glanford Harborough High Peak Leicester Mansfield Melton Newark North East Derbyshire North Kesteven North West Leicester Nottingham Oadby & Wigston Rotherham Rushcliffe Rutland Scunthorpe Sheffield South Derbyshire South Kesteven West Lindsey
COUNTY COUNCILS	COUNTY COUNCILS	COUNTY COUNCILS	COUNTY COUNCILS
Shropshire Powys Clwyd Gwynedd	Warwickshire Gloucestershire Northamptonshire Oxfordshire Avon Hereford & Worcester	Staffordshire	Leicestershire Nottinghamshire Derbyshire Humberside Lincolnshire
OTHER PLANNING AUTHORITIES	OTHER PLANNING AUTHORITIES	OTHER PLANNING AUTHORITIES	OTHER PLANNING AUTHORITIES
		Black Country Urban Development Corporation	Peak Park Joint Planning Board

Planning Liaison Group. Similar liaison meetings also exist at a local level with NRA Regional/Area staff attending Regional Planning Forum meetings.

2.6.5 Reference should be made to the report entitled 'Planning Liaison with Local Planning Authorities' issued by Severn-Trent Region in November 1993 and included as Appendix 6(B). This has now been adopted as a National document with each Region inserting its own Appendices 1 and 2.

2.7 Development about which Flood Defence should be Consulted

2.7.1 The General Development Order 1988 sets out the types of planning application on which the local planning authority is required to consult with the NRA. In addition to these statutory matters, consultations are strongly urged on other matters through Department of Environment circulars.

2.7.2 Flood Defence staff should encourage Developers to discuss their proposals prior to submitting an outline planning application. This could well avoid a planning refusal and should save time overall. Care should be taken not to be too obliging or else the Developer may try to get his scheme "designed" by the Authority.

2.7.3 Examples of classes of Planning Applications upon which Flood Defence would wish to receive Formal Consultation

(The following list includes only those planning applications relevant to Flood Defence/Land Drainage:-)

(1) All development within 30m or likely to affect the flow of a watercourse marked in blue on the 1 : 25,000 Ordnance Sheet.

(2) All development within the floodplain areas or land otherwise known to be liable to flooding, or within overland flood paths in urban areas.

(3) All development, or re-development, in excess of 1 hectare.

(4) All development affecting water recreation, fishing and fisheries which involves the use of a water surface or land adjacent to it.

(5) All oil and gas pipe lines within 30m of a watercourse marked in blue on the 1:25,000 Ordnance Sheet.

(6) All mineral extraction including sand and gravel quarrying within floodplain areas, and reinstatement and after use.

(7) All development which comes within Article 18 of the General Development Order 1988 (as amended) with particular reference to tipping.

(8) The construction and reconstruction of roads, railways, bridges and culverts, in particular, motorway proposals.

(9) Any development which involves a significant departure from the provisions of the relevant Development Plan.

2.7.4 **Principal Flood Defence Issues of Concern**

In general terms the issues of interest to Flood Defence can be summarised as:-

(i) Surface water run-off from increased urban development may cause new flooding problems or exacerbate existing difficulties on receiving watercourse systems. Early discussions on these matters are essential.

(ii) The erection of buildings or the raising of land levels within floodplains which might increase the probability of flooding elsewhere. With few exceptions this should not normally be permitted.

(iii) The design of surface water discharges to avoid scouring of the stream or river bed.

(iv) The future maintenance of watercourses, control structures etc, and protection of river banks from the forces of erosion.

2.8 Development in Flood Risk Areas

2.8.1 If the NRA is to fulfil its Flood Defence supervisory role it must supplement its own direct powers by endeavouring to ensure that its policies are supported by the much wider powers of the Local Planning Authorities.

2.8.2 A joint circular from the Department of the Environment (DoE), the Ministry of Agriculture, Fisheries and Food (MAFF) and the Welsh Office entitled 'Development and Flood Risk' is reproduced in Appendix 5. The document is usually referred to as DoE Circular 30/92 and was issued in December 1992. [It also carries the references MAFF Circular FD1/92 and Welsh Office Circular 68/92.]

2.8.3 The new circular largely reiterates and builds upon Circular 17/82 which it replaces. The circular emphasises that development permitted without regard to flood defence considerations can lead to danger to life, damage to property and wasteful expenditure of public resources on remedial works. It also emphasises that it is important for planning authorities to consult the NRA before granting permission for any developments where flood defence considerations may arise.

2.8.4 Perhaps the most significant change is that the new circular states:-

'The Government wishes the main NRA input to development plan preparations to be the surveys which Section 105(2) of the Water Resources Act requires the NRA to carry out [such that] the NRA will therefore be able to influence development patterns in a positive, rather than a reactive, way in accordance with the Government's plan-led approach'.

Other improvements are the better explanation of the role of the NRA in considering development proposals and the explanation of the significance of run-off from new development.

2.9 Section 105(2) Survey and Memorandum of Understanding

[Previously known as Section 24(5) and Section 136(1) Survey. See Appendix 19 for details].

2.9.1 Section 105(2) of the Water Resources Act 1991 states:-

"For the purpose of carrying out its flood defence functions the Authority shall from time to time carry out surveys of the area in relation to which it carries out those functions."

2.9.2 DoE Circular 30/92 advocates that:-

"The NRA should therefore copy the results of these surveys, as they become available, to Local Planning Authorities in order to inform their development plan and development control functions. The surveys should indicate the areas where flood defence problems are likely. In particular they should help to identify the extent of the flood plains, washlands and other land liable to flood, in relation to risk; along some coastlines they may identify set-back lines beyond which most development should be avoided. The surveys will be of most help to Local Authorities in identifying land which is at risk from major events of low probability (such as storm surges); authorities will be more familiar with areas where there is a high frequency of flooding. In coastal areas there is the additional risk of wave and tidal erosion which can rapidly remove areas of high ground protecting lower lying areas behind. Low lying coastal lands should always be regarded as being at some degree of risk from flooding."

2.9.3 Although all Local Authorities within the NRA Severn-Trent Region's drainage area have been notified of the floodplain areas and sites of urban flooding through the issue of the Section 105(2) Flooding Survey Report and Maps, these documents are not an alternative to consultation and are not necessarily definitive or have complete coverage of the area. In particular the floodplain areas shown on the issued plans are meant to show only the approximate extent of the floodplain.

2.9.4 The guidance given in Circular 30/92 requires a large data collection initiative by the NRA, a task made more difficult by the need to verify and update existing flood risk data.

Faced with a potentially huge task, the NRA decided to initiate discussions with representatives of the Planning Authorities. The aim of these discussions was to ensure that results of data collection surveys under Section 105(2) would meet the needs of the Planning Authorities.

A Memorandum of Understanding was drawn up (reproduced in Appendix 19) to provide a framework to enable NRA to negotiate and agree the quantity, quality and timing of information to be delivered to the Planning Authorities.

2.10 Internal Consultation Procedure

2.10.1 In Severn-Trent Region, the Area Planning Sections have the responsibility of circulating planning applications internally, co-ordinating a response and returning the response to the Planning Authority before the end of the consultation period. The national code of practice for planning consultees sets a maximum 21 day period for responding to consultation on planning; the legislation requires at least 14 days before determination. However, this is onerous for the NRA and LPA's have been advised that the NRA normally requires 28 days.

2.10.2 In order to check the effectiveness of consultation the NRA needs to be supplied with the relevant decision notices by the Planning Authority.

2.11 Response to Planning Authorities

2.11.1 Upon consultation, the NRA advises on the nature of any constraints and if possible indicates whether there may be means of overcoming the problem. Likewise, advice may be given for the long term benefit of the development or to protect the interests of others. Where significant investment lead-in times are required to overcome constraints, the NRA may request that development be phased in line with any necessary watercourse improvements. In these circumstances it may be possible to

achieve appropriate phasing of the development by means of a Section 106 agreement or undertaking under the Town and County Planning Act 1990 as amended by the Planning Compensation Act 1991 (See Chapter 4 Section 4.5).

2.11.2 Typical Flood Defence comments on planning applications include indications of flooding problems that exist or will arise from the development, together with appropriate recommendations to cater for the additional run-off. Proposals for development within floodplains are generally objected to on the basis of loss of storage capacity. The response should recommend that the finished floor level of residential property adjacent to floodplains is set at least 600 mm above the highest known flood level if no more accurate information is available (See Chapter 6 Section 6.10). In addition, comments are given to protect interests on all rivers for maintenance and access requirements.

2.11.3 In responding to planning authorities, the NRA must be particularly mindful of its environmental duties under Section 12 and 13 LDA 91 and Sections 16 and 17 WRA 91 regarding development which may have a significant impact on the aquatic environment.

2.11.4 For proposals requiring the NRA's Consent (culverting, structures within 8 metres of river bank etc), the Planning Authority is often requested to inform the developer of the NRA's requirements but there is no obligation for the planners to do so. The NRA should write directly to the developer in these circumstances.

2.11.5 It is in our own interests to ensure that our requirements are fully understood by both the planners and the developer. Increasingly it is recognised that the most satisfactory method of responding to consultations is to reply in a form which can be 'lifted' unchanged and used as enforceable planning conditions. NRA Severn-Trent Region currently uses 'standard' paragraphs which are in this format.

2.11.6 Reference should be made to other chapters which cover the NRA Severn-Trent Region's policy on topics from floodplains to culverting. The sections contain points which will affect the response to the Planning Authority, be it a comment, a condition or an objection.

2.11.7 If the response includes an objection, it should be clearly stated as 'Objection' followed by a reason. The Flood Defence consultee should ensure that the objection is clear and is not watered-down in the NRA response to the LPA and is capable of being defended at an appeal.

2.11.8 The following three types of Flood Defence objection to development are most frequently made:-

(1) Objection - The site forms part of the essential floodplain of the River....In accordance with the Department of Environment Circular No 30/92 the Authority is opposed to development in floodplains. There are no proposals at present to implement a flood alleviation scheme at this site.

(2) Objection - There is insufficient capacity in the receiving watercourse to deal with surface water run-off from this site. In accordance with the Department of the Environment Circular 30/92 the application should be refused or held in abeyance until further details are submitted by the Applicant to demonstrate how the problem may be overcome.

(3) Objection - The plans indicate an obstruction within.....metres of the top of the bank of the watercourse. The preservation of a continuous clear area is essential in order to allow for future maintenance, improvement or flood flow.

2.11.9 A list of Flood Defence standard comments is given in Appendix 6(C).

2.12 Planning Conditions and Planning Permissions

2.12.1 The LPA may refuse planning permission or may grant it with such conditions as the LPA deems appropriate.

2.12.2 Planning conditions must be:-

a) Necessary

b) Relevant to Planning

c) Relevant to the development to be permitted

d) Enforceable

e) Precise

f) Reasonable in all other respects

Full guidance on each of these aspects is given in DoE Circular 1/85. Examples of acceptable and unacceptable conditions are given in the appendices to the Circular (see Appendix 25).

2.12.3 Conditions normally apply to the land which is the subject of the planning application, although they may apply to adjacent or other land under the control of the applicant. This is because the applicant must be capable of complying with a condition and the compliance must be enforceable by the LPA.

2.12.4 However, conditions may relate to off-site works which the applicant is in a position to carry out or have carried out. Such conditions are often termed "Grampian conditions", as the principle was established in the case Grampian Regional Council v Aberdeen District Council in 1983 ([1984] JPL 590). Grampian conditions have to be negative, prohibiting the development until specified action has been taken. An example would be:-

"No development shall take place until the improvement of the Black Brook has been completed in accordance with the submitted plans".

2.12.5 For this condition to be valid, it must be established prior to the grant of permission that the developer is able either to carry out the works or to have them carried out by another body such as a statutory authority. In the above example, this might be achieved if the NRA is proposing to carry out an improvement scheme, (the Black Brook being Main River), using its powers under the Water Resources Act 1991. Since planning permissions are time-limited, the watercourse improvement works would have to be capable of being carried out within the time allowed. The interests of the developer and the NRA would be protected by an agreement or contract being drawn up between them.

2.12.6 The advantage to the LPA of using a condition is that permission can be granted reasonably quickly which reflects well on the LPA's performance. Conditions also run with the land and, therefore, apply after the applicant has moved on. A possible disadvantage for the NRA is that developers can apply to have conditions varied or removed. They are imposed by the LPA, not necessarily with the agreement of the applicant.

2.12.7 There is no NRA policy to check whether the various planning conditions imposed have been implemented. Each Planning Authority has a planning enforcement officer who should ensure that the conditions are adhered to. If a contravention is detected which affects any of the NRA's interests, then the Area should report it to the enforcement officer.

2.13 Section 106 Agreements and Undertakings

A requirement of the grant of planning permission may be that the applicant first enters into a planning agreement under Section 106 of the 1990 Act. Under Section 106, a developer may give a unilateral undertaking to the LPA to accept some obligation in return for the grant of planning permission. These undertakings are expected to be used only when the LPA is unwilling to enter into an Agreement. They are however enforceable by the LPA. (Section 106 as amended by the Planning and Compensation Act 1991). See section 4.5 of these Guidelines.

2.14 Severn-Trent Region's Objections to Individual Planning Proposals

2.14.1 Where the NRA objects to any proposed development and the Local Planning Authority refuses permission, the Local Planning Authority should be requested to include the NRA's objections as a ground for refusal.

2.14.2 Where the NRA's objections to an application can be overcome in some way - by imposing conditions, an agreement under Section 106 of the Town and Country Planning Act 1990, or by the submission of a modified application, then the Local Planning Authority should be requested to notify this fact to the applicant so that discussions which might lead to a mutually acceptable solution can be held.

2.14.3 Should a Planning Authority give approval to develop despite having received an objection from the NRA, then there is little action that the NRA can take. Where it has become known to the Authority that the Planning Committee is mindful to grant permission contrary to the NRA's recommendations, and provided that permission has not yet been granted, the NRA can request, via the Department of the Environment, that the application be "called in" for determination by the Secretary of State.

2.14.4 This procedure requires extremely prompt action by the Authority and there is no guarantee that the request will be granted. Fortunately, the number of occasions when these circumstances occur are infrequent, as they can usually be avoided by close liaison between the NRA and the Planning Authorities. If the proposed development itself is likely to be affected by flooding, then the NRA should ensure that the developer is aware of its objections and the reasons therefore. (This is to protect the NRA's position in the event of complaints regarding the effect of flooding on the premises by future owners/occupiers). In addition, where applicable, the developer's attention should be drawn to the provision in the NRA's Land Drainage Byelaws - particularly Byelaw 21. The Area Water Resources and Planning Manager should always be informed of these cases.

2.15 Appeals

2.15.1 An applicant for planning permission can appeal against:-

1) Refusal
2) Non-Determination
3) Conditions

2.15.2 The planning system has three methods for dealing with appeals namely:-

a) Written Representations (includes site visits)
b) Informal Hearings chaired by an inspector
c) Full Public Inquiry

It should be noted that the general public are not allowed to attend informal hearings but interested parties such as the NRA can ask the Inspector for permission to be represented.

2.15.3 When an appeal is lodged against refusal of planning permission and the NRA has objected to the application, the Local Planning Authority should be requested to notify the appropriate Area as soon as possible with a copy of the Notice of Appeal, and thereafter to ensure that the NRA have the opportunity to make representations, either at the Inquiry or by letter in the case of an appeal being dealt with by way of written representations. In appropriate cases, the Area should seek advice from the Regional Solicitor. In such cases, the Area Water Resources and Planning Manager will be responsible for co-ordinating the drafting of Statements and Proofs of Evidence.

2.15.4 If a planning application has been refused, and an appeal has been lodged in a case where the NRA has objected to the proposed development, the NRA must be prepared to appear at a Public Inquiry in support of its objection. If the NRA's objection has been given as a ground of refusal, then the Local Planning Authority will normally request the NRA to provide an officer to appear as a witness for the Local Planning Authority. Such a course of action is quite proper, but there may well be certain instances, where the NRA's objection is of major importance, where it would be more appropriate for the NRA to appear as a third party at the Public Inquiry and to adjure its own evidence and to be separately represented by a solicitor.

2.15.5 Where the NRA's objection is included as grounds for refusal, the Local Planning Authority will expect the NRA to let it have a statement of submissions concerning the objection, for inclusion within the Local Planning Authority's Rule 6 Statement. This Statement has to be served on the Appellant at least 28 days before the Public Inquiry and therefore the Local Planning Authority will require the NRA's Statement in good time before that deadline.

2.15.6 Where the NRA's objection is not included as grounds for refusal, there is no need for the preparation of such a Statement, but Proofs of Evidence of the NRA's witnesses should be ready for distribution at least 28 days before the commencement

of the Inquiry and, as a matter of courtesy, should be sent to the Local Planning Authority and the Appellant.

2.15.7 A synopsis of any planning appeal affecting the Flood Defence function should be forwarded to the Regional Headquarters Regulation and Emergency Section for circulation.

2.15.8 Further advice on the preparation of appeal statements etc can be obtained from the Regulation and Emergency Section at Regional Headquarters.

2.16 Planning Applications for NRA development

2.16.1 Some of Severn-Trent Region's land drainage and flood alleviation measures do not require formal planning approval. However, they will be discussed with the local authority at a formative stage, and modified where appropriate. Internal liaison with fisheries, amenity, nature conservation and recreational interests in particular is always necessary.

2.16.2 It is considered that construction of a new sluice in an existing defence may properly be regarded as "permitted development" under the GDO 1988 Part 15 Class A(c), as development required in connection with the improvement of land drainage works. As an improvement the Land Drainage Improvement Works (Assessment of Environmental Effects) Regulations 1988 will apply.

2.16.3 With regard to the construction of a gauging station this may be permitted development under Class A(e), which allows the improvement of works for measuring the flow in any watercourse or channel if the original defence contained some measurement device (so that the construction of a gauging station constitutes an "improvement", rather than "new" works. The extension or alteration of a building on our operational land is permitted development (within certain size contraints) under GDO Part 15 A(h). A totally new station will need planning permission.

2.16.4 Irrespective of whether planning permission is required, most flood defence or land drainage works carried out by the NRA are subject to the European Community Environmental legislation as set out in Chapter 12, Section 12.7 of this document.

2.17 NRA Catchment Management Plans

2.17.1 A Catchment Management Plan is the NRA's vision for a catchment. Catchment Management plans are produced by the Area Offices. They are the cornerstone of the NRA's new integrated approach to providing services locally to its customers. The first stage is to produce a Consultation Report that assesses the present uses and status of the water environment. The current status is compared with a relevant standard or target. Where the targets are not being met, shortfalls with options to resolve them are presented as Issues. This process takes into account known pressures external to the NRA such as increasing demands for water, housing and industrial development plans, and the desire for more recreational facilities.

2.17.2 Then follows a period of public consultation (two months) centred on the Consultation Report. This is an important part in the development of every Plan. Through the consultation process the NRA gains the views of all those concerned with the water environment. The Consultation Report is sent to all those with significant interest. There is also a summary document for wider consultation that is available on request and in local libraries.

2.17.3 After the consultation period, the next stage is production of a Final Plan for the catchment. This will include an action plan for improvements to the water environment. It will outline areas of work and investment proposed by the NRA and others. An annual review is undertaken to monitor and report on progress. The monitoring review will consider the need to update the Consultation Report and final plan. Update requirements will vary from catchment to catchment but will normally be at five year intervals.

2.18 Flood Defence Planning Liaison Considerations

2.18.1 Upon receipt of a planning consultation, the Flood Defence Development Control Officer must take into account a wide range of variables which will have an impact on the final response and advice to the planning Authorities.

In particular, there are two main considerations, as follows:-

(1) How will the development affect watercourses and NRA Flood Defence interests?

(2) How will watercourses affect the development?

2.18.2 Before reaching a decision, the Development Control Officer must seek answers to the following questions where they apply to a particular application:

(1) Basic application details:

- (a) Location?
- (b) Type of development?
- (c) Scale? (1 house or 100 houses?)
- (d) Change of use?
- (e) Outline/Detailed?
- (f) Reply by date? (Remember, if you don't reply in time, your efforts may be wasted. If absolutely necessary ask for an extension of time at an early stage).

(2) Has the site been subject to previous Flood Defence comments in the context of development plans, a previous planning application, or previous pre-planning consultations?

(3) Will the proposal flood?

- (a) Is there a history of flooding problems at the site, upstream or downstream of the site?
- (b) To what extent and level will it flood?
- (c) How often will it flood?

(d) Is it protected from flooding by a defence?

(4) How will surface water be disposed of?

(a) Is there a natural watercourse which directly drains the site?

(b) Does it drain to a surface water sewer and where is the point of outfall?

(5) Are any Main Rivers involved?

(6) Should the application be referred to an Internal Drainage Board, and/or be discussed with Local Authority drainage engineers?

(7) Will the proposal significantly increase runoff and is runoff control appropriate? What form?

(a) Surface water balancing? On or off site?

(b) Infiltration techniques?

(8) Are any washlands/floodplains, flood defences or other hydraulic control structures affected?

(9) Will the proposal obstruct flow either:

(a) within channel? or

(b) along overland flood routes?

(10) Are <u>existing</u> channels, washlands/floodplains, structures, bridges, culverts etc. adequate for both the existing and future situations?

(11) Are any <u>new</u> structures etc. adequate?

(12) Will the proposal significantly increase flood levels elsewhere?

(13) Are watercourse improvements appropriate:

(a) Through the site?

(b) Downstream of the site?

(14) Is a Section 106 agreement necessary for off site works?

(15) Will the proposal obstruct access along or to watercourses/flood defences/structures?

(16) How do the current proposals relate to the future in terms of:

(a) Further development?

(b) Possible flood alleviation schemes?

(c) Any declared drainage/development strategy for the catchment?

(d) The NRA Catchment Management Plan for the watercourse?

(17) What are the implications for upstream landowners in terms of drainage outfalls, groundwater movements and enhanced flood levels?

(18) What are the environmental implications of the proposal?

(19) Will the proposal require Land Drainage Consents or other permissions either from the NRA or others?

(20) Are there any implications for the NRA and/or IDB in terms of increased maintenance liabilities?

(21) Does your response to the Planning Authorities adequately protect Flood Defence interests?

(22) Are any planning conditions that you are recommending:-

(a) Necessary

(b) Relevant to planning

(c) Relevant to the development to be permitted

(d) Enforceable

(e) Precise

(f) Reasonable in all other respects

IMPORTANT NOTE

The above list is for guidance only. No priority or logical sequence should be inferred from the order in which these items are listed. Some important considerations in relation to a specific application may have been omitted, and clearly, must not be ignored.

3. CONSENTS

3 CONSENTS

3.1 Regulatory Powers to Control Development and other Works

3.1.1 The NRA's control over development and other works is limited to advising the planning authorities on the implications of development proposals and through its own direct Consent powers.

3.1.2 NRA Land Drainage Consents are required by virtue of the Water Resources Act 1991, the Land Drainage Act 1991, the NRA's Land Drainage Byelaws and the Highways Act 1980. For consistency, certain NRA works are also subject to internal consent or approval in this Region.

3.1.3 Generally, the NRA's powers in relation to Main Rivers are much stronger and more extensive than for ordinary watercourses.

3.1.4 The NRA Severn-Trent Region's Land Drainage Byelaws which apply only to Main Rivers were drawn up, and became effective under Section 34 of the Land Drainage Act 1976 Act from 17 January 1977. By the provisions of the 1991 Water Consolidation (Consequential Provisions) Act, these Byelaws are now enforced by the National Rivers Authority, Severn-Trent Region. All references to Severn-Trent Water Authority, STWA or Water Authority should now read National Rivers Authority, Severn-Trent Region.

3.1.5 Schedule 25(5) WRA 91 enables the NRA to make new Byelaws to secure the efficient working of the drainage system and the proper defence against sea or tidal water.

3.1.6 In addition to Flood Defence considerations, when considering an application for Consent the NRA must also satisfy itself that any proposed works on an ordinary watercourse or Main River will not adversely affect the interests of Fisheries (Section 105(4) WRA 91 and Section 67(4) LDA 91), Conservation (Sections 16 & 17 WRA 91 and Sections 12 & 13 LDA 91), Water Resources and Planning, Environmental Quality and any Internal Drainage Board.

3.2 Examples of Works Requiring Consent

3.2.1 Main River

The following activities on a Main River require Land Drainage Consent:-

(a) **Under Section 109 of the Water Resource Act 1991**

(i) the erection of any structure in, over or under a watercourse.

(ii) the alteration or repair of any structure in, over or under a main river if likely to affect the flow of water in the Main River or impede any drainage work.

(iii) the erection or alteration of any structure designed to contain or divert floodwaters of any part of the Main River.

(b) **Under the NRA Severn-Trent Region's Land Drainage Byelaws (Section 34 of the 1976 Act)**

(iv) the discontinuation of use or removal or alteration or reconstruction or addition or reduction or repair of river control works in the charge of a person or body but excluding the NRA and British Waterways.

(v) the cutting down, lowering, excavation, removal or interference with any part of any wall or other flood protection works, or the bed or the banks of the channel of a main river except for securing the efficient working of the drainage system.

(vi) the carrying out of building work or operations in or on land adjoining any wall or flood protection works under the NRA's control if likely to endanger the stability thereof.

(vii) the driving of any vehicle whatsoever at or along the top of the banks of a main river or flood protection works under the NRA's control if likely to cause damage or endanger the stability thereof.

(viii) the planting of any tree, shrub, willow or other growth on any flood protection works or bank of a main river or within 3m on the landward side of the foot of such works.

(ix) the diversion or alteration of the level or direction of flow of water into, in or out of a main river.

(x) the removal of turf from the bank of any main river or integral drainage work.

(xi) the digging and removal of fishing bait within 3m of the foot of a main river bank.

(xii) the digging, removal or disturbance of any material whatsoever forming part of a main river bank or integral drainage work or river control work.

(xiii) the removal or disturbance of any materials intended for or installed as protection to any main river bank or integral drainage work or river control work.

(xiv) the carrying out of any excavation or operations in or on any land adjoining any main river bank or integral drainage work or river control work if likely to endanger the stability thereof.

(xv) the driving of animals or vehicles over any bank, drainage work, river control work, bridge or culvert in the NRA's control if the weight exceeds that prescribed by the NRA on a notice. This does not apply if the crossing is a highway maintained at the public expense.

(xvi) the construction of anything in a main river or in, on or over any bank, drainage work or river control work or within 8m measured horizontally from the foot of any bank on the landward side.

(xvii) the excavation of a tunnel or drain or other passage for water into, in, out of or under a main river or through any bank, drainage work or river control work.

(xviii) the fixing of any pipe (or any supports) or wire or cable in, over, or under a main river or in, over, under or through any bank, drainage work or river control work or within 8m from the foot of any bank on the landward side.

(xix) the construction of a berth on a main river.

(xx) the erection of any structure or deposition of any material in a main river floodplain if likely to divert or obstruct the flow of floodwater but excluding ordinary agricultural heaps. (NB. - See 3.3.3 below regarding works subject to planning authority permission.)

The above activities are an abbreviated version of Section 109 WRA 1991 and the Byelaws. Section 3.3 covers Bodies exempt from obtaining Land Drainage Consents. Genuine emergency work is naturally exempt from the formal consenting procedure but formal notification is required as soon as practicable. The complete texts of Sections 23 LDA 91 and 109 WRA 91 and the Byelaws are reproduced in Appendices 1, 2 and 4 respectively.

3.2.2 Ordinary Watercourses (Non-Main River)

The following activities on an 'ordinary' watercourse require Land Drainage Consent:-

(a) **Under Section 23 of the Land Drainage Act 1991**

(i) the erection or alteration of any mill dam, weir or other like obstruction to the flow of any watercourse.

(ii) the erection or alteration of any culvert that would be likely to affect the flow of any watercourse.

(b) **Under Section 17 of the Land Drainage Act 1991**

Any drainage works carried out by a District or Borough or County Council against flooding in connection with any watercourse.

(c) **Under Section 20(2) of the Land Drainage Act 1991**

Elements of works carried out by County Councils will frequently require a Land Drainage Consent.

3.2.3 Any obstruction on an 'ordinary' watercourse which only extends part way across should be treated in the same way as if fully across if it will obstruct the flow.

3.2.4 Arguably, Section 23(1b) of the LDA 91 gives Consent exemption to the erection or alteration of any culvert if unlikely to affect the flow in an 'ordinary' watercourse. This is unlikely to be the case. Furthermore if a screen was affixed then Consent would always be required as the screen would constitute a 'like obstruction' under Section 23(1a) LDA 91.

3.3 Highway Works and Other Exemptions

3.3.1 Highway Authorities carry out highway works under the Highways Act 1980. Section 339 of this Act states that a Highway Authority may not interfere with any watercourse (including the banks thereof), or any drainage or other works vested in or under the control of the NRA without our Consent.

The carrying out by a Highway Authority of any works on a main river described in Section 109 of the Water Resources Act 1991 requires Consent under the Water Resources Act 1991 and a fee is applicable unless the work is subject to Highway Orders in which case consent is strictly not required.

With regard to ordinary watercourses the construction of a culvert or other obstruction to flow requires Consent under Section 23 of the Land Drainage Act 1991 and a fee is charged. However for a bridge which does not interfere with flow, Consent is issued under the Highways Act 1980 and no fee is charged (see Section 3.7.3 of this chapter).

The above applies to the Department of Transport and County Council works.

3.3.2 Section 23(6) of the Land Drainage Act 1991 exempts Navigation, Harbour and Conservancy Authorities from obtaining Consent under this Section. Also other bodies for works carried out or maintained under or in pursuance of any Act or any order having the force of an Act (however see Section 3.3.1 above regarding highway works). Such bodies are not exempt from obtaining Consent under Section 109 of the Water Resources Act 1991.

3.3.3 Land Drainage Byelaw 21 which covers the prohibition of heaps on floodplain also states:-

"Such consent shall not be required in relation to any construction erection deposit or formation as aforesaid in respect of which planning permission has been granted by a local planning authority or by the Secretary of State on an application in that behalf made to a local planning authority".

It is not clear whether works classed as "permitted development" by the Town and Country Planning Act are deemed to have been "granted" planning permission and are, therefore, exempt from Byelaw 21. Legal advice is currently being sought on this matter.

3.3.4 Land Drainage Byelaw 34(a) states that nothing in the Byelaws shall conflict with the operation of any Byelaw made by an IDB, Navigation or Harbour Authority.

3.3.5 Land Drainage Byelaw 34(b) states that nothing in the Byelaws shall restrict, prevent, interfere with or prejudice the exercise of any statutory rights or powers of an IDB, British Gas Corporation, CEGB and Area Boards, Navigation and Harbour Authorities, British Railways Board, any Local Authority, Highway Authority, British Telecom and the British Airports and Civil Aviation Authorities. (NB This clause now applies to the equivalent "privatised" companies.)

3.3.6 Although a Body may be exempt from obtaining the NRA's formal Consent, the NRA's requirements are normally requested and agreed to in these cases but occasionally dispute arises.

3.3.7 Specific examples of exemptions from Consent Charges under Sections 17 & 23 of the Land Drainage Act 1991 and Section 109 of the Water Resources Act 1991 are given in Section 3.7.3 below.

3.4 Information for Applicants

3.4.1 To assist members of the public and developers who are applying for Land Drainage Consent, a series of information leaflets has been produced which summarises the NRA's requirements. These are reproduced in Appendix 10. Where the Area supplies a typical structure arrangement drawing to a Consent applicant it must be made clear that it is "for guidance only".

3.4.2 The inclusion of appropriate clauses in contract documents, pointing out the NRA's special requirements is another method of encouraging consent applications. Examples of typical conditions are included in the document in Appendix 23.

3.5 Standard of Protection

Where appropriate, an application for consent should include hydraulic calculations consistent with the NRA's standard of protection aims. These are expressed as the return period between floods and are as follows:

1 in 100 years - Urban areas and villages.
1 in 50 years - Agricultural land of high value and isolated properties.
1 in 25 years - Agricultural land (mainly arable).
1 in 15 years - Agricultural land (mainly pasture).
1 in 5 years - Grass floodplain.
(see also Chapter 30 Section 30.2)

3.6 Application for Land Drainage Consent

3.6.1 All applications for Consent must be made using forms to be supplied by the NRA as contained within Appendix 7. This form has been agreed and adopted nationally.

3.6.2 Informal applications should be acknowledged, but not considered as an application in terms of the "two month rule", (see section 3.8.1), until a completed application form is forthcoming.

3.6.3 If an application is received with inadequate details of the proposed works, the applicant should be informed immediately together with an indication of how the situation could be remedied. The applicant should then submit the amendments to the original application and the application will proceed on that basis. Where the applicant is unwilling to modify an unsatisfactory application or where the two months period for determination is in danger of expiry the Authority has no choice but to refuse consent.

3.6.4 The Consent application form and explanatory notes have the following features:-

(i) They stipulate the information to be submitted with the form.

(ii) They gave the address for submission.

(iii) They quote the relevant sections from the legislation.

3.6.5 The application form indicates the minimum survey information required. However, some applications may require more extensive survey information.

3.6.6 Apart from specific notes for applicants which are covered in Section 3.4, it is recommended that Appendix 9, "Typical Requirements for River Surveys", is sent to applicants where appropriate.

3.6.7 Although a Consent is not required for some works on 'ordinary' watercourses, applicants should be encouraged to seek the NRA's advice on siting, construction details and layout.

3.6.8 **Retrospective Applications**

If works have been carried out in a watercourse without prior Consent under Section 23 (LDA 91), a notice may be served to abate the nuisance. In these circumstances, if a person wishes to prevent the removal of any unauthorised works, a retrospective formal application should be made enclosing the required fee. It is considered appropriate however that if we are certain that the obstruction will not be approved prior to the submission of formal application, the applicant should be informed of this to avoid unnecessary work and expense.

With regard to Main Rivers, Section 109(4) (WRA 91) states that we may remove, alter or pull down any unauthorised work. If a person is informed that we intend following this course of action, the opportunity of making a formal retrospective application should be given but again only where we know that Consent is likely to be granted.

3.7 Charging

3.7.1 Introduction

The Water Resources Act 1991 and the Land Drainage Act 1991 both provide for the payment of a £50 charge for applications for a Consent under Section 110 (WRA 91) and Section 23(2) (LDA 91). There is no provision to make any charge for a Consent sought under the Byelaws of the NRA. With effect from 1 January 1991, the NRA adopted a basic charge of £50 for each individual Consent.

3.7.2 The charge is normally applied for each application for each structure even where the structures are on the same site. Nevertheless, there are circumstances where this could be regarded as unreasonable.

Severn-Trent Regional Management Team approved on the 3 June 1991 the following recommendation:-

"Where an application for Land Drainage Act Consent involves groups of "minor" identical structures, a single charge may be applicable at the discretion of the Authority."

This single fee approach should be applied in the case of a fishing club wishing to apply for a Consent to construct fishing platforms on the banks of a relatively short reach of Main River. The cost of processing the Consent application being little different from that for a single structure. Clearly, if a number of different designs or considerably different locations were involved the Authority may charge more than one fee.

3.7.3 Exemptions from Charges

The following types of application are exempt from charges:

(1) Section 17 Land Drainage Act 1991 Consents.

(2) Section 23 Land Drainage Act 1991 Consents from:

(a) Navigation, Harbour and Conservancy Authorities.

(b) Local Authorities, Government departments and other bodies carrying out works in pursuance of their statutory powers/duties (except for certain highway works - see Section 3.3.1 of this chapter).

(3) Applications for Section 23 Land Drainage Act 1991 Consents where only an informal approval is necessary, ie for works on ordinary watercourses that are not mill dams, weirs, culverts or other potential obstructions to flow (see Chapter 15, Sections 15.1.4 and 15.2.1).

(4) All Byelaw Consents.

(5) Emergency works exempted from Consent by Section 109(5) of the Water Resources Act 1991 but about which the NRA must be informed in writing as soon as practicable.

(6) Where an application has been refused due to insufficient details, the applicant can resubmit a modified application free of charge provided it is received within six months of the original application.

3.8 Determination of Consent Applications

3.8.1 The 2 month period for Consent determination runs from the date the application is received. Failure to determine an application within this time shall be deemed an approval.

3.8.2 It is strongly recommended that a visit to the site of the proposed works is made when considering an application. This can be beneficial in that potential problems can be spotted more easily and the size of existing nearby culverts or bridges can be ascertained.

3.8.3 The size of existing structures should not be used to directly determine the size of new ones unless it is known that the existing structures meet the required design standards. Both replacement or new structures must be sized in accordance with the present day flows in the watercourse and NRA design standards.

3.8.4 The promoter of a structure has a duty to demonstrate to the NRA that there will be no detriment to others. It may be that the Development Control Officer can assist individuals with their applications. A Developer, on the other hand, would be expected to engage a Consultant if he does not have expertise himself.

3.8.5 Where a Developer wishes to install a weir for example, it is his responsibility to identify the extent of likely flooding and to demonstrate that he has the agreement of those affected.

3.8.6 Development Control Officers are expected to check the hydraulic capacity of proposed works but not the structural integrity. Nevertheless, it would not be appropriate for the NRA to issue a Consent for works which were obviously unsafe. Consequently, Consent must be refused for such works with the applicant being requested to reconsider the design.

With regard to earthworks, the Development Control Officer may request that the applicant provides assurance that the works have been designed in accordance with good engineering principles.

3.8.7 In determining the application, the Development Control Officer must make a reasonable consideration of the possible implications to the watercourse, both upstream and downstream of the proposal. Whilst it is the owner of a structure who is responsible for any nuisance caused to neighbours, the NRA would not wish to be implicated by consenting a structure which caused the nuisance. Care must clearly be taken where replacement structures have a greater capacity for conveyance of flow than those of which they replace, as it might be argued that the downstream flood risk was enhanced.

3.8.8 Under Sections 16 and 17 WRA 91 and Sections 12 and 13 LDA 91 the NRA has a duty to promote the conservation and enhancement of the natural beauty and amenity of inland and coastal waters and of land associated with such waters. Clearly the issue of a Land Drainage Consent must be compatible with this duty. It is therefore essential that the Fisheries, Conservation, Recreation and Navigation Department are consulted prior to the issue of a Consent. If necessary a Consent may be refused on conservation grounds even if it fulfils all other requirements (see Chapter 12).

3.8.9 Consultation with other NRA departments should take place before issuing a Land Drainage Consent. The departments to be consulted are Fisheries, Conservation, Recreation & Navigation, Water Resources and Planning, Licensing Section and Environmental Quality. The Regional Consents database program generates its own consultation forms for this purpose.

3.8.10 When a Consent application is received in respect of a structure, the applicant should be advised to contact:-

(1) the relevant Pilots or Navigation Authority if within tidal waters

or

(2) the British Waterways Board or other Navigation Authority if within non-tidal navigable waters.

3.8.11 The public right of navigation is paramount on a navigable tidal waterway. A Statutory Order would be required to allow works affecting navigation to be carried out.

3.8.12 MAFF approval is required under the Food and Environment Protection Act 1985 Part II for works on the foreshore below mean high water spring tides. This Act superseded the Dumping at Sea Act 1974 on 1 January 1986.

3.8.13 Consultation with any Internal Drainage Board, Navigation Authority, Local Authority and others affected by the application should take place before issuing a Land Drainage Consent.

3.8.14 Under Section 23 LDA 91 an Internal Drainage Board can Consent obstructions in 'ordinary' watercourses within their district. Should an IDB not wish to exercise this right, then the NRA should issue the necessary Consents.

3.8.15 The granting of abstraction and impounding licences takes longer than for Land Drainage Consents owing to the advertising procedure. Applicants should be advised, therefore, to deal with the Licensing Section in the first instance. In the case of an abstraction works on a Main River, an application form for Land Drainage Consent should be sent to the Applicant. For any impounding works the Licensing Section will issue an application form and information sheet. A separate application is required for a Land Drainage Consent. The Land Drainage Consent should state that it should not be taken as either an impounding licence or an abstraction licence, as appropriate.

3.8.16 Granting of a Land Drainage Consent cannot be delayed until after planning approval is obtained.

3.9 The Issue of Land Drainage Consents

3.9.1 The standard Land Drainage Consent forms are reproduced in Appendix 8.

All completed Consents, together with related correspondence, should be forwarded to the Regional Flood Defence Manager for signature.

3 copies of the consent form (Applicant, Area File & Regional HQ file) should be sent for signature together with 2 copies of the covering letter (Applicant & Area File) plus related drawings and correspondence.

The completed and signed Consent, together with a covering letter will be sent to the applicant. A copy of the Consent and the correspondence will be returned to the Area Office.

3.9.2 The typed letters and form must be checked carefully before they are sent for signature. Typing errors create a bad impression if the form is issued, and time delays if the work is returned for correction.

3.9.3 When completing the forms it is essential that the Description of the Works adequately describes the proposed works to enable rapid identification of the structure which is being consented.

3.9.4 Conditions

To date, Consents for activities on Main River and 'ordinary' watercourses have been subject to conditions within Severn-Trent Region. The legality of including conditions with Section 23 Land Drainage Act 1991 Consent is uncertain but in the meantime Development Control Officers can continue to impose such conditions provided they are reasonable. Some typical conditions are reproduced in Appendix 8.

3.9.5 To enable policing of consented works, the Consent should state that 7 days notice of commencement and immediate notification of completion are required.

3.9.6 Once a Consent has been issued it cannot usually be revoked. If, however, construction will be substantially different from that consented then a new Consent application is required. There is no time limit on construction after the Consent has been issued except where specific time constraints have been included as a Consent condition. All Consents should contain a condition that the works consented must be constructed within 3 years of the date of issue of the Consent. The time period however may be varied to suit the circumstances of a particular application.

3.9.7 Temporary Works

Where appropriate, a Consent should be issued for temporary works separately from the Consent for the permanent works (see Chapter 26). Consent conditions

relating to the timing, nature and extent of the temporary works are a particularly important method of controlling such works.

3.9.8 Where a single application form is received which is an application for more than one structure, it is permissible to issue one Consent to cover all the proposed works, provided the appropriate fees have been submitted. Nevertheless, it is recommended that the public be given "value for money" and that individual Consents for each structure should be given. This also helps to clearly apportion any conditions that may be applicable. In the case of multiple 'minor' structures such as fishing platforms a single Consent will be applicable - see section 3.7.2 above.

3.9.9 Refusal of Consent

Development Control Officers must remember that Consent cannot be unreasonably withheld.

Generally, incomplete applications, inappropriate structures or inadequate proposals can be brought up to an acceptable standard by liaison with the applicant. However where the applicant is unwilling to modify an unsatisfactory application or where the two months for determination are in danger of expiry the Authority has no choice but to refuse consent.

3.9.10 Where Consent is being refused on conservation grounds only, the Regional Flood Defence Manager will wish to discuss the details with the appropriate Regional Managers prior to the applicant being informed (see Chapter 12).

3.9.11 In all cases, a site visit must be made before refusal of a consent is contemplated to ensure that the refusal is appropriate and to see if an alternative design could be considered.

3.10 **Land Drainage Consent Register/Database**

3.10.1 There is no legal requirement to maintain a Land Drainage Consent register, or database but in order to achieve deadlines, Consent applications should be registered on arrival and their progress monitored.

3.10.2 Information to be recorded should include:-

Consent No./Watercourse/Date of Consent/Name and Address of Applicant/Grid Reference/Particulars of Consent/Consultations/ Decision/Conditions or Reasons for Refusal/Section of Act(s).

3.10.3 Both Consents granted and refused should be entered.

3.10.4 It is recommended that all relevant documents ie. application form, drawings, consultation replies, correspondence and calculations are filed together or adequately cross-referenced. Where possible, Consents relating to planning applications should be cross-referenced to those applications.

3.10.5 It is important that the NRA maintains a system to enable rapid identification of existing Consents at a particular location. Historically, maps have been used with reference to consents being marked upon them. A Regional computerised consents database has now been introduced to replace all existing systems which will enable a more rapid search and review of archived data. This system will be compatible with the Planning Liaison System to ensure ease of cross-reference with planning applications.

3.11 **Internal Consents or Approvals**

3.11.1 In order to demonstrate that the Region is treating proposals by the NRA in the same manner as for external Land Drainage Consent applications, an application is required for the following capital and maintenance works:-

- Culverts

- Weirs
- Piling
- Encroachment into channels (eg gabions, significant stoning etc)
- Headwalls
- Temporary works (including crossings, diversions, scaffolding etc)
- Major dredging (ie involving resectioning)
- Works where engineering drawings are produced

3.11.2 Application form FD1 and final drawings should be sent to the relevant Senior Engineer Technical Liaison who will endeavour to process it within two weeks. It is incumbent upon the applicant to have completed consultation with Area Operations staff in the case of capital works and the Area FRCN staff in all cases. Nevertheless, a phone call check will be made by the Development Control Officer to ensure this has been done.

3.11.3 For capital works, it is important that any definite requirements by Technical Liaison are included in the Design Brief. Any contracts involving Temporary or Diversion Works must include details of the Special Requirements given in Appendix 10, Information Sheet No 10. Some additional site specific clauses may also be required.

3.11.4 For simplicity Consents for internal works will be issued on the standard forms and marked 'Internal'. Details will be recorded in the normal way in the Consents database. (See Appendix 8). In the case of planting schemes under the control of the FCRN Department an approval memorandum will be issued.

3.12 Policing of Consents

3.12.1 The NRA has an obligation under Section 105(1) Water Resources Act 1991 to "exercise a general supervision over all matters relating to flood defence". An effective policing policy for Consents is therefore required. The person policing a consented structure will require a copy of the Consent and any relevant agreed drawings.

3.12.2 Policing should, for example, take the form of checking the size and position of a culvert, compliance with drawing detail and with any conditions. It is not expected that a level check is carried out except in critical or suspect cases. If upstream ponding is observed, then this is an indication that levels should be taken.

3.12.3 It was recommended in Section 3.9.5 that notice of commencement and completion should be a condition of Consent. It may be that a further inspection should be made eg. the inspection of a flood bank six months after completion.

3.12.4 There will inevitably be structures built without Land Drainage Consent. Whilst this may be a criminal offence by nuisance, if the structure is perfectly satisfactory it is worth consenting it once discovered.

See Section 3.6.8 on retrospective applications.

3.12.5 It is suspected that many essential Consent requirements are not complied with which could lead to future drainage problems. It is also possible that the NRA could be implicated in any subsequent legal proceedings if it could be established that one of its officers had been negligent in the policing of a consent.

3.13 Right of Appeal

If the applicant believes that a consent has been unreasonably withheld then he/she has the right of appeal to an independent arbitrator or Government Minister as appropriate.

3.14 Failure to Obtain Land Drainage Consent

The failure to obtain a Land Drainage Consent prior to carrying out the works may be a criminal offence. Any person acting in contravention of any of the NRA's Land Drainage Byelaws, or Section 23 of the Land Drainage Act 1991, may be liable, on conviction, to a fine of up to £5,000, and to a further fine of up to £40 for every day on which the contravention is continued after conviction. Under

Section 109 of the Water Resources Act 1991, the NRA may remove, alter or pull down any unauthorised work in, over or under a main river and recover from the offender the expenses incurred in so doing.

3.15 Other Licences and Consents

3.15.1 Impounding Licences

It is important to note that the issuing of an impounding licence does not preclude an application for Consent under Section 109 WRA 91 or Section 23 LDA 91.

The requirements of the NRA relating to proposals to construct impounding works on watercourses are contained in Appendix 13.

3.15.2 Section 3.8.10 stressed the need for consultation with the Navigation Authority and, indeed, its consent will sometimes be required. Appendix 18 titled 'Navigation Interests on Watercourses' gives the addresses of the major navigation interests in Severn-Trent Region's drainage area.

3.15.3 Other licences and consents may be required from the NRA. Synopses of the procedures for these are given in the following Appendices:-

Appendix 14 Impounding and Abstraction Licences
(See also Chapter 19 regarding weirs).

Appendix 15 Discharge Consent Procedures

Appendix 16 Waste Disposal Licences

3.15.4 Appendix 17 titled 'Reservoirs Acts' is also provided for information and gives important guidance on registrable reservoirs under the Act.

3.15.5 Appendices 14 to 18 are relevant to the work of the Development Control Officer and have been included for general information. If further information on these topics is required, the appropriate NRA department must be consulted.

3.16 Flooding Survey [Section 105(2) Water Resources Act 1991]

3.16.1 In the determination of Consents, the surveys carried out under Section 105(2) of the Water Resources Act 1991, provide valuable information on the extent of floodplains, details of property known to have flooded, as well as details of NRA flood defences and other assets. (See also Section 2.8 and 2.9 and Appendix 19.)

4. SURFACE WATER RUNOFF
FROM DEVELOPMENT

4 SURFACE WATER RUN-OFF FROM DEVELOPMENT

4.1 Introduction

When the NRA is consulted on a development proposal, a decision must be made as to whether or not the receiving watercourse can accept the associated increase in peak discharge without increasing the risk of flooding.

4.2 Policy

4.2.1 The NRA's Policy with regard to discharge of surface water is as follows:-

THE NRA WILL OPPOSE ANY DEVELOPMENT WHICH WILL AGGRAVATE EXISTING OR CREATE NEW FLOODING PROBLEMS EITHER ON THE SITE OR ELSEWHERE BY WAY OF ADDITIONAL SURFACE WATER DISCHARGE DIRECT INTO A WATERCOURSE.

4.3 Reasoned Justification

4.3.1 The NRA aims to prevent the overloading of river systems through the discharge of surface water direct into the watercourse, where the river is inadequate to accept further run-off. In such cases the National Rivers Authority will recommend that the Local Authority refuses planning permission for development unless the developer implements appropriate remedial measures.

4.4 Remedial Measures

4.4.1 Where there is an increased flooding risk then the following options must be considered:-

(1) The receiving watercourse may be improved to the required standard providing this can be achieved in an environmentally appropriate way.

(2) Where appropriate, surface water balancing may be permitted on or adjacent to the watercourse. Future extension of the balancing area to cope with further development should be catered for if possible.

(3) Consideration should be given to a well designed on-sewer balancing system.

(4) Where possible, the use of source control methods or on site disposal of storm water by the use of ground infiltration or percolation techniques should also be considered.

(5) A combination of any of the above works may be the preferred option.

If none of the above are feasible or the developer is not prepared to countenance the expenditure, then refusal of planning permission should be recommended.

The NRA will often recommend watercourse improvements to cater for the increased run off from development, particularly where this will also resolve existing flooding problems in the watercourse. In some locations it is recognised that such improvements will be impractical or incompatible with environmental considerations and here other options must be considered. Where a surface water balancing solution is adopted the developer must demonstrate that adequate provision for future maintenance of the balancing device has been made.

Reference should be made to CIRIA Report 123/124 'Scope for Control of Urban Runoff' published in 1992.

The Authority's requirements are summarised in Appendix 10, Information Sheet No 15.

4.4.2 Improvements to 'Ordinary' Watercourses

Normally the NRA will not carry out or finance work on a watercourse between the end of the surface water sewerage system and Main River. Such watercourses fall into the general category of 'ordinary' watercourses. County and District Councils,

and IDB's where appropriate, have permissive drainage powers over them under Section 14 LDA 91.

Where the powers conferred by Section 14 on a non-metropolitan District Council are not exercised, the County Council has default powers. Powers not exercised by Metropolitan District Councils default to the NRA. Default powers can only be exercised at the request of the District Council or after six weeks notice in writing to the Council.

4.4.3 The NRA's policy on surface water balancing reservoirs is given in Chapter 5. Reference should also be made to Appendix 13 titled 'Requirements of the Authority Relating to Proposals to Construct Impounding Works on Watercourses'.

4.4.4 DoE Circular 30/92, given in Appendix 5, contains a section on run-off, from new development.

4.4.5 Developers should be told, if and when they seek the NRA's advice, that the increase in peak discharge in the receiving watercourse must not increase flooding. The onus must be on the developer to demonstrate to the satisfaction of the Planning Authority that this is so.

4.4.6 In an urban area where an 'ordinary' watercourse would have adequate capacity to cater for a new development but for lack of maintenance, then the Local Authority, IDB or NRA, as appropriate, should consider exercising their powers under Section 25 LDA 91.

[NOTE: the above Act appears to give both the NRA and Local Authorities equal powers to serve notice. Nevertheless, Severn-Trent Region normally requests that the Local Authority exercise powers in relation to 'ordinary' watercourses.

4.4.7 Reference should also be made to Chapters 3 and 8 in relation to Planning Applications.

4.5 Section 106 Agreements (Town and Country Planning Act 1990)

4.5.1 Section 106 agreements are a method for allowing the NRA to lift an objection to a development at the planning stage.

4.5.2 If a planning application necessitates downstream watercourse improvements then the following procedure is recommended. The developer should first obtain the riparian landowner's formal agreement to the improvement works and then resubmit his planning application, together with a drawing showing a red line down the affected length of watercourse. The developer should then enter into a Section 106 agreement with the District Council or in exceptional cases give a unilateral undertaking whereby the improvements are carried out prior to commencement of the development.

4.5.3 The NRA is normally only involved with Section 106 Agreements as a signatory where the Authority owns land affected by the developers improvement works. Any subsequent enforcement action in relation to the drainage works is the responsibility of the Planning Authority.

4.5.4 A Section 106 agreement only relates to the signatories of the agreement, ie. it relates to the developer and not future owners. The Agreement can be made to run with the land if also drawn up under Section 33 Local Government (Miscellaneous Provisions) Act 1986.

4.5.5 Alternatively, a Section 40 Agreement under the Severn-Trent Water Authority Act 1983 (which we are still entitled to use) could be made between Severn-Trent Region and an owner, which is binding on successive owners. The owner may agree not to exercise a right conferred by any enactment (eg. building of sheds etc., within 8m of the bank of a Main River to maintain an access strip) or to carry out watercourse improvements on land vested in the owner. The agreement should be signed before Severn-Trent Region lifts an objection to a development at the planning stage as for Section 106 Agreements above.

4.5.6 See also Chapter 2 of these Guidelines - "Planning Liaison".

4.6 Culverting of Watercourses on Development Sites

4.6.1 The NRA's policy has been to encourage the use of open channels wherever possible. Such channels allow flexibility for improvements and do not suffer from blockage. Detailed consideration, however, must be given to future access for maintenance, landscaping and ecological features to ensure the integration of the watercourse as a feature of the developments and not as a convenient tip for garden rubbish.

4.6.2 Confusion can sometimes occur regarding the difference between a surface water sewer and a culverted watercourse (drain). Such cases must be looked at individually as no universal rule applies. Although extremely complicated their status can be determined. The detailed design and layout of any site surface water drainage system proposed requires the approval of the appropriate Local Authority.

4.6.3 A watercourse on a new development may convey flows of water emanating from:

(1) a natural upstream catchment.

and/or

(2) impervious areas within the development through the development site.

4.6.4 In the past developers have been inclined to culvert watercourses (drains) through the site with a philosophy of "out of sight, out of mind". This practise should be discouraged. When a culvert is proposed it is necessary for the developer to obtain the Consent of the NRA under Section 23 LDA 91 unless the watercourse is a Main River, in which case the NRA's Consent for all works is required.

4.6.5 Culverts are designed to cater for a certain maximum flow. When this is exceeded (or if the culvert blocks) extensive and serious flooding can occur at a specific location. In addition, a culvert cannot have its capacity uprated without duplication or relaying. Provision should be made for overland flood routes to cater for excess flows or in the event of blockage.

4.6.6 Further details and policy on culverting are contained in Chapter 14.

5. SURFACE WATER
BALANCING RESERVOIRS

5 SURFACE WATER BALANCING RESERVOIRS

5.1 Policy

5.1.1 The NRA's policy is as follows:-

(1) The NRA will sometimes recommend watercourse improvements to cater for increased runoff from development. However in some locations it is recognised that such improvements are impractical or environmentally insensitive and the Authority would recommend surface water balancing as a possible option.

(2) The requirements for surface water balancing must be covered by a condition upon a Local Authority planning approval for the development. A Section 106 agreement may also be appropriate.

(3) The NRA recommends that the design of balancing schemes be considered within the context of an overall design strategy for a particular catchment and not merely in relation to individual development.

5.2 General Information

5.2.1 The purpose of a balancing reservoir is to attenuate the incoming flood peak to a flow that can be accepted by the downstream channel and delay the timing of the flood so that its volume is discharged over a longer time interval. References here to balancing reservoirs include storage reservoirs, storage basins, balancing ponds etc.

5.2.2 Increasingly, developers and District Councils are looking at the possibility of providing balancing reservoirs for attenuating the increased rate of surface water run-off from development. Source control techniques (eg. soakaways) for dealing with surface water, may also be appropriate. In some cases a combination of watercourse improvements, surface water balancing and source control may be feasible.

5.2.3 Balancing reservoirs are prone to deterioration as a result of loss of volume by siltation and by the growth of vegetation unless properly maintained. The question

of maintenance must therefore be addressed at the planning stage and it is particularly important that, where any control devices are involved, the developer enters a suitable long term legal agreement to ensure satisfactory long term maintenance and future renewal.

5.2.4 When considering the use of balancing storage to overcome an increased run-off problem, the full impact of both existing and possible future balancing in other parts of the drainage system needs to be carefully considered. A proliferation of balancing reservoirs should be avoided in any catchment or sub-catchment since this could, in certain circumstances, lead to an enhancement of peak flows in watercourses downstream.

5.2.5 In certain instances, balancing might be seen as a temporary expedient to cater for increased run-off from new development until such time as improvements can be carried out on watercourses downstream. Careful thought should be given to adopting such a temporary solution which might involve additional expenditure by others later. In most cases a permanent solution for dealing with the increased run-off should be adopted from the outset of the development.

5.2.6 Balancing can be provided either in the form of dry reservoirs, or alternatively wet reservoirs in which balancing can be effected by allowing water levels to rise during flood times. Whilst permanent, large water areas can often provide useful water based recreation and amenity areas, many of the smaller installations will not have this potential, and in most cases dry storage reservoirs, water meadows or nature conservation sites will offer the preferable solution, usually having lower maintenance and operational costs, as well as the opportunity for alternative use of the area when not required for balancing floods.

5.2.7 Balancing storage can be provided either on or off-line of the main watercourse depending on the particular circumstances. On-line balancing proposals should be carefully considered, with particular account being taken of the likely future changes in or on the watercourse, and the future additional demands for balancing resulting from further development upstream. Wherever possible, initial provision should be made for any future likely pattern of development upstream. Where this is not

feasible, provision should be made to allow for future extension of the balancing reservoir.

5.2.8 Where a balancing reservoir forms an integral part of the main river system, and meets the strategic objective of providing relief from existing flooding problems, or where the reservoir serves a large area, the NRA should adopt the storage facility. Any adoptable reservoir should be paid for by the developer who should also provide a suitable sum to defray future maintenance and renewal costs. Also it is desirable that the land upon which the reservoir stands is transferred to NRA ownership.

5.2.9 In exceptional circumstances the NRA may consider extending main river up an ordinary watercourse to the point of entry into the balancing device to ensure that the future maintenance of the reservoir and its discharge to the channel downstream may be controlled by the Authority. This option may not be available unless such an extension to main river is consistent with main river policy.

5.2.10 Both wet and dry balancing reservoirs require Impounding Licences except for off-line dry reservoirs which are not classified as part of an inland water. Consideration of water resource issues must be taken into account to ensure there is no detriment to the downstream catchment.

5.3 Design Criteria

5.3.1 A national agreement and guidelines on appropriate design standards or levels of service for balancing devices have, to date, not been formulated.

5.3.2 It has been agreed that in the absence of national guidelines, NRA Severn-Trent Region will adopt the following standards:-

(1) In relation to off-line devices:-

Maximum Outflow - 1 in 1 year "green field" peak runoff (or less if watercourse has lesser capacity).

Storage Capacity - The capacity of the reservoir shall be sufficient to store the limit state design of the surface water sewer system. This approximates to the 1 in 20 year event (ie. when the surface water drainage system for a flat site is surcharged to ground level) as designed by the WASSP method.

Account shall be taken of the likely levels of sheet runoff retained within the site area when calculating finished floor levels.

(2) In relation to on-line devices:-

Outflow - To be determined by limitations of the downstream watercourse and the type of land at risk.

Inflow - 1 in 100 year runoff from the upstream catchment where property at risk downstream, or as appropriate for the type of land at risk downstream.

(3) For balancing reservoirs that are normally dry, except under storm conditions, it is recommended that the maximum stored depth of water should be 1 metre or shallower if there is concern over safety.

5.3.3 Calculations

(i) Calculations must consider the whole catchment draining to the outfall from the proposed development. Flow hydrographs should be calculated for the catchment with:-

a) The site as existing and

b) The site developed

(ii) In all cases, flows should be calculated using the Flood Studies Report or other approved design method.

(iii) Where developers submit calculations using computer design packages unfamiliar to the Development Control Officer, advice should be sought from Regional Headquarters as to the suitability of the method employed.

5.3.4 CIRIA Book 14 'Design of Flood Storage Reservoirs' by Hall, Hockin and Ellis deals specifically with flood storage reservoirs in partly urbanised catchments. In particular, the book contains recommendations as to the detailed design and the operational and maintenance requirements and also considers the environmental quality benefits of storage reservoirs.

5.3.5 **Other Design Considerations**

(i) Normally dry reservoirs should have adequate underdrainage arrangements.

(ii) Both the inlet (to off-line reservoirs) and outlet structures should be capable of future adjustment to trim the inflow and/or the rate of discharge in the light of operational experience.

(iii) Shallow, marshy reservoirs should be carefully designed since they are difficult to maintain and can become rubbish tips. They could also be a danger to children. They may, however, be appropriate from a nature conservation aspect at certain locations. The opportunity exists to create a wide range of aquatic habitats from wetland meadow through reed beds, shallow pools to deeper pools. Advice should therefore be sought from Area FRCN staff.

(iv) The preferred bank slopes on dry reservoirs are 1:5 for safe and easy mowing, and to avoid danger to children and animals. Variation in the slopes around a reservoir will provide a more visually attractive result. The slope of an area should be 'informal' curves rather than a rectangular shape.

(v) The emergency overflow capacity and Reservoir Act implications must be considered.

(vi) On-line reservoirs can create a far greater siltation problem than off-line ponds, but both require careful design and access for desilting operations.

(vii) Balancing reservoirs from surface water sewerage systems and motorway drainage may well require oil interceptor traps at the inlet.

(viii) Balancing reservoirs must be constructed out of the floodplain.

(ix) When giving advice on impoundments, Development Control Officers must make it clear that the advice concerns Flood Defence requirements only and that the NRA is not responsible for their stability and safety.

(x) The provision of adequate flood storage capacity is normally the principal objective of the designer but consideration must also be given to the following:

1) Operational and maintenance aspects of the design.
2) Environmental aspects such as the effect of the reservoir on water quality and the ecological balance of the area.
3) Possible secondary uses of the reservoir such as an open-space amenity, a nature reserve, or a centre for water-based recreation.

5.4 Maintenance of Balancing Reservoirs

5.4.1 DoE Circular 30/92 "Development and Flood Risk" when referring to the limitation of surface water runoff from new development states:

"Where any control devices are involved it will be particularly important to ensure that the developer enters a suitable long term legal agreement to ensure satisfactory long term maintenance and future renewal."

5.4.2 If the device forms part of a sewer, then responsibility for maintenance rests with the developer/landowner or the sewerage company if the device is adopted. Adoption by the sewerage company is generally the most satisfactory arrangement provided the developer makes a suitable payment towards future maintenance costs. Unfortunately there is an increasing reluctance for companies to adopt open wet or dry reservoirs

which control the discharge from a new sewer to a watercourse. Some companies will only consider over-sized sewers together with a commuted sum to cover future maintenance liabilities.

5.4.3 If a device is constructed on an ordinary watercourse, then responsibility for maintenance rests with the developer/landowner, but the Local Authority (or IDB if appropriate) can choose to exercise their permissive drainage powers to carry out works. Alternatively, the developer may come to an arrangement with the Local Authority for them to maintain it perhaps as public open space, or an amenity feature. A commuted sum to cover future maintenance costs is usually appropriate. Normally the developer will be reluctant to retain responsibility and the NRA would prefer that responsibility be taken by a suitable drainage body to relieve the relative uncertainty associated with private ownership. Unfortunately, some Local Authorities are reluctant to accept open reservoirs in public open spaces for safety reasons, and there is a general reluctance to take on additional responsibilities.

5.5 Statutory Requirements

5.5.1 Calculations and details of detention proposals may require the Authority's Consent under the Water Resources Act 1991 or the Land Drainage Act 1991, may be subject to planning permission, and may also be subject to the requirements of the Reservoirs Act 1975.

5.5.2 Further details on the Reservoirs Act requirements can be found in Appendix 17.

6. FLUVIAL FLOODPLAINS
& WASHLANDS

6 FLUVIAL FLOODPLAINS AND WASHLANDS

6.1 Introduction

6.1.1 Perhaps the most important objective of Flood Defence Development Control is to preserve and protect the essential floodplains and washlands of watercourses. In achieving this, the Development Control function goes a long way to fulfilling the objective of Flood Defence of reducing the risk from flooding of people and property.

6.1.2 Few rivers have sufficient channel discharge capacity to contain all likely flood flows. Many 'natural' river channels will contain little more than the mean annual flood and some come 'out of bank' several times each year. Whatever the frequency of occurrence, exceedance of the bankfull capacity results in flooding of the adjoining land known as either Floodplain or Washland.

The flooding which occurs serves one or both of the following purposes

(1) It provides additional capacity to carry away the excess discharge;

and/or

(2) It provides temporary storage of water which the river system is unable to discharge. The part played by floodplains is similar to the function of balancing reservoirs. They impound a large quantity of water and release it over a long period of time at a rate small enough to be taken by the existing drainage channels.

6.1.3 For information, the definitive distinction between the two terms, floodplain and washland is best explained by the wording of the now withdrawn/replaced Joint Ministry Circular 52/62 which stated:-

"A natural river channel is not normally large enough to contain major flood flows. It is seldom practicable sufficiently to enlarge it artificially so major flood flows pass over the land adjacent to the river, known as the "flood plain". Obstruction in the "flood plain" such as an embankment carrying a road will obstruct the flood flow of

the river thus raising the flood level and perhaps causing flooding in an area which has not been flooded in the past. Sometimes flood water simply spreads out on to the land adjacent to the river and when the flood level in the river subsides the water merely flows back into the river channel. Such areas are known as "washlands" and act as reservoirs for flood water. If a river system is deprived of washlands the effect is to increase the flood flows in the lower reaches often with disastrous results".

6.1.4 Following the formation of the NRA it was agreed that Severn-Trent Region should adopt the use of the single term floodplain to describe areas subject to fluvial flooding previously referred to as either floodplain or washlands. Attempts to describe the differences between such areas have in the past led to confusion.

6.2 Definitions of Floodplain and Washlands

6.2.1 In order to establish an acceptable definition of the extent of the floodplain of a watercourse it is necessary to determine the purpose for which the delineation is required.

The three main purposes for which the NRA requires a definition are:-

a) Planning Liaison & Regulation
- Development Plans
- Planning Applications
- Catchment Management Plans
- Flood Defence Consents

b) Works Programmes
- Asset Maintenance
- Asset Renewal
- New Capital Schemes

c) Flood Emergency Service
- Flood Warning
- Emergency Response

6.2.2 Although the extent of a floodplain might be defined in terms of levels or flows for actual or theoretical flood events, it is much better to have a definition in terms of return period or the risk of occurrence of the flooding. For example, floodplain

information is required by planners in establishing the appropriate use of land, and the underlying basis of such a decision must be an appraisal of the risk of inundation and the social and economic damage which this could cause.

6.2.3 The definitions which would be satisfactory for all the above purposes are set out in the DoE Circular 30/92 entitled "Development and Flood Risk" and these are:-

Floodplain

All land adjacent to a watercourse over which water flows in the time of flood or would flow but for the presence of flood defences where they exist. The limits of floodplain are defined by the peak water level of an appropriate return period event on the watercourse or at the coast. On rivers, this will normally be the greater of the 1 in 100 year return period flood or the highest known water level. In coastal areas the 1 in 200 year return period flood or the highest known flood will be used, whichever is the greater. In both instances, where a flood defence exists which protects to a greater standard than those defined, then the floodplain is the area defended to the design water level.

Washland

Area of floodplain where water is stored in time of flood. Such an area may have its effectiveness enchanced by the provision of structures to control the amount of water stored and the timing of its release to alleviate peak flood flows in areas downstream.

6.3 Development in Floodplains

6.3.1 Background

Historically, restrictions have been artificially created by bridges, towns and other development situated in the floodplain, which tended to create higher flood levels locally, and sometimes increased the flooding in the towns which had themselves created the restrictions. The consequence of any new development would be to further exacerbate flooding problems by depriving the floodplain of its additional

flow capacity and storage volume which is displaced elsewhere, and by increasing the rate of runoff to the system.

This is clearly undesirable and Severn-Trent Region's policy has been developed to resist encroachment upon the floodplain by development which would create a restriction in the floodplain thus pursuing its objective to maintain and where practical restore the capacity of the natural floodplains of the river system.

6.3.2 Objectives

In its consideration of development and redevelopment proposals likely to affect rivers, the National Rivers Authority has established five broad aims. These are:

(1) that no development should be permitted which is liable to flood;

(2) that no development should cause or exacerbate flooding in other areas;

(3) that no development should be permitted which will prevent or obstruct future watercourse improvement or maintenance works from taking place;

(4) that no development should be permitted which will cause detriment to the existing regime of a watercourse;

(5) to maintain and where practical restore the capacity of the natural floodplains.

6.3.3 The choice of a specific return period to define fluvial floodplain is generally accepted to be to a 1 in 100 year standard.

At most locations, floodplain can therefore be defined as the area inundated by a 1 in 100 year return period flood event as defined by historic records and/or synthetic maps generated from hydraulic models. In exceptional circumstances and in coastal situations a higher return period may be appropriate.

6.4 **Policy**

6.4.1 The NRA's Policy with regards to development within a floodplain is as follows:-

TO RESIST ENCROACHMENT UPON THE FLOODPLAIN AND DEVELOPMENT WHICH CREATES A RESTRICTION IN THE FLOODPLAIN THUS PURSUING ITS OBJECTIVE TO MAINTAIN AND WHERE PRACTICAL RESTORE THE CAPACITY OF THE NATURAL FLOODPLAINS OF THE RIVER SYSTEM.

THE NRA WILL OPPOSE ANY NEW DEVELOPMENT WITHIN THE ONE IN 100 YEAR FLOODPLAIN OF A WATERCOURSE, UNLESS REMEDIAL WORKS ARE UNDERTAKEN TO THE SATISFACTION OF THE NATIONAL RIVERS AUTHORITY AND THE LOCAL AUTHORITY, IN ORDER TO AVOID FLOODING OF THE PROPOSED DEVELOPMENT SITE AND THE EXACERBATION OF FLOOD RISKS. IN EXCEPTIONAL SITUATIONS (EG URBAN AREAS), A GREATER THAN 100 YEAR RETURN PERIOD STANDARD OF PROTECTION MAY BE APPLICABLE. BUILDINGS ON STILTS WILL ALSO BE STRONGLY OPPOSED.

6.5 **Reasoned Justification**

6.5.1 The NRA classifies floodplains by their likelihood to flood. A one in 100 year floodplain has a one per cent chance of flooding in any one year. The NRA requires that floodplains up to this level of risk remain free from development. The reason is not only to protect the developments themselves from flooding, but also because building within the natural floodplain impedes the flow of flood water and reduces the capacity of the floodplain to store flood water leading to a worsening of flooding in other parts of the river.

6.5.2 At particularly flood sensitive locations, in areas where a recent flood event of greater magnitude than the 100 year event has been experienced, or where a particular standard has been applied for a long period of time, it may be appropriate to define the floodplain by return periods different from the general 100 year standard.

6.5.3 On some sites, it may be possible to increase the developable area by undertaking remedial works to maintain the area available for flood water storage at the correct level. These might include the improvement of watercourses to remove specific bottlenecks or carrying out earthworks to rationalise the floodplain. Development must not be permitted on any part of the floodplain where water is flowing, and thus providing additional channel capacity. Development must not be permitted on the floodplain unless satisfactory compensatory works are undertaken. The Authority does not generally encourage such compensatory schemes because the number of locations at which satisfactory works can be undertaken are comparatively few. Any such scheme must also be considered in terms of its environmental effects on landform and habitats. (See also Section 9.1.2 and Appendix 22.)

6.5.4 The Authority has found from practical experience that where a building has been constructed on stilts, it is impossible to ensure that the free passage of water beneath such buildings is maintained. It has been found that the areas beneath the buildings are either used for the storage of materials etc or even sealed up to facilitate other uses. The Authority is therefore strongly opposed to such designs.

6.5.5 It is appreciated that individual works are often very small compared with the extent of the floodplain so the effect of each one on water levels and flows is imperceptible. However, the effect is cumulative and progressive encroachment of this sort ultimately results in significant adverse effects. Allowing one such development is likely to create a precedent for other developments in the vicinity.

6.5.6 Single Dwellings

In accordance with the above policy, the Authority will oppose application for new buildings in floodplains including single dwellings.

6.5.7 The NRA floodplain policy relates to any type of building, whether it be for Agricultural, Industrial/Commercial or Residential purposes. In the case of the latter a further argument against the development is that it would impose an additional burden on the emergency services if permitted. Clearly the risk to life

increases with greater human occupancy, which is a strong argument against permitting residential development.

6.5.8 Change of Use of Buildings

The Authority will oppose the change of use of any existing building in the floodplain which would increase the overall flood risk to the occupants, users or others.

For example 1) Change of use from agricultural to residential
2) Splitting of one property into two or more properties

In each of these examples the number of people constantly at risk is increased if the change is permitted.

6.6 Possible Floodplain Uses

6.6.1 The NRA suggest that floodplains might be used for the following:-

1 Agriculture.

2 Informal recreation such as country parks.

3 Formal recreation such as football pitches, but excluding activities requiring buildings.

4 Short stay car and lorry parks, where environmentally acceptable.

5 Marinas, providing they are not embanked. (See also separate policy statement on marinas - Chapter 20).

6 Sites dedicated for conservation or environmental purposes.

6.6.2 Where development is permitted, it must be remembered that soil movement or a chain link fence around a site could cause a serious restriction in a floodplain.

6.6.3 Reference should also be made to Chapter 11 in relation to the use of floodplains for caravan sites.

6.7 Pavilions and Clubhouses

6.7.1 Sports pavilions and club houses represent a particular problem. Historically, the Authority's predecessors have been reasonably sympathetic towards allowing the construction of small 'traditional' wooden cricket pavilions etc raised up on stilts, in less sensitive areas of the floodplain. The main basis for treating these differently from other development being that the period of occupancy was very limited and the consequences of flooding to the building itself were insignificant, except perhaps to the club. The present day equivalent to the old style pavilion is much more elaborate, permanent and undesirable in Flood Defence terms. Wherever practicable, developers should be encouraged to site clubhouses etc on adjacent land outside the floodplain. Objection should be made against applications for any buildings in the floodplain but LPA's may not necessarily support this policy. (See also Chapter 20 on Marinas).

6.8 Redevelopment and Extensions to Buildings

6.8.1 Areas of floodplain exist where, for historic reasons or as a result of the Authority's floodplain policy being overruled, development has taken place. It is extremely difficult to restore such areas to natural floodplain.

6.8.2 Sometimes opportunities exist whereby the NRA can persuade the Local Authority to restore areas of floodplain which have been degraded or lost in the past where redevelopment of an area is being planned. Individual redevelopment of property is virtually impossible to oppose successfully. Nevertheless, the NRA has a duty to point out the flood implications and should oppose enlargement or change of use of the buildings which would create significantly greater flood risk.

6.8.3 Individual applications for extensions to property in the floodplain must be considered on their own merits.

Very small extensions would be 'permitted' development not subject to planning permission and could only be opposed by the Authority if contrary to our own Byelaw controls eg within 8 metres of a Main River. Larger extensions subject to Local Authority control should be objected to on the grounds of accumulative loss of floodplain.

6.9 **"Remedial Measures" in the event of the Floodplain Policy being overruled**

6.9.1 At an appeal the NRA is usually asked to specify conditions should a development be permitted contrary to our objection.

If faced with a permission being granted the possible conditions could include:-

a) Raising of floor levels to protect the occupants of the development

b) No raising of adjacent ground levels

c) Removal of permitted development rights to prevent expansion of the development in the future.

d) Possible raising of the buildings on piers subject to strict planning conditions controlling development under the building

IN ALL CASES CARE MUST BE TAKEN TO PLAY DOWN THE EFFECTIVENESS OF THESE 'REMEDIAL' MEASURES OTHERWISE THE INSPECTOR MIGHT ASSUME THAT THEY REPRESENT AN ACCEPTABLE ALTERNATIVE TO OUR STATED POLICY!

6.9.2 It is essential to ensure that any work which is required to mitigate the effects of new development on flooding is paid for by the developer and not left for the NRA to pay for out of public funds.

6.10 Development adjacent to floodplains and in defended areas (Freeboard)

6.10.1 Where development takes place outside the floodplain, there is still a risk of flooding. We should therefore recommend to the planning authorities and developers that floor levels be raised to be 600mm above highest recorded flood level or 600mm above the 1 in 100 year flood level if known. The additional freeboard is to provide a reasonable margin against uncertainty in the flood level and for other factors such as wind or vehicle generated waves.

6.10.2 For development protected by a 1 in 100 year defence, we should nevertheless recommend floor levels be raised 600mm above existing ground level as a nominal protection against overtopping or breach of the defence. If a lesser standard defence protects the area, then property should be raised to be above the 1 in 100 year level at least.

6.10.3 These freeboard recommendations may need to be varied in relation to existing circumstances or local custom and practice.

6.10.4 Adequate provision must always be made for the disposal of surface water runoff from new development in a protected area during flood times when gravity discharge is impeded.

6.11 Hydropower

In support of the Government's policy to enhance the use of renewable energy sources the NRA aims to co-operate with developers over the use of weirs for electricity generation.

The construction, operation or alteration of impoundments should not however be permitted to adversely affect upstream or downstream water levels. Nor should there be impediment to field drainage, and channel velocities should not be permitted to aversely affect channel stability. In many cases these concerns can be overcome by appropriate design.

Some hydropower proposals utilise existing "mill type" buildings to house generating and switching equipment and may not therefore create new problems. However sites requiring new buildings and structures in the floodplain are more difficult to accommodate. The NRA must be satisfied that the scale and location of such buildings and structures create no overall detriment, and that appropriate compensatory works are incorporated into the design.

See also Chapter 19 and Appendix 10 Information Sheets 12 and 18.

6.12 Coastal Floodplain

See Chapter 7.

6.13 Further Information

DoE Circular 30/92 entitled 'Development and Flood Risk' is reproduced in Appendix 5. Further information is given in Appendix 10, Information Sheet No 12, 'Floodplains and Washlands'. This could be sent to an applicant together with a Land Drainage Consent rejection for development within a floodplain. It can also be sent to Planning Authorities to explain the NRA's policy on floodplains.

7. COASTAL FLOODPLAIN,
ESTUARIES & SEA DEFENCES

7 COASTAL FLOODPLAIN, ESTUARIES & SEA DEFENCES

7.1 Introduction

7.1.1 The underlying aims of Flood Defence planning liaison and consenting apply equally to the coastal situation as well as the fluvial situation.

7.1.2 This chapter deals briefly with some aspects unique to the coastal zone, but the reader is strongly advised to consult other texts in relation to these topics. In particular reference should be made to the following:-

MAFF	"Coastal Defence and the Environment".
MAFF/Welsh Office	"Strategy for Flood and Coastal Defence in England and Wales".
DoE	"Circular 30/92 - Development and Flood Risk".
NRA	"Sea Defence Survey".
MAFF	"Coast Protection Survey of England".

7.2 Definitions

7.2.1 Waves and Tides

Waves are generated by the action of surface winds on the sea. Tides are generated by the gravitational effects of the moon and the sun. Waves entering shallow water can rapidly increase water levels locally, thereby increasing risks of flooding and erosion. Beaches can be moved, removed or augmented and land eroded or sediment deposited by the action of waves and currents generated by the tides.

7.2.2 Storm Surges

Storm surges are generally created by a combination of low atmospheric pressure and high winds. In shallow coastal waters and particularly in areas such as the southern end of the North Sea, where the coastline creates a funnelling effect, a surge can raise predicted tide levels by 2m or more. Surges of 1m occur in the North Sea about 4 or

5 times a year, with most occurring during the winter months. Surges of a similar magnitude can also occur along the south and west coasts.

7.2.3 Coastal Floodplain

Low-lying areas adjacent to the sea or estuaries constitute what may be termed "coastal floodplain", where such areas suffer occasional inundation by salt water.

In the past there have been several different options for defining coastal floodplain. Some of these definitions include:-

(a) All areas contiguous with the coast lying below Mean Sea Level, Newlyn (MSLN).

(b) All areas contiguous with the coast lying below highest astronomical spring tide for the 1990-1999 decade.

(c) Sub-areas corresponding to effective crest height of existing sea defences.

(d) Sub-areas corresponding to theoretical crest height of sea defences, designed to a specified return period.

These have now been superseded following publication of DoE Circular 30/92 Development and Flood Risk which defines coastal floodplain as:-

"Lands at risk from flooding from the sea or tidal lengths of rivers, whether or not protected by sea defences."

"The limits of floodplain are defined by the peak water level of an appropriate return period event."

"In coastal areas the 1 in 200 year return period flood or the highest known flood will be used whichever is the greater."

7.2.4 Tide Lock

The period of inundation during flood events can be influenced by tidal levels where these restrict river outfalls.

7.3 Physical Processes

7.3.1 Geomorphological Change

The effects of geomorphological change vary in their nature, scale and extent. On the coast, the dissipation of the energy of the sea is the main cause of material falling from natural cliffs and of landslides. The stability of cliffs may also be influenced significantly by groundwater seepage and the action of frost. Inland, rainfall may contribute directly, and indirectly through erosion by rivers, to landslides and to the accretion of sediment in river channels with significant effects on the incidence of flooding. The locations for potential erosion are usually predictable but the actual process is variable and during periods of extreme weather conditions the loss of material may be extensive and rapid, causing significant changes in the shape and stability of the remaining land.

7.3.2 Geological Crustal Movement

In the period since the last ice cap retreated, the earth's crust has been adjusting to the removal of the great weight of ice, and the land masses affected have slowly been returning to their earlier positions. The last glacial period covered northern and western parts of Britain with ice. Its retreat means that the land in Scotland and parts of northern England and Wales are slowly rising, whilst to the south it is slowly sinking at up to 1 to 2 mm per year. The south and south east coast of Britain will therefore continue to become more vulnerable to inundation from the sea as this process continues.

7.3.3 Global and/or Regional Climate Change (Global Warming)

Throughout the Earth's history the global climate has changed dramatically many times and, despite continuing research, there is still much to learn about the processes

which affect it. The retreat of the ice cap since the last great ice age provides a clear indication that a natural rise in global temperature has occurred in geologically recent times. However, man's more recent activities are also believed to be affecting the global climate.

In 1990, the Inter-Governmental Panel on Climate Change (IPCC) predicted that unless special action was taken to limit the emission of 'greenhouse gases' there would be an increase in global mean temperature of about 1°C above the present level by 2025 and 3°C before the end of the next century. Basic knowledge of climate processes is still insufficient to predict with confidence what the effects of global warming will be. However, as the sea warms it will expand and with the addition of melted land-based ice there will be some effect on the level of the world's oceans. The IPCC's 'best estimate trend', which is generally accepted as the most appropriate at this time, suggests a rise in global sea level of about 20cm by the year 2030 and 65cm by 2100. However, subsequent work suggests that the increases may be less than this, although the margin of error in these scenarios is significant.

Changes in global mean temperature could also have consequential effects on ocean currents and the frequency and magnitude of storms and surges. This may have a greater impact on defences than steady sea level rise, as well as increasing flood risks inland. In addition, changes in evaporation and moisture lost by vegetation, precipitation and consequent run-off may affect river and estuary environments. Global circulation modelling is not yet, however, at a stage where such changes can be predicted with confidence.

7.3.4 Sea Level Rise

Continuing relative sea level rise, resulting from a combination of geological crustal movement and climate change, will not only affect the coastal zone, but may also cause serious flooding further inland where the land is low-lying. Rivers and man-made systems relying on outflow to the sea, including navigation channels, sewer outfalls, etc, will also be affected, causing further difficulties inland.

The accepted predictions for global warming and land level adjustment have formed the basis of suggested allowances for the design of coastal defences. Operating

authorities were advised by MAFF and Welsh Office in November 1991 to allow for the following relative sea level rises:

NRA Region	Allowance
Anglian, Thames, Southern	6mm/year
North West, Northumbria	4mm/year
Remainder	5mm/year

Where a case, based on the conditions unique to a particular location, can be made, an adjustment to these allowances may be considered.

See also Policy Instruction TE/FD/001 "Climate Change" and R&D Report 12 "The Implication of Climate Change for the National Rivers Authority".

7.4 Coastal Defences

7.4.1 The coastline of England and Wales is approximately 4,500 kilometres long. Many urban and rural areas depend on coastal defences to protect them from flooding or erosion by the sea or tidal waters. These defences take many forms. Over one third of the defences along the coast, mainly in the south and east, is man-made, but many other areas are safeguarded by natural features such as sand dunes, beaches and saltmarshes, which may themselves require some intervention to maintain sufficient protection.

7.4.2 Over the last two centuries people have turned to engineered structures to maintain the coastline by opposing the natural forces of the sea. It is now becoming better understood that some of these techniques can cause problems either locally or at other points along the coast.

7.4.3 Past defences, built in response to contemporary need to protect important assets, were based on the best available technology at the time. Although such defences have an important socio-economic purpose we now know that they also have had, in a number of cases, an adverse impact on the environment. Intertidal areas have been reduced by the construction of sea defences which have allowed the land behind to be drained for agriculture or development. Saltmarsh and mudflats absorb wave energy, and fens

and low-lying marsh provide natural washlands to hold flood waters and slow the rate of flow to rivers. The valuable contribution these and other habitats can make to flood protection has thus been lost in many areas. Attention has therefore turned to adapting and supplementing natural coastal processes, with the aim of creating a more environmentally acceptable and sustainable coastline through, for example, beach nourishment. This approach has become known as 'soft' engineering. However, given the diversity of the coastline, no one method of defence will hold good in all circumstances; 'hard' defences will continue to be appropriate in many cases.

7.4.4 By absorbing the energy of waves, dune systems and sand and shingle beaches, mudflats and saltmarshes act as a natural defence along significant stretches of the coast. Where they are depleted and there is an increased risk to life and the developed and natural environment, measures to enhance those natural defences or the need to build or reinforce artificial ones may have to be considered.

7.4.5 Erosion of cliffs is vital to the continued diversity of habitats and geological exposures of scientific interest, and material lost can replenish beaches further along the coast. Monitoring of beach levels and coastal erosion rates can underpin decisions on defence measures and on whether to feed beaches artificially where natural replenishment is not adequate.

7.4.6 Along the coastline discrete cells can be identified within which the movement of coarse sediments is largely self-contained. Within these cells some of the material from eroding cliffs - together with coarse sediment swept down by rivers and material from the sea bed - naturally feeds beaches along the coast. Dunes, spits and nesses also move in relation to the prevailing longshore drift. The installation of groyne systems and the construction of artificial shorelines such as coastal defences and harbour walls may interrupt these natural supply routes. Movement of fine cohesive sediment is not wholly confined within such defined cells. These sediments originate from soft cliff erosion, rivers, estuaries and other coastal and offshore sources. Continued supplies of such sediment are essential to the maintenance of mudflats, saltmarshes and related coastal and estuarine systems. Supply can be interrupted by river and coastal protection works, dredging and other related activities.

7.4.7 Dredging to maintain navigation channels and disposal of the dredged material may also have an effect on the natural supply of sediment. It is estimated that each year some 40 million tonnes of dredged material are currently dumped at sea. Licences are required under the Food and Environment Protection Act to deposit materials at sea and MAFF as licensing authority, requires applicants to have examined the practical availability of alternative methods of disposal. The policy is to encourage, wherever possible, the beneficial uses of such materials for purposes such as beach nourishment, the feeding of saltmarshes and as wave breaks. In this way constructive use may be made of materials which would otherwise be removed from the coastal zone.

7.5 Sea Defence Survey

All agencies responsible for flood and coastal defences, as well as private and corporate owners, need up-to-date information on their general state of repair and adequacy, to ensure that they are maintained in good condition and to identify and prioritise any works which are necessary: Assessment of the residual life of individual defences is also important in planning future repair and replacement programmes. In 1992 the NRA published the results of a survey of all existing sea defences, including those in private, corporate or local authority ownership. British Rail carried out a separate survey of their own defences, the findings of which were included in the NRA report. The survey established the condition of the existing defences and identified those in need of works.

7.6 Development in Areas "Protected" by Coastal/Tidal Flood Defences

7.6.1 Property should be set back from the tidal defences, out of range of wave/spray overtopping, to prevent damage due to wave action/water-borne debris, and must provide adequate working space along the toe of the defences for future maintenance and improvement.

7.6.2 New development should be discouraged where it would increase flood risk to third parties ie by taking up storage in 'sump' areas or deflecting flood water.

7.6.3 Floor levels of permitted development should be raised a nominal 600 mm above surrounding ground levels and, where ponding is likely to occur, above expected flood levels.

7.6.4 Property must not be located where it will obstruct flood evacuation routes.

7.6.5 In areas where drainage is tidelocked, new development should not be allowed unless: a) adequate storage can be provided on-site to cater for surface water runoff and overtopping water; or b) facilities for overpumping are provided.

7.7 Managed Retreat

7.7.1 Managed retreat can be defined as:

"The deliberate process of setting back a defence line or allowing a coastline to recede to a new line of defence (natural or manmade) accompanied by measures to encourage the development of an environmentally beneficial habitat."

7.7.2 In July 1993, the NRA Board approved a policy which established how managed retreat could be adopted whilst still fulfilling the principal objective of flood defence to protect people and property from flooding.

7.7.3 In accordance with MAFF Project Appraisal Guidance Notes published in March 1993, managed retreat can be adopted as the preferred option in those situations where it is shown to be the best option for providing the required standard of protection in the most technically, economically and environmentally sound way.

7.8 Development in Unprotected Coastal/Tidal Flood Risk Areas

7.8.1 New development and redevelopment should be discouraged in unprotected tidal flood risk areas.

7.8.2 If development is unavoidable, then floor levels of new property should be raised above surrounding ground levels to provide a measure of protection against flooding.

Care must be taken that such raising of levels will not aversely affect others eg by infilling significant 'sump' areas or blocking flood water evacuation routes.

7.9 Strategic Approach

7.9.1 MAFF and Welsh Office encourage the setting up of coastal defence groups for specified stretches of the coast and the development of shoreline management plans. These plans should be integrated with the work of local planning authorities so that statutory development plans can take account of shoreline management issues.

7.9.2 MAFF and Welsh Office also welcome the development by the NRA of river catchment plans. Where shoreline management or catchment plans are in place, proposed flood warning and defence measures should be consistent with these plans.

8. MAINTENANCE ACCESS STRIPS

8 MAINTENANCE ACCESS STRIPS

8.1 Policy

The NRA's Policy with regard to access for maintenance of watercourses is as follows:-

IN ORDER TO ALLOW ACCESS FOR MAINTENANCE AND IMPROVEMENT WORK, THE NRA WILL OPPOSE ANY DEVELOPMENT WITHIN EIGHT METRES OF A MAIN RIVER WATERCOURSE AS CLASSIFIED BY THE WATER RESOURCES ACT 1991. A SIMILAR POLICY APPLIES TO ORDINARY WATERCOURSES.

8.2 Reasoned Justification

Irrespective of the possible need for channel improvement works, rivers and other watercourses require periodic maintenance and repair, much of which is carried out with the aid of machinery. In order to ensure that this work can be carried out, it is essential that development proposals retain an adequate working strip either side of the watercourse, ideally as public open space. This strip must be kept free of all buildings, fences, walls, areas of dense planting and other obstructions, although clearly some natural bankside vegetation is both essential and desirable, and can be enhanced where appropriate.

8.3 Implementation

8.3.1 On Main River the NRA's Byelaws can be used to preserve access strips. On ordinary watercourses, the Planning Authority should be advised to adopt a similar approach and restrict development. Also the Planning Authority should be advised regarding the need for access to bank top access strips.

8.3.2 Problems can arise when a developer does not pass on any planning conditions regarding fencing and buildings on the access strip to the purchaser. The Planning Authority may be persuaded to remove the General Development Order rights to build

or fence on the access strip at the bottom of gardens abutting watercourses, in which case this is entered into the Land Charges Register.

8.3.3 On Main Rivers the NRA Severn-Trent Region's Byelaws should be heeded in that an 8 metre access strip should be provided except in exceptional cases. This is difficult to enforce if the Planning Authority does not take this into account when granting planning permission. Where possible, access should be preserved on both banks, particularly if the watercourse is large and it would be impractical to carry out operational dredging from one bank only.

8.3.4 A similar approach should be adopted for ordinary watercourses although it is recognised that a 5 metre wide access would be more appropriate on smaller watercourses. It should be remembered that a 6 metre access only just gives a medium sized excavator room to swing and 5 metres is the minimum width to allow passage of plant at a pinch point.

8.3.5 Where a local authority is concerned over the possibility of unsightly, unkept access strips on new developments, two solutions which have been tried with limited success have been: firstly, to arrange for a road on the edge of a watercourse rather than gardens, and secondly, for the watercourse to be incorporated into public open space with the house fronts facing the watercourse and road access to the rear of the properties. Nevertheless the maintenance of a natural river corridor is the Authority's preferred option.

8.3.6 At bridges, a 5 metre wide, 1 in 3 gated ramp up and over the obstruction is the normal requirement unless a 5 metre high and 5 metre wide access is provided under the bridge soffit which could double as an access for landowners. Flood Defence Area Operations staff should be consulted regarding individual proposals.

8.3.7 It must be remembered that the option of ramping up and over does not exist where the bridge is carrying a motorway or major dual carriageway with crash barriers and alternative access facilities must be provided.

8.3.8 See also Chapters 4 and 6 in relation to Planning Applications. Further guidance on watercourse maintenance techniques compatible with the NRA's environmental duties can be found in "The New Rivers and Wildlife Handbook".

8.3.9 The Authority's requirements are summarised in Appendix 10, Information Sheet No 16.

9. TIPPING

9 TIPPING

9.1 Policy

9.1.1 The NRA's policy with regard to tipping is as follows:-

NO TIPPING OF MATERIALS OR RAISING OF GROUND LEVELS SHALL BE PERMITTED WITHIN THE FLOODPLAIN OF A WATERCOURSE, AS DEFINED BY THE NATIONAL RIVERS AUTHORITY

9.1.2 In exceptional circumstances:-

(1) The filling of hollows in the floodplain with material from the floodplain, ie on a cut and fill basis, might be permitted provided that no imported material is used, and provided the flow area and net storage volume is not reduced. Similarly, some earthworks may be permitted to rationalise the floodplain boundary on a very limited localised basis provided that there is no detriment to the hydraulic function of the floodplain. However, reduction in the diversity of habitat and landform can be detrimental to the environment, and thus may be contrary to the Authority's conservation duties. Such schemes must be referred to the Area FRCN staff for comment. (See also Chapter 6 and Appendix 22).

(2) The formation of temporary topsoil heaps associated with gravel extraction may be permitted providing their location and alignment is time controlled. These heaps should be parallel to the flood flow and limited to a maximum of 100m in length with breaks between each heap. Conditions are best controlled through the planning approval.

9.1.3 Old worked out gravel pits in the floodplain can cause problems if abandoned before reinstatement has taken place. Often there is no record of previous ground levels so a compromise solution has to be reached before reinstatement can take place. Topsoil heaps often used to be placed at right angles to the flow causing flooding problems and difficulty is often experienced in achieving their removal. (See Chapter 10 Gravel Extractions).

9.1.4 When there is a risk of urban flooding due to restricted width of floodplain, temporary bunding will be resisted. Where permitted the width reduction must be limited to a maximum of one third of the floodplain in the absence of hydraulic calculations. Locations exist where no reduction in the width of floodplain can be permitted.

9.2 "Unauthorised" Tipping

9.2.1 In the case of unauthorised tipping, the NRA can take legal action under Sections 23 (LDA 91) or 109 (WRA 91) or the Land Drainage Byelaws, but proceedings via a Magistrates' Court must be commenced within six months of illegal action if the person who is the landowner or the Licence holder is to be convicted. A case would only be taken to Magistrates Court by the Authority if sufficient evidence regarding the nature, time, place, perpetrator etc was available. Notebooks, photographs, historic records and witnesses would all be required.

9.2.2 Alternatively, a person who has illegally tipped material in the floodplain of a Main River should be served a Notice to remove it within a reasonable period. Should the person refuse, the NRA, under its Land Drainage Byelaws, can remove the material and seek to recover the costs. The Local Authority must be requested to take action on Ordinary watercourses. The recommended enforcement procedure is set out in Chapter 29.

9.2.3 The NRA can take action under Severn-Trent Region Byelaw 21 against a person who is tipping in a Main River floodplain, except where planning permission has been granted, in which case the NRA's powers are limited to the other Byelaws.

9.2.4 The Local Authority may take action via the Public Health Acts if domestic property is flooded.

9.2.5 The following courses of action can be taken if a Waste Disposal Licence is issued without consultation and/or inclusion of all the NRA's conditions:-

(1) The NRA can appeal to the Secretary of State for the withdrawal of the Licence.

(2) Civil Action may be taken by the injured party against the Waste Disposal Authority and/or the Licence holder if damage occurs as a result of the tipping operation.

9.3 Disposal of Dredgings

9.3.1 Drainage authorities are entitled to carry out dredging works and "dispose of any matter removed in the course of the carrying out of any work for widening, deepening and dredging any watercourse and deposit any matter so removed on the banks of the watercourse or on such width of land adjoining the watercourse as is sufficient to enable the matter in question to be removed and deposited by mechanical means in one operation".

The deposition of any matter which would constitute a nuisance under the Environment Protection Act 1990 is excluded (Section 167 WRA 91 and Section 15 LDA 91).

Note: Any material carted and dumped may be subject to the requirements of the Control and Disposal of Waste Regulations 1989.

9.3.2 As a responsible body, consideration must be given to the implications of disposal of dredgings from NRA operations, to ensure that we do not compromise our own floodplain policies. A similar site specific consideration should be applied to the bodies with statutory powers to carry out dredging works, and where necessary, an objection should be raised to works that are detrimental to Flood Defence interests.

9.3.3 Appendix 16 titled 'Waste Disposal Licences' covers further points regarding tipping.

A10. GRAVEL EXTRACTIONS
& OTHER MINERAL WORKINGS

10 GRAVEL EXTRACTIONS AND OTHER MINERAL WORKINGS

10.1 Introduction

Unless properly controlled by the Planning Authorities, gravel extractions and other mineral workings potentially have a substantial adverse impact on the water environment. In Flood Defence terms the immediate concerns of the NRA are:-

(a) to ensure the physical integrity of nearby watercourses by allowing adequate margins between the river bank and the excavation;

(b) to preserve the effectiveness of local land drainage systems;

(c) to preserve the effectiveness of the floodplain for Flood Defence purposes;

(d) to be mindful of its duties under Sections 12 and 13 LDA 91 and Sections 16 and 17 WRA 91 to promote the conservation, and enhance the natural beauty of land associated with rivers and to promote the conservation of flora and fauna therein.

Details of the programme and method of working and reinstatement of the site must be agreed in advance, to ensure that the Flood Defence considerations are not adversely affected during the life of the site.

10.2 Temporary Works

10.2.1 In terms of temporary works affecting floodplains, the most important aspect, is the way in which spoil and topsoil are stored and moved around the site. There are few sites where excavation can be undertaken without some temporary loss of floodplain storage, although usually the NRA can support methods of working which reduce this to an acceptable degree during the lifetime of the site.

10.2.2 Storm water run-off from major earthworks and overburden mounds can create problems in receiving watercourses, particularly if formal drainage systems are installed.

10.2.3 Ancillary buildings, batching plants, settlement lagoons etc associated with quarrying can represent a problem, particularly on sites within floodplains. Wherever possible it must be recommended to the Planning Authority that such features be located on higher ground out of the floodplain, or that appropriate compensatory drainage works are undertaken to minimise the potential detriment.

10.3 Reinstatement

10.3.1 When consulted by a Planning Authority over an application to extract gravel in a floodplain, the NRA's response should include a condition that the applicant carries out a grid level survey and sends a copy of the survey drawing to the Planning Authority, for onward transmission to the NRA, before the topsoil is stripped.

10.3.2 It must be assumed that the site will eventually be reinstated to its original use, although in practice parts of the site may be left as voids, ponds etc. The NRA must ensure that finished ground levels are no higher than the existing levels. A condition regarding levels should also be included in the response to the Planning Authority.

10.3.3 In some areas, PFA from power stations is used to fill the voids created by mineral workings. Whether deposited in dry or slurry form, PFA is a potential pollutant if exposed to flood water. Temporary protective bunding is therefore required which needs to be compatible with floodplain policy.

10.3.4 When fully settled and dried, the PFA can be capped and the bunds removed. Settled PFA forms a low permeability barrier to ground water movement which can itself lead to drainage problems. Adequate provision must be made by the developer.

10.3.5 Further details regarding reinstatement of sites are contained in Appendix 16 "Waste Disposal Licences".

10.3.6 It is recommended that full details of the proposals for filling/restoring the site are agreed in advance of planning approval.

10.4 Voids and Stability of Excavated Slopes

10.4.1 The Health & Safety Executive, The Federation of Civil Engineering Contractors and British Coal Opencast Executive have jointly drawn up a code of practice entitled "Stability of Excavated Slopes at Opencast Coal Sites". This followed the unscheduled diversion of the River Aire into the St Aidan's excavations. Development Control Officers should not comment on stability calculations, but should nevertheless seek written assurances from the applicant that the proposals are in accordance with the code of practice.

10.4.2 For many years a 'rule of thumb' standoff distance between Main River and excavations of 30 metres (previously 100 feet) has been applied. For major rivers like the Trent this was increased to 45 metres. Historically these distances have proven adequate to ensure that the river does not break into the void. In recent times developers have challenged their validity claiming that they sterilize valuable mineral assets and increase the costs associated with quarrying if limited small scale encroachment into the standoff is permitted.

It is recommended that the 30 metres rule be continued until the developer can demonstrate that it is inappropriate at the particular site.

If, for example, the developer designs temporary works, sheet piling etc between the river bank and the excavation, it may be possible to permit a smaller standoff distance. As an absolute minimum the 8 metre wide Byelaw enforceable access strip must be maintained.

11.CARAVAN SITES

11 CARAVAN SITES

11.1 Introduction

11.1.2 The NRA Severn-Trent Region's policy is to oppose the development of caravan sites in flood risk areas. This is in accordance with the Authority's floodplain policy and in the interests of public safety.

11.1.3 The NRA must strongly oppose all applications for static caravans or mobile homes in floodplain areas on the basis that these are no different from permanent dwellings and represent an unacceptable loss of floodplain storage and/or an obstruction to floodplain flows.

11.1.4 Reference should be made to Appendix 5, DoE Circular 30/92 paragraphs 22-24.

11.2 Policy

11.2.1 The following statements outline the NRA's policy:-

(1) CARAVANS MUST NOT BE POSITIONED WITHIN FLOOD RISK AREAS.

Floods can occur at any time of year and development in flood risk areas is undesirable because it can cause an increase in flood risk to adjacent sites by reducing flood storage volumes and flow routes as follows:-

(a) The positioning of any new structures within the floodplain potentially reduces the capacity of the floodplain to store water. The raising of caravans on piers is not an acceptable alternative, as the voids beneath the caravan cannot be effectively policed to prevent their use for storage or from being walled off. The argument that an application examined in isolation would have a negligible effect cannot be accepted, as the cumulative effect of all development within the floodplain must be considered.

(b) The positioning of caravans on flow routes presents several problems. The caravans and their associated fencing and planting cause obstructions to the passage of flood waters. In extreme events these obstructions can be swept away to form greater blockages downstream.

(2) CARAVANS MUST NOT BE ISOLATED FROM DRY LAND IN THE EVENT OF A FLOOD.

If permitted, the development of caravan sites in flood risk areas would increase the demand on the emergency services to warn, assist and rescue residents during flood times. The stresses and expense of being flooded or surrounded by flood water should also be considered.

(3) EXISTING SITES WITHIN FLOOD RISK AREAS MUST NOT BE EXTENDED OR HAVE THEIR CONDITIONS RELAXED TO PERMIT CONSOLIDATION OF THEIR POSITION.

Experience has shown that there is an irresistible progression from touring caravan park through static caravans to all year habitation, mobile homes and occasionally permanent housing. Once sites are established, applications for changes in use and for the relaxation of conditions become more difficult for this Authority and the Planning Authority to refuse. Any application to change the usage of a site should be taken as an opportunity to redress past bad practice.

(4) ANCILLARY BUILDINGS MUST NOT BE POSITIONED WITHIN THE FLOODPLAIN.

The development of a caravan park will inevitably require the erection of ancillary buildings, toilet/shower blocks, shops, clubhouse and cafe facilities etc. This Authority would object to the positioning of any such buildings within the floodplain for the reasons given above.

(5) PROVISION MUST BE MADE TO REDUCE THE RISK TO PUBLIC SAFETY ON EXISTING SITES.

Where sites already exist in flood risk areas, the NRA would recommend that:-

(a) The site be equipped with an adequate flood warning system.

(b) The caravans be restricted to the touring variety.

(c) The site be restricted to summer occupancy only to reduce but by no means remove the flood risk.

11.2.2 The Authority's requirements are summarised in Appendix 10, Information Sheet No 14.

12. ENVIRONMENTAL, RECREATION
& CONSERVATION MATTERS

12 ENVIRONMENTAL, RECREATION AND NATURE CONSERVATION MATTERS

12.1 Introduction

12.1.1 The WRA 91 and LDA 91, require the NRA to appraise the environmental implications of all proposals which are likely to have an effect on any wetland, watercourse, lake, reservoir or other habitat dependent on water.

12.1.2 The Fisheries, Conservation, Recreation and Navigation staff should be consulted for detailed advice on such matters, but the governing legislation and basic principles and objectives are set out below.

12.2 Sections 2(2) and 16 Water Resources Act 1991

(Note: Section 12 LDA 91 also imposes similar environmental and recreational duties on the NRA or Drainage Board as appropriate)

12.2.1 Section 16(1) of the Water Resources Act 1991 states:

"It shall be the duty of each of the Ministers and of the Authority, in formulating or considering any proposals relating to any functions of the Authority -

(a) So far as may be consistent -

(i) with the purposes of any enactment relating to the functions of the Authority and,

(ii) in the case of the Secretary of State, with his duties under section 2 of the Water Industry Act 1991,

so to exercise any power conferred on him or it with respect to the proposals as to further the conservation and enhancement of natural beauty and the conservation of flora, fauna and geological or physiographical features of special interest;

(b) to have regard to the desirability of protecting and conserving buildings, sites and objects of archaeological, architectural or historic interest; and

(c) to take into account any effect which the proposals would have on the beauty or amenity of any rural or urban area or on any such flora, fauna, features, buildings, sites or objects."

12.2.2 Section 16(2) of the Water Resources Act 1991 states:-

"Subject to subsection (1) above, it shall be the duty of each of the Ministers and of the Authority, in formulating or considering any proposals relating to the functions of the Authority -

(a) to have regard to the desirability of preserving for the public any freedom of access to areas of woodland, mountains, moor, heath, down, cliff or foreshore and other places of natural beauty;

(b) to have regard to the desirability of maintaining the availability to the public of any facility for visiting or inspecting any building, site or object of archaeological, architectural or historic interest; and

(c) to take into account any effect which the proposals would have on any such freedom of access or on the availability of any such facility."

12.2.3 **<u>The Environmental and Recreational Duties in S16 (WRA 91) and S12 (LDA 91)</u>**

Guidance on the application of the Authority's environmental duties under S16 (WRA 91) and S12 (LDA 91) is given in NRA Policy Instruction CE/LL/001 - see Appendix 12.

The main environmental and recreational duties which arise when the NRA is formulating its own proposals or considering proposals from other parties can be summarised as follows:-

(a) to TAKE INTO ACCOUNT any effect which proposals would have on the beauty or amenity of any rural or urban area or on any flora, fauna and geological or physiographical features of special interest and on buildings, sites and objects of archaeological, architectural or historic interest.

(b) to HAVE REGARD to the desirability of protecting and conserving buildings, sites and objects of archaeological, architectural or historic interest.

This duty imposes a more positive requirement than (a) to consider whether, and if so how, such places or objects should be protected and conserved and will usually call for specialist advice.

(c) to EXERCISE ANY POWER conferred on it (so far as may be consistent with the purposes of any enactment relating to the NRA functions) with respect to the proposals AS TO FURTHER the conservation and enhancement of natural beauty and the conservation of flora, fauna and geological and physiographical features of special interest.

This is the most active duty and is the one likely to create the best opportunities for enhancing the conservation values of water and associated land under NRA control but raises difficult issues. The guidelines are therefore directed mainly towards the application of this duty, which is referred to throughout as the 'new conservation duty'.

It is noted that the duty is qualified by the words 'so far as may be consistent with the purposes of any enactment'. A single section of an act of Parliament is an enactment. The general purpose of a particular section is usually reasonably clear. For example, the general purpose of Section 23 of the Land Drainage Act 1991 is to provide the means of controlling the erection of certain structures in an ordinary watercourse. The means of control is to require the consent of the drainage authority to be obtained before any such action is begun. It follows that a secondary or subsidiary purpose of the enactment is to permit actions whose obstructive effect on the flow of a watercourse are, or can be made, acceptable in land drainage terms.

The requirement that the enhancement duty places on the NRA, often applied by individual officers, is to exercise the NRA's powers so as to achieve improvement in terms of the environment, whilst recognising that the power has to be used consistently with achievement of the objectives (ie. the purposes) for which the power is granted.

(d) to HAVE REGARD to the desirability of preserving for the public, any freedom of access to places of natural beauty.

(e) to HAVE REGARD to maintaining the availability to the public of any facility for visiting or inspecting buildings, sites or objects of interest

and

(f) to TAKE INTO ACCOUNT any effect which the proposals would have on any such freedom of access or on the availability of any such facility.

General duties (d) (e) and (f) relating to access will be taken on board by the NRA's own maintenance access requirements and recommendations as detailed in Chapter 8. Duties (a) (b) and (c) are more complex and need further consideration as detailed below.

12.3 Implications of Environmental and Recreational Duties on Land Drainage Consents

12.3.1 In exercising its Land Drainage Consenting powers under the Water Resources Act 1991 and the Land Drainage Act 1991, the NRA is required to consider whether proposed works "further the conservation and enhancement of natural beauty and conservation of flora, fauna and geological or physiographical features of special interest".

12.3.2 This requirement forms a test or question, ie "How does this proposal affect the environment?", which a developer will normally be expected to satisfy. The "furtherance" of the "conservation" and the "enhancement" of the environment implies that some degree of improvement over the existing state of affairs is to be anticipated.

This may be difficult to establish and work may need to be done in discovering or calculating the answer. The applicant will clearly have a role to play in either providing additional information or undertaking or funding the necessary investigative work.

12.3.3 Anyone intending to develop land should, therefore, be aware that an associated proposal to "alter" a watercourse requires Consent and that the NRA will consider the proposals in the light of these requirements, and may refuse Consent if there is an environmental detriment. Developers should accordingly consider how best to meet the NRA's requirements in this respect. It should be remembered that the condition of banks and adjacent land is often as relevant as that of the water and stream bed, and that the construction process and access routes can be the most detrimental features of an application.

12.3.4 It is suggested that developers should consult the NRA at the earliest opportunity to identify problems and solutions to environmental issues. In some instances, mitigating measures might be appropriate, whilst in some cases the best approach may be to plan a development so that the watercourse remains substantially unaffected, with its route through the land being incorporated into an environmental corridor or buffer zone forming part of the development. The latter approach is consistent with the "River Corridor" approach to river management.

12.4 Assessing the Environmental implications of Land Drainage Consent Applications

12.4.1 The Authority's standard Land Drainage Consent form informs applicants of the need to comply with any duties or responsibilities for the conservation or protection of the environment (including flora and fauna).

12.4.2 For each Land Drainage Consent application, the designated member of FRCN staff must be consulted. This procedure serves two purposes. Firstly, it enables the NRA to comply with Section 17 WRA 91 and Section 13 LDA 91 (environmental duties with respect to sites of special interest), since FRCN staff can consult English Nature, the Countryside Council for Wales, County Archaeologists and other organisations as appropriate. Secondly, it will enable FRCN staff to follow up any proposed Consent

which it is felt could have detrimental environmental or recreational consequences, or where further advisory expertise is required on the design or implementation of works.

12.4.3 Since a Land Drainage Consent is deemed granted two months after application, it will be necessary for the FRCN staff to respond by a specified date. The target consultation period for the FRCN staff should be three weeks.

12.4.4 The likely environmental effects of any application for Consent can be broadly categorised as either:-

a) Beneficial
b) Neutral
c) Harmful

12.4.5 Beneficial Effects

Where the environmental effects are beneficial, the environmental, conservation and enhancement duties will be fulfilled if the proposal is consented and goes ahead in the manner proposed. Any later variations should be similarly assessed.

12.4.6 Harmful Effects

Where the environmental effects are harmful there is obvious reason to query the proposal and indeed it may later be appropriate to reject it. There will, however, be cases where the proposal is of such significance in terms of a function of the NRA eg. conservation or water resources, that the proposal ought, if at all possible, to be modified rather than refused. In these, and sometimes in other less sensitive cases, it will be necessary to identify the damaging features of the proposal and to raise the question whether such features need take the form in which they are proposed. Generally in these circumstances modifications should be sought on the basis that the unmodified proposal would not be acceptable.

12.4.7 Neutral Effects

Where the effect of a proposal is broadly neutral, the desirable objective is to have some further input of environmental benefit brought into it, so that the exercise of the power to consent or to approve is no longer held back by the new conservation duty. How substantial this input should be is a matter of judgement in each individual case.

12.4.8 Making a Quantitative Judgement

The words of the environmental duty express no obvious quantitative test. However, the whole basis of the concept of furthering conservation lies in its quantitative element. It is, therefore, important to have regard to the scale of the project when considering the benefits to the environment that it is expected to bring. There should be some element of proportionality. It is necessary to consider the overall consequences of a proposal in the context of the river catchment in order to assess its likely quantitative effects. This will be required even though it involves asking an applicant for more information than he may have expected to provide. An early warning to the applicant of the likelihood of such a request might help him.

12.5 Granting/Refusal of Land Drainage Consent

12.5.1 Granting of Consent

Section 109, WRA 91, (Main River) Consents may be granted with reasonable conditions as to the time and manner of carrying out the works. This will enable the avoidance of disruption during particular times of the year, and the incorporation of design features which will conserve flora, fauna etc.

12.5.2 Clarification as to whether conditions can be imposed on a Section 23 (LDA 91) Consent is currently being sought. Until further notice, staff should continue to make use of Section 23 conditions where appropriate.

12.5.3 Historically, the Byelaws were for "any act the doing of which does not adversely affect the efficient working of the drainage system", but the legislation imposes a requirement to consider conservation issues in relation to all NRA functions.

Conditions relating to environmental matters can therefore be imposed on Byelaw Consents.

12.5.4 Refusal of Consent

It is now generally accepted that we do have the power to refuse Consent on conservation grounds. Nevertheless a consent cannot be "unreasonably withheld"!

12.5.5 Development Control Officers should seek to resolve matters of disagreement by negotiation with an applicant in conjunction with FRCN, rather than unqualified refusal. In cases where technical advice on the proposals would be constructive, a wide range of sources is available to FRCN.

12.5.6 Where FRCN staff recommend refusal on conservation grounds, the Regional Flood Defence Manager is to be notified promptly to allow time for discussion with the Regional Manager for Fisheries, Recreation, Conservation and Navigation.

12.6 Flora and Fauna

12.6.1 The majority of works affecting watercourses present an opportunity for the preservation, creation or enhancement of habitats for plants and animals. Detailed guidance on river management techniques that integrate the needs of both Flood Defence and wildlife is contained in "The New Rivers and Wildlife Handbook" produced by RSPB, NRA and The Wildlife Trusts and published in June 1994.

12.6.2 Clearly, the basic engineering requirements from a Flood Defence point of view, must remain at the forefront in the consideration of proposed works. There is usually scope, however, for optimisation of a design to take on board both Flood Defence and environmental requirements. In particular the use of environmentally appropriate materials is important in the design of any construction works. FRCN staff will be pleased to advise developers on such matters in relation to specific sites.

12.6.3 It is beyond the scope of this document to go into details on these matters, but some typical examples of aspects which can be readily accommodated are given below.

12.6.4 Otter Holts

The Authority in conjunction with National and Local Nature Conservation Bodies is actively encouraging the re-colonisation of river corridors by otters. Where appropriate, the riparian owners will be encouraged by FRCN staff to construct artificial holts in appropriate locations.

A typical example of an artificial holt which is compatible with both Fisheries, Conservation, Recreation and Navigation and Flood Defence requirements is illustrated in Appendix 10 Information Sheet No 21.

Further information is given in the NRA's Conservation Technical Handbook 3 'Otters and River Habitat Management'.

12.6.5 Birds and Bats

Bridges and other structures can provide important nesting sites for a number of species of birds and bats. Nest boxes can be incorporated into designs without reducing the hydraulic capacity of such structures.

12.6.6 Tree Planting

Guidance on tree planting is given in Chapter 13 and Appendix 10, Information Sheet No 22.

12.7 Environmental Assessment

12.7.1 An EC Directive 85/337/EEC on the Assessment of the Effects of Certain Public and Private Projects on the Environment has been implemented in the UK by a number of Statutory Instruments, of which the most important for the NRA are:

SI No 1217 The Land Drainage Improvement Works (Assessment of Environmental Effects) Regulations 1988. The UK Regulations which give effect to Directive 85/337/EEC with respect to improvements to land drainage and flood defence works undertaken by a Drainage Authority, which as permitted development

do not require planning permission. Copies of ESs produced under these regulations must be sent to the Countryside Commission and English Nature/Countryside Commission for Wales. The Schedule to the regulations specifies the type of information required in an Environmental Appraisal: this includes a description of likely significant effects on flora, fauna, landscape and the cultural heritage and appropriate mitigation and enhancement features.

SI No 1199 The Town and Country Planning (Assessment of Environmental Effects) Regulations 1988. The UK Regulations which give effect to Directive 85/337/EEC with respect to projects requiring planning permission.

Outside developers should seek the NRA's advice as to those issues which it will seek to be covered by the Environmental Statement.

12.7.2 Other relevant Statutory Instruments include:-

SI No xxxx Ancient Monuments (Application for Scheduled Monuments Consent) Regulations 1981. Form of application for consent to carry out works on scheduled monuments.

SI No 1510 Control of Pesticides Regulations 1986. Made under Food and Environment Protection Act 1985. Protection of the aquatic environment from use and storage of pesticides (including herbicides).

SI No 1813 Town and Country Planning General Development Order 1988 (as amended). Planning authorities required to consult EN/CCW before granting permission for land development within an SSSI or in any consultation area around an SSSI defined by EN/CCW. Also required to consult with certain conservation bodies when considering planning applications.

SI No 424 Harbour Works (Assessment of Environmental Effects) (No 2) Regulations 1989. Implementation of Directive 85/337/EEC for harbour works below medium low water, for which planning consents are not needed, including works under the Coastal Protection Act 1949.

12.7.3 Technically, SI 1217 means that any NRA Flood Defence works may require Environmental Statements. Severn-Trent Region takes a pragmatic approach with all works being subject to an initial low cost Environmental Appraisal which determines the need for any further action to comply with the legislation.

12.8 Recreation

12.8.1 The NRA's National Recreation Strategy emphasises the need for better access and improved facilities on land owned or managed by the NRA. Specific objectives of the Strategy are:

- to maintain, develop and improve recreational use of NRA sites;
- to take account of recreation proposals relating to any NRA function;
- to promote the use of water and associated land for recreation purposes.

All regions must promote this strategy.

12.8.2 This emphasis of recreation will be strengthened by:

- National trends in recreation with increasing numbers of participants of a wide range of age, physical ability and spending power taking part in increasingly different forms of recreation
- Further NRA obligations arising from the Water Resources Act 1991.

12.9 Fisheries

See Chapters 27 and 28.

12.10 Navigation

See Chapter 20 and Appendix 18.

13. TREE PLANTING

13 TREE PLANTING

13.1 Whilst the NRA has a duty under Sections 12 and 13 LDA 91 and Sections 16 and 17 WRA 91 to enhance conservation along watercourses, and elsewhere, the planting of trees and bushes near watercourses needs to be controlled to prevent the creation of significant obstructions to flood flow.

13.2 The Forestry Authority and the NRA have recently embarked on a joint research project to evaluate the effects of forestry on river floodplains. It is hoped that this research will enable the perceived detriment to flow resulting from tree planting to be quantified. Results are awaited and in the meantime a common sense approach has to be taken in evaluating forestry proposals.

13.3 The NRA Severn-Trent Region's Land Drainage Byelaw 9(d) (see Appendix 4) requires a Consent for any tree or shrub to be planted on a Main River flood bank or within 3m of its landward side toe. It does not cover any ground between the watercourse bank top and the river side toe of a flood bank. It is hoped that the planned new NRA Byelaws will give greater controls over tree planting.

13.4 Planning Authorities should be requested to submit any planting proposals in the floodplain to the NRA for consideration and comment by the Flood Defence and Fisheries, Conservation, Recreation and Navigation Departments.

13.5 Full consultation with Area FRCN staff is necessary in relation to specific planting schemes but in general terms:-

(1) Clear stemmed trees which, when mature, present less hydraulic resistance to flood flows, are preferable to shrubs or hedges.

(2) The planting of trees or shrubs should not be permitted within the channel of a watercourse unless the design of the channel makes provision for such planting in terms of the channel capacity.

(3) Dense or very extensive clumps of trees should be avoided.

(4) Groups of trees planted in semi linear form, parallel with the river are the least obstructive to overland flow. However, such a configuration might not be acceptable at some locations on conservation grounds or where it might obstruct watercourse maintenance or improvement works.

(5) Maintenance access should not be prejudiced.

(6) Sketches of typical requirements are included in Appendix 10, Information Sheet No. 22. Lists of native trees and shrubs are included in Appendix 28.

(7) See also "The New Rivers and Wildlife Handbook" for further guidance on tree and shrub establishment and management.

14. CULVERTS

14 CULVERTS

14.1 Policy

14.1.1 The NRA's policy is to resist culverting and to strongly oppose buildings over the top of culverts where they exist. Nevertheless, Consents cannot be unreasonably withheld. Development Control Officers must be satisfied that proposals:

(1) Should not cause flooding either at the site or upstream and downstream of the site;

(2) Should not prevent the solution of existing flooding problems;

(3) Should not prevent maintenance of the watercourse;

(4) Are not contrary to the NRA's duties under Sections 12 and 13 LDA 91 and Sections 16 and 17 WRA 91.

Generally we should not permit buildings over or within 3 metres either side of Main River culverts. Design flow criteria for culverts are to be compatible with open channel criteria. Screens should be discouraged.

14.2 Explanation

14.2.1 The NRA has statutory duties for protection of the water environment. The NRA seeks to discourage the use of culverting wherever possible in order to protect the amenity and habitat values of the river corridor and its environment.

14.2.2 Proposers of culverting schemes should be encouraged to find alternatives which utilise the watercourse as a feature, and enhance the area. Refusal of Land Drainage Consent may be appropriate on conservation grounds if the Authority is not satisfied with the submitted proposals.

Should applicants feel aggrieved at this approach, it will be up to them to prove that their proposal is environmentally and hydraulically acceptable.

14.2.3 All culverting works on Main Rivers and 'ordinary' watercourses require Land Drainage Consent. (Note:- Arguably, Section 23(b) LDA 91 gives Consent exemption to the erection or alteration of any culvert if unlikely to affect the flow in an 'ordinary' watercourse. However the NRA should endeavour to consent all such works).

14.2.4 The minimum pipe size should normally be 450mm diameter in order to reduce the risk of blockages. Trash screens can be a maintenance liability and their use should be discouraged. However, with smaller culverts, particularly in urban areas, a screen might be better than the risk of blockage of the culvert. Where the applicant requires screens on the grounds of safety to the public, these can be permitted if they generally conform to the recommendations in Appendix 10, Information Sheet No 4.

14.2.5 Buildings or other structures should not be permitted over Main River culverts on the basis that:

(a) The culvert may need to be replaced or uprated if conditions in the catchment upstream change.

(b) There is a need to maintain an overland flood route if the culvert is blocked or its capacity is exceeded.

The Authority requires the following in relation to Main River culverts and would recommend a similar policy be applied to culverted 'ordinary' watercourses:

(i) No development should be permitted over and within three metres of the outer walls on either side of the culvert.

(ii) Foundations of proposed buildings must be taken down to below the invert level of the adjacent culvert.

It is advisable for the Planning Authority to be recommended to take away the development rights over the area above the culvert.

14.2.6 It is sometimes argued by developers that if it becomes necessary to replace an existing culvert then the owner of the culvert need only replace like with like in terms of capacity. The NRA requires that where the existing culvert is inadequate, then any replacement should be uprated to the appropriate size. The legal position is uncertain but nevertheless the following comments apply:

(1) The NRA cannot Consent works which are hydraulically inadequate.

(2) It should be argued that historically the culvert may have been adequate but changes in the catchment may have rendered it inadequate. The owner of the culvert has a Common Law Duty to accept run-off from upstream and if a flooding problem occurs as a result of the inadequate culvert then a claim of nuisance may be appropriate.

(3) Highway Authorities, British Rail etc design their own works to modern standards. The NRA similarly does not wish archaic design standards to be applied to works under its control.

14.2.7 Where the culverting of an 'ordinary' watercourse is consented within a development, it is good policy to persuade the District Council to undertake any future maintenance provided the Developer pays a suitable commuted sum under a Section 106 Agreement.

14.2.8 For culverts constructed by Highway Authorities see Section 3.3.1.

14.3 Design Criteria

Where culverts are consented, the hydrological and hydraulic design should conform to the design standards and procedures described in Chapter 30 and the requirements set out in Appendix 10, Information Sheet No 4, and as summarised below.

(i) The hydraulic capacity should be consistent with the NRA's standard of protection aims which are as follows:-

1 in 100 years - Urban areas and villages.

1 in 50 years - Agricultural land of high value and isolated properties.

1 in 25 years - Agricultural land (minimum level of protection).

(ii) Culverting proposals should include inlet and outlet hydraulic control calculations.

(iii) Culverting proposals should include longitudinal sections of the watercourse upstream and downstream of the culvert in order to adequately demonstrate the effect of the proposal on the watercourse.

(iv) The minimum culvert diameter should not be less than 450 mm as smaller sizes are prone to regular blockage.

(v) Culverts under motorways and other major road embankments should be a minimum of 1,050 mm diameter to allow access for maintenance.

(vi) Culverts should have access manholes for maintenance at least every 100m, and at changes of direction and section. Consideration should also be given to providing additional access at changes of property and on culverts with slow bends.

(vii) The exit velocity under the design flood conditions should be limited to 1.2 m/s (2.0 m/s in upland watercourses) unless erosion protection is provided.

(viii) Protection against erosion should be provided up to flood level at both the culvert entry and exit.

(ix) Headwalls should be provided at entry and exit and adequately keyed into the banks and bed to prevent erosion. Construction should be in keeping in style and materials with the character of the locality and their visual impact monitored by Area FRCN staff.

(x) Safety fencing should be provided at entry and exit wherever there is public access.

(xi) Upstream screens should only be used where there is a real danger to public safety or where rubbish or tree branches are likely to block the culvert and cause major flooding. The screen should be designed for easy raking and have a horizontal top section which allows additional flow capacity when the inclined section becomes blocked. A two stage sloping screen should be considered if the watercourse has a particularly high debris load.

The basic design criteria are as follows:-

(1) Screen size must be such that it will allow full flow through the culvert even when partially blocked.

(2) It must be designed so that debris can be cleared from it safely under all conditions. Provision to be made for standing above the screen to hand rake. Horizontal supports or spacers must be offset so that raking will not be obstructed.

(3) It must prevent all debris capable of causing a blockage from entering the culvert.

(4) It must remain structually sound under all conditions of service.

Reference should be made to NRA R&D Publications Ref P-126 and 300/2/T 'Design and Operation of Trash Screens'.

(xii) In some situations it is appropriate for the inverts of box culverts to be set 600mm below the design bed level to allow for future regrading of the watercourse. The void between the invert and the existing bed level should be filled with a suitable inert material.

(xiii) Because of the cost of replacement, the inverts of large circular pipe culverts should also be set 600mm below present bed level if future regrading is likely. To avoid oversizing, a temporary upstream drop structure can be constructed. Smaller pipe culverts should have their inverts set at hard bed level (as a minimum) when the watercourse has been recently dredged, or 300mm below

existing bed level when in an unimproved state. The likelihood of future regrading, the cost of culvert replacement and the culvert hydraulics should be borne in mind when deciding on an acceptable level.

(xiv) For all shapes of culverts the required hydraulic capacity must be available above the bed level at all times.

(xv) Where a box culvert is proposed in preference to a bridge a freeboard of 600mm is required as in Section 17.2.1 (i). Freeboard is also required for large circular bridge openings 600mm above design flood level over 2/3rds of the width of the opening at design flood level.

(xvi) For smaller circular bridge openings it is recommended that allowance for freeboard should be made as follows:-

Calculated diameter (mm)	Recommended diameter incorporating freeboard (mm)
300 or less	450
450	600
900	1200
1350	1800

(xvii) Where possible, an overland flood route should be retained by permitting no development over and within 3 metres either side of a Main River Culvert. A similar approach is recommended for 'ordinary' watercourse culverts.

(xviii) Syphons are a source of continuous maintenance problems and their use should be discouraged. Where a syphon is proposed on an 'ordinary' watercourse, it is good policy to persuade the District Council to undertake the design and maintenance, provided the applicant pays a suitable commuted sum under a Section 106 Agreement.

(xix) Multi-pipe culverts should be discouraged. Where site conditions prevent a single pipe or box culvert, a minimum number of pipes should be used. Cutwaters should be provided between the pipes at the culvert entry.

(xx) Elliptical and other shapes of culvert can be consented provided that they satisfy the hydraulic and operational considerations encompassed in the above criteria.

14.4 Local Authority Approval

14.4.1 Complimentary to the powers of drainage bodies such as the NRA, local authorities also have powers in relation to watercourses and culverting by virtue of the Public Health Act 1936 and planning legislation.

14.4.2 Section 263 PHA 1936 states:-

"It shall not be lawful ..... to culvert or cover any stream or watercourse except in accordance with plans and sections to be submitted to and approved by the local authority .....".

14.4.3 Where culverts are constructed therefore, the applicant should be made aware that technically he may require the prior approval of the local authority under Section 263 of the Public Health Act 1936. This legislation is often not enforced by District Councils because Section 266(1) of the PHA 1936 requires consultation with the NRA in all cases where any of the powers of this part of the Act are exercised in respect of any watercourse stream, ditch or culvert.

14.4.4 Where it is known that a local authority does wish to enforce its PHA 1936 powers then the NRA should advise applicants accordingly, or if in doubt to check with the District Council.

15. OUTFALLS, HEADWALLS
& RETAINING WALLS

15 OUTFALLS, HEADWALLS AND RETAINING WALLS

15.1 Outfalls/Headwalls

15.1.1 Policy

The NRA wishes to ensure that pipe outfalls:

(a) function correctly;

(b) do not adversely affect the recipient watercourse, and in particular the stability of its banks;

(c) have provision for sampling of the discharge from the pipe;

(d) are of an appropriate environmentally sensitive construction.

To this end, a suitably designed outfall structure is required.

15.1.2 Design Criteria

Typical outfall structures are illustrated in Appendix 10 together with an information sheet for developers.

The typical details are meant as an illustration of the Authority's general recommendations. They are not to be misconstrued as the only design acceptable to the Authority. Whilst an outfall structure must satisfy basic engineering requirements, each one must be designed for the particular application. In particular the use of environmentally appropriate materials is important.

15.1.3 The required design standards are summarised below:-

(i) The outfall pipe should discharge obliquely to the watercourse flow (ideally 45^0 to the direction of flow).

(ii) The invert of the pipe should be a minimum of 225mm above the apron of the outfall to enable sampling.

(iii) The outfall pipe should project a minimum of 50mm beyond the headwall to allow the discharge to be sampled. Where flap valves are fitted flush with the headwall, the lip must project a minimum of 50mm. In awkward or dangerous locations, the Pollution Control Officer may require a sampling chamber to be constructed in a safe location.

(iv) The outfall apron should be set just above normal summer water level.

(v) The footing of the outfall structure should be taken down at least 600mm below the bed of the watercourse.

(vi) The headwall and wingwalls should neither project beyond nor above the line of the bank.

(vii) Anti-scour protection may be required to the watercourse bed and/or banks. Where the discharge velocity exceeds 1.2m/s a stilling basin or upstream drop chamber or baffle chamber is required.

(viii) Screens on outfalls should be discouraged unless there are exceptional circumstances. District Councils often require screens for safety reasons. Generally the need for a screen should be discussed with the local authority.

(ix) Underdrainage outfalls should be either a proprietary make or follow one of the designs in Appendix E of the ADAS 'Technical Note on Workmanship and Materials for Field Drainage Schemes' (1979). Underdrainage outfall pipes should be a minimum of 150mm above normal summer water level.

(x) Where appropriate, flap valves should be fitted.

(xi) Where an outfall pipe passes through a flood defence structure e.g. a floodbank, the NRA requires that a flapvalve be provided. A manually operated back-up penstock is also required. Flood Defence Operations must

be consulted on such matters since they may seek to obtain a fee from the developer to cover the cost of future maintenance of the outfall.

(xii) The number of outfall pipes passing through a flood defence structure should be kept to a minimum to ensure the integrity of the defence. Where possible, drainage works should be rationalised to reduce the number of small individual outfalls.

15.1.4 Strictly speaking, under Section 23 LDA 91, headwalls on watercourses other then Main Rivers do not require a Consent unless they are constructed in such a way as to cause an obstruction to the flow. In practice, it may not be possible to decide whether such a headwall will cause an obstruction until an application is received for consideration. Since work is necessary to decide this matter, it could be argued that it is reasonable to collect the fee of £50. Historically, Severn-Trent Region has not issued a formal Consent for such structures, only "approvals".

This matter is currently under review nationally and for the time being no charge is being made in this region for 'Consents' for outfalls to 'ordinary' watercourses. Nevertheless, the Authority's policy of 'approving' such structures remains.

15.1.5 Section 109 (WRA 91) refers to Consent being required to work 'in, over or under' a Main River and the definition of Main River in Section 113(1) of the Water Resources Act 1991 includes both the channel and the bank. Therefore, any works carried out in the bank also require Consent. In addition, it could be argued that the construction of outfalls constitutes an interruption to the wetted perimeter of rivers and the development is, therefore, in or 'part of' the river itself. Under this section an application is always necessary for such work, together with a fee.

15.2 Retaining Walls

15.2.1 Careful consideration is necessary regarding retaining walls running parallel to the flow in an 'ordinary' watercourse. Under Section 23 LDA 91 a Consent will be required if these walls have a constricting or 'dam-like' effect on the flow of the river. Otherwise no Consent is required. Each case will have to be considered on its merits and a decision made on engineering grounds. Engineering considerations would

include increase in upstream water levels, increase in velocity of flows etc. In practice this is a situation again where it may be necessary to receive an application and carry out investigation works before a decision as to whether or not Consent is required is made. It seems reasonable in these circumstances that the fee of £50 is paid and a formal Consent issued, whether or not strictly speaking it is required.

15.2.2 The situation on Main River is that all such structures either within the channel, the floodplain, or an area subject to Byelaw controls will require Consent.

15.3 Conservation

See 15.1.2 above and also Chapter 12 of this Manual.

16. MOTORWAY AND OTHER ROAD CONSTRUCTION WORKS

16 MOTORWAY AND OTHER ROAD CONSTRUCTION WORKS

16.1 Highway schemes can both increase the discharge of surface water drainage to existing rural watercourses and affect the natural drainage of an area owing to the embankments and cuttings.

16.2 All highway proposals should be examined to establish the effect of the increased discharge on the receiving watercourses. Should the receiving watercourses be unable to accept additional flow without causing unacceptable detriment downstream, the Highway Authority (or the Department of Transport, as appropriate) should be requested to carry out appropriate remedial measures such as balancing.

16.3 Often, proposals for new roads or bypasses etc involve works within the river floodplain and/or new river crossings. Increasingly, there is a need for such proposals to be subject to detailed model analysis in order to assess the extent and location of any remedial measures required.

16.4 Detailed requirements may include:-

(i) Hydrological assessment of all subcatchments draining through highway crossings to give flood flows for various return periods up to 1 in 100 years.

(ii) Hydraulic, numerical or physical modelling of highway crossings (embankments across floodplain, flood culverts and bridge structures) to demonstrate that they are able to pass flood flows without increasing the severity or extent of flooding for any event.

(iii) Design of structures to enable future improvement of conveyance by channel regrading, flood channel construction, etc.

(iv) Assessment of surface water discharge and design of flow attenuation measures where necessary.

(v) Provision of flood storage compensation areas to balance volumes of natural flood storage lost where embankments cross floodplains.

(vi) Detailed environmental corridor surveys during late spring and summer and subsequent design of structures, embankments, etc; including temporary works, to minimise environmental damage and, where possible, to enhance the local watercourse environment.

16.5 Mathematical models can be used to determine the sizing and configuration of bridge openings, but physical models are often necessary in order to accurately locate and orientate bridge openings or flood relief culverts.

16.6 Generally, the modelling costs will be wholly born by the promoter of the highway. In exceptional circumstances, the NRA may wish to consider being part of a jointly funded venture if there are benefits to be gained for the NRA by a relatively reduced cost extension to the modelling exercise.

16.7 The effects of run-off from highways, and the impact on the river system of works in the floodplain, must be examined as for any other form of development and in accordance with the policies set out in Chapters 4 and 6 of this document. See also Appendix 30.

16.8 <u>NRA Special Requirements for Highway Schemes</u>

The NRA has agreed with the Department of Transport/Highways Agency a set of NRA special requirements for inclusion in their contract documents. See Appendix 23.

17. BRIDGES

17 BRIDGES

17.1 Introduction

17.1.1 Any person intending to construct a bridge over a watercourse requires either Land Drainage Consent or the prior approval of the NRA.

17.1.2 In the case of a bridge over a Main River watercourse, a Land Drainage Consent is required (except bridges for road schemes carried out under Highway Orders, see Section 17.1.4 below) under Section 109 of the Water Resources Act 1991. A £50 fee is applicable.

17.1.3 The position with regard to 'ordinary' watercourses is less straight forward than for Main River watercourses. Consent is required under Section 23 of the Land Drainage Act 1991 for a bridge over an 'ordinary' watercourse where the structure interferes with the flow. A £50 fee is applicable. Where possible the NRA should try to ensure that the erection of a bridge over an 'ordinary' watercourse does not interfere with the flow in the watercourse before granting approval, rather than Land Drainage Consent, for such a structure.

17.1.4 Bridges for road schemes carried out by Highway Authorities by virtue of Orders made in accordance with Schedule 1 of the Highways Act 1980 do not require Land Drainage Consent. In such cases the NRA must resolve all Flood Defence issues that would otherwise require Land Drainage Consent via the pre Inquiry process. If they cannot be resolved to the NRA's satisfaction then the NRA should consider objecting to the road proposal and argue its case at the Inquiry.

17.2 Design Criteria

17.2.1 The following criteria should be applied:-

(i) Bridge soffit levels, and flood spans, should be 600mm above the design flood level (or maximum known flood level on minor watercourses) in order to allow floating debris to pass freely through the structure. 1m above maximum known flood level on Main Rivers and major 'ordinary' watercourses is

appropriate if the promoter does not provide hydraulic calculations for the design flood level.

(ii) The top of abutment footings of bridges with a soft invert should be set a minimum of 600mm below the existing hard bed level.

(iii) Solid inverts should be set 600mm below the existing hard bed level to allow for future regrading. The void up to existing bed level should be filled with a suitable inert material.

(iv) Clear span bridges should be provided where possible and open-type parapets are preferred to allow some over deck flow in case of the bridge opening becoming partially blocked or an extreme flood event.

(v) Where additional flood openings are proposed, a model study would normally be expected in order to identify the optimum number, size and location. A physical model is likely to be required in complex situations and where there is a wide floodplain necessitating a number of flood openings.

(vi) Ideally, the soffit should be no lower than either of the upstream bank tops. Should a lower clearance be necessary on technical grounds, then a wider span may be required to compensate.

(vii) It must be ensured that the promoter has given adequate consideration to local scour of the piers and abutments. A study of bridge failures has indicated that 60-70% are caused by the effects of hydraulic action.

(viii) Velocities should be limited to between 1.5m/s and 2.0m/s under flood conditions, but with a sheet piled opening and upstream and downstream training walls a velocity of 3.5m/s can be designed for.

(ix) Advice on maintenance access requirements is given in Chapter 8.

(x) Afflux criteria and other hydraulic considerations are detailed in Chapter 30.

(xi) Consideration must be given to the choice of materials and the environmental implications of all works affecting a watercourse.

(xii) Bridges provide important nesting sites for a number of species of birds and bats. Nest boxes can be incorporated into the design of new bridges and Area FRCN staff will be pleased to advise developers.

17.2.2 The Authority's requirements are summarised in Appendix 10, Information Sheet No.5.

18. FENCING

18 FENCING

18.1 Whilst it is accepted that riparian owners and tenants may require to fence their riverside lands, to prevent access from unauthorised persons or to restrain their stock from entering a watercourse or other lands, such fencing should not be erected in a manner which will be detrimental to the maintenance of good drainage.

18.2 Fencing which will collect debris under any state of flow should not be permitted across watercourses. The erection of fencing or stakes within a channel is not permitted (except for cattle drinks). Where fencing is necessary, riparian owners should be encouraged to fence along the top of the river banks parallel to the flow of the watercourse.

18.3 The Byelaws state:-

No person shall, without the consent of the NRA, erect any fencing on the banks of Main River, or any flood banks or any river control structure. Conversely no person shall remove any fencing erected by the NRA without its Consent. See Byelaws 11 and 18. (A fence constitutes a structure under Byelaw 18).

18.4 Temporary fencing as an emergency measure to safeguard persons, stock or property can be allowed. Reinstatement works should be requested as soon as is practical and, following completion, the temporary fencing removed.

18.5 Riparian owners often string one or two strands of barbed wire across a watercourse to prevent animals from straying upstream or downstream. The barbed wire collects debris until it snaps during a flood and then the debris can cause problems at a downstream structure. This practice should be discouraged.

18.6 Hanging gates may be permissible in certain circumstances and will require consent. The gate might comprise of chains hanging off a spreader bar, or a couple of larch poles separated by chains/wires and suspended from a chain/wire anchored on the banks. The latter design can be provided with a stop on the upstream side only.

18.7 Close boarded fencing perpendicular to the river flow should not be permitted in floodplains. This is particularly important in narrow floodplains and where flood arches are involved.

18.8 Mesh security fencing can also cause blockage problems. Its use should be discouraged as it can trap debris, and thus impede flow.

18.9 Where appropriate, the Area should request a planning condition to the effect that fencing proposals are to be submitted for the approval of the Planning Authority who should be requested to forward proposals to the Area for comment.

19. WEIRS

20. PIERS, MOORINGS & MARINES

20 PIERS, MOORINGS AND MARINAS

20.1 Policy

(i) The NRA recommends that wherever possible, boats are moored in marinas and not on rivers. This policy is to ensure that the impedance to flow, particularly as a result of associated development in the watercourse or floodplain, is kept to a minimum.

(ii) The NRA also wishes to ensure that the development of navigational facilities remains balanced in relation to the functional and environmental capacity of rivers.

20.2 Moorings must be parallel to the river flow and should be constructed so as not to pose a maintenance problem.

20.3 It is recommended that new moorings should be let into the banks to create less obstruction to flow.

20.4 Double berthing should not be permitted where it will result in a significant obstruction of the waterway.

20.5 On fluvial rivers moorings should not project out from the waters edge at normal water level more than 1.0 metre and they should be solidly secured.

20.6 Applications for floating moorings must also satisfy the above criteria.

20.7 The NRA should object to moorings at the planning consultation stage where these create a permanent obstruction. Where a Navigation Authority exists, a navigation consent will also be required. Land Drainage Consent may be given for moorings for overnight stays, but not for permanent moorings unless the location is suitable.

20.8 Piers and jetties on a Main River or 'ordinary' watercourse will not normally be permitted by the Authority although some have been consented on the tidal sections of the Rivers Severn and Trent.

20.9 Marinas should be treated the same as any other development in flood risk areas. Buildings should only be 'approved' on higher land adjacent to the floodplain, not in the floodplain. If necessary, marinas can be constructed on the edge of the floodplain with a long connecting channel to the river. Buildings on stilts should not be permitted.

20.10 The NRA must oppose any landscaping including raising of ground levels and, in particular, embankments associated with marinas which would, if permitted, be contrary to its floodplain policy. Attention must also be given to any fencing proposals to ensure that these do not create obstructions to floodplain flows.

20.11 In cases where further consideration of landscaping or environmental factors is required, consultation is recommended with the Landscape Section of the Fisheries, Conservation, Recreation and Navigation Department.

20.12 All surplus material excavated within the floodplain for the construction of moorings etc must be removed from the floodplain.

20.13 The Authority's requirements are summarised in Appendix 10, Information Sheet No.17.

19 WEIRS

19.1 Introduction

19.1.1 Weirs may be used to control flow or water levels, measure flow, reduce the gradient of an erosive river or for amenity, conservation or fishery reasons. The purpose will affect the form of crest, but some other features are common to all weirs. The design must prevent the passage of water under or around the weir and should dissipate the energy of falling water without causing progressive scour of the bed and sides of the channel downstream. Wholly submerged weirs still require Consent from the NRA, and there is no difference between our Main River and 'ordinary' watercourse powers.

19.2 Policy

19.2.1 The NRA must ensure that the construction, removal or modification of any weir or impounding structure is not detrimental to the flooding situation upstream or downstream of the structure. If a design does not meet this requirement, the NRA would recommend that alternative means of achieving the objective be sought. In such circumstances, weirs will only be consented where such alternatives are impractical and the permissions of affected landowners have been obtained.

19.2.2 The NRA's policy towards historic structures must reflect the present and future needs of the river system but not necessarily historic needs. For example, the NRA will sometimes seek the removal of redundant weirs that exacerbate flooding problems.

19.2.3 Increasingly existing weirs are being considered for the possible generation of hydropower. In support of the Government's policy to enhance the use of renewable energy sources the NRA encourages the use of hydropower and aims to co-operate with developers in accordance with its duties, powers and available resources. Nevertheless the NRA must be satisfied that the design of hydropower schemes will not create or exacerbate land drainage or flood defence problems before granting Land Drainage Consent. See Appendix 29. See also Chapter 6 with regard to associated buildings etc in floodplains.

19.3 Design Criteria

19.3.1 The following criteria should be applied:-

(i) Adequate bed and bank protection against erosion must be provided downstream of the weir.

(ii) Area Fisheries staff should be consulted as part of the internal consultation procedure regarding the provision of any necessary fish passes.

(iii) Area FRCN staff should be given the opportunity to consider conservation aspects and to take advice, if necessary, on design and visual aspects.

(iv) The construction, removal or modifications of any weir or impounding structure may require an impounding licence. The applicant must request an application form and information sheet from the Water Resources and Planning Department at the appropriate Area office.

(v) The promoter should demonstrate, by calculations, the extent of the backwater effect due to the weir, and the agreement of any affected upstream landowners should have been obtained.

19.3.2 The Authority's requirements are summarised in Appendix 10, Information Sheet No.18.

21. CATTLE DRINKS

21 CATTLE DRINKS

21.1 Land Drainage Consent is required for the construction of cattle drinking facilities on all watercourses on the basis that they create an obstruction to flow if poorly constructed.

21.2 Attempts to fence across a watercourse to prevent stock migrating along the watercourse are generally unsuccessful and lead to blockages of the watercourse occurring.

21.3 Where fencing is parallel with the watercourse, cattle drinking bays have to be provided.

21.4 A typical construction is illustrated in Appendix 10, Information Sheet No.8, and the following features need to be incorporated:-

(i) Cattle should be kept out of the river bed by stout post and rail fencing.

(ii) Access ramps should not exceed a 1:4 slope.

(iii) Access ramps should be fenced on the waterside when parallel with the bank.

(iv) The drinking bay should be not less than 3 metres wide.

(v) It is recommended that a concrete or hard-core base be provided below normal water level.

22. EROSION

22 EROSION

22.1 Policy

22.1.1 The Authority's policy is to use flood defence resources for anti-erosion works only in those cases where flood defence interests are adversely affected. It has also adopted policies aimed at preserving the regime of its rivers. Works will only be undertaken where there is a correct balance between the cost of the anti-erosion works and the benefits to be obtained.

22.1.2 Increasingly it is important that engineering solutions should accommodate natural processes where possible and not work against them. This trend will continue as the understanding of fluvial and coastal geomorphology increases.

22.2 Background

22.2.1 The Authority's permissive powers enable the implementation of anti-erosion measures on Main River but there is no duty to do so.

22.2.2 Riparian owners may look to the National Rivers Authority feeling that it has a duty to ensure that rivers and watercourses, whether mained or not, should be constrained to flow in clearly defined channels whatever the circumstances. Clearly, the National Rivers Authority cannot accept such an obligation and indeed has no direct powers to undertake such works on 'ordinary' watercourses. In exercising its land drainage powers the Authority undertakes erosion prevention and control works only in those situations where Flood Defence interests are adversely affected. This precludes the stoning or revetment of a river bank solely to prevent land loss through erosion, but may include anti-erosion measures in those cases where there is a danger of the river bank giving way and causing extensive flooding of lower lying land beyond the river bank.

22.2.3 All alluvial rivers, are able to change their course by the process of erosion and sedimentation. This is a natural phenomenon. The behaviour of a river is frequently termed the 'regime' of the river. A river with a stable regime neither scours or silts

but all rivers and watercourses are unstable to some extent. The construction of anti-erosion measures at one point could lead to increased scour elsewhere and it is often pointless to undertake expensive revetment in an attempt merely to control a naturally unstable river. To prevent adverse effects occurring elsewhere a Land Drainage Consent should always be obtained before riparian owners undertake their own anti-erosion schemes.

22.3 Maintaining the Regime of a River

22.3.1 In the interests of preserving good drainage, the Authority should seek to maintain the regime of a river and ensure that, as far as possible, nothing is done by others which would upset the stability. This should be done by requiring the works to be carried out in a particular way or by requiring anti-erosion works to be included as necessary. In this way undue erosion is controlled and siltation is prevented.

22.3.2 The river regime should be preserved by:

(i) the acquisition of water rights at abandoned weirs and sluices on Main Rivers so that these can be properly maintained by the Authority in such a way and at such levels that the regime is preserved. Mill streams and other controls should be included where these are no longer required for any purpose by the riparian owners.

(ii) the stabilisation of newly excavated river banks by the sowing or planting of vegetation at the earliest possible time. The presence of good vegetation cover, which in certain instances might include riverside bushes and shrubs, is vital to the control of erosion.

(iii) the consideration of river regime when assessing applications for Land Drainage Consents for the construction of bridges, weirs or similar engineering works on rivers and watercourses. Outfall pipes and water supply intake works should also be considered from this aspect. All anti-erosion works should be the subject of a Land Drainage Consent.

(iv) consideration of anti-erosion works only where the erosion is endangering Flood Defence works, or in those cases where erosion is resulting in siltation, and the shoals thus formed are detrimental to Flood Defence interests.

(v) the removal of shoals only where these are causing Flood Defence problems and after consultation with the Fisheries, Conservation, Recreation and Navigation Department. The correct season for undertaking shoal removal will depend upon the type of fishery in the river.

(vi) the construction of a weir or other form of control to ensure the correct slope in the bed of the channel, if river improvement works carried out by the Authority involve a 'cut' or a reduction in the length of a river or watercourse.

(vii) having regard to possible erosion problems resulting from the transfer of water from one catchment to another resulting in a change of flow pattern. Anti-erosion revetment should be provided by the Authority in the case of transfer schemes carried out by the Authority where protective works are shown to be necessary.

(viii) providing limited advice to riparian owners who wish to undertake their own anti-erosion measures to protect their own land or property.

22.3.3 See also chapter 23 relating to bank protection and "The New Rivers and Wildlife Handbook".

23. BANK PROTECTION

23 BANK PROTECTION

23.1 Policy

23.1.1 In accordance with Section 16 and 17 WRA 91 and Sections 12 and 13 LDA 91, the NRA recommends that, wherever possible, natural methods of bank protection are used and hard man-made revetments are kept to a minimum.

In considering an application for Consent for bank protection works the following factors should be taken into account:

(a) Environmental impact/appearance of the bank protection method.
(b) Suitability for location.
(c) Durability and flexibility.
(d) Effect on channel capacity.
(e) Effect on adjacent bank and structures.
(f) Construction and maintenance implications including cost.

23.2 General Information

23.2.1 Riparian owners are responsible for maintaining and protecting from erosion the bed and banks of any watercourse that runs through or abuts their property. Bank protection works on a Main River watercourse require Consent from the NRA under the WRA 91. Poorly constructed bank protection works on 'ordinary' watercourses are arguably an obstruction to flow, and the Authority would, therefore, need to consider whether to Consent such works.

23.2.2 Bank protection should have an adequate toe which should be taken down a minimum of 600mm below firm bed level. It is equally important to key the upstream and downstream ends of the protection works into the bank by at least 600mm at 45° to prevent erosion around the back.

23.2.3 Different methods of bank protection can withstand a variety of levels of attack. Below are some of the techniques available, listed in ascending order of durability and descending order of environmental sensitivity.

23.3 Natural Vegetation

Vegetation such as trees and marginal aquatic plants helps to protect the banks and prevent erosion. Natural vegetation is also valuable from a landscape and conservation point of view. To prevent the need for revetment works, therefore, riparian owners should always be encouraged to maintain vegetation along banks, to cut back, coppice or pollard rather than remove and only to remove as a last resort.

23.4 Willow Spiling

Willow spiling involves weaving willow withies (thin willow branches) between fresh winter-cut willow stakes to form a fence-like structure. This method is less durable than a geotextile, but has the advantage that over time the willow roots and sprouts, providing living protection and additional stability. Care must be taken to use fresh-cut willow as dead willow will not sprout. In addition excessive shading from overhanding vegetation may affect the ability of the willow to establish. This method is suitable for the protection of steep or vertical banks, but is not suitable as a major retaining structure.

A typical design is included in Appendix 10 with Information Sheet No.9.

23.5 Geotextiles

Geotextiles are generally flexible fabrics and/or mesh matting which can be placed over a slope or area of potential erosion and pinned in place to provide stability.

Biodegradable soil stabilisers are preferable to permanent ones for nature conservation reasons. They are constructed from natural materials such as straw or coir (a coconut fibre), and held together with degradable threads. An additional

technique to the flexible matting is the use of fibre rolls. These are more often used for channel shaping and narrowing. The technique selected for use will depend on site-specific conditions. This method is usually only suitable for slopes of moderate gradient and is likely to fail on steep slopes or in high energy environments.

There are several types of non-biodegradable geotextiles as follows:

(a) **3-Dimensional nylon matting**

This type of nylon matting consists of a mesh formed from nylon threads fused where they cross. Ninety percent of the volume of the matting is air. Once laid it can be filled and covered with soil and seeded. The geotextile is predominantly a form of erosion control and holds the soil and seed in place, thereby encouraging plant growth. When the vegetation is established, the 3-D grid provides a permanent reinforcement of the root zone. The matting is not biodegradable and a serious disadvantage of this technique is that over time it may become exposed and/or tear, making it both unsightly and ineffectual.

(b) **Geogrids**

Geogrid is the collective term used for net shaped synthetic fabrics. It is generally used for vertical or steep embankment reinforcement. The original bank profile is removed and a new one is created using a geogrid. A wide variety of inert fill types such as crushed rock, gravel and clay can be used. Soil is compacted in between horizontal layers of geogrid reinforcement with a facing material in front to prevent soil erosion.

(c) **Stretch Fencing**

This is a method of vertical bank protection. It is a double weave revetment fabric, consisting of a successive series of open sleeves through which softwood stakes are placed. The fabric is stretched taut before driving the stakes homes. The space between the bank and the fencing is then backfilled with a suitable material and the bank graded down towards the top of the

fabric. Vegetation can then grow through the fabric giving a semi-natural appearance to the bank. In addition reeds can be planted in front of the fabric to mask it and provide additional protection.

23.6 Timber Piling

Timber piling can be used to support the toe of a bank and protect it from erosion. There are two types which are common:

(i) The first type involves driving wooden stakes (usually larch posts) vertically, shoulder to shoulder into the bed to protect the bank. The area behind the stakes needs to be backfilled.

(ii) A harder form of bank protection can be provided by wooden boards with stake supports driven into the bed. This technique is installed where lack of space necessitates the use of vertical bank protection. Pressure treated woods (not tropical hardwoods) are recommended. The boards need only project above the water level enough to cope with normal fluctuations in flow. Backfilling is required and the bank should be graded down to the top of the piling. A typical design is included in Appendix 10 with Information Sheet No.9.

Timber piling is more environmentally sound and aesthetically acceptable than sheet piling. It is not however suitable for high energy environments and does not last as long as sheet piling.

23.7 Stone Pitching

Stone pitching involves the careful placing of loose stone of a nominal 225 mm - 300 mm size onto a prepared sloping earth bank. Each piece of stone is placed such as to leave the minimum of voids. Gaps between the stone can be filled with soil to enable the establishment of natural vegetation in the longer term.

Where stone pitching is proposed consideration should be given to the size of the stone with regards to washing out, and to the risk of vandalism.

An alternative for areas subject to constant wetting or locations with a stability problem is to set the stone into a bed of concrete and grout the joints with cement mortar.

A typical design is included in Appendix 10 with Information Sheet No.9.

23.8 Gabions

Gabions are wire mesh cages filled with loose stone to provide flexible structures for bank protection. The stone chosen should, if possible, be from the locality and in keeping with the river environment. The selective use of gabion baskets and mattresses, particularly below normal water level, is acceptable, but large scale use above normal water level should be discouraged.

Typical designs are included in Appendix 10 with Information Sheet No.9.

23.9 Bagwork Bank Protection

Bagwork bank protection is constructed using concrete filled hessian bags laid in a brickwork pattern. Nylon and other man-made materials are not acceptable. It is important to ensure that bagwork foundations are secure and will not be undercut. Extensive bagwork should not be permitted as it creates a visually obtrusive form of bank protection.

A typical design is included in Appendix 10 with Information Sheet No.9.

23.10 Steel Sheet Piling

This technique is environmentally unsympathetic obliterating any bankside habitat. It is expensive in the short term but has a long lifespan. Sheet piling is generally made from steel sheets driven into the bed vertically and tied back to the bank with anchors. A sufficient depth of penetration and adequate support are crucial for long term stability of the structure, otherwise the piles may fail. The appropriate sheeting should be selected and installed to the manufacturers specification.

Typical designs are included in Appendix 10 with Information Sheet No.9.

23.11 Hard Revetments

The use of hard revetments such as steel sheet piling, concrete retaining walls, precast concrete channels or solid revetment blocks should be discouraged, although in certain locations these may be the only practical option. These may be faced with more attractive natural materials such as stone or timber to provide a more visually acceptable solution.

23.12 Further Details

23.12.1 Further guidance on the management of bankside vegetation and the use of environmentally appropriate revetment techniques is contained in "The New Rivers and Wildlife Handbook".

23.12.2 The Authority's requirements are summarised in Appendix 10, Information Sheet No.9 and typical designs of some of the techniques listed above are also included.

24 OVERHEAD LINES

24.1 Policy

The NRA wishes to ensure that overhead lines do not inhibit or prevent the future machine maintenance of a watercourse (see also Maintenance Access Policy).

24.2 Clearances

There is no national agreement which applies to clearance above waterways and it is dealt with by individual agreement. However, for flood banks, the minimum statutory clearances above ground level (i.e. top of flood bank) apply. The NRA recommendations and statutory clearances are given below:-

24.2.1 High voltage overhead lines and towers must give:-

(a) vertical clearance above river banks and flood banks, and

(b) horizontal clearance from the top of the bank of the watercourse.

	Vertical Clearance		Horizontal Clearance
	Statutory	NRA (a)	NRA (b)
*275 KV	7.0m	15m	15m
400 KV	7.6m	15m	15m

*275 KV lines can be uprated and, therefore, sometimes the electricity undertaker will quote clearances appropriate to 400 KV lines.

24.2.2 The table below gives the current clearances for 132 KV and below:-

Vertical Clearance above ground		Horizontal Clearance from bank top	
Voltage	Statutory	NRA	NRA
415V	5.2m	6.0m	9.0m
6.6KV	5.2m	9.0m	10.0m
11KV	5.2m	9.0m	10.0m
33KV	5.2m	9.0m	10.0m
66KV	6.0m	9.0/12.0m	10.0/15.0m
132KV	6.7m	12.0m	15.0m

24.2.3 Agreements for lines up to and including 33KV should include the proviso that 'the line can be made "dead" for short mutually agreed periods'. The electricity company may switch out a line for a few hours or several days depending on the importance of the line in the system, and other outages. Outages are unlikely to be obtained for lines 132KV and above except with very long notice. For 66KV lines the higher NRA clearances should be adopted when outages will not be given and vice-versa.

24.2.4 The Authority's Fisheries Conservation, Recreation and Navigation Department requires to be consulted regarding overhead lines.

24.3 Land Drainage Consents

A formal Consent for an overhead line can only be issued where the watercourse is a Main River (Section 109 WRA 91).

In relation to other watercourse, the Authority wishes to ensure the application of a similar policy and therefore will seek to 'approve' such crossings.

(**NOTE:** If any supporting structure lies within the channel of an 'ordinary' watercourse, a refusal of Consent under Section 23 LDA 91 would be appropriate).

24.4 Temporary Works

Arguably, any temporary works affecting the channel of either a Main River or 'ordinary' watercourse require Consent; as do works in the floodplain of Main Rivers.

25. PIPE CROSSINGS

25 PIPE CROSSINGS

25.1 Policy

25.1.1 The Authority wishes to ensure that pipe crossings of watercourses:-

(1) Do not obstruct the flow in the watercourse either directly or indirectly as a result of encouraging the build up of debris.

(2) Do not prohibit the maintenance or future improvement of the watercourse.

(3) Are appropriately integrated into the environment visually.

25.2 Pipe Crossings Below Bed Level

(i) Cover requirements should take into account both future regrading and existing freeboard.

(ii) On Main River and major 'ordinary' watercourses, a minimum cover of 1 metre shall be provided above the highest part of the pipe or concrete surround to the firm bed level, and the pipe shall remain at this level for at least 3m on each side of the channel with the following provisos:

(a) This clearance is required to permit possible future deepening and widening of the watercourse and the owner of the pipe or cable must allow any additional clearance required to protect his apparatus.

(b) On other 'ordinary' watercourses, the cover may be reduced to 600mm minimum subject to agreement with the NRA.

(c) Where heavy maintenance plant will track along the river bank, consideration should be given to increasing the horizontal length of the pipe under that bank. The amount depends on the profile of the bank and pipe, and on the cover required for the pipe strength and the loading.

(iii) It is important that the level above Ordance Datum of the highest part of the pipe or concrete surround is shown on the drawing to avoid future disputes.

(iv) Permanent marker posts which show the owner of the apparatus shall be set in one bank if a channel is less than 10 metres wide, and in both banks if wider.

(v) Bank protection where required should be provided beyond the disturbed width and be adequately keyed into both the bed and banks.

(vi) Pipe crossings which may limit the NRA's maintenance activities (e.g. high pressure gas mains) will require a commuted sum payment for the higher operational costs.

25.3 Pipe Crossings Above Water Level

(i) The same clearance standard shall apply to both the underside of pipes and bridge soffits (see Chapter 17).

(ii) Where an existing bridge gives less clearance, a pipe or cable may be fixed on the downstream bridge face to the same clearance as the bridge and an agreement should be entered into whereby the undertaker agrees to move the service to a higher level at his own cost if the bridge is replaced in the future.

(iii) The level of the underside of the apparatus must be shown on the drawing.

25.4 Land Drainage Consents

25.4.1 A formal Consent can only be issued for a pipe crossing a Main River. In relation to other watercourses, the Authority wishes to ensure the application of a similar policy, and will therefore seek to 'approve' such crossings (Note: if any part of the pipeline or its surround lies within the channel of an 'ordinary' watercourse a refusal of consent under Section 23 LDA 1991 may be appropriate).

25.4.2 The Authority's requirements are summarised in Appendix 10, Information Sheet No.6.

25.5 Temporary Works

25.5.1 Arguably any temporary works affecting the channel of either Main Rivers or 'ordinary' watercourses require Consent as do works in the floodplain of Main Rivers. See Chapter 26.

26. TEMPORARY WORKS
& DIVERSION CHANNELS

26 TEMPORARY WORKS AND DIVERSION CHANNELS

26.1 Temporary Works

26.1.1 Temporary works affecting any watercourse require a Section 109 (WRA 91) or Section 23 (LDA 91) Consent. There is no exception from this provision for contractors carrying out temporary works.

26.1.2 Careful consideration must be given to consents for temporary works. The Development Control Officer must consider for example:-

(1) The maximum river and flood opening width restrictions.

(2) The top level of any cofferdams.

(3) The dimensions of any diversion channels.

(4) The minimum temporary support spacing.

(5) The time of year.

(6) The duration of the works.

(7) The consequences of flooding during the life of the works.

(8) The requirements for reinstatement on completion of the temporary works.

(9) The views of Area FRCN staff on the temporary or permanent impact on the environment.

26.1.3 Typical requirements for temporary works are detailed in Appendix 10, Information Sheet No.10.

26.1.4 Most of these aspects can be covered by appropriate conditions on a Section 109 (WRA 91) Consent. The legality of Section 23 (LDA 91) conditions is currently

being questioned. Until further notice, staff should continue to make use of Section 23 (LDA 91) conditions where appropriate.

26.1.5 Alternatively, the most effective way of controlling temporary works is by the insertion of appropriate clauses in the contract specification. (See Appendix 23 and the specimen clauses shown in Appendix 10 (Information Sheet No.10) which cover temporary works which are likely to be required on drainage works). The use of these clauses in a contract document will eliminate delays after the acceptance of a tender since the issuing of a Consent for temporary works will follow as a matter of course, assuming the Contractor has complied with the specification when preparing the temporary works drawings.

26.1.6 Appendix 10 (Information Sheet No.10) requires the permitted maximum river width and flood opening width reductions, top level of any temporary cofferdam and minimum temporary support spacing to be entered by the Area before enclosing it with a Land Drainage Consent for permanent works back to a developer.

26.1.7 Wherever practicable, a Consent for temporary works should have a time constraint attached to it. For example, a Consent for a temporary bridge across a river must specify the period for which the consent remains valid and/or state a date for removal of the structure and reinstatement of the river channel. Clearly, timescales must be reasonable.

26.2 Works Affecting Flood Defences

26.2.1 Contractors carrying out works affecting a Flood Defence structure must ensure that the integrity of the defence is maintained at all times. Where this is difficult, temporary additional defences must be provided prior to any demolition of the existing defences. On completion of the contractor's works, the permanent defences should be reinstated prior to removal of the temporary defences.

26.2.2 Excavation in Floodbanks

The recommended procedure for the laying of pipes etc through a floodbank is as follows:-

(1) The turf shall be stripped from the area of excavation in the floodbank and removed from site. It is essential that vegetable matter is not mixed with soil in the core of the floodbank since this rots and produces fibrous areas.

(2) The excavated material from the floodbank shall be stored at the rearward side of the bank.

(3) A concrete cut-off wall shall be erected around any pipes passing through the floodbank, extending for a distance of 0.75 metres and placed at the position of the centre line of the floodbank. (The cut-off wall is intended to apply to pipes passing through the floodbank but not necessarily to pipes passing well below the floodbank).

(4) The backfill shall be reinstated in 0.2 metre layers, except for the first one which shall be 0.4 metres, and shall be well rammed and consolidated. The material used shall be approved by the Area Flood Defence Manager and free from stones, rubbish or other suitable matter.

(5) The floodbank shall be covered with a minimum of 0.2 metres of good quality top soil, well rolled and turfed.

(6) The finished top soil level shall be that of the original bank, giving suitable allowance for settlement, and the batters shall conform to those existing.

(7) After a period of six months, any settlement from the profile before disturbance shall be made good.

Construction of Temporary Floodbanks

(8) The crest level width and profile shall be not less than the existing floodbank.

(9) The material shall be well consolidated in 0.2 metre to 0.3 metre layers by a heavy tracked vehicle..

(10) Any access over the bank shall not be allowed to depress the proper crest level.

(11) There shall be no excavation within six metres of the floodbank while it is in effective use.

(12) The soil shall be suitable for the purpose and approved by the Authority.

26.3 Diversion of Watercourses

26.3.1 All diversions of Main River require Consent under Section 109(3) of the Water Resources Act 1991.

26.3.2 The situation on 'ordinary' watercourses is less clear. Strictly, Section 23 LDA 91 Consent is required only if a diversion necessitates the construction of a weir, dam or other like obstruction, or if the watercourse is to be culverted. It has been argued that an 'approval' rather than a Consent is more appropriate for diversion works where there is no 'obstruction' to flow. On the other hand it can be argued that all diversions where the old channel is blocked off require our Consent. In addition, we need to assess whether the proposals are satisfactory in terms of hydraulic capacity, nature conservation aspects etc and so arguably, the majority of such works need to be consented.

Unless challenged, staff should issue Consent for diversions on 'ordinary' watercourses. However, if a watercourse is diverted, but the existing channel continues to function unobstructed, no Consent is required.

27. FISHING PLATFORMS

27 FISHING PLATFORMS

27.1 In order to reduce the possible obstruction to flow in the watercourse which can be caused by poorly designed and constructed fishing platforms, the Authority's requirements are as follows:-

(1) Fishing platforms must be parallel to the river flow and should be constructed so as not to pose a maintenance problem.

(2) It is recommended that fishing platforms should be let into the banks to create less obstructions to flow, but the construction must not destabilise the bank. They should not project out from the waters edge at normal water level more than 1.0 metre. They should be fixed securely into the bank and constructed on a suitably firm foundation of piling into the river bed (see typical drawing in Appendix 10, Information Sheet No.7).

(3) Inadequately constructed platforms (e.g. pallets tied back to small pegs in the bank), must not be permitted as these can be torn away during a flood and cause an obstruction at a downstream bridge or culvert.

(4) The access ramp/steps/ladder to the platform should also be designed so as not to create erosion or obstruct flow.

(5) Established vegetation which is often essential for bank stability, must not be damaged or removed in the construction of platforms.

(6) Fishing platforms, or any other structures on Main River require a Land Drainage Consent which may also be necessary in relation to works affecting other watercourses. A fee for a Consent may also be appropriate (see Chapter 3). Fishing clubs must consult the NRA for details and submit Consent applications where appropriate. An application for several minor structures such as fishing platforms within one river reach will be treated as one application attracting one charge of £50.

It is recognised that a fishing club will carry out periodic maintenance or refurbishment of fishing platforms, and it would be unreasonable for the Authority to demand a fee every time such works were carried out. Any new structures or major works detrimental to Flood Defence interests, must clearly be subject to consent procedures and fees, but routine works should be exempt from a further fee.

(7) Fishing platforms are frequently constructed without a Land Drainage Consent. The Area should contact the riparian owner or fishing club, requesting removal of those on Main Rivers which do not conform to the above standards.

28. FISHERIES AND FISH FARMS

28 FISHERIES AND FISH FARMS

28.1 Section 105(4) WRA 91 and Section 67(3) LDA 91 state that in the exercise of the powers conferred by the Acts :

"Due regard shall be had to the interests of fisheries, including sea fisheries."

Consequently Flood Defence staff must be satisfied that any proposed works on any ordinary watercourse or Main River will not adversely affect the interest of fisheries. Where appropriate the Fisheries Officer must be consulted using the consultation form generated by the Regional consents database. This provides a formal record in the event of any dispute.

28.2 Flood Defence Information Sheet No. 11 titled 'Legal Aspects and Other Regulations Relating to Fish Farms' gives the requirements and regulations governing the setting up of fish farms. The sheet is intended for issue to prospective fish farmers for their information should they make an initial approach to the Area. In a number of cases the many requirements will discourage any further interest.

28.3 A number of additional points are given below :-

(1) Fish farms should be located on a site free from flooding and should have adequate fall so that all ponds can be drained individually.

(2) All dredgings from fish ponds must be disposed of outside the floodplain. Although the NRA may dump maintenance dredgings on the river banks, the loss of floodplain storage capacity is offset by the river flow being improved. Fish pond dredgings, on the other hand, merely create an obstruction to flow.

(3) Any material excavated to create a fish pond must be removed from the floodplain and may not be banked up around the pond.

(4) On-line fish farms with a grill at the downstream end should not be consented as grills can become choked with weeds. Instead, a proper weir should be constructed.

(5) An applicant for a fish farm may well need the services of a Consulting Engineer for the design of the weir and pond system. In addition, the applicant will have to show that there will be no detriment to upstream riparian owners. If there will be an increase in water level which may affect an upstream riparian owner, then the applicant should obtain written evidence that the riparian owner has no objection.

(6) The Salmon and Freshwater Fisheries Act 1975 makes a dam (or weir) owner responsible for providing a fish pass for salmon and migratory fish, and the NRA can serve a notice to this effect. Examples of Rivers to which this Act applies are the Severn, Derwent, Trent and Teme.

(7) Fishing platforms on rivers require a Land Drainage consent. See Chapter 27.

28.4 Further information regarding fisheries can be obtained from the following publications :-

(1) 'Freshwater Fisheries Management' Edited by R G Templeton (Severn-Trent Water Authority) Fishing News Books ISBN 0 85238 130 1

(2) 'Fisheries Advisory Booklets' - produced by NRA Severn-Trent Regions which are available from the Area Fisheries Officers.

(3) "The New Rivers and Wildlife Handbook" - produced by RSPB, NRA and The Wildlife Trusts.

29 LEGAL MATTERS

29.1 Serving of Notices and Prosecutions

29.1.1 Where contraventions of Sections 21, 23, 24 LDA 91 or Section 109 WRA 91 or Severn-Trent Region's Byelaws are discovered and not remedied, then the matter should be reported with a view to legal action being commenced.

The NRA can prosecute, but proceedings via a magistrates court must be commenced within 6 months of the illegal action if the person who is the landowner or the licence holder is to be convicted. A case would only be taken to a magistrates court if sufficient evidence regarding the nature, time, place, perpetrator etc was available. Notebooks, photographs, historic records, witnesses etc would all be required. Such details must be presented to the Legal Section within 3 months of the incident at the latest, as a delay in instituting proceedings could lead to a situation where no prosecution can be commenced.

29.1.2 While not discounting the possibility of criminal court proceedings, the Authority's objective should be to have the matter put right and not necessarily to seek to fine individuals. Consequently, civil court action would be a preferred alternative. By this means, the Authority would seek to recover the costs to the Authority of remedial works if the offender fails to carry out such works. This method need not be commenced within 6 months of the illegal action, but the practical time limit for prosecution is 6 years. The recommended sequence of enforcement is as follows :-

Stage A) Verbal discussion (visit, or telephone call) with landowner if appropriate, immediately followed by a letter telling the landowner that all adverse activity must cease immediately and detailing remedial course of action.

Stage B) If the matter is not resolved at Stage A), then a second letter (warning) should be sent requesting either :-

(1) that within 7 days we require a written undertaking that remedial works will be completed within a further period of time (e.g. 28 days, but needs to be reasonable in relation to the scale of the remedial works required), or

(2) that within 28 days (say) the matter should be put right.

This letter must also contain a warning that if no action is forthcoming the Authority's Legal Section will be instructed to take legal action which will enable the Authority to enter the land, take appropriate action and recover the costs.

Stage C) Copies of all correspondence to the Regional Solicitor via the Regional Flood Defence Manager, who will ensure that the matter is progressed.

Stage D) A legal notice will be prepared and sent by the Regional Solicitor. This notice must specify a firm date on which we intend to take action. If the phrase 'on or after' is used we must be prepared to carry out the action within a few days, at the most, of the date. Legal notice must, therefore, have the full support of the Area Flood Defence Manager who will have to take action.

29.1.3 Development Control Officers are reminded of the need to prepare plans and drawings to a high standard where these may become part of the Authority's legal evidence. All drawings should have a title, drawing number, scale, date of issue and, where appropriate, northpoint, key and Ordnance Survey acknowledgement.

29.1.4 Although Consent has been required for culverts etc., since 1961, the practical time limit for prosecution in respect of an unconsented culvert on an ordinary watercourse is 6 years from the completion of the structure.

29.2 Powers of Entry

29.2.1 Sections 169, 170, 171 and 172 WRA 91 give officers of the NRA duly authorised in writing, power of entry onto any land for the purpose of performing any functions authorised by that Act to be exercisable by the NRA. The right embraces the right to enter upon land for inspection and survey purposes. The rights can only be exercised at a reasonable time. This should normally be construed as during daylight hours although circumstances, particularly an emergency, may dictate that entry between the hours of darkness is reasonable.

29.2.2 If admission to land is refused, or refusal is anticipated, or the land is unoccupied, or the occupier is temporarily absent, or the case is one of urgency, or application for admission would defeat the object of the entry, then if there is a reasonable ground for entry, a Warrant can be obtained from a Justice of the Peace. In the first instance above, the Court would need to be satisfied that the occupier had been given notice of the NRA's intention to seek a Warrant. Once a Warrant has been granted, then it continues in force until the purpose for which entry is required has been satisfied.

29.2.3 A person authorised to enter land is obliged, if required, to produce evidence of his authority before entering. When entering onto land or a vessel, he is entitled to take such other persons and equipment as may be necessary.

29.2.4 Admission to any land used for residential purposes and admission with heavy equipment to any other land shall not, except in an emergency, be demanded of right unless seven days notice in writing of intended entry has been given to the occupier.

29.2.5 Any person who enters premises which are unoccupied or premises where the occupier is temporarily absent shall leave the premises as effectually secured against trespassers as he found them.

29.2.6 Any person who wilfully obstructs an officer acting in the exercise of such powers is guilty of an offence.

29.2.7 Under Section 165(6) WRA 91 and Section 14(4) LDA 91, the NRA's power of entry is limited to the maintenance of existing works. Where improvements to existing works or the construction of new works are needed, the NRA may have to negotiate terms for the acquisition of land or an interest in the land. It is desirable that such agreements are concluded before work commences.

29.3 Disclosure of Information

Development Control Officers are reminded that they are often in possession of confidential documents and information which should not be indiscriminately disclosed to unauthorised parties. All telephone enquirers should be encouraged to write in requesting information.

The Environmental Information Regulations came into force on 31 December 1992. They implement an EC Directive of 1990, the objective of which is to ensure freedom of access to, and dissemination of, information on the environment held by public authorities'. NRA Policy Instruction CE/LL/003 reproduced in Appendix 11 indicates how these regulations are to be implemented.

29.4 Provision of Flooding Information

It is reasonable to expect to receive enquiries, following a flood event, from insurance companies and the public and their representatives in relation to specific locations. Where information is available it should be made available to enquirers.

The particular points that need to be borne in mind are :-

(1) Information released should be restricted to verifiable, factual statements.

(2) The extent of the flooding should be described.

(3) When appropriate a best estimate of the scale of the flooding (e.g. 1 in 25 years which is equivalent to a 1 in 25 chance of the flood occurring in any one year) may be given, if this can be verified using standard techniques. This

will not be factual information and will include a certain element of judgement. Care must be taken to ensure that this is explained and that the use of return periods is likely to be understood by the enquirer. Alternatively reference may be made to historical floods and their impact.

(4) Any statements attributing causes to the flooding should be avoided.

(5) All information released should include this caveat :

"Every effort has been taken to collect and verify this information and it is believed to be the best available, but it should not be taken as definitive as full surveys may not have been carried out. Further information may be available from other sources, for example local authorities in relation to localised flooding from drains and small watercourses. No liability is accepted for the accuracy or completeness of the information provided."

The person responding should indicate that, where he/she has been unable to locate any information, that this is the case rather than state that there is no such information.

For general information the approach to be adopted will place the onus on the enquirer to obtain information, from documents held by the NRA. A standard letter to guide replies in these circumstances is included at Appendix 26.

29.5 Search Letters

In replying to search letters etc it is vital that we only convey verifiable facts e.g. our records show that the property flooded etc.

If we have no records of a property flooding we should declare this but emphasise that this does not necessarily mean that the property is not at risk and recommend further local enquiries. If we quote flood levels or return periods for floods it must be emphasised that these are best estimates and not definitive values.

Replies to Solicitors enquiries should be routed through the Authority's Legal Section.

29.6 Further Advice

29.6.1 The Authority's Legal Section must be consulted if there is any doubt regarding any of the above issues or other legal matters referred to elsewhere in this document.

29.6.2 Refer also to NRA Policy Instruction TE/FD/002 entitled "Provision of Information on the Risk of Flooding".

30. HYDROLOGY & HYDRAULICS

30 HYDROLOGY AND HYDRAULICS

30.1 Introduction

Essentially, hydrological techniques are used to determine flows which can then be translated into levels by hydraulic analysis.

This chapter briefly describes the numerous hydrological and hydraulic methods, both old and new, with the varying degrees of accuracy. The reader is advised that some of the older more empirical methods are not appropriate for certain types of catchment or river system. Some of the modelling techniques are very sophisticated and require training in their use. It is recommended that further advice as to the appropriate methodology is sought from Regional Headquarters.

30.2 Design Frequencies for Arterial Watercourses

30.2.1 Table 6.61 of the Flood Studies Report Volume 1 - Hydrological Studies shows that in order to yield a flood peak of a given return period in a rural catchment, a storm with a greater return period is required i.e. a 10 year flood will require a 17 year rainfall event. Since it is the flood peak that concerns river engineers, all further reference to return periods in this Chapter shall apply to run-off (floods) and not rainfall.

30.2.2 The NRA expects certain design frequencies to be met by any proposal submitted for approval. These frequencies apply to both Main Rivers and 'ordinary' watercourses. The standard of protection acceptable by Severn-Trent Region is expressed as the 'return period' between floods. The standards applicable to fluvial situations are as follows :-

(i) 1 in 100 years

Urban areas

Villages

Large areas of agricultural land protected by flood embankments.

(ii) <u>1 in 50 years</u>

Agricultural land of high value (arable or horticultural)
Isolated properties

(iii) <u>1 in 25 years</u>

Agricultural land - mainly arable

(iv) <u>1 in 15 years</u>

Agricultural land - mainly pasture
(Note : Openings 1 in 25 years)

(v) <u>1 in 5 years (or as appropriate)</u>

Grass floodplain

The above protection standards should be considered as Severn-Trent Region's indicative standards, but they may be varied if local circumstances dictate.

30.2.3 It should be noted that indicative standards for both tidal and fluvial situations are included in the MAFF publication entitled "Project Appraisal Guidance Notes" published in 1993. The MAFF standards are to be used in evaluating the economic viability of capital works undertaken by drainage authorities and the fluvial standards vary slightly from those stated above. The MAFF standards are not mandatory and it is considered appropriate to continue to apply the Severn-Trent standards above to all matters relating to Flood Defence regulatory activities in the Region.

30.2.4 CIRIA Book 14 'Design of Flood Storage Reservoirs' states that common standards of protection are 5-10 years for agricultural areas and 25-100 years for urban areas, with the rider that higher standards are not uncommon where the potential damages are large, or where there is the risk of loss of life.

30.2.5 The method chosen for the derivation of the design flood will in part be dependent on the size and nature of the catchment, and in part on the availability of measured flow data. The methods fall into two categories ie those that determine volumes and those that determine the peak flow.

30.3 Volume Methods

30.3.1 Method (a) - Flood Studies Report Unit Hydrograph Method

This method was devised for all natural catchments where urban areas are less than 10% of the catchment area. The method can be used where little or no data are available. In all cases where local hydrological data is available this should be used to either replace or supplement the Flood Studies Report techniques. Early contact with the Water Resources Section of the Technical Services Department at Headquarters is advised in order to establish the availability of data and the ease with which such data could be collected.

The method should be revised as necessary using the following :

Flood Studies Supplementary Report No. 5 'Design flood estimation in catchments subject to urbanisation' September 1979.

Flood Studies Supplementary Report No. 6 'Flood predictions for small catchments' April 1978.

Flood Studies Supplementary Report No. 16 'The FSR rainfall-runoff model parameter estimation equations updated' December 1985. This report summarises the results of the review contained within the Institute of Hydrology Report No. 94 and contains a consolidated set of revised equations updating the recommendations published in the original Flood Studies Report (NERC 1975) and previous Flood Studies Supplementary Reports.

The unit hydrograph method was based on data collected from predominantly rural catchments up to 500 km^2. However the procedures are relevant to urban

catchments ranging from 5 to 100 km^2 in size with development fairly uniformly distributed over the catchment.

A small catchment is defined as one that is less than 20 km^2.

30.3.2 Method (b) - Wallingford Package (WASSP)

This method is for sewered catchments and is not used by NRA Severn-Trent Region.

30.3.3 Method (C) CIRIA Book 14 'Design of Flood Storage Reservoirs'

Where balancing schemes are being considered for catchments of between 2.5 km^2 and 100 km^2 the method outlined in CIRIA Book 14 can be used as an alternative to method (a) above. Care should be taken in using this for catchments of less than 10 km^2 and greater than 50 km^2. However the method is suitable for catchments which are up to 75% urban. There are strong similarities between Flood Studies Supplementary Report No. 5 and CIRIA Book 14. However, in using the design hydrograph methods in the latter, particular care should be taken to follow the exact procedures therein since it is not permissible to mix the Flood Studies Report assumptions and the CIRIA hydrograph methodology.

30.3.4 In certain complex cases where it is not clear what technique to follow, it is vital to consult an experienced hydrologist. Severn-Trent Region has available both hydrological services and access to hydrological data at Headquarters. In certain circumstances, it may be preferable to construct a distributed model. No national guidelines are generally available and reference to Severn-Trent Region's hydrologists is essential.

30.3.5 Comments on the Volume Methods

The Basic FSR, FSSR No. 5, FSSR No. 16 and CIRIA methods have been compared on the 70% urban, 75 km^2 Calthorpe Park catchment on the River Rea. This is a gauged catchment and the peak flows determined by the above methods were in the range +21% to +47% greater than the measured flows.

The CIRIA method relies on a dimensionless hydrograph whereas the FSSR No. 16 method uses a triangular unit hydrograph.

The FSSR No. 5 and CIRIA methods both use a summer rainfall profile and have different percentage run-off formulae from the basic FSR method, which together increase the volume and peakiness. However, both methods assume that the rainfall and run-off return periods are the same which reduces the volume, and the differences largely balance out.

The FSSR No. 16 method largely confirms the earlier methods and there seems to be no clear advantage in using any one particular method for urban catchments.

30.4 Peak Flow Methods

30.4.1 A number of methods of calculating the peak flow are given below. Guidance has been given on the limits of catchment size applicable to each method.

30.4.2 The Development Control Officer frequently needs to assess flood flows rapidly when no data are available, and when neither serious flooding nor loss of life is at stake. A number of reasonably quick methods are therefore included.

30.4.3 Since the methods often give a wide variation in answer, it is suggested that, where possible, at least three of the appropriate methods for a particular catchment size (see paragraph 30.4.15) are evaluated. A valued judgement can then be made based on the results, dependent upon circumstances.

30.4.4 Method (a) - Flood Studies Report - 6 Parameter Equation

For Severn-Trent Region's drainage area the formula to obtain the mean annual flood $\bar{Q}$ in cumecs for catchments greater than 20 km^2 is :

$$\bar{Q} = 0.0213\ AREA^{0.94}\ STMFRQ^{0.27}\ S1085^{0.16}\ SOIL^{1.23}\ RSMD^{1.03}\ (1+LAKE)^{-0.85}$$

A sample calculation sheet is given in Appendix 20(A) which also gives the growth factor multipliers to obtain the flood flow of a given return period Q_T

30.4.5 Method (b) Flood Studies Supplementary Report No. 6 - 3 Parameter Equation

The formula to obtain the mean annual flood $\bar{Q}$ in cumecs for catchments less than 20 km^2 is :

$$\bar{Q} = 0.00066\ AREA^{0.92}\ SAAR^{1.22}\ SOIL^{2.0}$$

30.4.6 Method (c) Flood Studies Supplementary Report No. 6 - 4 Parameter Equation

The formula to obtain the mean annual flood $\bar{Q}$ in cumecs for catchments less than 20 km^2 is :

$$\bar{Q} = 0.0288\ AREA^{0.9}\ RSMD^{1.23}\ SOIL^{1.77}\ STMFRQ^{0.23}$$

30.4.7 Method (d) Flood Studies Supplementary Report No. 5 - Mean Annual Flood Approach

The mean annual flood approach for catchments 5 km^2 - 100 km^2 with over 40% urbanisation is detailed in paragraph 6.2 of FSSR No. 5.

$$\frac{\bar{Q}_u}{\bar{Q}_r} = (1 + URBAN)^{1.5}\ \left(1 + 0.3\ URBAN\ \left(\frac{70}{PR_r} - 1\right)\right)$$

where suffices u and r refer to urban and rural conditions respectively.

30.4.8 Method (e) - Simpson's - 3 Parameter Equation

The following equation for mean annual flow in cumecs was developed solely for Severn-Trent Region's area by Simpson, at Birmingham University, for catchments greater than 20 km^2 :

$$\bar{Q} = 0.0945\ A^{1.0}\ STMFRQ^{0.62}\ S1085^{0.51}$$

Simpson also developed the following 4 parameter equation which has not been evaluated :

$$\bar{Q} = 0.137\ A^{0.99}\ STMFRQ^{0.57}\ S1085^{0.48}\ SOIL^{0.29}$$

30.4.9 Method (f) - Poots and Cochrane

Their method is detailed in TN229 titled "Design flood estimation for bridges, culverts and channel improvement works on small rural catchments" which was published in the proceedings of the Institution of Civil Engineers, Part 1 in November 1979. The formula, which applies to catchments less than 20 km^2 is:

$$\bar{Q} = 0.0136F_n\ AREA^{0.866}\ RSMD^{1.413}\ SOIL^{1.521} m^3/s$$

F_n is a design factor and varies from 1.64 for a 68% confidence that the predictions in the equation are not underestimated, to 2.7 for a 95% confidence.

NOTE : This method tends to overestimate the discharge when compared to other methods.

30.4.10 Method (g) - Rational Method

$$QT - 0.278\ MpR\ \delta\ m^3/s$$

where M = Area km^2

P = impermeability factor

R = precipitation in mm of a storm with duration T_c and return period T which can be obtained from the Met. Office (or Bilham's Tables).

δ = areal reduction factor

The time of concentration T_c in hours can be obtained from

either (i) The Bransby-Williams formula

$$T_c = 0.96 \sqrt[5]{\frac{L^6}{HM^{1/2}}}$$

where H = Catchment fall in m

L = Catchment length in km

Note : For catchments greater than 8 km^2, 0.25 hours should be added to T_c.

or ii) The Ragan Duru method for the overland flow component from the most extreme point in the catchment to the nearest stream head, to which is added the time of travel down that stream calculated from the Manning equation.

30.4.11 Method (h) - Modified Martin's Analysis

This analysis is suitable for catchment areas up to 1 km^2 and requires some experience to be able to produce reliable results.

The design flood flow Q is m^3/s is

Q = 0.0283 RAIF

where R = rate of run off (cusecs/sq mile)

A = catchment area (sq miles)

I = impermeability factor

F = frequency factor

The impermeability factor for a rural catchment is taken between 0.2 and 0.3.

The rate of run-off varies between 100 for flat terrain through 175 for normal rolling land up to a maximum of 250 for a steeply graded catchment.

The frequency factor is taken from the following table :-

1 in 1	=	0.5	1 in 2	=	0.60
1 in 3	=	0.69	1 in 5	=	0.80
1 in 10	=	1.00	1 in 20	=	1.22
1 in 25	=	1.30	1 in 50	=	1.61
1 in 100	=	2.00			

30.4.12 Method (i) ADAS Method

Staff of the MAFF Field Drainage Experimental Unit have drawn upon the relevant parts of the TRRL and Flood Studies Reports to produce a method for estimating surface run-off from agricultural catchments not exceeding 30 ha. The method is fully outlined in 'Field Drainage - Principles and Practice' by ADAS, 1984.

Design Flow $Q_o = S_T\ F\ A$ l/s

where S_T = soil type factor (varies 0.1 to 1.3)

A = Area in ha

F = F number obtained from nomographs of catchment characteristic C, the dominant crop and average annual rainfall.

$$C = 0.0001 \frac{L}{S}$$

and L = maximum length of catchment m

S = average slope of catchment

30.4.13 Method (i) - MAFF Method (1966)

The method uses a nomograph of catchment slope (ft per 100 ft), soil texture and surface run-off coefficient (cusecs per acre) for agricultural and paved area components. The method gives approximately the Q_{10} flow and is limited to catchment sizes up to 1 km^2.

30.4.14 Comments on the Peak Flow Methods

The following observations result from a recent comparative analysis of the various methods applied to different sized gauged and ungauged catchments of varying slopes.

(i) The Poots and Cochrane Method (f) gave results which were consistently far too conservative at the 95% confidence limit and it is recommended that only the 68% confidence limit is used. It was observed that even the 68% confidence limit gave the highest flow figures compared with the appropriate FSR Methods (a), (b) and (c) and Simpson's Method (e).

(ii) The Modified Martin's Analysis Method (h) gave the lowest flows for both steep and flat catchments in the 0.3 km range. This is due to the low impermeability factor range quoted. Impermeability factors are covered in Section 30.5.

(iii) The Rational Method (g) produced a flow of three times the gauged flow for a steep catchment 8 km^2 in size. It is suggested that the method is limited to catchments less than 5 km^2. The method is more time consuming than the other methods and to no advantage.

(iv) Simpson's-3 Parameter Method (e) gave nearly double the measured flow on a medium sloped 53 km^2 catchment.

(v) The FSSR No. 6 Methods (b) and (c) gave consistently good results for the 0.3-8.0 km^2 range tested. The major advantage over FSR Method (a) is that the methods are simpler and quicker.

(vi) Headquarters' experience in the use of FSR Method (a) is that the average error in the Severn-Trent Region is 50%, generally on the high side. Errors are less for steep upland catchments or large catchments where there is more chance of being able to confirm the flow from adjacent catchment data. For catchments greater than 20 km^2, this method is believed to give the best results. The method can be used for smaller catchment areas but problems may be encountered in determining some of the parameters eg stream frequency.

30.4.15 Summary of Methods by Area

The appropriate methods for the following agricultural catchment sizes are as follows :-

>20 km²	<20 km²	<5 km²
(a) or (e)	(b), (c) or (f)	(b), (c), (f) or (g)

<1 km²	<0.3 km²
(b), (c), (g), (h) or (j)	(b), (c), (g), (h), (i) or (j)

where (a) is FSR - 6 Parameter Equation
(b) is FSSR No. 6 - 3 Parameter Equation
(c) is FSSR No. 6 - 4 Parameter Equation
(e) is Simpson's - 3 Parameter Equation
(f) is Poots and Cochrane
(g) is Rational Method
(h) is Modified Martin's Analysis
(i) is ADAS Method
(j) is MAFF Method (1966)

30.5 Impermeability Factor

30.5.1 The Rational Method and the Modified Martin's Analysis described in Section 30.4 require an estimate of the impermeability factor for the catchment. The percentage of any rainfall which runs off from a catchment is a function of the morphology of the catchment, and the initial catchment state.

30.5.2 R E Bartlett, in his book Surface Water Sewerage (Second Edition), presents the following table of impermeability factor percentages compiled from a number of sources.

Type of Surface		Factor %
Urban areas, where the paved areas are considerable		100
Other urban areas	- average	50 - 70
	- residential	30 - 60
	- industrial	50 - 90
	- playgrounds, parks etc	10 - 35
General development	- paved areas	100
	- roofs	75 - 95
	- lawns - depending on slope and sub-soil	5 - 35
Heavy clay soils		70
Average soils		50
Light sandy soils		40
Vegetation		40
Steep slopes		100
Housing development at	- 10 houses per ha	18 - 20
	- 20 houses per ha	25 - 30
	- 30 houses per ha	33 - 45
	- 50 houses per ha	50 - 70

It is rare to assume that the run-off will equal 100% of the rainfall since even apparently impervious surfaces are pervious to some extent. The impermeability factors quoted are generally maximum figures and frequently the run-off from any particular surface will be lower if dry conditions exist before the storm.

30.5.3 The British Coal guidelines on tip drainage schemes contains a nomogram applicable to areas up to 200 ha. The nomogram starts with ground slope and progresses through the type of vegetal cover and soil type and finally gives the impermeability factor or run-off coefficient. By way of an illustration, for cultivated loam soil with a ground slope of 0.01, the impermeability factor is 0.45.

30.6 Determination of Flood Levels

30.6.1 Once the design flood flow has been determined, a downstream control point must be used from which to carry out a backwater analysis to obtain the flood level at the required point.

30.6.2 A manual calculation can be carried out using the Standard Step Method outlined in "Open-Channel Hydraulics" by Ven Te Chow 1959. The method utilises Manning's formula :

$$V = \frac{R^{2/3} S^{1/2}}{n}$$

where V = Mean velocity m/s

R = Hydraulic Radius m = $\frac{\text{Cross Sectional Area}}{\text{Wetted Perimeter}}$

S = Water Surface Slope

n = Roughness Coefficient

The calculation can be carried out on a suitable programmable calculator or a micro-computer.

30.6.3 Alternatively, the micro-FLUCOMP package can be used. This package is a one dimensional river flow model for steady or unsteady flow conditions. The package was developed by Hydraulics Research Ltd (now known as Wallingford Software). Micro-FLUCOMP can be used on its own or in conjunction with RBM-DOGGS which is a flow routing model. The HEC-2 package can also be used. This package was developed by the US Army Corps of Engineers' Hydrologic Engineering Centre and is a one dimensional river flow model for steady flow conditions. See Section 30.9 for further details of hydrological and hydraulic computer packages.

30.6.4 The derived flood level should, where possible, be checked against local knowledge whether it be a mark on a house/bridge or a point in a field. The Section 105(2) Survey 1:25,000 maps show the approximate limits of floodplain and are a useful guide.

30.7 Hydraulic Sizing of Culverts and Bridges

30.7.1 Ven Te Chow in his book title "Open-Channel Hydraulics" states that for practical purposes culvert flow may be classified into six types as follows :-

A	Outlet submerged (full flow)			Type 1
B	Outlet unsubmerged			
	1	Headwater greater than the critical value		
		a	Culvert hydraulically long (full flow)	Type 2
		b	Culvert hydraulically short (partly-full)	Type 3
	2	Headwater less than the critical value		
		a	Tailwater higher than the critical depth	Type 4
		b	Tailwater lower than the critical depth	
			i Slope sub-critical (control at outlet)	Type 5
			ii Slope supercritical (control at inlet)	Type 6

30.7.2 The critical headwater value varies from 1.2 to 1.5 times the culvert height and is dependent upon the entrance geometry, barrel characteristics and approach condition. A figure of 1.5 may be used for preliminary analysis.

30.7.3 Hydraulically long culverts flow full, whereas hydraulically short culverts will never flow full.

30.7.4 Flow types 1 and 2 are pipe flow whereas the others are open-channel flow. Type 3 acts as an orifice with the coefficient of discharge varying from 0.45 to 0.75. Flow types 4,5 and 6 act as a weir with the coefficient of discharge varying from 0.75 to 0.95.

30.7.5 Inlet control occurs when the tailwater does not submerge the outlet and the culvert is laid on a slope greater than or equal to the friction slope. The discharge capacity is controlled at the entrance by the headwater depth, cross-sectional area and inlet geometry. Outlet control occurs when the culvert is laid on a slope less than the friction slope and the discharge capacity is controlled by the culvert length,

roughness, slope and the tailwater. Culverting proposals should be checked for both inlet and outlet control.

30.7.6 Practical guidance in the sizing process is given in the following publications :-

(1) "Pipe and Culvert Hydraulics Manual" (Metric 1976) by Rocla Concrete Pipes Limited of Australia which covers concrete pipes and box culverts.

(2) Manual prepared for the culvert design seminar held in March 1994 by HR Wallingford. The recommended method for designing new culverts and assessing the performance of existing culverts are based on those in a publication entitled "Hydraulic Design of Highway Culverts", Hydraulic Design Series No. 5, Report No FHWA-IP-85-15, September, 1985, produced by the US Department of Transportation, Federal Highways Administration.

(3) "Handbook of Steel Drainage and Highway Construction Products" (Metric 1984) by the america Iron and Steel Institute which covers corrugated steel joints and pipe arches.

(4) "ARMCO Design Manual" for UK use was produced by Manstock Geotechnical Consultancy Service in 1985. The manual contains a comprehensive section of the hydraulic design of corrugated circular and pipe-arch culverts.

30.7.7 Most culverts should be designed for inlet control conditions of flow, since an outlet control designed culvert runs severe risks of blockage from floating debris and could also cause extensive damage downstream if discharging like a jet. In addition, upstream ponding is likely to increase dramatically in severe storm conditions with possible property damage, apart from the very real risk of over-topping and loss of any embankment.

30.7.8 It is difficult in many instances to predict the type of flow likely to occur for any given discharge and culvert installation. The type of flow or the location of the control is dependent on the quantity of flow, roughness of the culvert barrel, changes in alignment, obstructions, sediment deposits, type of inlet structure, flow pattern in

30.7.11 The HEC-2 package referred to in Section 30.6.3 can be used for culverts and bridges.

30.7.12 The suggested procedure for bridges over major watercourses, where a flow constriction is caused by the abutments and/or piers, is that given in Section 17-6 in "Open-Channel Hydraulics" by Ven Te Chow. The increase in water level from the normal stage to the backwater stage just upstream of the new bridge, known as the backwater of the constriction or afflux, needs to be determined, as does the point upstream where the backwater runs out. The velocity through the bridge downstream will determine the level of any scour protection required.

30.7.13 For bridges over smaller watercourses, where there is not a serious flow constriction, the design flow chart in 30.7.9 above can be used for checking the capacity and outlet velocity.

30.8 Afflux

30.8.1 In reality, most bridges on a medium or large watercourse will create an upstream afflux under flood conditions.

30.8.2 In the majority of cases, the upstream landowner is not the bridge owner and therefore his interests should be protected. A zero afflux is desirable but will often lead to an uneconomic design.

30.8.3 A bridge promoter will sometimes support his proposal with a benefit-cost analysis. Hard and fast afflux limits under flood conditions are not practical. However, bridge works must not be allowed to increase flooding of property. In agricultural situations, the afflux should be limited to 75 mm as this is unlikely to be perceived or result in any permanent damage. Examination of the afflux backwater on a long section together with the bridge costings, supplied by the promoter, will enable a decision to be made on whether or not to accept a greater afflux. For example, if the backwater runs out after 200 m, a 150 mm afflux may be acceptable under the 1 in 100 year flood condition.

30.8.4 Should the bridge promoter also be the upstream landowner, then a greater afflux can be permitted by agreement, providing only his land is affected.

30.8.5 There is often no significant increase in the area of flooding, but farmers do notice and are concerned about changes in the frequency of flooding, particularly at the lesser events.

30.9 Software for Hydrological & Hydraulic Calculations

30.9.1 The established hydrological techniques for estimating flood statistics or flood hydrographs are available in the form of microcomputer-based software which eliminate much of the repetitive calculation procedures and allow the hydrologist to concentrate on the principles of estimation.

30.9.2 The Institute of Hydrology has developed Micro-FSR from the techniques developed in the Flood Studies Report and subsequent research described in Flood Studies Supplementary Reports (FSSR), and thus combines information otherwise available in a number of publications. Design flood estimation may be based on either the statistical or the rainfall-runoff approach although the statistical method only provides the peak flow and not the full hydrograph.

A choice may be made between the FSR and the more recent FSSR parameter estimation equations, while model parameter estimates for percentage runoff and time to peak (Tp) and the mean annual flood may be based on local data if these are available. Routing of the flood hydrograph through a reservoir for spillway design is also included, and the effects of balancing ponds can also be simulated. This routing facility may be useful in simulating flow hydrographs below an existing or planned flood control storage. Micro-FSR is designed to run on the IBM range and compatible personal computers.

30.9.3 A flood frequency analysis programme (HYFAP) has been developed by the Institute of Hydrology. It accepts annual maxima as input from HYDATA, a hydrological processing programme, or directly, and fits a variety of statistical distributions (EV1, GEV, 2 or 3 - parameter log normal, Pearson III or log-Pearson III) by different methods (moments, maximum likelihood or probability weighted moments).

30.9.4 The RIBAMAN set of software packages, developed by Hydraulics Research Ltd., includes hydraulic as well as hydrological techniques, but RBM-DOGGS which models discharges and storages in a stream network incorporates alternative models of storm losses and runoff models. These are based on the techniques of the Flood Studies Report. The hydrological results form the input to a wider set of programs to study river management problems, such as the MicroFLUCOMP package, which are discussed below. RBM-DOGGS is particularly useful for checking or designing flood storage ponds in medium to large watercourse systems.

30.9.5 For gradually-varied one dimensional flow there are steady state backwater models such as HEC-2 or steady-state options within the more complex models such as ONDA. HEC-2 is available commercially from Haestad Methods Inc. and in UK from Bullen & Partners. These steady-state estimations of floodwater levels would be sufficient for smaller, less critical areas.

30.9.6 Five models - HYDRO, ONDA, SALMON-F, FWAVE and MIKE11 - deal with the unsteady hydrodynamics of river flow in one dimension. The first four incorporate the same basic method of solving the St Venant Equations. They differ in the details of the numerical methods. The fifth uses a different scheme to solve the same equations. They can all model systems of similar complexity, with looped networks of channels and two or quasi two-dimensional flow in the flood plain. These more complex models will be needed when assessing large rivers with highly populated valleys.

SALMON-F (formerly LORIS, HR Wallingford), ONDA (Halcrow), and MIKE11 (DHI) and HYDRO are available under a range of licence agreements. FWAVE is offered on a consultancy basis where the originating company does the modelling.

A joint venture by HR Wallingford and Halcrow will shortly result in SALMON-F and ONDA being replaced by a new combined model.

30.9.7 FLUCOMP (HR Wallingford) is a much simpler model without the ability of the above to deal with looped networks of river channels and storage behind embankments/levees.

30.9.8 DAMBRK-UK, as its subscript implies, is a British version of a model which was originally developed for the calculation of dam break flood events. It originated from the US National Weather Service and was adapted for UK use by Binnie and Partners, under contract to DoE. It is potentially useful for river flood modelling, without structural failure as the necessary upstream mechanism.

30.9.9 The construction and calibrations of a networked hydraulic model of an unsteady system involves considerable investment of time and resources. Regard must be made therefore to those models already in use by the NRA when considering future modelling.

A1. SECTION 109 (WRA91)

WATER RESOURCES ACT 1991

SECTION 109

Structures in, over or under a main river.

109.—(1) No person shall erect any structure in, over or under a watercourse which is part of a main river except with the consent of and in accordance with plans and sections approved by the Authority.

(2) No person shall, without the consent of the Authority, carry out any work of alteration or repair on any structure in, over or under a watercourse which is part of a main river if the work is likely to affect the flow of water in the watercourse or to impede any drainage work.

(3) No person shall erect or alter any structure designed to contain or divert the floodwaters of any part of a main river except with the consent of and in accordance with plans and sections approved by the Authority.

(4) If any person carries out any work in contravention of this section the Authority may—

(a) remove, alter, or pull down the work; and

(b) recover from that person the expenses incurred in doing so.

(5) Subsections (1) and (2) above shall not apply to any work carried out in an emergency; but a person carrying out any work excepted from those subsections by this subsection shall inform the Authority in writing as soon as practicable—

(a) of the carrying out of the work; and

(b) of the circumstances in which it was carried out.

(6) Nothing in this section shall be taken to affect any enactment requiring the consent of any government department for the erection of a bridge or any powers exercisable by any government department in relation to a bridge.

A2. SECTION 23 (LDA91)

LAND DRAINAGE ACT 1991

SECTION 23

Control of flow of watercourses etc.

PART II

Prohibition on obstructions etc. in watercourses

23.—(1) No person shall—

(a) erect any mill dam, weir or other like obstruction to the flow of any ordinary watercourse or raise or otherwise alter any such obstruction; or

(b) erect any culvert that would be likely to affect the flow of any ordinary watercourse or alter any culvert in a manner that would be likely to affect any such flow,

without the consent in writing of the drainage board concerned.

(2) The drainage board concerned may require the payment of an application fee by a person who applies to them for their consent under this section; and the amount of that fee shall be £50 or such other sum as may be specified by order made by the Ministers.

(3) Where an application is made to the drainage board concerned for their consent under this section—

(a) the consent is not to be unreasonably withheld; and

(b) if the board fail within two months after the relevant day to notify the applicant in writing of their determination with respect to the application, they shall be deemed to have consented.

(4) In subsection (3) above "the relevant day", in relation to an application for a consent under this section, means whichever is the later of—

(a) the day on which the application is made; and

(b) if at the time when the application is made an application fee is required to be paid, the day on which the liability to pay that fee is discharged.

(5) If any question arises under this section whether the consent of the drainage board concerned is unreasonably withheld, that question shall be referred to a single arbitrator to be agreed between the parties or, failing such agreement, to be appointed by the President of the Institution of Civil Engineers on the application of either party.

(6) Nothing in this section shall apply—

(a) to any works under the control of a navigation authority, harbour authority or conservancy authority; or

(b) to any works carried out or maintained under or in pursuance of any Act or any order having the force of an Act.

(7) The power of the Ministers to make an order under subsection (2) above shall be exercisable by statutory instrument subject to annulment in pursuance of a resolution of either House of Parliament.

(8) Subject to section 8 above, references in this section and section 24 below to the drainage board concerned—

(a) in relation to a watercourse in an internal drainage district, are references to the drainage board for that district; and

(b) in relation to any other watercourse, are references to the NRA.

A3. SUMMARY OF
LEGISLATION CHANGES

SUMMARY OF LEGISLATION CHANGES

LAND DRAINAGE ACT 1976	WATER RESOURCES ACT 1991	LAND DRAINAGE ACT 1991
1	Section 105(1)	
8	Section 113	
16		Section 9, 10
17	Section 165, Schedule 21	Section 14
18	Section 107	Sections 25, 26, 33
19	Section 107	Section 27
24	Sections 107, 185	Sections 8, 21, 72
28		Sections 8, 23, 24
29	Section 109,110, Schedule 22	
30		Section 18
32	Sections 148, 166	
33	Section 167, Schedule 21	Section 15
34	Schedule 25	Section 66
97		Section 26
98		Sections 14, 15, 16, 17, 62, 66
99		Section 20
100		Section 14, Schedule 4
112	Schedule 22	Schedule 6
113	Section 105	Section 67
116	Sections 108, 113	Sections 7, 9, 17, 23, 72

WATER ACT 1989	WATER RESOURCES ACT 1991	LAND DRAINAGE ACT 1991
8	Sections 2, 16, 17, 107	Sections 12, 13
8	Section 17	Section 13
136(1)	Section 105(2)	
147 178	Sections 169, 170, 171, 172	
186	Schedule 25(5)	

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A4. LAND DRAINAGE BYELAWS

SEVERN-TRENT WATER AUTHORITY

Land Drainage Act 1930

Land Drainage Act 1961

Water Act 1973

BYE-LAWS

The Severn-Trent Water Authority under and by virtue of the powers and authority vested in them in Section 47 of the Land Drainage Act 1930 as amended by the Land Drainage Act 1961 and the Water Act 1973 and as applied by the Water Act 1973 and of every other power enabling them in that behalf hereby make the following Bye-laws for securing the efficient working of the drainage system in their area:-

1 Citation and Commencement

These Bye-laws may be cited as the Severn-Trent Water Authority Land Drainage Bye-laws 1975 and shall come into operation at the expiration of one month beginning with the day on which they are confirmed by the Minister.

2 Application of Bye-laws

These Bye-laws shall have effect within the Severn-Trent Water Authority area for the purposes of their functions relating to land drainage.

* By the provisions of Schedule 2 of the Water Consolidation (Consequential Provisions) Act 1991, these byelaws are now enforced by the National Rivers Authority, Severn-Trent Region. All references to Severn Trent Water Authority, STWA or Water Authority should now read National Rivers Authority.

3 Definition and Interpretation

In these Bye-laws unless the context otherwise requires the following words and expressions shall have the meanings hereby respectively assigned to them, that is to say:-

'Act' means the Land Drainage Act 1930 as amended by the Land Drainage Act 1961 and the Water Act 1973;

'Animal' includes any horse, ass, mule, cattle, sheep, goat, swine, goose or poultry;

'Authority' means the Severn-Trent Water Authority;

'Authority Area' means the area of the Authority for the purpose of their functions relating to land drainage;

'Bank' means any bank, wall or embankment adjoining or confining or constructed for the purpose of or in connection with any watercourse and in the case of watercourses within which tidal waters flow includes all land between the bank and low water mark of mean spring tides or in the case of other watercourses includes all land between the bank and the level of the water therein from time to time and the word 'banks' shall be construed accordingly;

'Consent of the Authority' means the consent of the Authority in writing signed by the Chief Executive of the Authority or any person authorised on their behalf by the Authority;

'drainage authority' in Bye-law 36 means an internal drainage board;

'Drainage Works' includes works for defence against water including sea water, irrigation and warping;

'Flood Warning System' means any system whereby, for the purpose of providing warning of any danger of flooding, information with respect to:-

a) rainfall, as measured at a particular place within a particular period, or

b) the level of flow of any inland water at a particular time, or

c) other matters appearing to the Authority providing the system to be relevant for that purpose

is obtained and transmitted, whether automatically or otherwise, with or without provision for carrying out calculations based on any such information and for transmitting the results of those calculations;

'Flood Protection Works' means any works constructed or maintained by the Authority for the purpose of preventing flooding;

'Land' includes water and any interests in land or water and any easement or right in, to or over land or water;

'Local Authority' means the council of any county or district;

'Main river' means a watercourse which is shown by a distinctive colour on the main river map of the Authority's area and includes any structure or appliance for controlling or regulating the flow of water into, in or out of the channel, being a structure or appliance situated in the channel or in any part of the banks of the channel (other than a structure or appliance vested in or controlled by an Internal Drainage Board or the British Waterways Board for the purpose of its functions as a navigation authority);

'Main river map' has the meaning assigned to that expression in paragraph 6 of Schedule 2 to the Water Act 1973;

'Minister' means the Minister of Agriculture, Fisheries and Food;

'Occupier' means, in the case of land not occupied by any tenant or other person, the person entitled to occupation thereof;

'Owner' means the person for the time being receiving the rack rent of the premises in connection with which the word is used whether on his own account or as agent or trustee for any other person or who would so receive the same if those premises were let at a rack rent;

'Person' includes a body corporate;

'railway property' means any railway of the British Railways Board and any bridges and works connected therewith or forming part thereof for the maintenance or operation of which the said Board are responsible and includes any land held or used by the Board for the purposes of such railway bridges or works;

'River Control Work' means any valve, sluice, floodgate, lasher, staunch gate, paddle, penstock, lock, weir, dam, pumping machinery, pump, pipe or any other structure or appliance for controlling, measuring or regulating the level of the water or the flow of water into, in, or out of the main river or for drawing water from or delivering water into the main river;

'Vessel' includes any ship, hovercraft as defined by the Hovercraft Act 1968, lighter, keel, barge, tug, launch, houseboat, pleasure boat, aircraft, randan, wherry, skiff, dinghy, shallop, punt, canoe, yacht, raft, float of timber, or any other craft whatsoever whether worked, navigated or propelled by steam, petrol, oil, electricity or other mechanical means or otherwise;

'Watercourse' includes all rivers and streams and all ditches, drains, cuts, culverts, dykes, sluices, sewers (other than public sewers within the meaning of the Public Health Act, 1936) and passages, through which water flows and any reference to a watercourse includes a reference to the channel or bed of a watercourse which is for the time being dry but excludes any canal or connecting feeder channel vested in or controlled by the British Waterways Board;

And other words and expressions shall have the same respective meanings as in the Act.

4 Limitation

Nothing in these Bye-laws shall:-

(1) authorise the Authority to require any person to do any act the doing of which is not necessary for securing the efficient working of the drainage system of the Authority area or to refrain from doing any act the doing of which does not adversely affect the efficient working of the drainage system of the Authority area;

(2) prejudice or affect the provisions of the Salmon and Freshwater Fisheries Act 1975 and Sections 18, 20 and 22 of the Water Act 1973 (which relate respectively to the Authority's duties in relation to fisheries, their powers and duties in regard to the use, for the purposes of recreation, of water and land associated with water and to their duties with regard to nature conservation and amenity) or any rights, powers or duties conferred or imposed thereby; and

(3) require any person to do any act or thing or to refrain from doing any such act or thing which would contravene the provisions of any Statutory Orders Regulations or Notices made pursuant to the provisions of any Act of Parliament.

5 River Control Works - Use and Maintenance

Any person having charge of any River Control work shall:-

a) maintain in accordance with the directions of the Authority such river control work in a proper state of repair and efficiency to the satisfaction of the Authority and,

b) use such river control work in accordance with such reasonable directions as may from time to time be given by the Authority with a view to the prevention of flooding, or the prevention of any shortage in the flow or supply of water in the main river.

PROVIDED THAT:-

i) Notwithstanding the provisions of this Bye-law the Authority shall not by any such directions as aforesaid prevent or interfere with the taking from or discharge into the main river of as sufficient a quantity of water as may be reasonably required by any person for any purpose for which he would but for the passing of the Act have been lawfully entitled to take or discharge water whether as the owner or occupier of riparian land or otherwise or for which he was already at the date of the confirmation of these Bye-laws lawfully taking or discharging water and so long as such quantity of water is reasonably required for any such purpose as aforesaid.

ii) Nothing in this Bye-law shall apply to a river control work vested in or controlled by the British Waterways Board.

6 River Control Works - Discontinuance - Removal - Alteration - Repair

(1) No person having charge of a river control work shall, without the consent of the Authority:

a) discontinue the use thereof, or remove the same, or

b) carry out any alteration or reconstruction of, or addition, reduction or repair to the river control work;

PROVIDED THAT:-

i) The foregoing shall not apply to any action taken in an emergency so long always as notice in writing of such action is given to the Authority as soon as practicable.

ii) Nothing in this Bye-law shall apply to a river control work vested in or controlled by the British Waterways Board.

(2) Where an application is made for the consent of the Authority the applicant shall furnish to the Authority such plans and specifications of the proposed work as the Authority may reasonably require.

(3) In any case where notice is given to the Authority by virtue of the proviso to paragraph (1) above the Authority may, by notice in writing, direct the person having charge of the river control work to take such action with regard to the river control work and within such a period as is specified in the notice and the person having charge of the river control work shall thereafter comply with those directions.

(4) In any case where the consent of the Authority under paragraph (1) above is refused the Authority may by resolution (due notice whereof shall be given to the person having charge of the river control work) assume responsibility for the maintenance and use of the river control work.

7 Prevention of Interference with River Control Works

No person shall without lawful authority or excuse interfere with or remove or in any way damage any river control work, bridge, building, access road, or any structure, appliance or property whatsoever vested in or under the control of the Authority for the purpose or in connection with their functions relating to land drainage.

8 Flood Warning Systems

No person shall interfere with or cause damage to any flood warning system established and maintained by the Authority.

9 Flood Protection Works

No person shall without the consent of the Authority

a) for reasons other than for securing the efficient working of the drainage system cut down, lower, excavate, remove or otherwise interfere with any part of any wall or other flood protection works or the bed or the banks of the channel of the main river.

b) do any damage to or carry out any building or other operations, in or on any land adjoining any wall or flood protection works vested in or under the control of the Authority so as to endanger or so as to be likely to endanger the stability thereof.

c) use or drive or permit to be used or driven any vehicle of any kind whatsoever at or along the top of the banks of the main river or flood protection works vested in or under the control of the Authority in such a manner as to cause damage to or endanger the stability of such banks or flood protection works.

d) plant any tree, shrub, willow or other growth on any flood protection works on the bank of any main river or within three metres on the landward side of the foot of any such works.

10 Alteration or Diversion of Flow

No person shall without the consent of the Authority divert or alter or permit to be diverted or altered the level of or the direction of the flow of water into, in or out of the main river.

11 Obstruction and Anticipated Obstruction to Flow

(1) This Bye-law shall have effect for the purpose of preventing any obstruction or impediment to or interference with the flow of water into, in or out of the main river and for the purpose of preserving the main river or the banks thereof from damage or destruction.

(2) No person shall

a) discharge or put or cause or permit to be discharged or put or fall into the main river any bricks, gravel, stones, or any substance which has been used as ballast or any ashes, dirt, soil, coal, manure, lime, tins, wires, bottles, furniture, prams, car bodies, rubbish, refuse, carcasses or other chattels or any matter of any kind whatsoever whether solid or liquid.

b) put or cause or permit to be put or to fall into the main river any tree or part thereof or any timber or wreck, debris, willows, shrubs, weeds, grasses, reeds, rushes, or vegetable growths or any object or matter whatsoever.

c) without the consent of the Authority erect or place in the main river any fence, stake, post, fishing rack, pen or enclosure for birds or fish.

d) allow any such object matter or thing as is referred to in paragraph (2) sub-paragraphs (a), (b) and (c) of this Bye-law to remain in proximity to the main river in such manner as to render the same liable to drift or be carried into the main river in time of flood:

PROVIDED however that nothing in this Bye-law shall be deemed to render unlawful

i) the maintenance or user of any fishing rack, pen or enclosure for fish or eels which might lawfully have been maintained or used immediately before the passing of the Land Drainage Act 1930 or of any portable cage or trap or of any keep net used in connection with angling; and

ii) the growing, harvesting or storage of crops or the storage of materials used in the growing of such crops in accordance with normal agricultural practice.

12 Control of Vermin in Banks

The occupier of any bank of the main river or any part thereof shall, upon being required by the Authority by notice in writing, within such reasonable time as may therein be specified, take such steps as are specified in the notice, being such steps as the Authority consider necessary and practicable, for preventing the bank from becoming infested by rabbits, musk rats, mink, moles and other vermin in or on the bank.

PROVIDED however that in taking such steps as aforesaid he shall not do or cause or permit to be done anything of such a nature as to cause damage to or endanger the stability of the bank.

13 Notice to Remove Growth in or on Banks

(1) This Bye-law shall apply to the main river or any watercourse flowing directly thereinto and shall have effect for the purpose of preventing any obstruction or impediment to or interference with the flow of water into, in or out of the main river or the watercourse as the case may be and for the purpose of preserving the main river or the watercourse or the banks thereof as the case may be from damage or destruction.

(2) The occupier of land through which a watercourse to which this Bye-law applies flows or of land abutting on any such watercourse or other the person having control of any such watercourse as the case may be shall, upon being required by the Authority by notice in writing within such reasonable time as may be therein specified, cut down such trees, willows, shrubs, grasses, reeds, rushes or weeds in or on the bank of the watercourse as may be specified by such notice.

14 Removal of Cut Vegetable growths

Every person who shall cut the weeds and vegetable growths in the main river or in any watercourse flowing directly into the main river shall remove such weeds and vegetable growths from the main river or the watercourse as the case may be immediately after the cutting thereof.

15 Acts endangering Stability of or Causing Damage to Banks

i) This Bye-law shall apply only to the main river or any part thereof and to any drainage work constructed thereon or therein

ii) No person shall without the consent of the Authority

a) cut or pare or remove or cause or permit to be cut or pared or removed any turf from any part of the bank or any drainage work.

b) dig for or remove or cause or permit to be dug for or removed any fishing bait within 3 metres of the foot of the bank of the main river.

c) dig or remove, excavate, disturb, disperse, or cause or permit to be dug or removed, excavated, disturbed, or dispersed any sand, shingle, chalk, soil, slag, stones, limestone pitching, revetment, concrete, gravel, small coal, clay, earth, timber gabions, wattle, piles or any material whatsoever forming part of any bank, drainage work or river control work.

d) remove, disturb, displace or injure any groynes, break-waters, piles, planks, mattresses, scaffolding, fences, steps, gates, windbreaks, wattles, netting, faggots, thorns, stakes, bags, sacks or other works or materials belonging to, set up, collected, stored, arranged or maintained by the Authority for the purpose of protecting, maintaining and improving any bank, drainage work or river control work.

e) make or cause or permit to be made any excavation or do or cause or permit to be done anything in or upon any land adjoining any bank, drainage work or river control work of such a nature as to cause damage to or to endanger the stability of the bank, drainage work or river control work.

16 Driving of Animals and Vehicles over Bridges etc.

No person shall without the consent of the Authority ride drive or cause to be ridden driven or propelled any animal, car, cart, lorry, wagon, bus, tractor, steam or other engine or machine of any kind whatsoever whether mechanically propelled or not over any bank, drainage work, river control work, bridge or culvert vested in or under the control of the Authority of a greater weight than may from time to time be prescribed by the Authority (to be indicated by notice on such bank, drainage work, river control work, bridge or culvert or any road leading thereto) as the traffic weight of such bank, drainage work, river control work, bridge or culvert.

PROVIDED THAT this Bye-law shall not apply to a bank, drainage work, river control work, bridge or culvert carrying a highway maintainable at the public expense.

17 Protection of Flood Protection Works against Grazing Animals

No person shall use of cause or permit to be used any flood protection works for the purpose of grazing or keeping any animal thereon unless he shall take such steps as are necessary and reasonably practicable to prevent the flood protection works from being damaged by such use.

PROVIDED THAT nothing in this Bye-law shall be deemed to affect or prevent the use of any flood protection works for the purpose of enabling stock to drink at any place made or to be made or constructed for that purpose as may be approved by the Authority.

18 Erections, Excavations etc. affecting Bed or Banks of river

i) This Bye-law shall apply only to main river

ii) No person shall without the consent of the Authority

a) erect or construct or cause or permit to be erected or constructed any building, pylon, wall, wharf, jetty, quay, pier, loading stage, landing place, piling, groyne, revetment steps, staging, gangway, mooring or any other building or structure whatsoever or any crane, elevator or other machinery or plant whatsoever in the main river or in, on or over any bank, drainage work or river control work within 8 metres measured horizontally from the foot of any bank on the landward side or where there is no bank, within 8 metres measured horizontally from the top edge of the batter enclosing the main river.

b) make or cut or cause or permit to be made or cut any excavation or any tunnel or any drain, culvert or other passage for water into, in, out of or under the main river or through any bank, drainage work or river control work.

c) place or affix or cause or permit to be placed or affixed any gas or water main or any sewer or other pipe whatsoever or any supports in respect thereof or any wire or barrier or any electric main or cable or any private telephone wire or cable or any radio, rediffusion, cable or wireless aerial in, over, or under the main river or in, over, under or through any bank, drainage work or river control work or within 8 metres measured horizontally from the foot of any bank on the landward side or, where there is no bank, within 8 metres measured horizontally from the top edge of the batter enclosing the main river.

PROVIDED THAT any person may execute any temporary works as aforesaid in case of emergency but in such event shall forthwith inform the Authority thereof and comply with any reasonable directions which the Authority may give with regard thereto.

19 Excavation of Berths

No person shall carry out any work on a bank or on any land adjoining a bank of the main river for the purpose of constructing a berth for any vessel except with the consent of the Authority.

PROVIDED THAT the consent of the Authority shall not be required under this Bye-law in relation to the construction of works in respect of which planning permission has been granted by a local planning authority or by the Secretary of State on an application in that behalf made to a local planning authority.

20 Repairs to Buildings

The owner of any buildings or structures in or over the main river or on the banks thereof shall, upon receipt of a notice from the Authority that because of its state of disrepair:-

i) the building or structure is or is in imminent danger of causing an obstruction to the flow of the main river, or

ii) the building or structure is causing or is in imminent danger of causing damage to the bank of the main river,

carry out such reasonable and practicable works as are specified in the notice for the purpose of remedying or preventing the obstruction or damage as the case may be within such reasonable time as is specified in the notice.

PROVIDED THAT Bye-law 36(1) shall not apply to a notice given or served by the Authority under this Bye-law.

21 Prohibition of Heaps on Washlands

No person shall, on land adjacent to the normal channel of the main river and over which flood water may flow, without the consent of the Authority construct erect or form or cause to be constructed erected or formed any structure or deposit or cause to be deposited any material or form or cause to be formed any heap of materials which is or are of such size of character or is or are placed in such a position or positions as to be likely to divert or obstruct the flow of flood water and to affect adversely the efficient working of the drainage system of the Authority Area

PROVIDED THAT:-

a) The foregoing provisions of this Bye-law shall not apply to temporary works constructed or carried out in an emergency provided that notice thereof shall forthwith be given in writing to the Authority and that such works shall be removed if so requested by and in accordance with the directions of the Authority.

b) Such consent shall not be required in relation to any construction erection deposit or formation as aforesaid in respect of which planning permission has been granted by a local planning authority or by the Secretary of State on an application in that behalf made to a local planning authority.

c) Such consent shall not be required in relation to the making of hay and straw stacks sugar beet potato and other clamps and manure heaps and the like in the ordinary course of accepted agricultural practice.

d) Bye-law 36(1) shall not apply to a direction of the Authority under this Bye-law.

22 Dredging Operations

No person shall dredge or raise or take or cause or permit to be dredged or raised or taken any sand, ballast, clay or other material from the bed or bank of the main river so as to cause damage to or endanger the stability of such bank or any drainage work thereon or therein except with the previous consent of the Authority.

23 Deposit on Banks

i) This Bye-law shall apply only in relation to the main river.

ii) No person shall use or cause or permit to be used any bank or drainage work or river control work for the purpose of depositing, stacking, storing or keeping any rubbish or goods or any material or things thereon in such manner as by reason of the weight, volume or nature of such rubbish, goods, material or things to cause damage to or endanger the stability of the bank or drainage work or river control work.

24 Mooring of vessels

No person shall moor or place any vessel in such manner as materially to obstruct or impede the free flow of water into, in or out of the main river or cause damage to the banks of the main river:

25 Unattended vessels

No person shall leave any vessel unattended without taking due care to prevent such vessel from materially obstructing or impeding the free flow of water into, in or out of the main river, or so as to impair the efficiency of any drainage work or river control work.

26 Notice to Remove Vessel Obstructing the Main River

Where any vessel is moored or lying in such a position as is likely to interfere with dredging or other operations of the Authority the owner of such vessel shall within seven days after receipt of notice to that effect from the Authority remove the vessel for such length of time as the Authority may reasonably require for the completion of such operations.

PROVIDED THAT Bye-law 36(1) shall not apply to a notice given or served by the Authority under this Bye-law.

27 Sunken, Stranded and Abandoned Vessels

No person who is the owner of a vessel sunk, stranded, damaged or adrift in the main river or in the case of a sunken vessel which is abandoned who was the owner immediately before the abandonment shall after the receipt of notice from the Authority that the vessel is causing obstruction permit the vessel to remain in the main river in such a manner as to impede or harmfully direct the flow of water into, in or out of the main river or to endanger the stability of any drainage work.

PROVIDED THAT Bye-law 36(1) shall not apply to a notice given or served by the Authority under this Bye-law.

28 Navigation - Speed Limits

No person shall in the main river navigate any vessel in such a manner or at such a speed so as to injure any bank, drainage work or river control work and where the Authority have by notice erected at any place limited the speed of vessels passing such place no person shall navigate a vessel at a speed greater than the speed so limited.

PROVIDED THAT the Authority shall not exercise their powers under this Bye-law so as to limit the speed of -

a) vessels in any tidal waters except after consultation with the Secretary of State, Department of Trade or

b) vessels navigating waterways of the British Waterways Board for which speed limits are prescribed by the byelaws of such Board.

29 Consents and Notices

Any consent, notice or other document required or authorised to be given or served under these Bye-laws shall be sufficiently given or served if given in writing under the hand of the Chief Executive of the Authority or other duly authorised officer of the Authority and served in the manner provided in Section 120 of the Water Resources Act, 1963.

30 Obstruction of the Authority's Officers

No person shall obstruct, interfere with, or resist any officer or agent or servant of the Authority exercising any of their powers or duties under these Bye-laws.

31 Control of Animals

The occupier of any land through which the main river flows or which abuts on the main river shall if required to do so by an officer of the Authority ensure that, during the progress of any work carried out by the Authority on such land or on so much of the main river as is co-extensive therewith, cattle, horses, dogs or dangerous animals are not kept on that land or if kept thereon, are kept under proper control and supervision.

32 Interference with Notices

No person shall deface or remove any notice board, notice or placard put up by the Authority.

33 Entry on to the Authority's Land

No person shall without lawful authority enter upon any land belonging to or in the occupation of the Authority where there is prominently displayed on or near the land a notice prohibiting entry and such entry is likely to endanger any person or property.

34 Savings for Local Authorities, Statutory Undertakers etc.

Nothing in these Bye-laws shall:-

a) conflict with or interfere with the operation of any Bye-law made by an internal drainage board, or other drainage authority other than a local authority, a navigation, harbour, pilotage or conservancy authority but no person shall be liable to more than one penalty or in the case of a continuing offence more than one daily penalty in respect of the same offence.

b) restrict, prevent, interfere with or prejudice the exercise of any statutory rights or powers which are now or hereafter may be vested in or exercised by:-

i) an internal drainage board or other drainage authority;

ii) the British Gas Corporation;

iii) the Central Electricity Generating Board or any Area Board established under the Electricity Acts 1947 and 1957;

iv) any navigation, harbour, pilotage or conservancy authority;

v) the British Railways Board with respect to the construction use maintenance and repair of any railway property or so as to interfere with or obstruct the free uninterrupted and safe user of any railway of the Board and the traffic thereon and the use by passengers of railway property;

vi) any local authority;

vii) any highway authority for the purpose of the Highways Act 1959 (as amended by any subsequent enactment) in relation to a highway whether or not maintained at public expense;

viii) the Post Office;

ix) the British Air Ports Authority;

x) the Civil Aviation Authority.

c) restrict, prevent, interfere with or prejudice either the erection by such local or highway authority of fencing for the protection of the public or any right of such authority to introduce into any watercourse surface water from any road or highway.

d) affect any liability arising otherwise than under and by reason thereof.

35 Application to Crown

Nothing in these Bye-laws shall operate to prevent the removal of any substances on, in or under or the erection of any structure, building or machinery or any cable, wire or pipe on, over, or under lands belonging to Her Majesty in right of the Crown by any person thereunto authorised by the Crown Estate Commissioners.

36 Determination of disputes

(1) Where by or under these Bye-laws (except Bye-laws 20, 21(a), 26 and 27) any person is required by a notice in writing given by the Authority to do any work to the satisfaction of the Authority or to comply with any directions of the Authority, he may within 21 days after the service of such notice on him give to the Authority a counter-notice in writing objecting to either the reasonableness of or the necessity for such requirement or directions, and in default of agreement between such person and the Authority the dispute shall, when the person upon whom such notice was served is a drainage authority or local authority be referred to the Minister whose decision shall be final and in any other case shall be referred to the arbitration of a single arbitrator to be appointed in default of agreement by the President of the Institution of Civil Engineers on the application of either party. Where such a counter-notice has been given to the Authority the operation of the notice shall be suspended until either agreement has been reached or the dispute has been determined by arbitration in accordance with the provisions of this Bye-law.

(2) Where by or under these Bye-laws any person is required by a notice in writing given by the Authority to do any work to the satisfaction of the Authority or to comply with any directions of the Authority and any dispute subsequently arises as to whether such work has been executed or such directions have been complied with, such dispute if it arises between a drainage authority or local authority and the Authority shall be referred to the Minister whose decision shall be final, and in any other case shall be referred to the arbitration of a

single arbitrator to be appointed in default of agreement by the President of the Institution of Civil Enigineers on the application of either party.

(3) Where by or under these Bye-laws any person is required to refrain from doing any act without the consent of the Authority such consent shall not be unreasonably withheld and may be either unconditional or subject to such reasonable conditions as the Authority may consider appropriate and where any dispute arises as to whether in such a case the consent of the Authority is being unreasonably withheld, or as to whether any conditions subject to which consent is granted are unreasonable, such dispute shall if it arises between a drainage authority or local authority and the Authority be referred to the Minister whose decision shall be final, and in any other case such dispute shall be referred to the arbitration of a single arbitrator to be appointed in default of agreement by the President of the Institution of Civil Engineers on the application of either party.

37 Breach of Conditions of Consent

Where the Authority give their consent under these Bye-laws to the doing of any act subject to any conditions which they are authorised to impose, a breach of the conditions shall be deemed as regards liability to a fine and other consequences equivalent to the doing of the act without the required consent.

38 Revocation

All Bye-laws made under the Act by the River Trent Catchment Board, the River Severn Catchment Board, the Severn River Authority and the Severn-Trent Water Authority are hereby revoked.

39 Application of Interpretation Act 1889

The Interpretation Act, 1889, shall apply for the interpretation of these Bye-laws as it applies for the interpretation of an Act of Parliament.

In witness whereof the Common Seal of the Severn-Trent Water Authority is hereunto affixed this

Eighteenth day of November 1975

(sgd.) William S. Dugdale

Chairman

PENALTY NOTE

Penalties and Recovery of Expenses

1. By Section 34(4) of the Land Drainage Act 1976 any person who acts in contravention of, or fails to comply with, any of the foregoing Byelaws is liable on summary conviction in respect of each offence to a fine not exceeding the amount prescribed from time to time for level 5 on the standard scale referred to in Section 37 of the Criminal Justice Act 1991 (Five Thousand Pounds) and a further fine not exceeding Forty pounds for every day on which the contravention or failure is continued after conviction.

2. By Section 34(5) of the Act if any person acts in contravention of or fails to comply with any of these Byelaws the Authority may, without prejudice to any proceedings under Section 34(4) of the Act take such action as may be necessary to remedy the effect of the contravention or failure and may recover the expenses reasonably incurred by it in doing so from the person in default.

A5. CIRCULAR 30/92

Circular 30/92
(Department of the Environment)

Circular FD 1/92
(Ministry of Agriculture, Fisheries and Food)

Circular 68/92
(Welsh Office)

Joint Circular from the
Department of Environment
2 Marsham Street, London SW1P 3EB

Ministry of Agriculture, Fisheries and Food
Eastbury House, 30–34 Albert Embankment, London SE1 7TL

Welsh Office
Cathays Park, Cardiff CF1 3NQ

16 December 1992

Development and Flood Risk

1. This Circular provides guidance to local planning authorities and others on the arrangements for ensuring that planning decisions take account of any risk of flooding, whether inland or from the sea. This issue will become increasingly important given expected sea-level rises, possible increases in storm severity and changes in weather patterns arising from predicted global climate changes. These changes could also result in an increased incidence of inland flooding. This Circular complements PPG 20 on Coastal Planning.

The National Rivers Authority

2. In 1989 the Government created the National Rivers Authority (NRA) with wide ranging responsibilities including the management of water resources, control of pollution in inland, estuarial and coastal waters, and flood defence including arterial land drainage. In carrying out all its functions, the NRA is subject to general duties to protect and enhance the environment and promote recreation.

Flood defence powers and duties

3. Section 105 of the Water Resources Act 1991 requires the NRA to exercise a general supervision over all flood defence matters. Their powers and duties under the Act largely relate to main rivers and to sea defence works. For watercourses which are not designated as main rivers, local authorities have the statutory powers, under the Land Drainage Act 1991, to maintain or

improve existing works or construct new works , except in internal drainage districts where the powers rest with the internal drainage boards. These powers are permissive and do not release riparian owners from any obligation to which they were subject by reason of "tenure, custom, prescription or otherwise", before the commencement of the Water Resources Act 1991 or the Land Drainage Act 1991.

4. In discharging their functions, drainage bodies[1] are concerned with:-

—the natural catchment area of watercourses and rivers;

—the channels occupied by rivers and watercourses during times of normal flow;

—flood plains[2] and washlands[3] which accommodate water during periods of flood; and

—coastal flood plains, that is lands at risk from flooding from the sea or tidal lengths of rivers, whether or not protected by sea defences.

Sections 109 and 110 of the Water Resources Act 1991 enable the NRA to control the erection of structures in, over or under main rivers. Sections 8, 23 and 24 of the Land Drainage Act 1991 empower drainage boards and the NRA to control obstructions and culverts etc. on any watercourse and in certain instances along the banks of any watercourses. Sections 14, 25 and 26 of the Land Drainage Act 1991 empower drainage bodies, including local authorities, to require works to be undertaken to maintain flow of water courses. But all these powers are limited. The Government therefore looks to local authorities to use their planning powers to guide development away from areas that may be affected by flooding, and to restrict development that would itself increase the risk of flooding or would interfere in the ability of the NRA or other bodies to carry out flood control works and maintenance.

5. Where flood defence considerations arise, they should always be taken into account by local planning authorities in preparing development plans and in determining planning applications. Development permitted without regard to such considerations can lead to danger to life, damage to property and wasteful expenditure on remedial works whether on the development site or elsewhere. Engineering works for flood defence can reduce the risk of flooding but can never eliminate it completely. Through the development plan and development control process developers need to be made aware of the risks in a specific area, the consequent constraints on development, and any ways in which these can be overcome.

[1]A "drainage body" is the NRA, an internal drainage board, or any body having power to make or maintain works for the drainage of land.

[2]All land adjacent to a watercourse over which water flows in the time of flood or would flow but for the presence or flood defences where they exist. The limits of floodplain are defined by the peak water level of an appropriate return period event on the watercourse or at the coast. On rivers, this will normally be the greater of the 1 in 100 year return period flood or the highest known water level. In coastal areas the 1 in 200 year return period flood or the highest known flood will be used, whichever is the greater. In both instances, where a flood defence exists which protects to a greater standard than those defined, then the flood plain is the area defended to the design water level.

[3]Area of flood plain where water is stored in time of flood. Such an area may have its effectiveness enhanced by the provision of structures to control the amount of water stored and the timing of its release to alleviate peak flood flows in areas downstream.

Development plans and flood risk areas

6. The NRA is a statutory consultee in the preparation of development plans, and will make an input (including objections to deposited draft plans, where necessary) in respect of flood defence issues. The Government wishes the main NRA input to development plan preparation to be the surveys which section 105(2) of the Water Resources Act 1991 requires the NRA to carry out. In this way, as the survey coverage is extended the NRA input should be delivered more efficiently, rather than in relation to individual requests and consultations as they arise; the NRA will therefore be able to influence development patterns in a positive, rather than a reactive, way in accordance with the Government's plan-led approach.

7. The NRA should therefore copy the results of these surveys, as they become available, to local planning authorities in order to inform their development plan and development control functions. The surveys should indicate the areas where flood defence problems are likely. In particular they should help to identify the extent of the flood plains, washlands and other land liable to flood, in relation to risk; along some coastlines they may identify set-back lines beyond which most development should be avoided. The surveys will be of most help to local authorities in identifying land which is at risk from major events of low probability (such as storm surges); authorities will be more familiar with areas where there is a high frequency of flooding. In coastal areas there is the additional risk of wave and tidal erosion which can rapidly remove areas of high ground protecting lower lying areas behind. Low lying coastal lands should always be regarded as being at some degree of risk from flooding.

8. The results of Section 105 surveys and other information provided by the NRA should be taken into account by planning authorities as they prepare their structure and local plans (including minerals and waste plans). Development plans should include policies relating to development in flood risk areas; proposals maps should indicate where such policies will apply. The policies should relate to the degree of risk as notified by the NRA, and the standards of protection. Development plans should also take into account the potential risk of pollution associated with inundation of a site containing materials which could be leached out—for example,from waste disposal or mineral extraction works—taking account of the nature of the potential pollutant and likely concentrations to be found in water draining from a site subsequent to flooding.

9. Flood defences are provided to a standard that relates to current land use subject to satisfactory economic appraisal. Where the local planning authority proposes a development strategy that would be incompatible with the current standard of defences, the development plan process should be used to determine the best approach, taking account of the current standard of defences and any plans to upgrade or renew them, the cost of renewing and upgrading defences, the quality and extent of the agricultural land affected and nature conservation interests and of the suitability of some areas for "managed retreat"[4]. Local authorities should bear in mind the Government's policy that new development in areas of flood risk should make provision for

[4]Managed retreat is allowing the coastline to recede to a new line of defence (natural or man-made) usually accompanied by measures to encourage the development of environmentally beneficial mudflat or saltmarsh areas seaward of the new defence line.

flood defence; and grant aid for flood alleviation works is not available for new developments. NRA resources are targetted at protecting existing developments, and it does not invest in flood protection works solely in anticipation of future development. Plans should not therefore provide for any development on land at high risk from flooding which is not currently protected, or in respect of which there is not already significant development unless a developer is willing to protect the land to the appropriate standard as part of the development.

10. In addition, in preparing plans local planning authorities should take account of advice from the Ministry of Agriculture, Fisheries and Food, the Welsh Office and the NRA on sea-level rise and global warming (annex A restates recent advice on this). The advice of the NRA will be especially important in respect of the types of land and proposed development described in paragraphs 13-14 below. English Nature and the Countryside Council for Wales will also offer advice on the nature conservation aspects of alternative policies in response to flood risk.

Development control

11. The results of the Section 105 surveys will also be useful to local planning authorities when considering planning applications, as well as in plan preparation. But because the surveys are indicative rather than specific, local planning authorities will nevertheless need to consult the NRA on individual applications before granting permission for development, including their own, where significant flood defence considerations may arise. (The close relationship between flood defence and nature conservation in some areas may demand parallel consultation with English Nature or the Countryside Council for Wales.)

12. In respect of flood defence, the NRA has two separate roles in considering development proposals. First, in relation to its own direct interests, it has to consider how development would affect rivers and existing and new flood defence operations taking account of conservation interests in the area likely to be affected. (Local planning authorities should take account of the fact that not all flood defences are owned or maintained by the NRA. British Rail, British Waterways, highway authorities and riparian owners control embankments which may also serve as flood defences). Secondly, the NRA will advise how proposed development would itself affect flood risk.

13. Each local planning authority should seek to agree with the NRA areas and types of development about which consultation will take place. As a starting point, the Secretaries of State advise local authorities to discuss with the NRA proposed development on land which is:-

(i) within a flood plain or washland shown on a map prepared by the NRA, either as part of a Section 105 survey or otherwise;
(ii) within a coastal flood plain, including that adjacent to the tidal length of a river;
(iii) of such a size or nature relative to the receiving watercourse that there could be a significant increase in surface water run off from the area (see paragraphs 17-21 below);
(iv) within or adjacent to any watercourse;
(v) includes or is adjacent to any flood bank or other flood control structure;

(vi) situated in any area where the NRA have indicated that there may be drainage problems; or

(vii) likely to involve the culverting or diversion of any watercourse.

Consultation arrangements may need to make special provision for:

(a) phased or other developments, where the cumulative effects of lost storage within flood plains or increased run off can be significant (in such cases it can be difficult to associate alleviation works with individual applications);

(b) development which would obstruct flood flows, leading to higher upstream water levels or increased erosion;

(c) building works on or near flood defence embankments or other control structures which might reduce their effectiveness or seriously impede their proper maintenance;

(d) development affecting an existing structure, constructed for another purpose, which may incidentally serve as a flood defence (alteration or removal, in whole or in part, may place the previously protected area at increased risk); and

(e) mineral workings in flood plain areas which could affect water storage and control of flooding.

A local authority should also undertake appropriate internal consultation in relation to its own flood defence responsibilities, and agree with any affected internal drainage board any types of development that will be of interest to that body (except in areas where local arrangements exist for consultation with internal drainage boards through the NRA).

14. A particularly important point arises in relation to development of land which is protected by defences from inundation by the sea. Clearly such land would be extremely vulnerable in the event of any flood defence embankment or sea wall being breached, in particular because of the speed of flooding in such circumstances. Tidal surges, for example, might involve loss of life as well as the destruction of property. Planning authorities should take this risk into account when considering development proposals for land protected in this way. Development should not be permitted where the existing sea defences, properly maintained, would not provide an acceptable standard of safety over the lifetime of the development.

15. The Government looks to the NRA to make an initial response to consultation on planning applications within 14 days of the date of notification by the planning authority. As investigation into the possible consequences of new development can involve considerable time and labour, applicants should provide any necessary information early enough to help the NRA to respond within this period. Local planning authorities are asked to encourage applicants to provide such detail at the earliest possible stage. Where local planning authorities are consulted by developers before a formal planning application is submitted and it appears that flood defence considerations may be important to the determination of any subsequent planning application, the local planning authority should advise the developer to consult the NRA.

16. The NRA may be expected to respond to consultation in a number of ways. It may, for example:

—object to the proposed development because of the risk of flooding on the site; or because the development would unacceptably increase that risk.

on other land; or because the essential alleviation works would cause disproportionate damage to nature conservation interest;

—indicate what further information is needed before the risks of flooding can be assessed sufficiently to decide the application;

—indicate that the risk of any flooding can reasonably be overcome by alleviation works and suggest conditions, which would need to reflect the advice in DOE Circular 1/85 (WO 1/85), or planning obligations (see DOE Circular 16/91 (WO 53/91));

—suggest conditions to ensure adequate access to watercourses, particularly to permit future maintenance;

—point out the need for works affecting watercourses to comply with NRA requirements.

The local planning authority should be ready to explain its reasons to the NRA, if it decides not to follow advice received as a result of consultation on an application.

Run-off from new development

17. Because impermeable surfaces such as paved areas and roofs reduce the ground area capable of absorbing rainfall, new development may increase the quantity of and the rate at which run-off reaches watercourses. Some mining, land drainage and forestry development can also have similar effects. These effects may cause the capacity of the watercourse to be exceeded at times of flood risk, especially where there are culverts, bridges or other artificial or natural restrictions. Similarly, canals may be more likely to flood if increased run-off causes the design capacity of culverts and weirs to be exceeded, or if their ability to provide buffer storage for watercourses downstream is overloaded (discharge into canals requires the consent of the owner of the canal, as well as any NRA consent or approval). Development proposals that affect contaminated land may pose problems because of the risk that soil and debris may be washed on to other land or into surface waters at times of flooding. Where contaminated sites are inundated there is the attendant risk that particular contaminants may dissolve and pose a threat to surface waters or leach into groundwaters.

18. In certain circumstances, outlets for the discharge of surface water to a watercourse can be subject to NRA control. In other cases on which they are consulted, the NRA may provide a broad assessment of the potential flooding effect, and of the scope for engineering works to alleviate it. Where the planning authority consider that, if it were not for this effect, planning permission could be given, they should so advise the applicant. The onus is then on the applicant to investigate, design and submit amendments to his planning application to show how any unacceptable flood risk arising from the development proposed will be mitigated or alleviated.

19. Where alleviation works are needed, the local planning authority should take steps to ensure that development is not brought into use until those works have been designed and carried out. This may be achieved either:

(a) by seeking the applicant's agreement to the application being held in abeyance while he tries to make suitable arrangements (the applicant could amend his application to include particulars of a plan of the drainage work to be carried out—although it may be necessary for him to submit a fresh application if the site area, or form of development is materially different from that originally proposed); or

(b) by refusing permission and giving advice on the kind of revised application which might overcome the difficulty; or

(c) by seeking to impose a negative (or "Grampian" type) condition (see Circular 1/85); or

(d) by entering into a planning obligation under S.106 of the Town and Country Planning Act 1990 (in such cases, the authority will need a formal agreement between the applicant, the NRA and the owners of the land through which the water would run, providing for the financing and carrying out of the necessary works and for their future maintenance) see DOE Circular 16/91 (WO 53/91).

20. Works for the limitation of surface water run-off from new developments can include the provision of surface water storage areas, flow limiting devices in conjunction with surface or subsurface storage or, where ground conditions permit and acceptable measures to avoid groundwater pollution can be achieved, the use of infiltration areas or soakaways. It can be very effective to retain surface water at source by allowing temporary ponding within the development. "Soft" alleviation measures including ponds and berms can add areas of nature conservation interest, and prove effective in delaying the discharge of water to natural watercourses. Where any control devices are involved it will be particularly important to ensure that the developer enters a suitable long term legal agreement to ensure satisfactory long term maintenance and future renewal.

21. Where a local authority itself proposes to carry out development, including highway works, which would result in increased run-off, these proposals should be subject to consultation with the NRA like any other. Where an authority is notified or consulted about proposals for such development by statutory undertakers and government departments, attention should be drawn to the need to consult the NRA.

Holiday parks, caravan and camping sites

22. Caravan and camping sites can give rise to special problems—whether they are in use all the year round or only in summer holiday periods. In holiday areas they are often on sites with a high risk of flooding and/or with severe access restrictions. The instability of caravans, particularly in tidal flooding and high velocity flood flow, may place their occupants at special risk. Flood protection works for such sites may be impractical or uneconomic and it may be particularly difficult for the police or the local authority to operate an effective flood warning system. For these reasons it is vital that planning authorities should consult the NRA and take their views into account when considering all such applications for planning permission. The type of unit may be material, since permanently sited twin unit caravans, for example, are much more stable than holiday caravans, and can be secured so that water passes underneath. Where permission is granted, and there is a risk of flooding, a planning condition should require the erection of suitable permanent warning notices.

23. Whilst the installation of warning schemes may be the only feasible method of reducing the risk of loss of life at existing sites, their presence should not justify the granting of permission for new sites or extension of existing sites where there is a higher flooding risk. Similarly, proposed changes of use to residential mobile homes or permanent housing should also be refused on such sites.

24. The Caravan Sites and Control of Development Act 1960 provides a facility for the larger caravanning organisations to certificate sites for use by up to 5 members touring caravans and to hold members rallies for periods of up to 5 days. Such a use does not normally require a planning application, but in the interests of safety, the caravanning organisations may wish to liaise with the local planning authority about any flooding risks that may apply to such sites.

Waterways

25. Development associated with boats and canal or river mooring is by its very nature likely to be within a flood risk area. This does not mean however that all such development is inappropriate. Development associated with the needs of navigation will require careful consideration. In making their assessments, local planning authorities should consult the NRA, which has statutory duties in respect of water recreation (see paragraph 2); it should also take into account the views of the appropriate navigation authority.

Coast Protection Works

26. Planning permission is required for new coast protection works, and environmental effects will be among the considerations taken into account by the planning authority in deciding whether to grant planning permission. If the works are below mean high water springs, a licence is required from MAFF under the Food and Environment Protection Act 1985. In considering whether to issue a licence, MAFF is required by the above Act to have regard (among other things) to the need to protect the marine environment. Also, under the Coast Protection Act 1949 all capital works must be approved by the relevant Minister irrespective of whether grant aid is being provided. Proposals are advertised and the Minister approves them if they satisfy technical, economic and environmental criteria, and there are no outstanding objections. If there are, the Minister has discretion to instigate a local investigation or public local inquiry before reaching a decision.

27. The Town and Country Planning (Assessment of Environmental Effects) Regulations 1988 implement the requirements of European Community Directive 85/337 on the assessment of the effects of certain public and private projects on the environment in so far as the Directive applies to projects which require planning permission. Schedule 1 to the Regulations, which reflects Annex I to the Directive, lists types of project for which environmental assessment is required in every case; Schedule 2, based on Annex II to the Directive, lists types of projects for which environmental assessment is required if the particular development proposed is likely to have significant environmental effects. Coast protection works require planning permission but, unlike flood relief works, are not listed in either Annex I or II to the Directive. The Government is considering whether to use its power in section 70A of the Town and Country Planning Act 1990 to add coast protection works to Schedule 2 to the Regulations so that environmental assessment would be required where such works were likely to have significant effects on the environment.

Flood defence works

28. Flood defence works, which are included in the list in Annex II to the Directive as flood relief works, require environmental assessment where the proposed works are likely to have significant environmental effects. New works are subject to normal development control procedures and the 1988 EA Planning Regulations apply. Improvements to existing works do not require an express grant of planning permission, as they are permitted development under Parts 14 and 15 of Schedule 2 to the GDO. But they are subject to the environmental assessment procedures set out in the Land Drainage Improvement Works (Assessment of Environmental Effects) Regulations 1988.

Financial and manpower implications for local planning authorities

29. Following the advice in this Circular will increase the number of planning applications requiring consultations with the NRA and Internal Drainage Boards. The financial and manpower implications for local authorities will be taken into account in setting the levels of planning application fees.

Cancellation

30. DOE circular 17/82 (MAFF LDW 1/82; Welsh Office 15/82) is hereby cancelled.

RICHARD G. WAKEFORD, *Assistant Secretary*
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The Chief Executive
County Councils } in England
District Councils } and Wales
London Borough Councils
Council of the Isles of Scilly

The Town Clerk, City of London

The National Park Officer
Lake District Special Planning Board
Peak Park Joint Planning Board

The Chief Executive, the Broads Authority

The Chief Executive, Urban Development Corporations

The Chief Executive, Land Authority for Wales

For information
The Chief Executive, the Residuary Bodies
The Secretary, London Planning Advisory Committee
The National Rivers Authority
The Association of Drainage Authorities
British Waterways
British Rail
The Water Services Association
The Water Companies Association

[DOE: PDC 12/10/021]
[MAFF: LDA 9558]
[WO: P31/12/07]

CLIMATE CHANGE

RESPONSE TO IMPACT ON COASTAL DEFENCE: ALLOWANCES FOR SEA-LEVEL RISE

In July 1989 the Ministry of Agriculture, Fisheries and Food promulgated a strategy to respond to the impact of the Greenhouse Effect. This strategy embraced the use of current predictions of sea level rise in reviewing existing standards and best practice for coastal defences with consideration being given to incorporating flexibility to allow for future modification when better predictions become available.

The Inter-Governmental Panel on Climate Change (IPCC) have since reported, offering predictions of global sea-level rise for various scenarios. The "IPCC Best Estimate trend" is accepted as the most appropriate at this time.

Predictions are also available of earth crustal movements in Great Britain.

The combination of these predictions has been accepted as forming the best basis of allowances (shown below) for the design of coastal defences but consideration needs to be given in the designs to adapting defences to allow for any future change in predictions where defences have an effective life beyond 2030. In designing schemes to this response strategy authorities should ensure that their proposal is cost effective.

For ease of reference the allowances are based on NRA regions and are:

NRA Region	*Allowance*
Anglian, Thames, Southern	6 mm/year
North West, Northumbria	4 mm/year
Remainder	5 mm/year

Flood Defence Division
Ministry of Agriculture,
Fisheries and Food
November 1991

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A6. PLANNING LIAISON

PLANNING LIAISON

(A) Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans

(B) Planning Liaison with Local Authorities

(C) Standard Paragraphs and Format for Replies to Planning Consultations

GUIDANCE NOTES FOR LOCAL PLANNING AUTHORITIES ON THE METHODS OF PROTECTING THE WATER ENVIRONMENT THROUGH DEVELOPMENT PLANS

NRA

National Rivers Authority

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TABLE OF CONTENTS

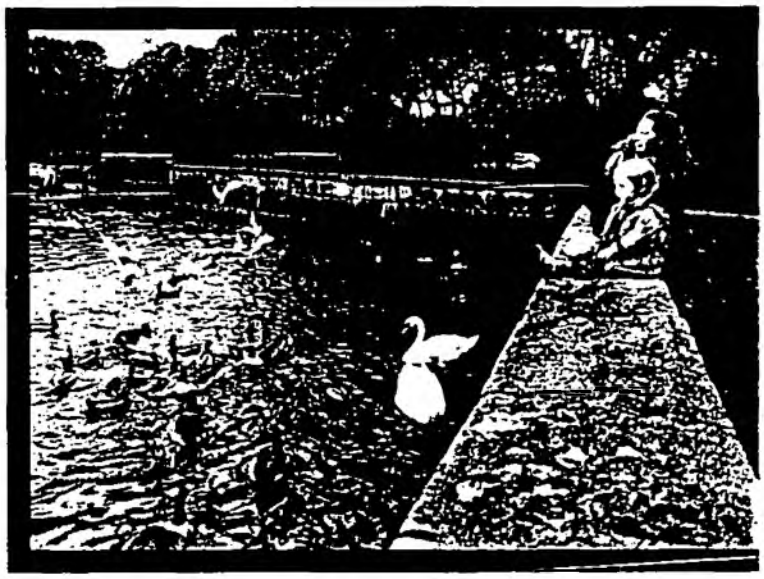
1.0 INTRODUCTION

1.1 The National Rivers Authority (NRA) was established by the 1989 Water Act as a non-departmental body with statutory responsibilities for water resources, pollution control, flood defence, fisheries, recreation, conservation and navigation in England and Wales. The Authority's Head Office is in Bristol, and there are 8 operational Regions. There is a Chairman's Office in London.

1.2 The aims of the NRA are summarised in its mission statement which reads:

"The NRA will protect and improve the water environment. This will be achieved through effective management of water resources and by substantial reductions in pollution. The Authority aims to provide effective defence for people and property against flooding from rivers and sea. In discharging its duties it will operate openly and balance the interests of all who benefit from and use rivers, ground waters, estuaries and coastal waters".

1.3 The statutory requirement to manage the water environment has created wide-ranging responsibilities for the Authority. These include the maintenance and improvement of water quality, conserving water resources, providing effective flood defence, improving, maintaining and developing fisheries, promote and further conservation, regulate navigation and generally promoting water-based recreation of all types. The Water Resources Act 1991 requires the NRA to conserve and enhance the water environment when discharging all its duties.



1.4 River catchment management planning provides an essential mechanism for implementing these responsibilities. The broad objective of catchment management planning is to conserve and enhance the total river environment through effective land and resource management. However, while the NRA is well placed to influence some of the factors responsible for the functioning of the hydrological system, particularly in relation to the river corridor itself, it has very little control over the mechanisms which

1 *The Water Resources Act 1991 uses the term "controlled waters" to describe the four categories of water for which the NRA has responsibility, ie. "relevant territorial waters", "coastal waters", "inland waters" and "ground waters". In effect, the NRA has jurisdiction over all waters that the general public are likely to encounter.*

determine land use change on a catchment-wide basis. This is largely the responsibility of local planning authorities through the implementation of the Town and Country Planning Acts.

1.5 The policies in statutory development plans are very important in this regard in that they set out the framework for land use change, and, since the enactment of the Planning and Compensation Act 1991, provide the key reference in determining development applications. The NRA therefore welcomes the inclusion of policies which reflect the Authority's concerns and responsibilities in development plans, including the statutory requirement to conserve and enhance the water environment and associated lands.

1.6 As guidance for local authorities on these matters, the NRA has prepared this set of statements relating to the broad headings of water quality and water resources, flood defence, fisheries, conservation, recreation and navigation in the river corridor, and mineral workings and waste disposal. While most headings reflect NRA functions, minerals and waste disposal have been included as a discrete section reflecting the practice of preparing separate minerals plans and waste plans. Under each heading, issues are described with suggested statements and reasoned justification.

1.7 Two levels of statements are presented. Those shown at the beginning of each section address the wider issues relevant to the preparation of structure plans and Part I of UDPs. These are followed by statements relevant to local plans, or Part II of UDPs.

1.8 It is hoped that the objectives will be substantially replicated in each local authority's land use plans insofar as they are appropriate. The NRA recognises that local circumstances will probably require the modification or omission of various policies. The aim is to assist Chief Planning Officers and their staff by explaining the reasons why it is desirable to include policy statements to protect the water environment, and to provide them with information from which to work. The NRA Planning Officers in each Region are available to provide further advice during plan preparation or review, and at the consultation stage. The NRA will subsequently assist with the implementation of policies where appropriate, either through the consultation process or by the use of its statutory powers and in the execution of its duties. Conversely, the NRA may formally object to development plans which conflict with the stated objectives.

1.9 Once a development plan has been adopted, the NRA will look to reinforce the framework created by the land use policies when commenting on development proposals, draft planning briefs, local planning initiatives and the like. It will also ensure that the activities it itself undertakes; such as granting land drainage consent, implementing river enhancement works etc; are in accordance with policies in development plans.

2.0 WATER QUALITY AND WATER RESOURCES
STRATEGIC/COUNTY CONCERNS

AIM

2.1 To protect surface, groundwater and coastal water from pollution arising from development.

GUIDANCE STATEMENT—

S1 The LPA should normally resist allocation of land for development which, in its opinion after consultation with the NRA, will lead to a deterioration in the quality of underground, surface or coastal water.

JUSTIFICATION

2.2 New development can have significant effects on the quality of surface, underground and coastal water. Therefore the NRA looks to Local Planning Authorities not to permit developments likely to place the quality of watercourses or groundwater at risk.

GUIDANCE STATEMENT

S2 Allocation of land for new development should normally be resisted where the LPA, in consultation with the NRA, considers that adequate water resources do not already exist, or where their provision is considered likely to pose a risk to existing abstractions, water quality, fisheries, amenity, inland navigations or conservation interests.

JUSTIFICATION

2.3 The supply of water to a new development is a critical factor. Development in locations where water resources are already scarce may result in less reliable supplies for existing population and industry, or may result in pressures for further abstraction licences which could put existing abstractions at risk, and may be detrimental to amenity, water quality, fisheries, inland navigations and nature conservation. Developments should be resisted if possible where existing water supplies are inadequate, or where they cannot be augmented in time to coincide with the development without adversely affecting the water environment.

LOCAL/DISTRICT CONCERNS

Waste Water Management

THE ISSUE

2.4 With increasing population and water use nationally, many sewer systems, including sewage treatment works, are becoming overloaded. Further development in the areas served by these systems is likely to lead to the pollution of watercourses unless additional infrastructure is provided. Such pollution poses a serious risk to water quality, water-based recreation, fisheries and nature conservation.

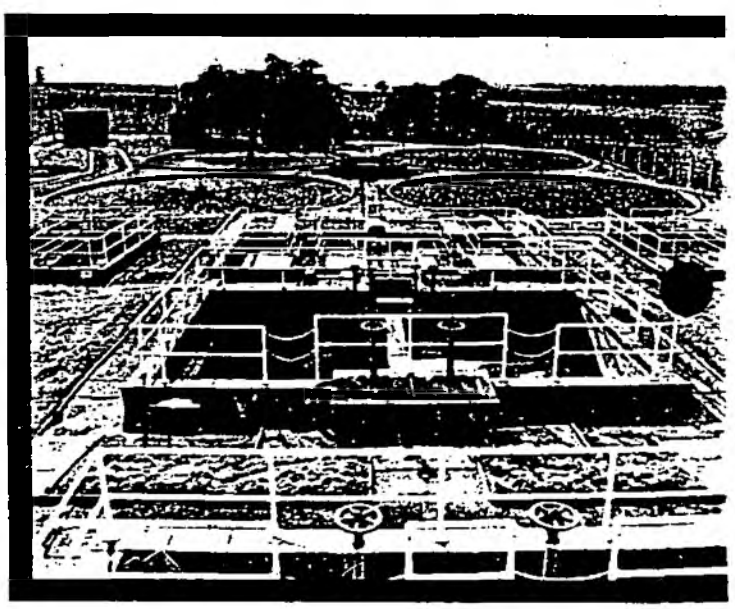
GUIDANCE STATEMENT

L1 New development should not normally be permitted unless foul sewers and sewage treatment works of adequate capacity and design are available or will be provided in time to serve the development. The NRA would look to the LPA to discourage the proliferation of small private package sewage treatment plants and other types of discharge direct to watercourse within sewered areas. The use of septic tanks will only be considered if connection to the mains sewerage is not feasible, and only then if ground conditions are satisfactory and the plot of land is of sufficient size to provide an adequate subsoil drainage system.

JUSTIFICATION

2.5 To ensure adequate infrastructure is available to serve the development. Private sewage plants require regular maintenance at frequent intervals in order to produce effluents which meet their discharge consents. Failure to reach the required standard can result in inadequate dilution of effluents and pollution of the ground or surface waters can result.

Industrial effluents also pose a significant risk of pollution to surface and ground waters and should, wherever possible, be discharged to the public foul sewerage system.



LOCAL/DISTRICT CONCERNS

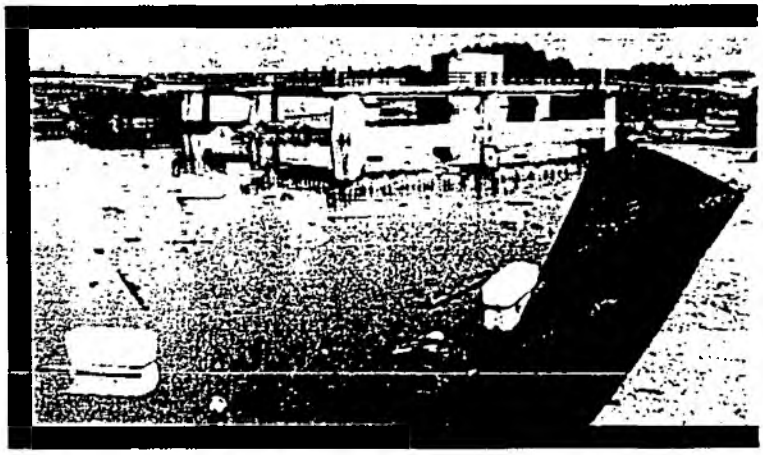
Surface Water Protection

THE ISSUE

2.6 The water quality of inland watercourses is an important area of concern for the NRA. This recognises the importance of water quality to a wide range of uses and users, including abstraction for potable supply, industrial water supply, fisheries, livestock watering, spray irrigation, and amenity, including inland navigation, and conservation.

GUIDANCE STATEMENT

L2 The LPA should normally resist development which in its opinion, after consultation with the NRA, could adversely affect the quality of surface, underground or coastal water as a result of the nature of the surface or waste water discharge, or give rise to pollution problems resulting from the disturbance of contaminated land. The NRA will look to the LPA to generally support initiatives which lead to improvements in surface water quality.



JUSTIFICATION

2.7 Maintaining or enhancing the water quality of coastal water, rivers, canals, lakes, ponds and other water bodies is important in order to protect the wide range of uses. The NRA looks to Local Planning Authorities to restrict development which threatens surface water quality, and will generally encourage initiatives that result in an improvement in surface water quality.

Development which disturbs contaminated ground is an additional concern. Unless carefully designed and implemented, such schemes can cause pollution of surface waters. Contaminated sites therefore should be adequately sealed against the leakage of polluted matter, while surface drainage should be directed away from the source of contamination. However, it is also recognised that the development of contaminated sites can offer opportunities for improvements in surface water quality, for instance by the restoration of sites which have been poorly infilled in the past.

LOCAL/DISTRICT CONCERNS

Groundwater Protection

THE ISSUE

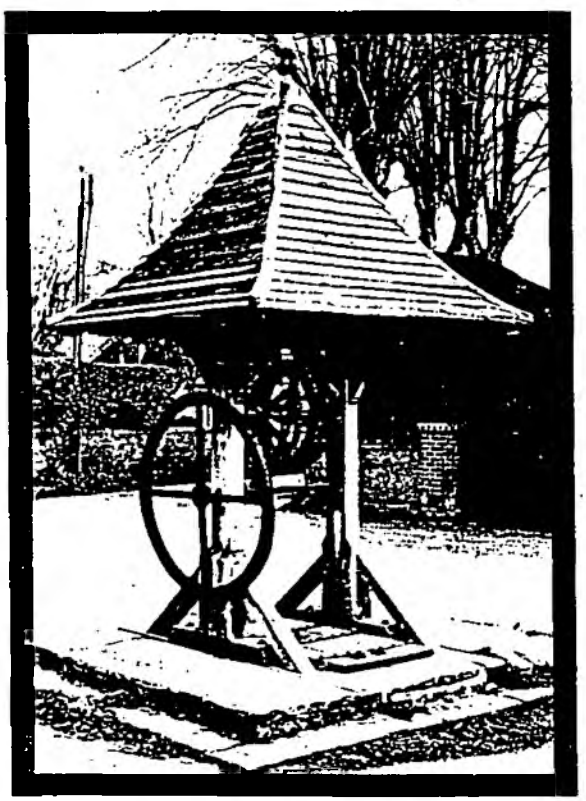
2.8 Groundwater resources are an essential source of water for public supply, industry and agriculture. They also sustain the base flows of many rivers. As a general principle, the NRA supports the conservation of groundwater quality, the aim being to prevent its pollution rather than the subsequent cleaning up of contamination. However, some activities, such as the disturbance of contaminated sites or the inappropriate storage of chemicals can result in the pollution of groundwater. The cleaning up of contaminated groundwater is difficult and expensive. It is better, therefore, to prevent or reduce the risk of groundwater contamination rather than deal with its consequences. Similarly, abstraction and dewatering can affect quantities available, and engineering works can obstruct groundwater flow within an aquifer.

GUIDANCE STATEMENT

L3 Developments should normally not be permitted which, in the opinion of the LPA, after consultation with the NRA, pose an unacceptable risk to the quality of groundwater. Areas subject to different levels of risk and protection are shown on the Proposals Map.

JUSTIFICATION

2.9 To prevent pollution of groundwater by controlling activities, such as the disposal of effluent in soakaways, landfilling of unsealed sites over permeable bedrock, or inappropriate storage of chemicals. Abstraction and dewatering can affect quantities available, and engineering works can obstruct groundwater flow within an aquifer. Guidance on considerations affecting the acceptability of development from a groundwater protection viewpoint has been published by the NRA as its "Policy and Practice for the Protection of Groundwater" (Bristol, December 1992). This includes map-based data showing the constraints on development.



LOCAL/DISTRICT CONCERNS

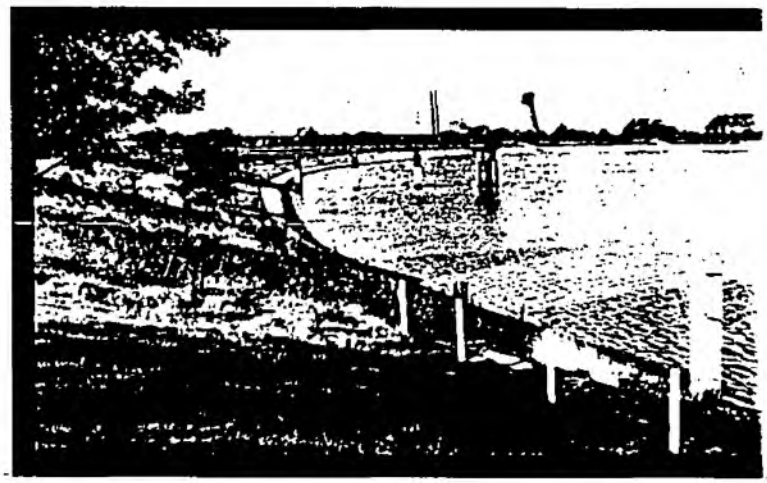
Availability of Water Resources

THE ISSUE

2.10 The development of water resources for water supply is becoming increasingly difficult. The NRA is concerned that the provision of water for development does not have a detrimental impact on existing uses. In some areas, over-abstraction has resulted in reduced flow rates in rivers. Further abstraction in such locations will exacerbate this problem. In practice, this allows no significant new all-year-round abstractions, and is therefore an important issue in terms of development control. Consequently, there is a growing need to plan for new strategic water resources which will not harm the environment; these may require the construction of new reservoirs or the expensive transport of water over long distances. This can have a critical impact on the viability or timing of new development.

GUIDANCE STATEMENT

L4 The LPA should not normally permit development which increases the requirement for water unless adequate water resources either already exist or will be provided in time to serve the development and without detriment to existing uses. The NRA looks to the Local Planning Authority to support water conservation measures.



JUSTIFICATION

2.11 Developments should be limited to locations where adequate water resources already exist, or where new provision of water resources can be made without adversely affecting existing abstraction, river flows, water quality, agriculture, fisheries, amenity or nature conservation, and where it coincides with the timing of the development. The NRA intends to publish its National Water Resources Development Strategy by early 1994.

3.0 FLOOD DEFENCE
STRATEGIC/COUNTY CONCERNS

AIM

3.1 To ensure that development is not at an unacceptable risk from flooding (including tidal inundation) and does not put other areas at risk, or greater risk, from flooding which could endanger life and damage natural and built assets. To ensure that any work which is needed to reduce the risk of flooding created by a development is paid for by the developer and not the public.

GUIDANCE STATEMENT

S3 The LPA, after consultation with the NRA, should normally resist allocation of land where such development would be at direct unacceptable risk from flooding (including tidal inundation) or likely to increase the risk of flooding elsewhere to an unacceptable level.

JUSTIFICATION

3.2 New development, redevelopment, and land raising can have significant implications for flood risk. Within river and coastal floodplain, new developments may be liable to flooding and may increase the risk of flooding (including tidal inundation) elsewhere by reducing the storage capacity of the floodplain and impeding flood flows. Development anywhere in the catchment may increase surface water run-off, adding to the flood risk downstream, and may increase the risk of pollution and damage to river habitats. Similarly, development which threatens the stability and continuity of fluvial and tidal flood defences can place large areas at risk from inundation.

LOCAL/DISTRICT CONCERNS

Protection of the Floodplain

THE ISSUE

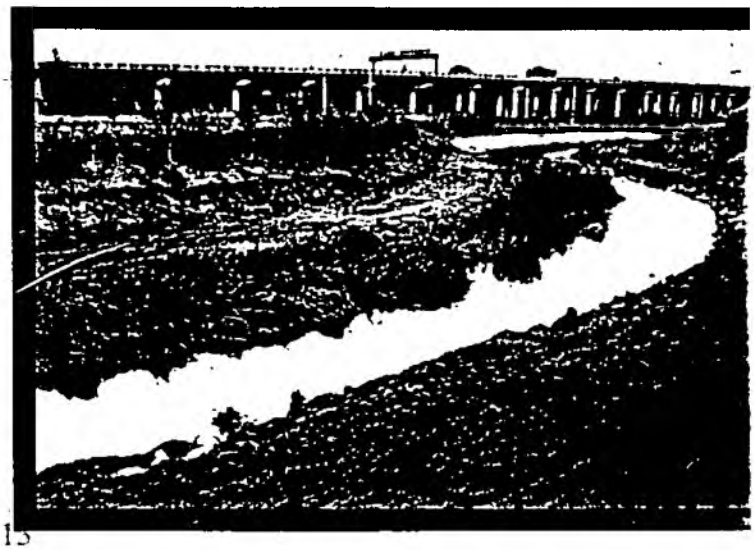
3.3 Throughout England and Wales, and particularly in urban areas, a considerable amount of development has taken place on the coastal plain as well as in river floodplains. Consequently, people and property in these areas are already at risk from flooding. New development in floodplains is also likely to be at risk from flooding. The NRA holds information identifying many of the areas known to be at risk and will provide such information as required. Development can also have the effect of increasing the risk of flooding elsewhere.

GUIDANCE STATEMENT

L5 Within the identified floodplain or in the areas at unacceptable risk from flooding the LPA should resist new development, the intensification of existing development or land raising. Where it is decided that development in such areas should be permitted for social or economic reasons, then appropriate flood protection and mitigation measures, including measures to restore floodplain or provide adequate storage, will be required to compensate for the impact of development. At sites suspected of being at unacceptable risk from flooding but for which adequate flood risk information is unavailable, developers will be required to carry out detailed technical investigations to evaluate the extent of the risk. In all cases, developers will be required to identify, implement and cover the costs of any necessary measures. In some cases the elements of the necessary measures may be such that they are best undertaken by the NRA itself, but in these cases the cost would be covered by the potential developers.

JUSTIFICATION

3.4 Guidance for Planning Authorities on protection of the floodplain is contained in DOE Circular 30/92 "Development & Flood Risk" (WO 68/92) and guidance on coastal floodplains is contained in PPG20 "Coastal Planning". In addition to the risk of flooding to the proposed development itself, development in such locations may increase the risk of flooding elsewhere by reducing the storage capacity of the floodplain, and/or by impeding the flow of flood water. Land raising in the floodplain may have a similar effect. Consequently, the NRA looks to the LPA to resist development in such locations, while redevelopment of existing sites will only be considered where the LPA, in consultation with the NRA, is satisfied that the developer will provide appropriate mitigation and/or protection measures. There may also be opportunities to enhance or restore the natural floodplain when redevelopment takes place.



LOCAL/DISTRICT CONCERNS

Surface Water Run-off

THE ISSUE

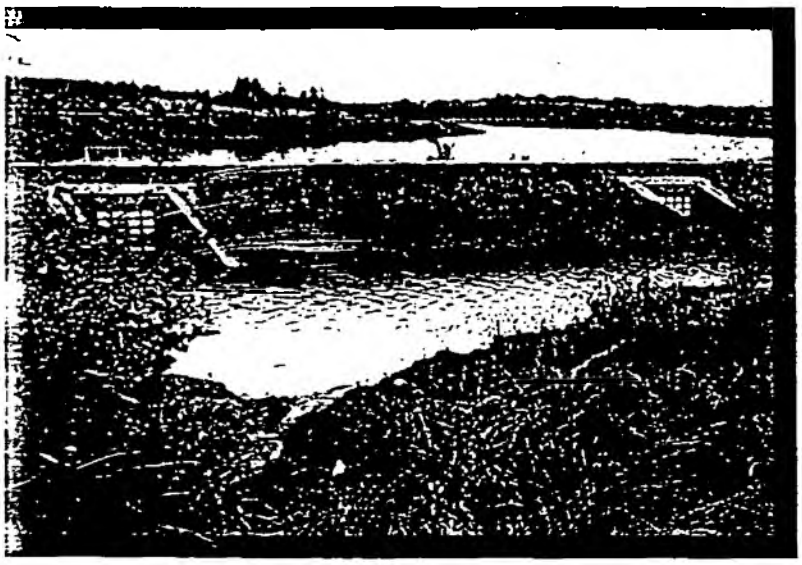
3.5 Unless carefully sited and designed, new development or redevelopment, can increase the rate and volume of surface water run-off. This can result in two types of problem. The first is the increased risk of flooding in areas downstream from the development in question. The second is physical damage to the river environment. This is a catchment wide issue and the NRA will take a co-ordinated approach to all developments.

GUIDANCE STATEMENT

L6 The LPA should normally resist development which would result in adverse impact on the water environment due to additional surface water run-off. Development which could increase the risk of flooding must include appropriate alleviation or mitigation measures, defined by the LPA in consultation with the NRA and funded by the developer. Developers will be expected to cover the costs of assessing surface water drainage impacts and of any appropriate mitigation works, including their long-term monitoring and management.

JUSTIFICATION

3.6 Guidance for Planning Authorities on dealing with run-off from development is contained in DOE Circular 30/92 "Development & Flood Risk" (WO 68/92). New developments may result in a substantial increase in surface water run-off as permeable surfaces are replaced by impermeable surfaces such as roofs and paving. This may result in an increase in the risk of flooding downstream to an unacceptable level and a reduction in infiltration to groundwater. Other consequential effects include increased pollution, silt deposition, damage to watercourse habitats and river channel instability, as well as reduction in both river base flows and aquifer recharge. These effects can often be at some considerable distance from the new development. The LPA, in consultation with the NRA, will assess the surface water run-off implications of new development proposals. New developments will only be permitted where the LPA is satisfied that suitable measures, designed to mitigate the adverse impact of surface water run-off, are included as an integral part of the development. Where appropriate, the development should include provision for the long term monitoring and management of these measures. Arrangements under S106 of the Town & Country Planning Act 1990 may be appropriate.



LOCAL/DISTRICT CONCERNS

Tidal and Fluvial Flood Defences

THE ISSUE

3.7 Development in lowlying land protected from flooding by tidal and fluvial defences is at risk of flooding, should the defences be overtopped by extreme water levels. A breach in tidal and fluvial defences could lead to significant flooding in areas of low lying land often well away from the location of the breach. Such an incident could place both people and natural and built assets at risk.

GUIDANCE STATEMENT

L7 Development should not normally be permitted which would adversely affect the integrity and continuity of tidal and fluvial defences. Access to existing and future tidal and fluvial defences for maintenance and emergency purposes will be protected, and where appropriate, improved. Where development relating to tidal and fluvial defences is permitted, the LPA will, in consultation with appropriate bodies including the NRA, require appropriate measures to be incorporated in order to ensure that the stability and continuity of the defences is maintained. Developers will be expected to cover the costs of any appropriate enhancement and mitigation works, including their long-term monitoring and management.

JUSTIFICATION

3.8 Guidance for Planning Authorities on development in flood risk areas is contained in DOE Circular 30/92 "Development & Flood Risk" (WO 68/92) and guidance on coastal floodplains is contained in PPG20 "Coastal Planning". In order to prevent flooding it is essential that local authorities, in consultation with other appropriate bodies including the NRA, ensure that the integrity and continuity of tidal and fluvial defences is maintained. In many cases access to these defences for maintenance and emergency purposes is required together with access for any future improvements. Local authorities should protect, and where appropriate, improve such access. Careful design and siting of flood defences may offer opportunities to increase public access to the waterside or to secure other types of environmental enhancement (for instance, the protection of an important view). In the case of coastal defences, the option of managed retreat should be considered. It is recognised that planning obligations are often a means of achieving such improvements. Developments which pose a threat to the integrity and continuing of tidal and fluvial defences could require the Authority's consent in addition to planning consent and consultation with the NRA is necessary.

GUIDANCE

L8 In order to minimise the effects of tidal flooding, the LPA should resist development on land to the seaward side of sea defences, including the siting of temporary holiday chalets and caravans. On land between a first line sea defence and the main defence, the siting of holiday chalets, caravans, and camping sites will not normally be permitted. If after consultation with the NRA and other interested bodies the LPA decides that the risk of flooding is sufficiently low to permit certain types of use, time limited occupancy conditions will need to be imposed preventing occupation during the period from November-March inclusive when the risk of tidal inundation is greatest. The development permitted in any area of land subject to a flooding risk must be in line with the level of protection provided by the sea defences which exist. A change in the type of development permitted could result in a need for increasing the level of protection afforded and if so the cost of such provision should be borne by the developer.

JUSTIFICATION

3.9 Any development on land to the seaward side of sea defences is obviously at significant risk from flooding. So as to minimise the effects of tidal inundation, the LPA will not normally permit development in such locations. See Circular 30/92 (WO 68/92).

4.0 FISHERIES, RECREATION AND CONSERVATION IN RIVER CORRIDORS AND COASTAL MARGINS

STRATEGIC/COUNTY CONCERNS

AIM

4.1 To consider the effects of development on the water environment so as to minimise its adverse impacts and maximise potential benefits. This is particularly so in river corridors and coastal margins, areas of land which are physically and visually linked to rivers, their estuaries and the coast, in wetlands, around lakes and ponds and in sensitive catchment areas.

GUIDANCE STATEMENT

S4 The LPA, in consultation with the NRA, should normally resist allocation of land for development which is likely to have an adverse effect on fisheries, nature conservation, landscape and recreation in river corridors, coastal margins and other waterside areas. The NRA will look to the LPA to generally promote and support initiatives which seek to conserve, restore or enhance the natural elements of the river corridors, coastal margins and other waterside areas, or which encourage appropriate water-based and waterside recreation.

JUSTIFICATION

4.2 River corridors and coastal margins are of great importance for water resources, nature conservation, fisheries and recreation and often make a significant contribution to the character of the landscape. Rivers, groundwater, ponds, wetlands, appropriate public access and water-related recreation all deserve conservation and restoration and enhancement where appropriate. The NRA is concerned that new development should not place these aspects of the water environment at risk. However, it is recognised that development, or more often redevelopment, can result in an enhancement of the environment of rivers and coastal margins, for instance by increasing public access, improving water-related habitats, landscape or water quality or by securing the restoration of natural features. The improvement of water-related habitats and water quality is likely to have a beneficial effect on the fish population.

LOCAL/DISTRICT CONCERNS

River Corridors and Coastal Margins

THE ISSUE

4.3 The NRA, in its role as 'Guardian of the Water Environment', aims to encourage policies which:

- further the conservation and enhancement of the natural environment;
- promote facilities for recreation, including public access;
- further the conservation and enhancement of the built environment, sites and objects of archaeological, architectural or historic interest.

4.4 By emphasising the importance of river corridors and coastal margins, the NRA aims to promote these three aspects of the river environment. Such a corridor is a continuous area of land which is physically and visually linked to the watercourse itself. A coastal margin is similarly an area of land physically and visually linked to the coast and any coastal defences. Studies have shown that there is a high correlation between river corridors in England and existing environmental designations, notably SSSIs and Areas of Outstanding Natural Beauty. In urban areas, the importance of river corridors is even more pronounced since they represent one of few remaining features which link areas of open space. Such links are significant for amenity and recreation, but also for wildlife, allowing otherwise isolated areas to be interconnected and more viable in terms of animal and plant populations and habitat types. These factors suggest that river corridors warrant reference in land use plans as important elements which link areas of open space together.

GUIDANCE STATEMENT

19 The LPA, in consultation with the NRA, should seek to promote river corridors and coastal margins as important areas of open land by:

- conserving existing areas of value and wherever possible seeking to restore the natural elements within the corridors and margins;
- promoting appropriate public access;
- identifying appropriate locations for water related recreation;
- protecting and improving access for operational and maintenance purposes, including the provision of maintenance strips where practical;
- resisting development which would have an adverse impact on nature conservation, fisheries, landscape, public access or water-related recreation.

JUSTIFICATION

4.5 In addition to their drainage function, river corridors are of great importance for water resources, water quality, nature conservation, fisheries, recreation and they often make a significant contribution to the character of the landscape. Coastal margins including areas adjacent to coastal defences can be similarly valuable. In many instances river corridors are an important source of open space in their own right, but frequently also form links or 'green chains' between areas of open space, often across borough boundaries. These links can be crucial for the survival or enhancement of wildlife. The NRA is committed to the protection, and wherever possible, enhancement of rivers, groundwater, ponds, wetlands, and appropriate public access and water-related recreation. Consequently, the NRA looks to Local Planning Authorities to support initiatives and proposals which will result in the conservation or enhancement of the natural elements of the river and coastal environment. Planning obligations are an important means of securing such improvements.

LOCAL/DISTRICT CONCERNS

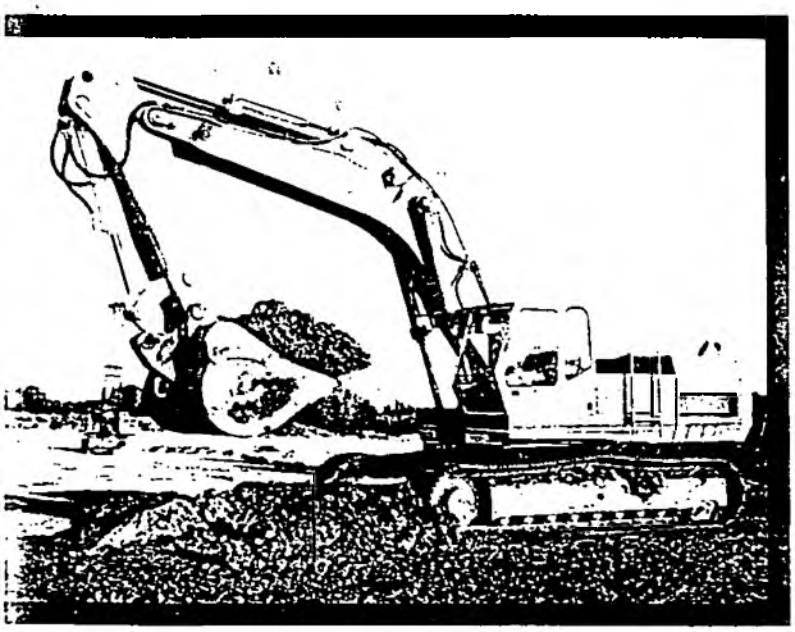
Implementing the Strategy for River Corridors and Coastal Margins

THE ISSUE

4.6 All types of work in, under, over and adjacent to rivers, lakes, ponds and the coast need to be properly evaluated since uncontrolled works may lead to damage to the water environment.

GUIDANCE STATEMENT

L10 The LPA, in consultation with the NRA, should seek to ensure that all works in, under, over and adjacent to watercourses, waterbodies and the coast are appropriately designed and implemented and that the likely impacts of development proposals have been adequately assessed by means of a formal Environmental Assessment, where appropriate. In all cases proposals will need to be accompanied by an environmental report so that environmental impacts can be appraised.



JUSTIFICATION

4.7 Uncontrolled works in the vicinity of watercourses may lead to problems such as an increased risk of flooding, erosion of the beds and banks of watercourses, waterbodies and the coast; increased danger to the public; restricted access for maintenance; and damage to the water environment and the associated river corridor. Consequently, the NRA will assess the environmental impact of such proposals on the water environment. Mitigation measures will be required to balance any adverse impacts. The culverting of watercourses will not normally be permitted since it results in a break in the continuity of the river corridor and may also have serious implications for safety, maintenance and flooding. The granting of planning permission for the above works does not remove the need to obtain relevant statutory consents/licences from the NRA, for which implications for the aquatic environment will be assessed. The NRA can offer guidance on these matters.

LOCAL/DISTRICT CONCERNS

Navigation

THE ISSUE

4.8 Specific Acts grant navigation powers to the NRA in some Regions where it controls various river navigations and harbours. In addition, the NRA has by-law making powers in respect of inland waterways in England and Wales, where there is a public right of navigation but no other authority legitimately exercises navigation powers. In such cases, the NRA's responsibilities include overseeing river based activities, licensing, conducting boat safety inspections and managing locks.

Rivers are an important recreational resource and the NRA recognises the contribution they can make to a community in terms of social and economic benefit. The development of new facilities (eg. moorings, slipways) can have an effect not only on the immediate location, but also throughout the navigation. Development proposals should be considered in the context of the whole navigation to achieve a balance between encouraging development and protecting the resource. NRA staff can provide advice about a catchment, upon which a strategic assessment of proposals can be based. Where possible, and in conjunction with Local Authorities and the relevant navigation authority, the NRA will encourage and support the production of Recreation Strategies for river navigations.

In some areas, riverside land is being redeveloped to provide housing, offices or some other non-river related use. This can lead to the loss of important facilities such as boatyards, slipways, access and open spaces. Where possible, riverside developments which destroy key facilities should be resisted or mitigation works should be required. Access to the riverside and riverside footpaths should be retained.

GUIDANCE STATEMENT

4.11 The LPA, in consultation with the NRA, should generally support proposals for the development of the recreational, leisure and tourist potential of river navigations where this is consistent with the capacity of the river and does not jeopardise other recreational activities, local amenity or conservation value. Wherever possible, when it is agreed that water based activities are an appropriate afteruse, encouragement will be given to locate new moorings and relocate existing on-river facilities to off-river basins and worked out mineral sites.

JUSTIFICATION

4.9 The development of river navigations is largely dependant upon the provision of land-based facilities. The NRA will consider the merits of each application on a site-by-site basis, and also in terms of impact and benefits that will accrue throughout the navigation. When considering moorings, off-river schemes will be favoured as they do not constrict the navigation channel or obstruct the river bank. They can also result in the creation of additional off-river areas which are of benefit to fish and wildlife. Riverside developments can have a significant visual impact and will be required to make a positive contribution to the landscape value and local characteristics of the area. Rivers are a natural resource and are of value and attraction to a broad cross section of society. Existing public access to the riverside should be protected and, wherever possible, opportunities for increased access points, riverside viewing points and riverside footpaths should be encouraged.

5.0 MINERAL WORKINGS AND WASTE DISPOSAL
STRATEGIC CONCERNS

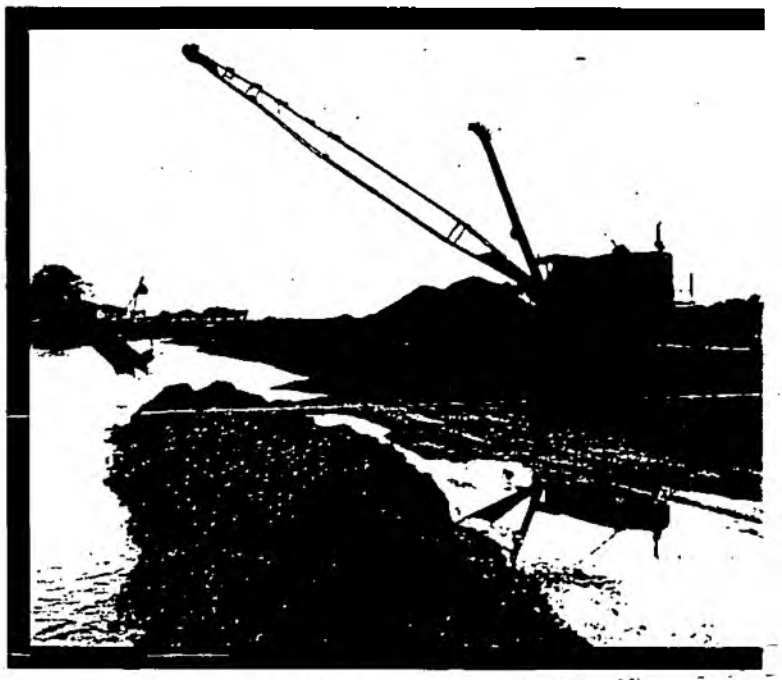
AIM

5.1 To reduce the negative impacts on the water environment of mineral workings and their after use, including subsequent infilling with waste, and to maximise the environmental benefits associated with site restoration.

GUIDANCE STATEMENT

S5 The LPA should normally resist proposals for new mineral extraction or waste disposal sites where, after consultation with the NRA, it considers that there would be adverse effects on groundwater, rivers or other water bodies.

S6 The LPA should generally support initiatives, including site restoration proposals, which result in benefits relating to the water environment, and improvements in the standard of flood protection.



JUSTIFICATION

5.2 Mineral extraction and the restoration of sites can raise a number of environmental issues. The extraction process, if it involves dewatering of workings, can lower groundwater levels around a site, possibly affecting flows in nearby watercourses and levels in nearby lakes, existing water abstractions and natural habitats. In some cases these effects can be over distances of several kilometres. The necessary mitigation of these adverse effects can sometimes be provided by appropriate design. In addition, the restoration of worked-out mineral sites may increase the possibility of flooding if they are located within the floodplain, and involve landraising or doming. Landfilling floodplain sites with putrescible waste increases the risk of pollution. However, the NRA also recognises that the restoration of worked-out mineral sites may offer opportunities for environmental enhancement, the provision of water based recreation or flood protection.

MINERALS PLANS/PART II OF UDPS

THE ISSUES

5.3 Mineral extraction can affect water resources, flood risk and the environment, if appropriate measures are not taken. Conversely, restoration works may offer opportunities for environmental enhancement, the provision of water based recreation or flood protection measures.

GUIDANCE STATEMENT

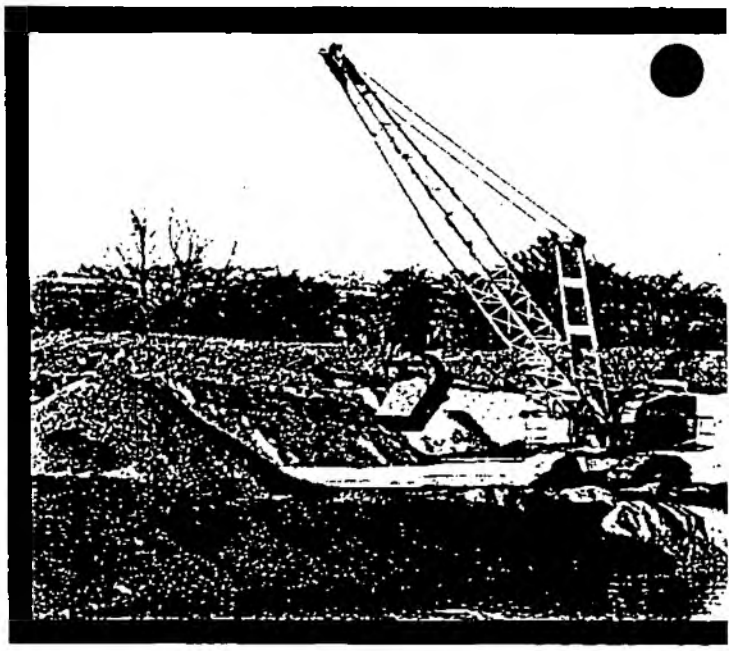
L12 The LPA should normally resist proposals for new mineral workings whose impact on surrounding groundwater levels is likely to have a detrimental effect on existing water abstraction, river flow, lake levels, or natural habitats.

JUSTIFICATION

5.4 Mineral extraction may have the effect of temporarily and in some cases for a prolonged time reducing groundwater levels in the area surrounding a site and up to some significant distance away. This may reduce flows in surrounding watercourses, reduce levels in adjacent lakes, affect existing water abstractions, or damage natural habitats.

5.5 Restoration of previously worked mineral sites may involve the raising of ground levels or the doming of sites. Such works may reduce the capacity of the floodplain, thereby increasing the flood risk in other areas. Planning consent should only be granted for this type of restoration where works elsewhere in the floodplain will provide appropriate alleviation or mitigation measures to compensate for the reduced capacity. Furthermore, backfilling with impermeable materials can lead to raised groundwater levels upstream, in turn leading to localised waterlogging and groundwater flooding. Similarly, groundwater levels can be lowered downstream leading to derogation of watercourses, existing abstractions and natural habitats.

5.6 However, sites which remain as open water may offer opportunities for the provision of routes for flood water, habitat creation, recreation provision, landscape enhancement and improved water resource availability.



GUIDANCE STATEMENT

L13 The LPA should not normally grant planning consent for mineral workings in floodplains where such workings could result in raising of existing ground levels, either during the operational life of the works or after restoration. Permission may exceptionally be granted where the LPA, in consultation with the NRA, is satisfied that flood compensation is provided elsewhere in the floodplain. Where restoration involves landfilling, care will be taken to ensure that the proposals do not affect groundwater quality and levels or impede flow paths.

JUSTIFICATION

5.7 If the restoration of disused mineral workings raises the ground level of a site within the floodplain, the capacity of the floodplain may be reduced, and the flow of flood water impeded, thus increasing the risk of flooding elsewhere. In addition, backfilling with impermeable materials can lead to raised groundwater levels upstream, in turn leading to localised waterlogging and groundwater flooding.

GUIDANCE STATEMENT

L14 The LPA should generally support and encourage restoration proposals for worked-out mineral sites, and restoration of related waste disposal sites which have been poorly restored in the past.

JUSTIFICATION

5.8 The restoration of worked-out mineral sites can present opportunities for environmental enhancement. In some locations, the retention of areas of open water may be appropriate, allowing the provision of routes for flood water, habitat creation, new or improved fisheries, recreation provision, improved water resource provision and landscape enhancement. The NRA will therefore generally support appropriate environmental enhancement as an element of site restoration including the proper restoration of sites which were poorly restored in the past. Conditions may be attached to new planning consents to this end.

WASTE PLANS/PART II OF UDPS

THE ISSUE

5.9 The disposal of waste, either by landfilling of disused mineral workings, or by land raising in the floodplain, presents a number of issues of concern to the NRA. The first is the reduction of the capacity of the floodplain itself. The second is the risk of pollution. Thirdly, raising of ground levels within the floodplain (for example by the doming of sites).

GUIDANCE STATEMENT

L15 Disposal of waste within the floodplain should be restricted to inert waste only. The LPA should not normally permit waste disposal which results in a raising of ground levels within the floodplain. Elsewhere, the disposal of putrescible waste should not be permitted where it is likely to lead to the pollution of groundwater or surface water.

JUSTIFICATION

5.10 The deposition of putrescible waste increases the risk of pollution for surrounding groundwater and surface water. The risk is greatest within the floodplain where disposal should be limited to inert waste only. Elsewhere, the disposal of putrescible waste should be limited to locations where these is no risk to groundwater or surface water quality. An additional problem is the risk of flooding that may result from waste disposal which involves the raising of ground levels or the doming of sites within the floodplain, since this can reduce the capacity of the floodplain to store water, and may impede the flow of floodwater. Guidance on considerations affecting the acceptability of development from a groundwater protection viewpoint has been prepared by the NRA in "Policy & Practice for the Protection of Groundwater" (Bristol Dec.92). This includes map-based data showing the constraints on development.

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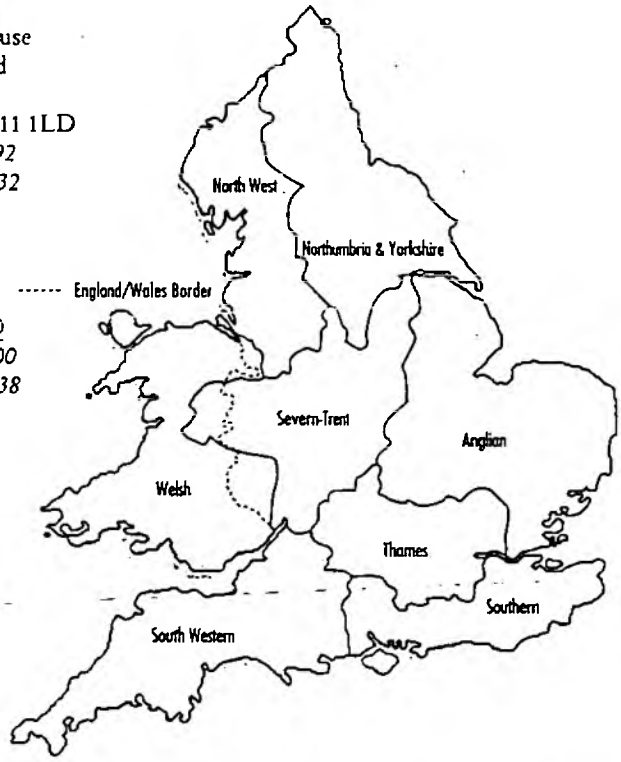

NRA

Planning Liaison with Local Planning Authorities

National Rivers Authority
Severn-Trent Region

NATIONAL RIVERS AUTHORITY
SEVERN-TRENT REGION

Planning Liaison
with Local Planning Authorities

Sapphire East
550 Streetsbrook Road
Solihull B91 1QT

November 1993

NATIONAL RIVERS AUTHORITY
SEVERN-TRENT REGION

PLANNING LIAISON WITH LOCAL PLANNING AUTHORITIES

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1. INTRODUCTION

1.1 The Water Act 1989 established the National Rivers Authority (NRA) to have responsibility for the regulatory powers controlling the aquatic environment and also the flood defence, fisheries, conservation and recreation activities previously undertaken by water authorities.

1.2 The NRA has a small national headquarters dealing with essential policy matters. Management of all operational and regulatory activities now takes place in 8 regions and not 10 as at vesting day in 1989 (The boundaries of the Severn-Trent Region remain the same). This change was designed to improve effectiveness and in conjunction with moves towards integrated catchment management in smaller areas, is intended to improve the delivery of services at local level and to make sure there is a smoother transition to the Environment Agency.

1.3 NRA regional offices deal with policy planning and standard setting. Day to day operational matters, more appropriately dealt with on a local basis, are carried out at Area Offices.

1.4 The impact of general building and other development is of prime concern to the NRA in the exercise of its duties. It therefore considers that effective liaison with planning authorities in the exercise of their general planning powers and in the detailed control of new development is of the utmost importance. Dedicated planning liaison staff within the NRA are therefore available to respond to planning authority consultations and to represent the NRA at all stages of the planning process.

1.5 Many planning authorities' boundaries straddle more than one NRA region and area. As far as possible the NRA Severn-Trent Region has, in conjunction with its neighbouring Regions, rationalised its boundaries for planning liaison purposes so that planning authorities have a single point of contact.

2. NRA - SEVERN-TRENT REGION

2.1 The Region covers the catchments of the Rivers Severn and Trent, an area of 21,600 sq km in which 8.36 million people live. Regional Headquarters is at Solihull and the region is divided into four operational areas, based on the upper and lower catchments of the two principal rivers - See map at Appendix 1.

2.2 Planning Liaison is undertaken at the area offices within which the Water Resources and Planning Sections have responsibility for co-ordinating this work. In order to facilitate liaison and consultation the area planning liaison boundaries have been drawn up to coincide with those of District Councils; consequently any enquiry originating within its liaison area will be dealt with at that area office. The area office will consult with adjacent areas in the region, and (subject to agreement) with adjacent regions. This provides simplified liaison procedures which are of mutual benefit.

2.3 Town and Country Planning is administered by 16 County Councils, 10 Metropolitan District Councils, 75 District Councils, the Peak District National Park Authority and the Black Country Urban Development Corporation. Of these authorities, 37 District Councils, 2 Metropolitan District Councils and the Peak Park Authority administer areas outside the region - see Appendix 2.

3. NEED AND OBJECTIVE

3.1 The need for Planning Liaison

The NRA's participation in planning liaison is to:-

- Protect the water environment from the adverse effects of all types of development.
- Identify demands on its services such as flood alleviation, conservation and recreation.
- Advise planning authorities on the protection of the public in matters of concern to the NRA.

These aims are achieved by participating in the procedures under the Town and Country Planning Acts, through co-ordinated responses to L.P.A.'s on development plans and planning applications, as well as by use of the powers given directly to the NRA.

Liaison is also specifically required between L.P.A.'s and the NRA in respect of NRA's statutory surveys and plans with regard to its flood defence functions in accordance with Section 105(2) of the Water Resources Act 1991.

3.2 The Objectives of Planning Liaison

To identify demands -

- for land drainage and flood alleviation measures associated with main river in respect of existing or proposed development and redevelopment.
- for recreation associated with water space.

To protect -

- surface and groundwater resources including watercourses, aquifers, licensed and unlicensed wells, boreholes, and other sources from pollution and derogation arising from development.
- the NRA's plant and installations including pumping stations, reservoirs, etc, - from encroachment and other hazards arising from development.
- the channels and banks of watercourses, flood protection works, floodplains and washlands - from obstruction, deposition, erosion, unauthorised alteration or run-off in excess of capacity - arising from development.

To advise -

- planning authorities of the NRA's attitude to proposed development, including the matters for which those authorities have an obligation by Statute, or Order to consult with the Authority, or are advised to do so by Departmental Circular or Planning Policy Guidance Notes.

3.3 Scope of Liaison and Consultation

The major subjects for liaison are:-

- preparation and/or revision of development plans.
- proposals for new development
- proposals to improve existing development
- land drainage and flood alleviation schemes
- floodplain protection
- provision of recreation and amenity facilities (including fishing)
- protection and improvement of water quality
- waste disposal sites and mineral workings
- abstractions for industry and agriculture (including fish farms)
- water resource needs and promotion of new resources
- trade effluent disposal
- pipelines (especially oil and gas)
- NRA developments
- rights of navigation

4. DEVELOPMENT PLANS

4.1 At the strategic level, liaison is very much a two-way process with the NRA making an input into development plans and seeking the planning authorities input to the NRA's own plans and in particular its Catchment Management Plans. The NRA is a statutory consultee for development plans (See T&CP (Development Plans) Regs 1991 [SI1991 No. 2974]).

When consulted on Draft Plans the NRA will comment on issues related to specific sites but for the process to be fully effective it is important that policies which cover NRA interests are incorporated in Development Plans. Model policies have been prepared, but it is appreciated that to meet individual plan styles the exact format may need to be modified.

4.2 Formal consultation should generally be made with area water resources and planning staff, but Regional Office staff will be involved in matters of regional importance.

The formal procedure is intended to apply to the whole of the continuing process of strategic planning from preliminary consultation via correspondence, meetings and discussion papers, through the creation of a development plan and its examination in public, to the review and updating of accepted plans. The NRA's plans will then be matched to the co-ordinated real needs of the local authorities, so far as is possible within nationally determined capital resources and physical and technical restraints.

4.3 Between 1992 and 1998, Catchment Management Plans for the 27 river basins which make up the Region will be prepared.

The purposes of a Catchment Management Plan (CMP) are to:-

- focus attention on the water environment of a specific river catchment;
- involve all interested parties in planning for the future well being of that catchment; and,
- establish an integrated plan of action for managing the catchment over the following five years, with reviews to extend the plan into the future.

4.4 At Local Plan level, development of particular sites begins to be identified at this stage and is a vital point of input to the planning process. The NRA will offer critical advice as to which areas suggested for development are subject to constraints such as being located within floodplains, and washlands, flooding problems, sensitive aquifer areas and gathering grounds. Specifically the technical and financial implications of these constraints need to be clearly spelt out for each individual development whenever possible. Similarly the NRA is keen to contribute to the drafting of Development Briefs.

5. PRE-SUBMISSION DISCUSSIONS

5.1 The NRA welcomes the opportunity of taking part in pre-submission discussions with developers and notes the comments made in the Guidelines for Handling Planning Applications (paragraph 2.1.8) issued by the National Planning Forum. Discussions will help to identify and resolve possible problems before an application is submitted and should ensure that the response period is minimised when formal consultation is undertaken by the local planning authority.

5.2 The NRA Severn Trent Region has produced a Guidance Note for Developers which advises applicants of the advantages to be gained by discussing their proposals with the NRA prior to the submission of a planning application.

5.3 Pre-submission discussions allow funding opportunities to be identified at the earliest possible stage, thereby helping to accelerate the NRA's capital programme where relevant and remove NRA related constraints on development.

5.4 Any information provided to the NRA at this stage will be treated in strictest confidence.

6. CONSULTATION ARRANGEMENTS FOR PLANNING APPLICATIONS

6.1 Planning authorities are responsible under Town and Country Planning Legislation for informing the NRA of all relevant planning applications and development plans and have discretionary powers regarding the referral of other matters.

Specific categories of mandatory consultation are set out in the Town & Country Planning General Development Orders, especially in Article 18 of the 1988 GDO as amended and also in DoE Circular 30/92 (WO68/92) - Development & Flood Risk.

The NRA should also be consulted on applications for hazardous substances consent under the Hazardous Substances Act 1990 (Section 7).

Where the water environment is affected, the NRA would welcome consultation on the need for, and the scope of, Environmental Assessments for applications within Schedule 2 of the 1988 Regulations.

6.2 In addition planning authorities have a wider duty to take into account all material considerations in reaching their decision on a planning application.

6.3 To assist planning authorities, the types of planning applications which the NRA considers should be referred to it are tabulated in Appendix 3. These tables also list sources of further information and indicate the relevance to the NRA of each type of application. It will be noted that in the majority of cases, consultations should be carried out in accordance with the directions of the GDO or recommendations in DoE/Welsh Office Circulars.

6.4 The NRA Severn-Trent Region receives about 12,000 planning applications for consultation per year. Use of the Appendix 3 tables will assist in ensuring that only relevant applications are referred, and hence reduce unnecessary work by both the planning authorities and the NRA, without loss of effectiveness.

For example, whilst the NRA is interested in many forms of agricultural development it does not wish to receive proposals put forward under the Agricultural Notification procedure, unless the site is adjacent to a watercourse or situated within the floodplain. This is because of the nature of the procedure and the limited opportunities for consultation contained within the legislation. Applications for certificates of established and lawful use are not relevant to the NRA.

6.5 The NRA wishes to receive copies of the local planning authorities' weekly/fortnightly lists of registered applications so that the area staff can advise if it appears that a relevant application has not been received for consultation.

7. CONSULTATION FORMAT

7.1 The NRA would ask for the following documents for each planning application referred:-

- Local planning authority's consultation letter/form/compliment slip,
- Copy of the planning application form,
- A copy of any supporting statement or submission, if relevant,
- An Ordnance Survey based location plan, if available, with grid reference to allow identification of the site,
- Any other relevant plans submitted as part of the application.

7.2 The National Planning Forum's 'Guidelines for the Handling of Planning Applications' refers to the importance of ensuring that sufficient information is made available to consultees to enable a response to be made quickly to consultations.

7.3 It is of considerable benefit to the NRA if satisfactory responses are made to the questions in the application form, particularly those concerning the disposal of foul and surface water and trade effluent, and the co-operation of local planning authorities is sought in ensuring that this information is provided by the applicant.

7.4 Although outline planning applications are intended to establish development potential of sites through a single undetailed submission, the NRA has to give proper assessment to several possible aspects at this stage, and may ask the planning authority to obtain additional information from the applicant. Any such request will be made as early as possible in the consultation period.

Matters of concern to the NRA which need to be considered at the outline stage, and where in some cases it may be necessary to request the imposition of conditions are:-

- the means of surface water drainage including advice to the planning authority within the terms of DoE Circular 30/92 (W.O. 68/92),

- measures to protect NRA installations and plant which may be adversely affected by the development,
- pollution control, including aquifer protection, and protection of public water supply sources,
- land drainage provision, such as flood berms and precautionary flood levels, together with any other matters which may have a bearing on the form or layout of the development relative to the provision of effective surface water drainage,
- the restriction of overland flood routes in urban areas.

Generally it would not be in the best interests of effective liaison to introduce these matters at a later stage in the planning process.

8. CONSULTATION RESPONSE

8.1 The response to all planning consultations will be in the form of a letter.

The general principle of the letter layout is that it should closely match the format which planning authorities adopt thus enabling them to incorporate the NRA's comments directly into their decision notices.

8.2 Those comments which are made to advise and inform the applicant will be distinguished from those which are considered to be relevant planning issues, and which may need to form the subject of appropriate conditions. Such advice and information will frequently be sent direct to the applicant by the NRA; however it will be included in the response so that the local planning authority will be aware of such matters, and that there has been direct contact with the applicant. The local planning authority is encouraged to pass the advice or information on to the applicant especially where it might have an impact on the planning of the development.

8.3 An objection will be made only after careful consideration and in circumstances where the NRA is prepared to make additional representations in the event of an appeal. The NRA will, when the response is made, endeavour to suggest a course of action which would allow the removal of the objection, if this is possible, e.g. by entering into an agreement to carry out specified works, the imposition of appropriate conditions, or by the submission of a revised application.

8.4 The NRA will endeavour to respond to consultations within the 14 day minimum period allowed in the GDO; if it becomes evident that the NRA is not going to be able to reply within the 21 day period suggested by the National Planning Forum, an appropriate extension of time will be sought from the L.P.A.

9. DECISION NOTICES

9.1 The NRA requests local planning authorities to supply copies of the decisions made in respect of those planning applications on which the NRA has objected or has requested the inclusion of conditions in line with the recommendations of the Audit Commission, Local Government Report No. 7 - Building in Quality.

9.2 Copies of the actual decision notices are required. However copies of the officers' reports to the planning committee may be acceptable provided the proposed conditions and reasons are included and that the NRA is notified promptly of any changes made by the committee which are material to the NRA's views or interests.

9.3 Knowledge of decisions made is important to the NRA:

- to ensure its objections are upheld in a manner which the NRA can support,
- to ensure conditions are phrased in the most appropriate way,
- to enable it to undertake any follow-up action required in conjunction with the local planning authority, developers or others in respect of planning agreements, conditions, etc.,
- to enable it to monitor development which might affect its interests.

10. DEVELOPMENT IN ENTERPRISE ZONES AND SIMPLIFIED PLANNING ZONES

10.1 Although the designation of an enterprise zone by itself has the effect of granting automatic planning permission for any development or class of development specified in the enterprise zone scheme, it does not remove the need to consult the NRA. Where the enterprise zone scheme requires that development needs to receive the formal approval of the local planning authority, then a copy of the submission should be sent to the NRA as soon as possible.

10.2 It is essential that prospective developers of land within an enterprise zone are referred to the NRA for discussion regarding the pollution and land drainage implications of their proposals at the earliest possible stage (see Section 5: Pre-Submission Discussions). The granting of planning permission does not remove the need to obtain relevant statutory consents from the NRA.

10.3 As a prescribed consultee the NRA wishes to be involved with the local planning authority in the formulation of simplified planning zone schemes. Such consultation should take place before deposit of the scheme so that due consideration is given to pollution, land drainage and water amenity matters, and to agree on the format of planning consultations.

11. PLANNING APPEALS

11.1 The NRA may become involved in a planning appeal if any one of the following situations arise:

- an objection made by the NRA was included as a reason for refusal, or
- an objection made by the NRA was <u>not</u> included as a reason for refusal, or
- comments made by the NRA took some part in the refusal decision reached by the local planning authority, or
- additional information, further details of the proposal, etc, became available after the consultation was originally undertaken with the NRA.

11.2 When an appeal has been lodged with the DoE/Welsh Office and where consultations were carried out on the original application, the local planning authority is requested to notify the NRA as soon as possible. A copy of the notice of appeal, the appellants grounds for appeal, the refusal notice and any other relevant correspondence should be made available.

11.3 In situations where an appeal is to be dealt with by a Public Inquiry or Informal Hearing, and an objection made by the NRA has been included in the refusal notice, then the NRA will either:-

a) provide a statement to be included in the local planning authority's rule 6 statement, or

b) provide a statement direct to the appropriate local office of the DoE.

In the case of (a) the NRA will also provide an expert witness who will appear under the 'umbrella' of the local planning authority's advocate. Where (b) applies the NRA will appear as a third party represented by its own advocate.

11.4 For the most part the NRA will leave the choice of approach to the local planning authority. There may, however, be occasions when an NRA objection is considered to be so fundamental to its interests that the NRA would wish to present its own case.

11.5 For appeals being dealt with by written representation the NRA will supply a statement direct to the DoE. In cases where the NRA has lodged an objection which has not been included in the refusal notice it reserves the right to present a statement as a third party where appropriate.

11.6 The NRA is not prepared to give any general undertakings to meet costs where they are allowed at appeals following refusal of planning permission based solely on an objection made by the NRA. In the unlikely event of an appeal moving towards an award of costs against the local planning authority the NRA might be prepared to discuss whether it should bear any part of the award. Every case is different and the NRA's attitude would depend very much on the merits of the particular appeal.

12. PLANNING APPLICATIONS FOR AUTHORITY DEVELOPMENT

12.1 Planning applications for development by the NRA may be made either by staff at regional headquarters or by the Area Water Resources and Planning Manager on behalf of area staff.

12.2 Most applications will be in respect of offices and depots, with a few for operational buildings and structures, and will be promoted by new works engineers, architects and estates departments.

12.3 Some NRA activities, including particularly land drainage and flood alleviation measures, do not require formal planning approval. However, they will be discussed with the local planning authority at a formative stage, and modified where appropriate.

12.4 Many NRA activities have such an impact on the countryside and environment generally that, except in very minor cases, there is a need to consult more widely. Liaison with fisheries, amenity, nature conservation and recreational interests is already established.

In respect of land drainage improvement works the NRA is required to prepare a statutory environmental statement, and to consider and resolve any objections received.

13. CONCLUSION

The NRA has a wide range of direct powers to prevent and control water related problems, and where appropriate will use them. However, these are not always adequate to protect against all of the potential problems surrounding development, and rarely offer preventative measures. Many of these measures are material to Town and Country Planning and it is for this reason that the NRA is involved in the planning process. The NRA seeks an effective and professional working relationship with planning authorities for the environmental benefit of the community at large.

NATIONAL RIVERS AUTHORITY
SEVERN-TRENT REGION

Regional Head Office
Sapphire East,
550, Streetsbrook Road,
Solihull, B91 1QT.

Tel. No. 021-711 2324

Upper Severn Area Office
Hafren House,
Shelton,
Shrewsbury, SY3 8BB.

Tel. No. 0743-272828

Severn catchment down to and including River Teme confluence

Lower Severn Area Office
Riversmeet House,
Newtown Industrial Estate,
Northway Lane,
Tewkesbury,
Glos, GL20 7JG.

Tel. No. 0684-850951

Severn catchment below River Teme confluence - including Avon catchment

Upper Trent Area Office
Sentinel House,
9, Wellington Crescent,
Fradley Park,
Lichfield, WS13 8RR.

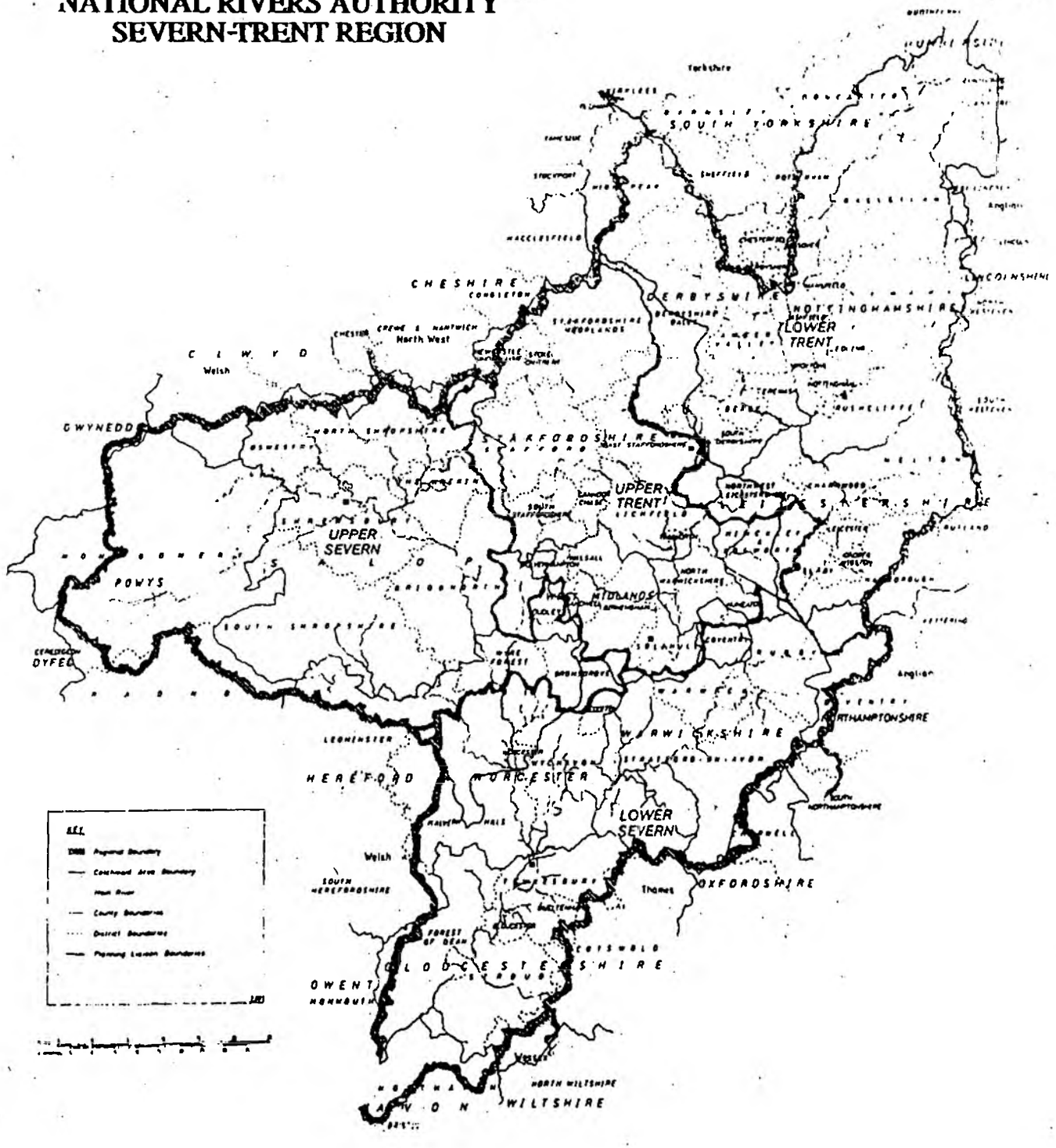
Tel. No. 0543-444141

Trent catchment down to and including River Dove confluence

Lower Trent Area Office
Trentside,
Scarrington Road,
off Lady Bay Bridge,
West Bridgford,
Nottingham, NG2 5FA.

Tel. No. 0602-455722

Trent catchment below River Dove confluence



APPENDIX 2

LOCAL PLANNING AUTHORITIES WITHIN THE LIAISON BOUNDARIES

TCHMENT MANAGEMENT AREAS

CATCHMENT MANAGEMENT AREA	DISTRICT COUNCIL	AREA (sq km)		POPULATION (000's)		OTHER N.R.A. REGION*	% POP'TN IN S-T REGION
		TOTAL	IN S-T REG	TOTAL	IN S-T REG		
UPPER SEVERN HAFREN HOUSE SHELTON SHREWSBURY	Bridgnorth	634	634	50.1	50.1	-	100
	Bromsgrove	220	220	88.6	88.6	-	100
	Dudley	98	98	308.0	308.0	-	100
	Glyndwr	966	140	42.2	1.7	W	4
	Leominster	932	140	39.7	9.9	W	25
	Meirionnydd	1,518	7	32.1	0.2	W	<1
	Montgomery	2,064	1,364	52.6	47.3	W	90
	North Shropshire	679	579	56.8	43.8	W	77
	Oswestry	256	216	33.7	29.3	W	87
	Radnor	1,219	40	23.5	4.0	W	17
	Shrewsbury	603	603	90.6	90.6	-	100
	South Shropshire	1,028	1,028	35.8	35.8	-	100
	Wrekin	291	291	137.4	137.4	-	100
	Wrexham Maelor	366	20	117	0.3	W	<1
	Wyre Forest	196	196	95.6	95.6	-	100
			6,696		942.6		
	COUNTY COUNCIL						
	Shropshire	3,491	3,351	417.0	400.3	W	96
	Powys	5,077	1,404	117.4	51.7	W	44
	Clwyd	2,427	160	411.8	1.9	W	<1
	Gwynedd	3,869	7	241.1	1.0	W	<1

Figures from Registrar General's population projection for 1993 based on estimated population mid 1990.

* W = Wales
SW = South Western
T = Thames
A = Anglian
NW = North West
NY = Northumbria & Yorkshire

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		TOTAL	IN S-T REG	TOTAL	IN S-T REG		
LOWER SEVERN RIVERSMEET HOUSE TEWKESBURY	Bristol	110	12	372.6	7.4	SW	2
	Cheltenham	39	39	85.8	85.8	-	100
	Cherwell	590	18	128.9	1.3	T	1
	Cotswold	1,142	160	75.4	9.8	T;SW	13
	Coventry	97	97	300.0	300.0	-	100
	Daventry	666	125	64.8	10.4	A;T	16
	Forest of Dean	527	427	79.0	60.8	W	77
	Gloucester	33	33	92.0	92.0	-	100
	Malvern Hills	902	162	87.5	78.7	W	90
	Northavon	462	200	135.7	33.9	SW	25
	Redditch	54	54	78.8	78.8	-	100
	Rugby	356	356	85.9	85.9	-	100
	South Herefords	905	20	52.5	1.6	W	3
	Stratford	971	920	105.7	103.6	A	98
	Stroud	454	454	110.1	110.1	-	100
	Tewkesbury	450	420	89.0	88.1	T	99
	Warwick	282	282	114.9	114.9	-	100
	West Oxon	715	5	96.9	0.1	T	<1
	Worcester	32	32	82.7	82.7	-	100
	Wychavon	666	666	101.8	101.8	-	100
			4,482		1,447.7		
	COUNTY COUNCILS						
	Warwickshire	1974	1923	487.0	484.6	A	~100
	Gloucestershire	2645	1563	541.0	454.4	T;W:SW	84
	Northamptonshire	2367	125	599.0	12.0	A;T	2
	Oxfordshire	2608	23	598.0	1.5	T	<1
	Avon	1345	212	959.0	38.3	SW	4
	Hereford & Worcester	3927	1490	693.0	554.4	W	80

Figures from Registrar General's population projection for 1993 based on estimated population mid 1990.

APPENDIX 2

LOCAL PLANNING AUTHORITIES WITHIN THE LIAISON BOUNDARIES

CATCHMENT MANAGEMENT AREAS

CATCHMENT MANAGEMENT AREA	DISTRICT COUNCIL	AREA (sq km)		POPULATION (000's)		OTHER N.R.A. REGION*	% POP'TN IN S-T REGION
		TOTAL	IN S-T REG	TOTAL	IN S-T REG		
UPPER TRENT SENTINEL HOUSE FRADLEY	Birmingham	264	264	988.0	988.0	-	100
	Cannock	79	79	89.7	89.7	-	100
	East Staffs	388	388	97.0	97.0	-	100
	Hinckley & Bosworth	297	297	98.9	98.9	-	100
	Lichfield	330	330	93.8	93.8	-	100
	Newcastle	211	115	118.7	80.7	NW	68
	North Warwickshire	286	286	60.1	60.1	-	100
	Nuneaton	79	79	116.1	116.1	-	100
	Sandwell	105	105	292.0	292.0	-	100
	Solihull	180	180	205.0	205.0	-	100
	South Staffs	409	409	109.5	109.5	-	100
	Stafford	596	596	119.1	119.1	-	100
	Staffs Moorlands	576	521	96.9	82.4	NW	85
	Stoke on Trent	93	93	246.7	246.7	-	100
	Tamworth	13	13	69.4	69.4	-	100
	Walsall	106	106	263.0	263.0	-	100
	Wolverhampton	69	69	245.0	245.0	-	100
			3,940		3,256.4		
	COUNTY COUNCILS						
	Staffordshire	2,716	2,544	1,053.	1,000.	NW	95
	OTHER PLANNING AUTHORITIES						
	Black Country Urban Development Corporation	23	23	40.0	40.0	-	100

Figures from Registrar General's population projection for 1993 based on estimated population mid 1990.

APPENDIX 2

LOCAL PLANNING AUTHORITIES WITHIN THE LIAISON BOUNDARIES CATCHMENT MANAGEMENT AREAS

CATCHMENT MANAGEMENT AREA	DISTRICT COUNCIL	AREA (sq km)		POPULATION (000's)		OTHER N.R.A. REGION*	% POP'TN IN S-T REGION
		TOTAL	IN S-T REG	TOTAL	IN S-T REG		
LOWER TRENT TRENTSIDE NOTTINGHAM	Amber Valley	265	265	114.2	114.2	-	100
	Ashfield	110	98	109.8	109.6	NY	~100
	Bassetlaw	641	641	105.0	105.0	-	100
	Blaby	130	130	85.6	85.6	-	100
	Bolsover	161	112	71.8	55.2	NY	77
	Boothferry	643	270	66.4	19.2	NY	29
	Broxtowe	81	81	110.5	110.5	-	100
	Charnwood	279	279	151.0	151.0	-	100
	Derby	78	78	217.3	217.3	-	100
	Derbyshire Dales	796	791	66.0	66.0	-	100
	Doncaster	563	321	296.0	151.0	NY	51
	Erewash	109	109	107.6	107.6	-	100
	Gedling	113	113	110.5	110.5	-	100
	Glanford	236	120	73.1	23.4	A	32
	Harborough	593	237	69.3	38.8	A	56
	High Peak	541	352	85.1	28.1	NW	33
	Leicester	73	73	278.0	278.0	-	100
	Mansfield	77	77	100.5	100.5	-	100
	Melton	482	437	45.1	44.2	A	98
	Newark	662	620	103.5	102.5	A	99
	North East Derbys	277	110	97.2	11.7	NY	12
	North Kesteven	923	25	86.5	1.7	A	2
	North West Leicester	280	280	81.0	81.0	-	100
	Nottingham	74	74	274.9	274.9	-	100
	Oadby & Wigston	24	24	51.9	51.9	-	100
	Rotherham	283	156	256.0	66.6	NY	26
	Rushcliffe	410	410	102.0	102.0	-	100
	Rutland	394	56	36.9	3.7	A	10
	Scunthorpe	32	32	59.8	59.8	-	100
	Sheffield	368	15	521.0	0.5	NY	<1
	South Derbyshire	339	339	72.8	72.8	-	100
	South Kesteven	943	15	107.1	1.0	A	1
	West Lindsey	1,153	130	76.9	22.3	A	29
			6,870		2,768.1		
	COUNTY COUNCILS						
	Leicestershire	2552	1813	914.0	850.0	A	93
	Nottinghamshire	2168	2124	1,026.0	1,025.1	A;NY	~100
	Derbyshire	2631	2156	944.0	680.0	NW;NY	72
	Humberside	3512	422	866.0	103.9	A;NY	12
	Lincolnshire	5915	170	605.0	24.2	A	4
	OTHER PLANNING AUTHORITY						
	Peak Park Joint Planning Board	1404		39.0		NY;NW	

Figures from Registrar General's population projection for 1993 based on estimated population mid 1990

APPLICATIONS REQUIRING CONSULTATIONS WITH NRA SEVERN-TRENT REGION

Type of Application	Relevance to the Authority	Sources of Guidance/Advice	Notes
A. Industrial/agricultural/commercial development involving the use, disposal of chemicals and other potential pollutants including trade effluents.	Consider the surface water and ground water implications. Assess the implications of water reclamation works and sewerage system performance on rivers and groundwater.	1. Circular 22/88 (WO 44/88) - GDO Consolidation (Appendix "C") 2. GDO 1988 Article 18(1)(p). 3. GDO Article 18(1)(r).	
B. Residential/industrial/commercial development over 1 hectare.	Consider land drainage implications. Consider the surface water and groundwater implications.	1. Planning Policy Guidance 3. 2. Circular 30/92 (WO 68/92) Development and Flood Risk. 3. Circular 22/88 (WO 44/88).	
C. Development of land adjoining a watercourse, affecting the bed or banks, in washland areas, and or in areas known to have drainage problems.	Consider the land drainage implications of development, including the effect on existing flooding patterns. Protect washland areas and flood defences. Preserve access and maintenance strips adjacent to a watercourse. Provide advice on flood risk and drainage matters. Applicable to tidal or non-tidal rivers, estuaries and coastal zones.	1. Circular 30/92 (WO 68/92) Development and Flood Risk. 2. GDO Article 18(1)(o). 3. Survey prepared in accordance with Section 105 (2) Water Resources Act 1991. 4. Planning Policy Guidance 20. 5. Planning Policy Guidance 22.	Identification of the existence of a watercourse to be made by the local planning authority from the applicant's plans. A copy of earlier Surveys and the relevant plans, indicating washland areas and all known land drainage problems, was sent to Councils in 1979. Copies of new and updated surveys will be forwarded to Councils as they become available.
D. Use of land as a cemetery.	Consider the surface water and groundwater pollution implications.	1. GDO Article 18(1)(s).	
E. Development involving the disposal of sewage (other than to a public sewer) including the use of septic tanks, cesspits, private sewage treatment plants, and private sewers and drains not communicating with a public sewer.	Consider the surface water and groundwater pollution implications of the proposal.	1. GDO Article 18(1)(r). 2. Circular 23/83 (WO 32/83). 3. Severn Trent Water Aquifer Protection Policy. National Rivers Authority Policy and Practice for the Protection of Groundwater.	Applications involving septic tanks and cesspits etc. serving single dwellings are required. The pollution implications are potentially as serious as those involving more than one dwelling. Copies of the former Severn Trent Water Authority policy and aquifer protection zone maps have been sent to local planning authorities. Groundwater Vulnerability Maps will be produced on a scale of 1:100,000 with each sheet covering one county area.
F. Development involving land reclamation, waste disposal and tipping.	Consider the surface water, groundwater pollution and land drainage implications.	1. GDO Article 18(1)(q). 2. Circular 30/92 (WO 68/92) Development and Flood Risk. 3. Mineral Planning Guidance 2. 4. Circular 4/82 and 20/90 - EC Directive on the Protection of Groundwater (80/68/EEC).	

APPLICATIONS REQUIRING CONSULTATIONS WITH NRA SEVERN-TRENT REGION

Type of Application	Relevance to the Authority	Sources of Guidance/Advice	Notes
G. Exploration for, and extraction of minerals. Restoration of mineral working sites.	Consider the surface water, groundwater pollution and land drainage implications.	1. GDO Article 18(1)(j). 2. Minerals Planning Guidance 2. 3. Circular 30/92 (WO 68/92) Development and Flood Risk. 4. Circular 2/85 (WO 3/85) Planning Control over Oil and Gas Operations. 5. Circular 25/85 (WO 60/85) Restoration of sites with a High Water Table. 6. Circular 4/82 - EC Directive on the Protection of Groundwater (80/68/EEC).	
H. Development in specific areas notified to the Council.	Assess the consequential effects of development in areas where sewerage, and/or water reclamation problems exist. Assess the effects of development in areas where known land drainage problems exist. Consider the surface water and groundwater implications.	1. Circular 30/92 (WO 68/92) Development and Flood Risk. 2. Circular 22/88 (WO 44/88).	
J. Development of contaminated land.	Consider the surface water and groundwater pollution implications.	1. Circular 21/87 (WO 22/87) Development of contaminated land. 2. Planning Policy Guidance 12. 3. ICRCL 17/78 - Landfill Sites. 4. ICRCL 18/79 - Gas Works Sites. 5. ICRCL 23/79 - Sewage Works and Farms. 6. ICRCL 42/80 - Scrap Yards. 7. ICRCL 59/83 - Contaminated Land.	
K. Development which may affect an aquatic/wetland site of conservation interest.	To consider the effects on the water environment and associated lands.	1. Planning Policy Guidance.	
L. Development involving water based recreation.	Examine the proposals and effects on established water users, provide advice to applicants.	1. Planning Policy Guidance 17.	

APPLICATIONS REQUIRING CONSULTATIONS WITH NRA SEVERN-TRENT REGION

Type of Application	Relevance to the Authority	Sources of Guidance/Advice	Notes
M. Development requiring an environmental assessment.	Consider the surface water and groundwater implications. Consider the land drainage implications Consider the water amenity implications	1. Circular 15/88 (WO 23/88) - Assessment of Environmental Effects regs. 1988.	
N. Development involving the use of land for fish ponds to be used for the business of fish farming.	Consider the surface water and groundwater pollution implications.	1. GDO Article 18(1)(x).	

National Rivers Authority

STANDARD PARAGRAPHS AND FORMAT FOR REPLIES TO PLANNING CONSULTATIONS

National Rivers Authority

STANDARD PARAGRAPHS AND FORMAT FOR REPLIES TO PLANNING CONSULTATIONS

Contents

MULTIFUNCTIONAL

STANDARD PARAGRAPHS AND FORMAT FOR REPLIES TO PLANNING CONSULTATIONS

Guidance Notes

1. Determination of a planning application by a Local Planning Authority (LPA) is a balancing of factors. The NRA will not always end up on the side chosen by the LPA. But do not think that this means we have been ignored.

2. This outcome might appear to make consultation pointless and demotivating, but our participation is worthwhile because within the democratic process of land use planning we are listened to, and our advice followed in a good proportion of cases on which NRA responds.

3. In future, Development Plans will be the primary factor in the determination of applications. It is therefore important to get NRA policies in Development Plans at the earliest opportunity, and for planning application consultation replies to have regard to the relevant policies in the Plan and to be consistent with the NRA's Plan input.

4. In addition to being a statutory consultee in the preparation of Development Plans the NRA is such a consultee for the purposes of categories of development specified in Article 18 of the Town and Country Planning General Development Order 1988. LPA's will also "informally" consult the NRA on other development applications and on agreed areas and types of development. For example, paragraph 13 of Circular 30/92 (WO 68/92) sets out suggested proposed types of development where consultation should take place and similar advice is included in other Circulars and many Planning Policy Guidance Notes (PPG's). NRA responds to those consultations' using broadly consistent "start" and "finish" paragraphs and providing advice on the refusal or grant (with/without conditions) of planning permissions.

5. Parallel to the development control process the NRA performs a regulatory role determined by the provisions of Land Drainage Act 1991, Water Resources Act 1991 and Byelaws made thereunder.

6. Because of environmental awareness, most of what NRA wishes to say will be a material consideration in the determination of an application. This is an aspect of Town and Country Planning which has changed significantly in recent years.

7. Contributions are sought from functional consultees within the NRA for all or some of the following reasons:-

   a) To seek valid points and implications

b) To identify options
c) To apply appropriate expertise
d) Synergy (whole > sum of the parts)
e) To refine and emphasise

Consultation is not concerned with opinions, generalities, nor, in most cases, with decisions.

8. Replies must be written in a way which takes into account the requirements of planning law, policy, and practice. NRA Planning Liaison staff have compiled Standard Paragraphs for you to use as an aid to speedy and effective responses in both internal and external elements of consultation. These Standard Paragraphs take those requirements into account.

9. There will be cases where standard paragraphs are not suitable, and special wording is required. Planning Liaison staff will consult and advise as necessary to ensure that all special paragraphs are framed to take into account planning law, policy and practice.

10. Planning Liaison staff will also advise on modification of observations and co-ordinate responses from several consultees so as to produce the overall reply to the LPA which best furthers the NRA's requirements and objectives.

11. Objections and conditions must be thought through each time, and not just used automatically. There must be sufficient information to give the NRA a sound sustainable position. Objections should be supported by policies in the relevant Development Plan whenever possible.

12. An objection by the NRA may not lead to refusal of planning permission by the LPA. Consideration should always be given to inclusion in the NRA's response of "backstop" conditions informatives and recommendations, using link paragraphs LF02 or LF03. This consideration is of the balance between diluting the basic objection, or not giving the LPA the opportunity to take account of NRA's interests in their determination of the application.

13. Any conditions suggested by NRA must be both valid in law and good planning conditions to be enforceable and not susceptible to challenge on appeal. The relevant law is to be found in the planning legislation (principally T&CPA 1990) and case law. Policy, which determines planning merit, is to be found in Circulars and the series of PPG Notes issued by the Government. Where they are relevant to the development proposal in question such policies will be material considerations which local planning authorities are legally obliged to take into account when determining applications.

14. It is worth noting that the language of policy must always give way to the requirements of statute. The following points have been considered when giving advice and formulating suggested conditions:-

    1. Decision makers should not adhere slavishly to policy; to do so would be in breach of the duty to have regard to all material considerations.

    2. The general power in Section 70, T&CPA 1990 to impose conditions is constrained by legal principles established in case law. Conditions must:-

a) be imposed for a planning purpose,

b) fairly and reasonably relate to the development permitted,

c) not be so unreasonable that no reasonable LPA could have imposed them.

3. Circular 1/85 sets out the Government's policy on the desirability/merits of conditions and requires them to pass 6 tests:-

a) necessity
b) relevance to planning
c) relevance to the development to be permitted
d) enforceability
e) precision
f) reasonableness in all other respects

Particular consideration needs to be given to the following:-

i) if planning permission could be given even if the condition was not imposed, the condition needs special and precise justification;

ii) conditions should normally be consistent with national planning policies;

iii) informal discussions early on can lead to an applicant taking into account the LPA's (and, therefore, NRA's) requirements and reducing the need for conditions;

iv) while lists of standard/model conditions can be of benefit they may encourage the use of conditions as routine without the careful weighing of each condition;

v) reasons for conditions must be clearly explained and not over general or vague;

vi) conditions should be tailored to tackle specific problems;

vii) a condition which duplicates the effect of other controls will be unnecessary, and one whose requirements conflict with those of other controls will be ultra vires because it is unreasonable;

viii) a condition cannot be justified on the grounds that the LPA is not the body for exercising a concurrent control and, therefore, cannot ensure that it will be exercised properly. (Concurrent control is a developing concept: see PPG 23 "Planning and Pollution Control", paras. 1.31 and 1.34, or MPG2 para. 110).

ix) a condition should not be imposed in order to avoid a liability to pay compensation under other legislation;

x) conditions must be enforceable;

xi) conditions must be precise e.g., conditions which require specific works to be carried out should state clearly WHEN this should be done. Conditions which are imprecise/unreasonable cannot be made acceptable by phrases such as, "except with the prior approval of the LPA". Paragraphs 34, 35, 66-69 and the suggested model land drainage conditions of Circular 1/85 are of particular significance.

4. It appears now to be generally accepted that a condition may validly be imposed on a planning permission excluding permitted development rights granted under the GDO 1988. HOWEVER the Courts have not ruled on this point. Nevertheless there must always be a general presumption <u>against</u> limiting the Orders in a particular case.

5. The terms of conditions imposed on a planning permission should <u>not</u> be restated in a planning obligation given under Section 106 T&CPA 1990.

6. Circular 30/92 (WO 68/92) at Paragraph 16 contains guidance on how NRA may be expected to respond to consultation. Other documents contain similar advice.

15. The format of the NRA's responses follows a sequence, whether replies are manually compiled, or generated by a computer system:-

a) start paragraph;

b) reasons for objections;

c) conditions with attached reasons;

d) informatives (i.e. permissions, consents, licences required from NRA, in addition to planning permission and related information);

e) recommendations (i.e. additional aspects the LPA or the applicant should take into account in the design implementation or operation of the development);

f) link paragraphs (may occur between any of the above paragraphs);

g) finish paragraphs

16. In the paragraphs which follow, a), f) and g) are grouped together, followed by b), c), d) and e) by NRA's function.

17. The start, link and finish paragraphs, reasons for objections, and conditions with reasons, are intended to cover all responses likely to be required within the provisos set out in paragraph 9 above. Regions may not themselves permanently amend the wording of existing paragraphs, nor add new paragraphs within these sections of the computer file. Requests and suggestions are to be sent through your Regional co-ordinator to the National co-ordinator for evaluation. Agreed changes and additions will then be made to all sets of paragraphs simultaneously.

18. By contrast, Informatives and Recommendations (d) and (e) sections contain only the most used paragraphs. They are intended as a core for these sections on which Regions can build their own libraries of paragraphs. They have been drafted as models so that the additional Regional paragraphs are likely to be properly worded and most effective. Regional co-ordinators are encouraged to liaise as a focus for collation of best practice.

19. A separate section of the computer file will be allocated for Regions to write special paragraphs of any of the above types a) to g).

    These paragraphs should be created by your Regional co-ordinator to ensure need and at least local consistency. The compilation of a semi-permanent library of such paragraphs is not encouraged.

20. The Standard Paragraphs are essentially for use in responding to consultations on planning applications. They may be used where appropriate for responding to Development Plans; for this purpose, an additional library of paragraphs may be compiled. However it is anticipated that the majority of the text will be so plan-specific that standard paragraphs will not be so vital a tool as for planning applications.

21. Free text may be inserted in places marked with ****** (80); the number in brackets indicates the maximum number of characters available.

SP01 Thank you for referring the above application which was received on ******(20).

SP02 It is not clear from the submitted application how the applicant intends to ******(80). In order to enable me to make a definitive response to the consultation, I would ask you to obtain the additional information from the applicant, and in the meantime to extend the consultation period until ******(25).

SP03 The development is within the ******(20) Region of the Authority and I have forwarded the consultation to ******(20) at ******(40) who will reply direct.

SP04 The development is within the ******(21) Region of the Authority and I understand that Region has already been consulted.

SP05 The Authority will require more time to consider the application. I will reply by ******(25) and request you to defer determination of the application until you have received my response.

SP06 In view of the complex issues involved in this application I am unable to make a full response in the consultation period you have allowed. I will reply by ******(25) and request you to defer determination of the application until you have received my response.

SP07 I apologise for the delay in replying, and trust that the Authority's comments, as set out below, will still be taken into consideration.

SP08 I have no further comments to add to my previous letter dated ******(25) regarding your consultation reference ******(20), copy enclosed.

SP09 In this instance I have no observations as the proposal falls outside the scope of referrals the Authority would wish to receive.

SP10 The Authority considers that the Environmental Assessment submitted with the application does not adequately address the following issues:- ******(80).

SP11 The Authority OBJECTS to the proposed development as submitted on the following grounds:-

SP12 The Authority requests that any approval includes the following formal conditions:-

SP13 The Authority has no objection to the proposed development but wishes to make the following comments:-

SP14 The Authority has no objection to the proposed development.

LF01 It may be possible to find a solution which would enable the Authority to withdraw its objection. Please contact ******(25), telephone ******(12) to discuss the matter further.

LF02 If the Local Planning Authority approve the application contrary to the Authority's objection to the proposed development, it is considered essential that the following requirements are incorporated into any planning consent in the form of planning conditions to ensure that the adverse effects upon which the objection is based are minimised:-

LF03 If the Local Planning Authority approve the application contrary to the Authority's objection to the proposed development, it is important in the interests of the applicant that the following information is attached to the decision notice:-

LF04 The Authority's objection might be overcome by an obligation under S106, Town and Country Planning Act 1990. Should the Local Planning Authority be prepared to enter into an agreement with, or accept an undertaking from, the applicant, the terms should meet the following requirements:-

LF05 If the Local Planning Authority approve the application contrary to the Authority's objection to the proposed development, it is requested that the Local Planning Authority and the Authority jointly formulate appropriate conditions to ensure that the adverse effects on which our objection is based are minimised.

LF06 I am returning plans of the site as requested.

LF07 The ******(30) Internal Drainage Board has been consulted regarding this application. The Board has been requested to return its observations direct to the Local Planning Authority as soon as possible.

LF08 The ******(50) Internal Drainage Board objects to the proposed development.

LF09 The ******(50) Internal Drainage Board objects to the proposed development; a letter from the Board dated ******(25) is enclosed.

LF10 A copy of the subsequent decision notice would be appreciated.

LF11 The Authority's ******(35) Officer, (Tel: ******(12) will be able to advise the applicant(s) in detail on the procedures involved.

LF12 The applicant(s) would be advised to contact our ******(25) Officer, (Tel: ******(12) to discuss this matter in detail.

LF13 The Authority wishes to be consulted following the submission of a detailed planning application.

LF14 The Authority wishes to be consulted following the submission of an application for approval of reserved matters.

LF15 Where a condition has been imposed which has been suggested by the Authority or which meets the Authority's objective the Local Planning Authority should consult with the Authority to secure compliance with the condition prior to its discharge.

LF16 The Authority considers that an Environmental Assessment is required to support this application, and should cover the following issues and topics:-

USER NOTE: Issues and topics should be described in a supplementary free format paragraph.

LF17 I have sent a copy of this letter to the applicant and brought ******(20) attention to my recommendations.

LF18 Permissions may be required under the Authority's own powers and I will deal with these matters direct. A guidance note has been sent to the applicant for information.

LF19 A copy of this letter has been sent to the applicant/agent.

LF20 I have written to the applicant with my recommendations and the legal requirements associated with the Authority's functions.

LF21 Do not hesitate to contact me if, following a site visit, you consider there are particular site characteristics which should be brought to the Authority's attention.

LF22 The informatives and recommendations set out in the attached sheet should be included with the decision notice.

LF23 The following informatives and recommendations should be included with the decision notice.

LF24 Please forward a copy of this letter to the applicant.

FLOOD DEFENCE

Reasons for Objection

F001 (Subject to flooding)

The site lies within an area liable to flood. The proposed development would be at risk of flooding and unacceptably increase the risk of flooding elsewhere.

USER NOTE: Knowledge of the level frequency and extent of flooding is needed to quantify the level of risk consequent on the proposed development.

Consider adding paragraph LF01 or LF12 to comply with guidance in Circular 30/92 (WO 68/92).

F002 (Loss of flood flow path)

The site lies within an area liable to flood. The proposed development would result in a nett loss of flood flow path and thereby unacceptably increase the risk of flooding elsewhere.

USER NOTE: Knowledge of the level frequency and extent of flooding is needed to quantify the level of risk consequent on the proposed development.

Consider adding paragraph LF01 or LF12 to comply with guidance in Circular 30/92 (WO 68/92).

F003 (Loss of flood storage)

The site lies within an area liable to flood. The proposed development would result in a nett loss of flood storage and thereby unacceptably increase the risk of flooding elsewhere.

USER NOTE: Knowledge of the level frequency and extent of flooding is needed to quantify the level of risk consequent on the proposed development.

Consider adding paragraph LF01 or LF12 to comply with guidance in Circular 30/92 (WO 68/92).

F004 (Tidal flooding)

The site is within an area subject to or at risk of tidal flooding. The proposed development is unacceptable in that the existing flood defences do not provide the standard of protection appropriate to safeguard the development proposed.

USER NOTE: Knowledge of the level frequency and extent of flooding is needed to quantify the level of risk consequent on the proposed development.

Consider adding paragraph LF01 or LF12 to comply with guidance in Circular 30/92 (WO 68/92).

F005 (River Flooding)

The site is within an area subject to river flooding. The proposed development is unacceptable in that the existing flood defences do not provide the standard of protection appropriate to safeguard the development proposed.

USER NOTE: Knowledge of the level frequency and extent of flooding is needed to quantify the level of risk consequent on the proposed development.

Consider adding paragraph LF01 or LF12 to comply with guidance in Circular 30/92 (WO 68/92).

F006 (Insufficient capacity in watercourse)

There is insufficient capacity in the receiving watercourse (******(25)) to deal with any rate of surface water run-off greater than that generated from the "greenfield site". As such the proposal is unacceptable in that it would increase the risk of flooding elsewhere.

USER NOTE: Knowledge of the level frequency and extent of flooding is needed to quantify the level of risk consequent on the proposed development.

Consider adding paragraph LF01 or LF12 to comply with guidance in Circular 30/92 (WO 68/92).

Insert name of watercourse in space provided.

An informative such as F.I15 covering possible means of overcoming the objection could be added.

F007 (Obstructed access)

The proposed development is unacceptable because of its proximity to the top of the bank of the watercourse (******(25)). The permanent retention of a continuous unobstructed area is an essential requirement for future maintenance or improvement.

USER NOTE: For main river where Bye-laws apply, or for ordinary watercourses, it must be considered whether the development truly prejudices access.

Insert name of watercourse in space provided.

F008 **(Obstruction to flood flows)**

The proposed development is unacceptable because of its proximity to the top of the bank of the watercourse (******(25)). The permanent retention of a continous unobstructed area is an essential requirement for passage of flood flows.

USER NOTE: For main river where Bye-laws apply, or for ordinary watercourses, it must be considered whether the development truly prejudices access.

Insert name of watercourse in space provided.

F009 **(Inadequate access to watercourse)**

The proposed layout as indicated on the submitted plan(s) does not include the provision of an adequate access through the site to the watercourse to allow for future maintenance or improvement.

USER NOTE For main river where byelaws apply, or for ordinary watercourses, it must be considered whether the development truly prejudices access.

F010 **(Unacceptable discharge)**

The proposed development would result in an increased rate of discharge to an existing surface water sewer and lead to unacceptable flow conditions in the receiving watercourse (******(25) thereby increasing the risk of flooding downstream.

USER NOTE: Knowledge of the level frequency and extent of flooding is needed to quantify the level of risk consequent on the proposed development.

Consider adding paragraph LF01 or LF12 to comply with guidance in Circular 30/92 (WO 68/92).

Insert name of watercourse in the space provided.

Discussions with the sewerage undertaker may be required.

F011 **(Undesirable precedent)**

The proposed development, if permitted, is likely to encourage similar proposals in respect of other land within areas liable to flood. The cumulative effect, if permitted, would be to further increase the risk of flooding, which might then be difficult to resist.

USER NOTE: Permission may be refused on the grounds of the possible precedent effect of the decision, and the pressures that may follow for the unlocking for development of a whole area liable to flood, once permission is granted for one site within it. Where precedent is the only reason not to allow development, generalised concern of a precedent effect would not normally be enough; evidence of the effects of development in flood risk areas would be needed for reliance on precedence.

F012 (Integrity of flood defences)

The proposed development would jeopardise the integrity of the flood defences by reason of ******(80).

USER NOTE: The practical effects of the proposed development should be inserted.

FLOOD DEFENCE

Conditions

FC01 (Drainage works to be agreed)

CONDITION: No development approved by this permission shall be commenced until a scheme for the provision of surface water drainage works has been approved by the Local Planning Authority. Such scheme shall be implemented to the reasonable satisfaction of the Local Planning Authority before ******(80).

REASON: To prevent the increased risk of flooding by ensuring the provision of a satisfactory means of surface water disposal.

USER NOTE: The free text space should be used to specify the event (e.g. occupation of houses or connection of road/car park drains) governing compliance with the condition.

The scheme could be in the form of an agreement or undertaking under s.106, Town and Country Planning Act 1990, especially if the required works are situated outside the development site.

FC02 (Restrict rate of discharge)

CONDITION: No development approved by this permission shall be commenced until a scheme for the provision and implementation of a surface water regulation system has been approved by and implemented to the reasonable satisfaction of the Local Planning Authority.

REASON: To prevent the increased risk of flooding.

USER NOTE: Ensure that future maintenance arrangements are included in the scheme.

If the precision of the condition can be improved by stating, for example, the minimum size of a detention basin, or the maximum rate of discharge, details should be given in an additional paragraph.

The scheme could be in the form of an agreement or undertaking under s.106, Town and Country Planning Act 1990, especially if the required works are situated outside the development site.

FC03 (Method of working/restoration)

CONDITION: No development approved by this permission shall be commenced until a scheme for the provision and implementation of the method of working and restoration and maintenance of ******(50) has been approved by and implemented to the reasonable satisfaction of the Local Planning Authority.

REASON: To safeguard the water environment.

USER NOTE: This condition is for proposals to excavate in the floodplain, or similar works, which involve formation of bunds, stockpiles, washing/crushing plants, haul roads, bridges etc.

Restoration may involve backfilling with excavated material or waste, or be retained as water space. Maintenance is most important if backfilling has been done with non-inert waste where the continuing integrity of the cap is vital; the scheme could also cover maintenance of watercourses and other drainage features.

Use of this condition could be followed by a request for the NRA to be involved in discussion of the scheme. Consider using LF11, LF12 or similar paragraph.

FC04 (Method of restoration)

CONDITION: No development approved by this permission shall be commenced until a scheme for the provision and implementation of the method of restoration and maintenance of ******(50) has been approved by and implemented to the reasonable satisfaction of the Local Planning Authority.

REASON: To safeguard the water environment.

USER NOTE: This condition is for proposals to excavate in the floodplain, or similar works, which involve formation of bunds, stockpiles, washing/crushing plants, haul roads, bridges etc.

Restoration may involve backfilling with excavated material or waste, or be retained as water space. Maintenance is most important if backfilling has been done with non-inert waste where the continuing integrity of the cap is vital; the scheme could also cover maintenance of watercourses and other drainage features.

Use of this condition could be followed by a request for the NRA to be involved in discussion of the scheme. Consider using LF11, LF12 or similar paragraph.

FC05 (Compensatory flood storage works)

CONDITION: No development approved by this permission shall be commenced until a scheme for the provision and implementation of compensatory flood storage works has been approved by and implemented to the reasonable satisfaction of the Local Planning Authority.

REASON: To alleviate the increased risk of flooding.

USER NOTE: Compensatory schemes should generally not be agreed to unless preventative solutions are not available. Use this condition sparingly.

FC06 (Further development of sites within floodplain/access strip or near to flood defences)

CONDITION: Notwithstanding the provisions of ******(80) (insert relevant classes and parts) of Schedule 2 to the Town and Country Planning General Development Order 1988, no ******(80) shall be erected within so much of the floodplain/access strip or in relation to any flood defence as is delineated on the attached plan.

REASON: To maintain the flow and storage capacity of ******(25) (name of watercourse); to prevent obstruction of access; to maintain the integrity of the flood defences.

USER NOTE:

1. This condition is intended to pre-empt further development of the site subject to a current application through use of permitted development rights.

2. There must be a special site specific need to take away permitted development (GDO) rights; this cannot be used as a general condition. It is proper to suggest such a condition for a high profile visual amenity waterside development, but up to the Local Planning Authority to decide. May be applied to main river, or to an ordinary watercourse not enjoying byelaw protection. The attached plan is to be supplied by the NRA to the Local Planning Authority.

3. Insertion within the condition of the correct development classes and parts of the schedule will be done by Planning staff; consultees should indicate clearly the type of building, structure, gates, fences, walls etc. that are to be restricted.

FC07 (Approval of levels - condition of outline permission)

CONDITION: The detailed drawings to be submitted for approval under reserved matters shall include a topographical survey of existing ground levels contoured at *** (3) metre intervals, together with details of proposed finished levels.

REASON: To enable the Local Planning Authority to assess the effects of the proposed development on flood defence/land drainage.

USER NOTE: To be used for an outline application where no details are given/known. Consider adding an informative justifying the request for a condition at outline stage; the informative will need to be specially written if no suitable paragraph is available in the "Flood Defence Informatives" section. It is always better to request necessary information before the application is commented on by NRA and determined by LPA.

For a full application where the NRA has insufficient information to sustain an objection, but considers that the site/proposal is at risk from flooding, further information should be sought by use of paragraphs such as SP02. Where the risk is low and will be confined to minor damage of property, consider using FR02.

In other circumstances where the risk may be high, but it is expected that the development can go ahead subject to provision of information by the applicant for discussion and agreement with the LPA and NRA, consider using an amended version of this condition paragraph FC07.

There is not normally any consultation with NRA when an LPA receives details of reserved matters for consideration.

FC08 (No storage of materials)

CONDITION: There shall be no storage of any materials including soil within that part of the site liable to flood as delineated on the attached plan.

REASON: To ensure that there will be no increased risk of flooding to other land/properties due to impedence of flood flows and/or reduction of flood storage capacity.

USER NOTE: Use for a full planning application where details are given/known.

FC09 (Flood defences - temporary works)

CONDITION: No development approved by this permission shall be commenced until a scheme for maintaining the flood defences has been approved by and implemented to the reasonable satisfaction of the Local Planning Authority.

REASON: To maintain flood defences whilst works are carried out which affect the permanent defences.

USER NOTE: The scheme should require the provision of temporary flood defences to the full height of the permanent defences.

FC10 (Emergency exit - single storey buildings)

CONDITION: All single storey buildings shall be provided with a means of exit through the roof space.

REASON: Escape from buildings during flood events must be possible at all times.

USER NOTE: Whether you use this condition or the equivalent recommendation FR04 depends on how you view the risk.

If the condition can be made more precise by quoting, for example, minimum levels for the flooring of the roofspace or threshold of the exit, you should provide the information.

FC11 (Flood notices)

CONDITION: Flood warning notices shall be erected in numbers, positions and with wording all to be agreed with the Local Planning Authority. The notices shall be kept legible and clear of obstruction.

REASON: To ensure that owners and occupiers of premises are aware that the land is at risk of flooding.

USER NOTE: This condition relates to paragraph 22 of Circular 30/92 - "Development and Flood Risk. It is therefore mainly intended for holiday parks, caravan and camping sites, but could be used for other types of development.

FC12 (Improvements to Sewerage System)

CONDITION: No development approved by this permission shall be commenced until a scheme for the improvement and/or extension of the existing surface water sewerage system has been agreed with the Sewerage Undertaker to the satisfaction of the Local Planning Authority. No buildings (or uses) hereby permitted shall be occupied (or commenced) until such improvements and/or extensions have been commissioned to the reasonable satisfaction of the Local Planning Authority.

REASON: To prevent pollution of the water environment.

USER NOTE: Use of this proposed condition must have regard to the sewerage undertakers programme. There must be a reliable date for improvements to be commissioned within 3 or 5 years (outline or full application) life of the planning permission, otherwise NRA should object. Consider discussing the application with the sewerage undertaker.

This condition is not a means of applying undue pressure on the sewerage undertaker through application of a general embargo.

Informatives

FI01 (Consent - adjacent to main river)

Under the terms of the Water Resources Act 1991 and the Land Drainage Byelaws, the prior written consent of the Authority is required for any proposed works or structures in, under, over or within ****** (10) metres of the top of the bank of the main river (****** (40)).

FI02 (Consent - adjacent to flood defences)

Under the terms of the Water Resources Act 1991 and the Land Drainage Byelaws, the prior written consent of the Authority is required for any proposed works or structures either affecting or within ****** (10) metres of the tidal or fluvial flood defence.

FI03 (Consent - culverting)

Any culverting of a watercourse requires the prior written approval of the Local Authority under the terms of the Public Health Act 1936, and the prior written consent of the Authority under the terms of the Land Drainage Act 1991/Water Resources Act 1991. The Authority seeks to avoid culverting, and its consent for such works will not normally be granted except for access crossings.

USER NOTE: See also paragraph C001.

FI04 (Consent - ordinary watercourse)

The proposal includes ****** (100) details of which require the prior formal consent of the Authority under the terms of the Land Drainage Act 1991.

FI05 (Flood protection level)

The site is protected from flooding from the ****** (40) by ****** (25) to a level of ****** (10) metres AOD.

FI06 (Design flood level)

Design flood level in the ****** (40) is ****** (10) metres AOD, for a return period of 1 in ******(6) years.

FI07 (Site protected - still at risk - fluvial)

The site is below retained flood level in the fluvial system and could be at risk from flooding from breach or overtopping of the defences.

USER NOTE: Consider adding paragraph FR01 or FR02.

FI08 (Site protected - still at risk - tidal)

The site is below highest recorded tide levels and could be at risk from flooding from breach or overtopping of the defences.

USER NOTE: Consider adding paragraph FR01 or FR02.

FI09 (Within IDB area - Byelaws)

The site is within the ****** (50) Drainage Board's area and the Board's Byelaws apply.

FI10 (Within IDB area - consult)

The site is within ******(50) Drainage Board's area, and the Drainage Board should be consulted.

FI11 (Status of culverted watercourse)

The culverting of an ordinary watercourse does not change the definition of the watercourse to that of a sewer and consequently the responsibility for maintenance of the watercourse rests with the riparian owner or owners.

FI12 (Riparian maintenance responsibilities)

The Authority and the Local Authority have permissive powers to maintain watercourses depending on the watercourse's definition as "Main River" or "Ordinary Watercourse".

The responsibility for general maintenance of the river and its banks rests with the riparian owner.

FI13 (Interference with common law rights)

The applicant should be aware of his responsibilities to ensure that the operations do not interfere with riparian owners common law rights to receive water undiminished in quantity or quality. If any watercourses crossing the site are interrupted or diverted then, notwithstanding the need for any statutory consents or licences, it is the applicant's responsibility to take appropriate steps to protect the rights of the riparian owners, for which he has a liability.

FI14 (Circular 30/92 - Development and Flood Risk)

Attention is drawn to the guidance in Circular DoE 30/92 (WO 68/92) "Development and Flood Risk" at paragraph(s) ******(20).

FI15 (LPA not prepared to follow Circular 30/92)

The Local Planning Authority should be ready to explain its reasons to the Authority if it decides not to follow advice received as a result of consultation (Circular 30/92 (WO 68/92) "Development and Flood Risk" refers in paragraph 16).

USER NOTE: Normally informative FI14 will be sufficient but this paragraph is available should there be good grounds for believing the NRA's advice will be ignored.

FI16 (Regulation/detention of flows)

Regulation of the flows may be achieved by:

1. On site storage with only restricted flows being discharged.

2. Soakaways in the case of small developments (This will require the Local Authority building control department's approval).

Whichever regulation method is adopted, it is essential that the developer enters a suitable long term legal agreement to ensure satisfactory long term maintenance and future renewal.

FI17 (Consent - diversion or alterations to flow)

Under the terms of the Authority's Land Drainage Byelaws, the prior written consent of the Authority is required for the diversion or alteration to the level or direction of the flow of the water in, into, or out of the Main River ****** (40).

FLOOD DEFENCE

Recommendations

FR01 (Recommended floor levels)

In view of the previously recorded flood levels in the ****** (30) it is recommended that floor levels be set at least ******(6) millimetres above the highest recorded flood level. The highest flood level recorded in the records of the Authority is ****** (6) metres AOD (Newlyn) and occurred in ****(4).

USER NOTE: Be aware of the dangers of offering information which may not be accurate. Where NRA does have flood information, it will be more appropriate to use FR01 than FR02, but consider adding a disclaimer.

FR02 (Local enquiries - floor levels)

The Authority has no specific information regarding any flooding of this site from the nearby watercourse. The applicant is advised to make local enquiries and set floor levels at least ******(6) millimetres above all locally determined levels.

FR03 (Bunding - effect on flood levels)

The applicant should be aware that flood levels may rise as a result of any bunding which takes place around construction sites; it is the applicant's responsibility if third party interests are detrimentally affected.

FR04 (Emergency exit - single storey buildings)

The development is proposed in an area liable to flood to considerable depth. It is recommended that all single storey buildings should have a means of exit through the roof space to a place from which rescue can be made. Similarly houses with two or more storeys should have a means of exit from upper floors. Floor levels proposed for the roof space or upper floors should be compared with highest recorded flood levels.

Reasons for Objection

C001 (Culverting - conservation)

The proposed culverting of the watercourse (******(25)), would lead to an unacceptable loss of habitat.

USER NOTE: Flood Defence Informative FI03 refers to the need for a formal consent to culvert a watercourse, and the scope of reasons for refusal must relate to flood defence.

This paragraph C001 relies on the more general powers and duties in Sections 2 and 16 of the Water Resources Act 1991.

C002 (Detrimental Impact - Environment)

The proposed development would have a detrimental impact on the water environment by reason of ****** (80).

USER NOTE: The impact should be described in the space. If a qualifying statement is required, describing the way in which damage would occur, and the level of risk, a separate special paragraph may be necessary.

FISHERIES CONSERVATION RECREATION AND NAVIGATION

Recommendations

CR01 (Other impact)

The proposed development may have an impact on ****** (30), and the advice of ******(30) (person or organisation) should be sought to establish the scale and significance of the potential impact.

CR02 (Nesting sites, bats, birds)

The ******(20) (building, structure, etc.) should be designed to incorporate suitable ledges and holes as nest and roosting sites for birds and bats in accordance with the guidance note, "Provision and Maintenance of Nest and Roosting sites on River Bridges" published by National Rivers Authority, Severn Trent Region.

CR03 Other opportunity to enhance flora, fauna etc)

The proposed development creates an opportunity for ******(80), and the advice of ******(30) should be sought as to the most appropriate way to incorporate it in the development.

CR04 (Footpath, cycle track, bridleway)

A marginal strip of land approximately ****(4) metres wide should be provided to accommodate a riverside ******(15) (footpath) (cycle track) (bridleway) between points marked X and Y on the submitted plan number ******(10).

CR05 (Pond dipping platforms)

Pond dipping platforms should be incorporated into the proposed development at points marked with a green cross on the submitted plan number ****** (10), to allow the use of the pond as an educational resource.

CR06 (Golf course - conservation)

In the design and construction of the proposed golf course, the Developer should follow the recommendations in the guidelines "On Course Conservation" published by English Nature.

CR07 (Opportunities for recreation)

The proposed development provides opportunities for the creation of recreational features which should be discussed with the Authority. The applicant is requested to contact ******(20) (name) at ******(30) (location) (Tel: ******)(12)).

CR08 (Set Aside)

The site is eligible for grant aid under the extended Set Aside Scheme and creation of ******(80) should be considered.

USER NOTE: Insert description of feature in space, e.g. (species rich grassland, wetland fringe, coastal habitats, broadleaved woodland.

CR09 (Alien species)

The site contains ******(50) an invasive plant, the spread of which is prohibited under the Wildlife and Countryside Act. Care should be taken to prevent its spread during any operations relating to the proposal.

Any soils brought onto the applicant's site should be free of the seeds/root/stem of any invasive plant covered under the Wildlife and Countryside Act.

USER NOTE: Insert description of invasive plant in space.

CR10 (River corridor promotion)

A marginal strip of land approximately ******(10) metres wide should be provided between the development and the watercourse (******(25)) as part of the river corridor, to permit conservation, access, and recreation uses, and to preserve visual amenity.

MULTIFUNCTIONAL

Reason for Objection

M001 (Contrary to Development Plan)

The proposal is contrary to policy number ****** (10) in the ****** (80) Plan.

USER NOTE: The name of the relevant development plan should be inserted in the second space, and its state of approval indicated where appropriate, e.g. "adopted" (plan); "deposit draft" (plan).

Informatives

MI01 (Consents and licences from NRA)

The applicant's attention is drawn to the fact that the grant of planning permission does not confer the necessary consents and licences for development required under other legislation and in particular the provisions listed below.

MI02 Flood Defence

- Water Resources Act 1991 Section 109
- NRA Flood Defence Byelaws
- Local Legislation
- Land Drainage Act 1991 Section 23

MI03 Water Quality

- Water Resources Act 1991 Section 88 and Schedule 10
- Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991
- Local Legislation

MI04 Water Resources

- Water Resources Act 1991 Sections 24, 25, 30, 32(3) 49, 50 and 199
- Local Legislation.

MI05 Fisheries Recreation & Conservation

- Salmon and Freshwater Fisheries Act 1975 Section 30
- Local Legislation.

USER NOTE: Paragraphs MI02 to 05 inclusive are to be used singly or severally with MI01.

MI06 (Precautions - construction)

Measures for the avoidance of damage to the water environment during construction projects are set out in the document entitled "Special Requirements of the National Rivers Authority" (A copy is enclosed).

A7. APPLICATION FORMS FOR
LAND DRAINAGE CONSENT

NOTES

INTRODUCTION

Responsibility for flood defence matters now rests with us, the National Rivers Authority. In order to carry out our role successfully it is essential that anyone who intends carrying out works in a watercourse which may obstruct or impede the flow obtains our consent before starting the work. The reason for this is to ensure that any works do not endanger life or damage property by increasing the risk of flooding.

Please note when making an application it is essential to fill in the application form accurately and for any accompanying information including drawings, maps and calculations submitted to be clear. In order to ensure that proper details are submitted you may wish to discuss the information required with our officers before you make your formal application.

For your information the legal provisions read as follows:

SECTION 23 CONSENTS

Section 23 of the Land Drainage Act 1991 provides:–

"No person shall:

a) erect any mill dam, weir or other like obstruction to the flow of any ordinary watercourse or raise or otherwise alter any such obstruction, or

b) erect any culvert that would be likely to affect the flow of any ordinary watercourse or alter any culvert in a manner that would be likely to affect any such flow.

without the consent in writing of the drainage board concerned.

SECTION 109 CONSENTS

Section 109 of the Water Resources Act 1991 provides:–

(i) "No person shall erect any structure in, over or under a watercourse which is part of the main river except with the consent of and in accordance with plans and sections approved by the Authority .

(ii) No person shall,without the consent of the Authority, carry out any work of alteration or repair on any structure in, over or under a watercourse which is part of a main river if the work is likely to affect the flow in the watercourse or impede any drainage works.

(iii) No person shall erect or alter any structure designed to contain or divert the floodwaters of the main river except with the consent of and in accordance with plans and sections approved by the Authority".

Note: It should be noted that section 23 relates to an ordinary watercourse (other than main river) whilst Section 109 is restricted to main rivers. Information on the main river status of a watercourse can be obtained from the National Rivers Authority regional offices.

APPLICATION CHARGE

We are authorised by Section 23 (2) Land Drainage Act 1991 and Section 110 (1) Water Resources Act 1991 to charge an application fee in relation to the consents required. These fees are payable to cover our costs for examining the proposals and **the amount of the fee is £50 for each application for consent for each structure.**

You should note that this charge is payable in respect of each structure and the box on the application form should be completed as appropriate.

HOW TO OBTAIN A CONSENT

When you have fully completed your application form please send it with the appropriate fee and documents to our appropriate regional office; a list of these is attached.

1. a) If the applicant is a company the address given should be that of the registered office of the company.
   b) If the applicant is a firm and not a registered company the full names and addresses of all the partners should be given together with the address from which the firm trades.
2. The Authority's consent is given solely on river shape, flow, environmental and flood defence criteria and should not be regarded by the applicant as in any way approving the design and soundness of the proposed structure other than in relation to its impact on flows and its effects in the watercourse and its floodplain.

Upon receipt of a full and proper application we have two months in which to grant or refuse a consent. We are legally obliged to grant consent to reasonable proposals whch will not endanger the flow of the river or possibly cause any additional risk or flooding.

You should be aware that we now have a duty under Sections 12 and 13 of the Land Drainage Act 1991 and Sections 16 and 17 of the Water Resources Act 1991 to refuse consent if the works proposed might prove detrimental to the environment. Also, under the terms of the Land Drainage Act 1991, we have to have due regard for the interests of fisheries.

If you receive no notification either refusing or consenting the proposed works within two months of the receipt by us of a full and proper application then we are deemed to have consented to it.

You can be given further information and details of any exemptions which apply under Section 23 on request.

RIGHT OF APPEAL

If you believe the consent has been unreasonably withheld then you have the right to appeal.

Under Section 23 if agreement cannot be reached between us an arbitrator will be appointed to settle the matter.

Under Section 110 any dispute between us will be referred to an arbitrator or if you do not agree to arbitration it will be referred to and determined by the relevant Ministers or Secretary of State.

FAILURE TO APPLY FOR A CONSENT

Under Section 23 if works are executed without first obtaining a formal written consent from us we have the power to serve a notice requiring you to abate the nuisance within a specified time. Should you fail to comply with the notice then we can take the matter to Court whereupon a fine not exceeding level 5 on the standard scale may be imposed. Any further failure to comply may result in an additional fine not exceeding £40per day for every day during which your default continues.

Under Section 109 we may remove, alter or pull down any unauthorised work and recover from you the expenses incurred in the process.

OTHER CONSENTS

PLEASE NOTE THE FOLLOWING:-

THIRD PARTIES

If the consent or approval of a third party is required before you are able to carry out any works proposed, please submit documentary evidence of this approval together with your application.

NRA,

You may also require further consents from us under the Flood Defence Byelaws, the Water Resources Act 1991(for impounding) or under the Salmon and Freshwater Fisheries Act 1975 in respect of fishpasses. If in any doubt please contact our regional office.

NRA OFFICES Figure 1

Head Office
30-34 Albert
Embankment
London, SE1 7TL
Tel: (071) 820 0101

North West Region
Richard Fairclough House
Knutsford Road
Warrington WA4 1HG
Tel: (0925) 53999

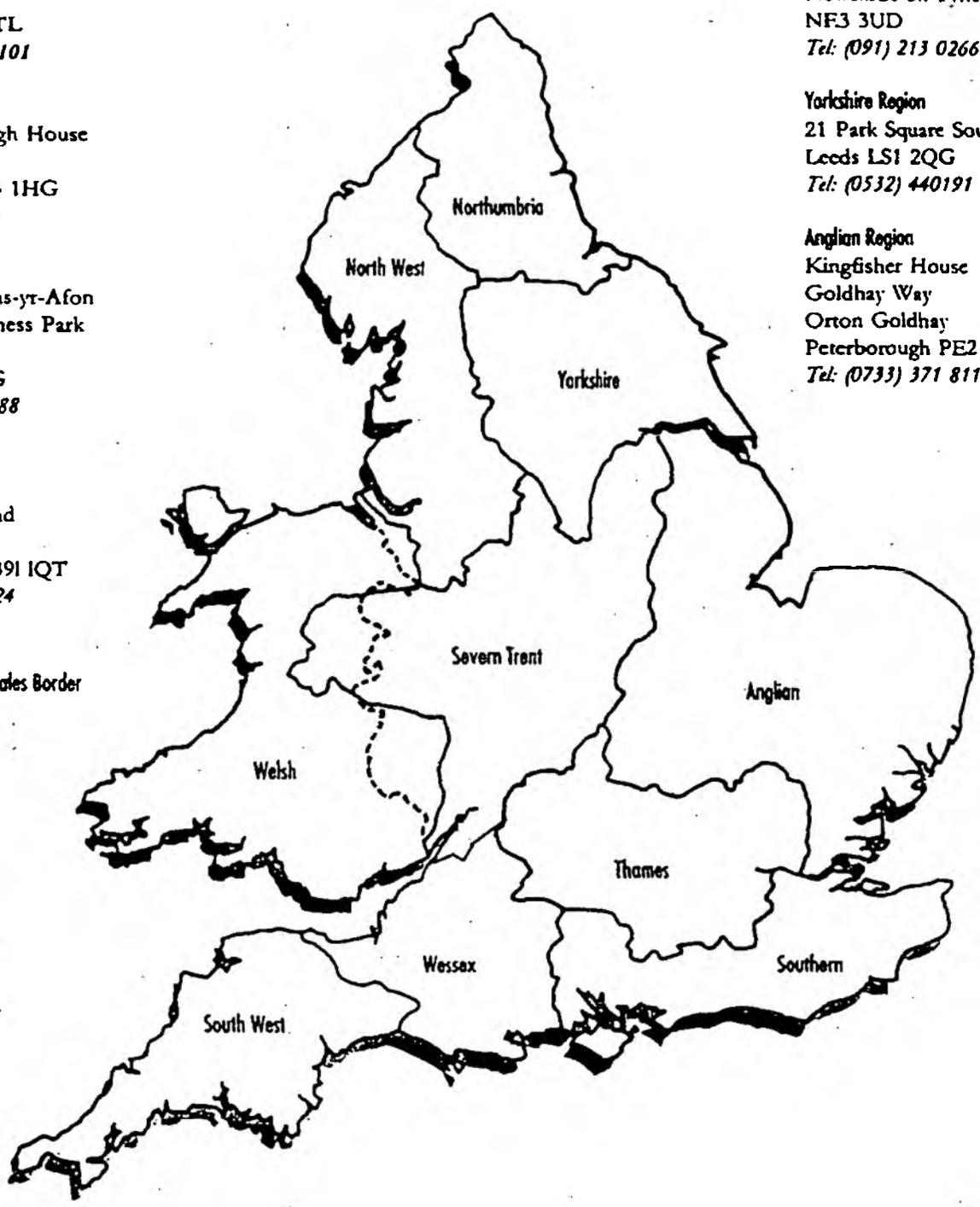
Welsh Region
Rivers House Plas-yr-Afon
St. Mellons Business Park
St. Mellons
Cardiff CF3 0EG
Tel: (0222) 770 088

Severn Trent Region
Sapphire East
Streetsbrook Road
Solihull
West Midlands B91 1QT
Tel (021) 711 2324

Northumbria Region
Eldon House
Regent Centre
Gosforth
Newcastle-on-Tyne
NE3 3UD
Tel: (091) 213 0266

Yorkshire Region
21 Park Square South
Leeds LS1 2QG
Tel: (0532) 440191

Anglian Region
Kingfisher House
Goldhay Way
Orton Goldhay
Peterborough PE2 0ZR
Tel: (0733) 371 811



— — — England/Wales Border

South West Region
Manley House
Kestrel Way
Exeter EX2 7LQ
Tel: (0392) 444 000

Wessex Region
Rivers House
East Quay
Bridgwater TA6 4YS
Tel: (0278) 457 333

Southern Region
Guildbourne House
Chatsworth Road
Worthing
West Sussex BN11 1LD
Tel: (0903) 820 692

Thames Region
3rd Floor
Kings Meadow House
Kings Meadow Road
Reading RG1 8DQ
Tel: (0734) 535 000

Form No. FD1

NRA

National Rivers Authority

APPLICATION FOR WORKS IN RIVERS

Land Drainage Act 1991 Section 23 and 24

Water Resources Act 1991 Sections 109 and 110

IMPORTANT NOTE: We ask you to read this form and the attached notes BEFORE you fill it in. Then please take GREAT CARE in answering the questions. If the form is fully and accurately completed, it will ensure as little delay as possible in processing it. If you have any queries, ASK US. Our address, telephone number, and other instructions are all in the attached notes.

Details of Applicant:

Name:

Contact Person:

Postal Address:

Telephone:

Out of hours:

Fax:

Location of Proposed Works:

OFFICIAL USE ONLY

1. APPLICANTS INTEREST IN LAND

2. AGENTS DETAILS

NAME

ADDRESS

POSTCODE

PROFESSION

CONTACT

TELEPHONE NO

FACSIMILE NO

3. DESCRIPTION OF PROPOSED WORKS

NUMBER OF STRUCTURES

4. LOCATION OF WORKS

DISTRICT COUNCIL

PARISH COUNCIL

NATIONAL GRID REFERENCE

5. STATE WHETHER WORKS ARE TO BE PERMANENT OR TEMPORARY

IF TEMPORARY, STATE DURATION REQUIRED

6. ARE THE PROPOSED WORKS ASSOCIATED WITH THE MAKING OF A DISCHARGE OF TRADE EFFLUENT OR SURFACE WATER

YES/NO

ARE THE PROPOSED WORKS ASSOCIATED WITH THE ABSTRACTION OF WATER

YES/NO

PLEASE TICK APPROPRIATE BOXES

7. IF PLANNING APPROVAL HAS BEEN GRANTED STATE

LOCAL AUTHORITY

APPLICATION NO

APPROVAL DATE

8. NAME OF PERSON OR ORGANISATION RESPONSIBLE FOR MAINTAINING THE STRUCTURE ON COMPLETION

9. DESCRIPTION AND NUMBERS OF PLANS AND SECTIONS SUBMITTED

10. BRIEF DETAILS OF ENVIRONMENTAL IMPACT OF WORKS TOGETHER WITH ANY PROPOSALS FOR AMELIORATION AND/OR COMPENSATORY ENHANCEMENT

APPLICATION

Name of Applicant

Address

I/We:

1. Apply for consent under the provisions of Section 23 of the Land Drainage Act 1991/ Section 109 Water Resouces Act 1991 to carry out works as described in this Application and on the attached plan(s).

2. Enclose a cheque for £..... to cover the cost of this application.

3. Enclose three (3) copies of suitable plans sufficient to show clearly the location of the proposed works together with three copies of plans and sections showing details of the proposed works to a scale appropriate to the nature of the works and any relevant calculations.

4. Confirm that I/we have the right to carry out the works and have obtained consent or approval as necessary.

5. Do not know of or suspect any other facts or information which would or might affect the granting of or conditions which might be imposed on the consent applied for.

6. Confirm that I/we will notify the National Rivers Authority of any future changes in the information given in this application which might be material to the continuation of this consent.

7. Confirm that all the information given in this application and any questions which the National Rivers Authority may have about it is/will be true to the best of my/our knowledge, information and belief.

8 Undertake to submit a full and accurate application and accept that the period of 2 months specified in Section 23 of the Land Drainage Act 1991/ Section 110 Water Resources Act 1991 for deciding the issue will not begin to run until the National Rivers Authority is satisfied that it has all necessary information.

Signed .....

On behalf of .....

Date .....

AII. LAND DRAINAGE
CONSENT FORMS

LAND DRAINAGE CONSENT FORMS

The Land Drainage Consent form is kept as a WordPerfect macro on the Regional word processing system.

The same blank master form can be used to issue five different types of Land Drainage Consent:-

1) Water Resources Act 1991 Consents.

2) Land Drainage Act 1991 Consents.

3) Land Drainage Byelaw Consents.

4) Land Drainage Consents for Internal Works.

5) Land Drainage Consents for Highway Works.

Examples of each of these are given in this Appendix.

MASTER

i:\wpwinl\regmacs\ldcnsnt

S Russell - 7/4/94 (JAJ)

[options in this typeface]

CONSENT REF NO. .

NATIONAL RIVERS AUTHORITY

SEVERN-TRENT REGION

[WATER RESOURCES ACT 1991/ LAND DRAINAGE]
[ACT 1991/BYELAWS/CONSENT FOR]

[(consent only) FOR HIGHWAY WORKS/INTERNAL WORKS]
Control of obstructions in and structures in over or under watercourses

1. To :

   Of :

   Agent for :

   Of :

2. In pursuance of *[Section 109 of the Water Resources Act 1991]*
   [Section 23 of the Land Drainage Act 1991]
   [Section of the]
   [Byelaw No. of the Authority's Land Drainage Byelaws]
   [Section 339 of the Highways Act 1980]

   and subject to paragraph 5 hereof, the National Rivers Authority HEREBY *[GRANTS/REFUSES]* ITS CONSENT in relation to the matters specified hereto.

3. Watercourse :

   Location :

   Map Reference :

   Description of Works, and drawings referred to :

4. Signed on behalf of the National Rivers Authority, Severn-Trent Region.

.....Dated.....
Regional Flood Defence Manager

Please turn over to Conditions and Notes

CONSENT REF NO.

5. **CONDITIONS**

This consent is *[granted subject to the following conditions:/refused for the following reasons;]*

[choose paras A-X / ParaNew = paragraph not listed / NoMore = when no more paras are required]

[and does not extend to the following works which were included in your proposals:]

6. NOTES

(1) PLEASE NOTE THAT THE ISSUE OF A CONSENT BY THE NATIONAL RIVERS AUTHORITY UNDER THE WATER RESOURCES ACT 1991 OR THE LAND DRAINAGE ACT 1991 DOES NOT ABSOLVE A PERSON PROPOSING TO EXECUTE WORKS ETC FROM THE NEED TO OBTAIN ANY OTHER LICENCES CONSENTS APPROVALS OR PERMISSIONS WHICH MAY BE REQUIRED IN LAW OR THE NEED TO COMPLY WITH ANY DUTIES OR RESPONSIBILITIES FOR THE CONSERVATION OR PROTECTION OF THE ENVIRONMENT (INCLUDING FLORA AND FAUNA).

(2) THE AUTHORITY DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF THE WORKS REFERRED HERETO AND ANY LIABILITY FOR ANY LOSS OR DAMAGE WHICH MAY ARISE OUT OF THEIR DESIGN CONSTRUCTION MAINTENANCE OR USE.

STANDARD CONDITIONS

i|\wpwinl\regmacs\ldcnsnt

S Russell - 24/3/94 (JAJ)

(A) That the works shall be carried out in accordance with the drawings numbered *[ ]*.

(B) That the works shall be carried out in accordance with the correspondence and plan referred to overleaf.

(C) Works should be carried out to ensure minimum obstruction to flows in the watercourse at all times.

(D) All reasonable care should be taken to ensure that the watercourse is kept free of foreign matter, floating debris etc. during the construction period and on completion.

(E) That on completion of the works all debris and surplus material shall be removed from the banks of the watercourse and that the banks shall be left in a stable condition with adequate protection being provided to avoid erosion.

(F) Any temporary works affecting the watercourse, required for construction, will require a separate prior consent.

(G) That 7 days notice of commencement of the works and immediate notification of completion are given.

(H) Work should be completed as quickly as possible once commenced.

(I) That the ***[pipes/box culvert]*** shall be constructed in a straight line on an even gradient between the inlet and outlet and the invert laid *[ ]*mm below the existing bed level on a suitable bedding material and be of sufficient strength to withstand the design loading.

(J) That headwalls are provided at entry and exit adequately keyed into the banks and bed of the watercourse to prevent erosion.

(K) That provisions are made to allow overland flow at the culvert should the inlet become blocked or flows are in excess of that which the culvert has been designed for.

(L) Additional bank protection works eg. limestone pitching should be provided on downstream side of outfall if serious erosion problems occur after completion of structure.

(M) Additional bank/bed protection must be provided on watercourse downstream of spilling if erosion problems occur as a result of this scheme.

(N) Additional bank and bed protection works must be provided both upstream and downstream of culvert to prevent problems at points where existing channel is diverted into the new culvert.

(O) Bank protection should have an adequate toe which should be taken down a minimum of 600mm below firm bed level. It is necessary to key the upstream and downstream ends of the protection works into the bank by a recommended length of 600mm at 45°.

(P) That stone pitching shall be provided to the bed and banks of the channel for a minimum distance of 5.0m below the outlet.

(Q) That the stone pitching shall be: Either, limestone which is hard dense homogeneous and free from foreign matter and the effects of frost. It should have a nominal size of *[300/400mm]*. Or, rough lump stone provided that the dimensions are not greater than *[325/450]*mm nor less than *[150/225]*mm measured on any face. The stone shall be hand packed and well rammed leaving the minimum voids and placed to the correct batter.

(R) That a minimum cover of *[1m/600mm]* shall be provided above the highest part of the pipe or concrete surround to the firm bed level and that the pipe shall remain at this level for at least 3m on each side of the channel.

(S) That permanent marker posts which show the owner of the apparatus shall be set in *[one bank/both banks]*.

(T) That there shall be no stock piling or storing of materials on the flood berms.

(U) There shall be no stock piling or storing of materials in the floodplain unless in broken heaps parallel to the direction of flood flow.

(V) Original profile and levels must be reinstated if access road causes damage to major floodbank.

(W) Access strip alongside watercourses to be a minimum width of *[ ]* metres.

(X) Flood defences are to be maintained at all times.

(Y) The construction of the works described and consented herewith must be completed within three years from the date of issue of this consent. Works not completed within this timescale and/or any additional works will require a consent.

[New Para]

EXAMPLE 1

CONSENT REF NO.

NATIONAL RIVERS AUTHORITY

SEVERN-TRENT REGION

WATER RESOURCES ACT 1991
Control of obstructions in and structures in over or under watercourses

1. To :

   Of :

   Agent for :

   Of :

2. In pursuance of Section 109 of the Water Resources Act 1991

   and subject to paragraph 5 hereof, the National Rivers Authority HEREBY GRANTS ITS CONSENT in relation to the matters specified hereto.

3. Watercourse :

   Location :

   Map Reference :

   Description of Works,
   and drawings referred to :

4. Signed on behalf of the National Rivers Authority, Severn-Trent Region.

..... Dated .....
Regional Flood Defence Manager

Please turn over to Conditions and Notes

5. **CONDITIONS**

This consent is granted subject to the following conditions:

6. NOTES

(1) PLEASE NOTE THAT THE ISSUE OF A CONSENT BY THE NATIONAL RIVERS AUTHORITY UNDER THE WATER RESOURCES ACT 1991 OR THE LAND DRAINAGE ACT 1991 DOES NOT ABSOLVE A PERSON PROPOSING TO EXECUTE WORKS ETC FROM THE NEED TO OBTAIN ANY OTHER LICENCES CONSENTS APPROVALS OR PERMISSIONS WHICH MAY BE REQUIRED IN LAW OR THE NEED TO COMPLY WITH ANY DUTIES OR RESPONSIBILITIES FOR THE CONSERVATION OR PROTECTION OF THE ENVIRONMENT (INCLUDING FLORA AND FAUNA).

(2) THE AUTHORITY DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF THE WORKS REFERRED HERETO AND ANY LIABILITY FOR ANY LOSS OR DAMAGE WHICH MAY ARISE OUT OF THEIR DESIGN CONSTRUCTION MAINTENANCE OR USE.

EXAMPLE 2

CONSENT REF NO.

NATIONAL RIVERS AUTHORITY

SEVERN-TRENT REGION

LAND DRAINAGE ACT 1991
Control of obstructions in and structures in over or under watercourses

1. To :

   Of :

   Agent for :

   Of :

2. In pursuance of Section 23 of the Land Drainage Act 1991

   and subject to paragraph 5 hereof, the National Rivers Authority HEREBY GRANTS ITS CONSENT in relation to the matters specified hereto.

3. Watercourse :

   Location :

   Map Reference :

   Description of Works,
   and drawings referred to :

4. Signed on behalf of the National Rivers Authority, Severn-Trent Region.

..... Dated .....
Regional Flood Defence Manager

Please turn over to Conditions and Notes

5. **CONDITIONS**

This consent is granted subject to the following conditions:

6. NOTES

(1) PLEASE NOTE THAT THE ISSUE OF A CONSENT BY THE NATIONAL RIVERS AUTHORITY UNDER THE WATER RESOURCES ACT 1991 OR THE LAND DRAINAGE ACT 1991 DOES NOT ABSOLVE A PERSON PROPOSING TO EXECUTE WORKS ETC FROM THE NEED TO OBTAIN ANY OTHER LICENCES CONSENTS APPROVALS OR PERMISSIONS WHICH MAY BE REQUIRED IN LAW OR THE NEED TO COMPLY WITH ANY DUTIES OR RESPONSIBILITIES FOR THE CONSERVATION OR PROTECTION OF THE ENVIRONMENT (INCLUDING FLORA AND FAUNA).

(2) THE AUTHORITY DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF THE WORKS REFERRED HERETO AND ANY LIABILITY FOR ANY LOSS OR DAMAGE WHICH MAY ARISE OUT OF THEIR DESIGN CONSTRUCTION MAINTENANCE OR USE.

EXAMPLE 3

CONSENT REF NO.

NATIONAL RIVERS AUTHORITY

SEVERN-TRENT REGION

LAND DRAINAGE BYELAWS
Control of obstructions in and structures in over or under watercourses

1. To :

   Of :

   Agent for :

   Of :

2. In pursuance of Byelaw No. of the Authority's Land Drainage Byelaws

   and subject to paragraph 5 hereof, the National Rivers Authority HEREBY GRANTS ITS CONSENT in relation to the matters specified hereto.

3. Watercourse :

   Location :

   Map Reference :

   Description of Works,
   and drawings referred to :

4. Signed on behalf of the National Rivers Authority, Severn-Trent Region.

..... Dated .....
Regional Flood Defence Manager

Please turn over to Conditions and Notes

(1)

i:\wpwin\fld\720.wp5

5. **CONDITIONS**

This consent is granted subject to the following conditions:

6. NOTES

(1) PLEASE NOTE THAT THE ISSUE OF A CONSENT BY THE NATIONAL RIVERS AUTHORITY UNDER THE WATER RESOURCES ACT 1991 OR THE LAND DRAINAGE ACT 1991 DOES NOT ABSOLVE A PERSON PROPOSING TO EXECUTE WORKS ETC FROM THE NEED TO OBTAIN ANY OTHER LICENCES CONSENTS APPROVALS OR PERMISSIONS WHICH MAY BE REQUIRED IN LAW OR THE NEED TO COMPLY WITH ANY DUTIES OR RESPONSIBILITIES FOR THE CONSERVATION OR PROTECTION OF THE ENVIRONMENT (INCLUDING FLORA AND FAUNA).

(2) THE AUTHORITY DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF THE WORKS REFERRED HERETO AND ANY LIABILITY FOR ANY LOSS OR DAMAGE WHICH MAY ARISE OUT OF THEIR DESIGN CONSTRUCTION MAINTENANCE OR USE.

EXAMPLE 4

CONSENT REF NO.

NATIONAL RIVERS AUTHORITY

SEVERN-TRENT REGION

LAND DRAINAGE CONSENT
FOR INTERNAL WORKS
Control of obstructions in and structures
in over or under watercourses

1. To :

   Of :

   Agent for :

   Of :

2. In pursuance of Section 109 of the Water Resources Act 1991

   and subject to paragraph 5 hereof, the National Rivers Authority HEREBY GRANTS ITS CONSENT in relation to the matters specified hereto.

3. Watercourse :

   Location :

   Map Reference :

   Description of Works,
   and drawings referred to :

4. Signed on behalf of the National Rivers Authority, Severn-Trent Region.

..... Dated .....
Regional Flood Defence Manager

Please turn over to Conditions and Notes

(1)

i:\wpwin\fld\720.wp5

5. **CONDITIONS**

This consent is granted subject to the following conditions:

6. NOTES

(1) PLEASE NOTE THAT THE ISSUE OF A CONSENT BY THE NATIONAL RIVERS AUTHORITY UNDER THE WATER RESOURCES ACT 1991 OR THE LAND DRAINAGE ACT 1991 DOES NOT ABSOLVE A PERSON PROPOSING TO EXECUTE WORKS ETC FROM THE NEED TO OBTAIN ANY OTHER LICENCES CONSENTS APPROVALS OR PERMISSIONS WHICH MAY BE REQUIRED IN LAW OR THE NEED TO COMPLY WITH ANY DUTIES OR RESPONSIBILITIES FOR THE CONSERVATION OR PROTECTION OF THE ENVIRONMENT (INCLUDING FLORA AND FAUNA).

(2) THE AUTHORITY DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF THE WORKS REFERRED HERETO AND ANY LIABILITY FOR ANY LOSS OR DAMAGE WHICH MAY ARISE OUT OF THEIR DESIGN CONSTRUCTION MAINTENANCE OR USE.

EXAMPLE 5

CONSENT REF NO.

NATIONAL RIVERS AUTHORITY

SEVERN-TRENT REGION

LAND DRAINAGE CONSENT FOR HIGHWAY WORKS

Control of obstructions in and structures in over or under watercourses

1. To :

   Of :

   Agent for :

   Of :

2. In pursuance of Section 339 of the Highway Act 1980

   and subject to paragraph 5 hereof, the National Rivers Authority HEREBY GRANTS ITS CONSENT in relation to the matters specified hereto.

3. Watercourse :

   Location :

   Map Reference :

   Description of Works,
   and drawings referred to :

4. Signed on behalf of the National Rivers Authority, Severn-Trent Region.

..... Dated .....

Regional Flood Defence Manager

Please turn over to Conditions and Notes

(1)

i:\wpwin\fld\720.wp5

5. **CONDITIONS**

This consent is granted subject to the following conditions:

6. NOTES

(1) PLEASE NOTE THAT THE ISSUE OF A CONSENT BY THE NATIONAL RIVERS AUTHORITY UNDER THE WATER RESOURCES ACT 1991 OR THE LAND DRAINAGE ACT 1991 DOES NOT ABSOLVE A PERSON PROPOSING TO EXECUTE WORKS ETC FROM THE NEED TO OBTAIN ANY OTHER LICENCES CONSENTS APPROVALS OR PERMISSIONS WHICH MAY BE REQUIRED IN LAW OR THE NEED TO COMPLY WITH ANY DUTIES OR RESPONSIBILITIES FOR THE CONSERVATION OR PROTECTION OF THE ENVIRONMENT (INCLUDING FLORA AND FAUNA).

(2) THE AUTHORITY DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF THE WORKS REFERRED HERETO AND ANY LIABILITY FOR ANY LOSS OR DAMAGE WHICH MAY ARISE OUT OF THEIR DESIGN CONSTRUCTION MAINTENANCE OR USE.

A9. TYPICAL REQUIREMENTS
FOR RIVER SURVEYS

TYPICAL REQUIREMENTS FOR RIVER SURVEYS

The following are typical requirements for river surveys, but they should not be regarded as a standard specification.

1. LEVELS

All levels to be ordnance datum Newlyn. Locations and values of Bench Marks used to be stated.

2. CROSS SECTIONS

On each watercourse, cross sections are to be taken at 100 metre intervals (reducing to 50 metres in urban areas and on very small streams), measured from an origin to be indicated by this Authority. Positions of the sections are to be determined by measuring along the centre line of the watercourse on 1:2500 maps.

Each cross section is to extend at least 10 metres from the top of each bank, and is to include :-

(a) Water level

(b) Hard and soft bed levels

(c) An indication of any trees, bushes etc, and the position and type of fence and boundaries

(d) A description of the land use on each side, eg arable, pasture, orchard etc.

Notwithstanding the foregoing, the final position of each cross section should be determined on site so as to be as typical as possible of the stretch of watercourse, (eg a seciton should not be taken at a cattle watering place where the banks have been trodden in).

On the cross sections, levels are to be taken at horizontal intervals not exceeding 2 metres, except :-

(1) under water where they are to be taken at intervals not exceeding 1 metre;

(2) where the mean slope of the ground is steeper than 1 in 1, where they are to be taken at intervals not exceeding 0.3 metre;

(3) at over 10 metres from the brink of each bank, where spot levels, together with their distances, should be taken of unusual features and the lowest general ground level, if not already included in the cross section.

3. STRUCTURES

(a) General

All service crossings, outfalls, sewerage, overhead cables etc. are to be surveyed, and their use, if known, is to be given.

Incoming streams are to be noted (flapped or open) and cross sections taken if of a reasonable size.

(b) Bridges, Culverts Etc.

An elevation of the upstream end of each structure is required (also of the downstream end if substantially different), with soffit and invert levels of both ends, and width of bridge deck (or length of culvert) indicated. It should also be stated whether the invert is structural or natural.

On large deep culverts, a longitudinal section through it should be taken, if possible.

Any angle of skew to the line of the watercourse is to be noted, together with the square span dimension.

(c) **Sluices, Weirs Etc.**

An elevation of each sluice, set of sluices, or weir is to be given, together with sections through them indicating profiles of the sluices or weir, sill levels, clear openings etc.

(d) **Landing Stages, Revetments Etc.**

Cross sections are to be taken at each of these but need only extend 2 metres from each side of the watercourse, or landside edge of the structure, whichever is the greater distance. Linear lengths or chainages of these features are to be stated.

The natural stream water levels immediately upstream and downstream (i.e. away from any drawdown or recovery of head effect) or (b) and (c) above are to be given.

4. ALTERNATIVE CHANNELS

Where the considered length of watercourse has an alternative or complementary channel, (eg a mill race), cross sections and structural details to the specification above should be taken.

5. PLOTTING

Cross sections (looking downstream), and elevations of structures are to be plotted in logical order. Scales are to be natural and should be 1:100 or 1:50. A longitudinal section should be drawn, using information from the cross sections. Vertical scale to be 1:100 and horizontal scale to be 1:1000.

All information required to plot each cross section and elevation is to be given on the respective section and elevation.

A 1:2500 scale key plan should be given, with the positions of the cross sections marked on, together with any other relevant features.

On each watercourse, cross sections, positions of structures, etc, are to be numbered in kilometres and metres, measured from the origin indicated by this Authority (eg 6.200 Km).

A10. FLOOD DEFENCE
INFORMATION SHEETS

FLOOD DEFENCE INFORMATION SHEETS

INDEX

NOTE

Where illustrations are included they are for guidance only. They are not to be misconstrued as the only designs acceptable to the Authority. In particular, structures must be designed for the particular application and should make use of environmentally appropriate materials.

Flood Defence
Information Sheet No. 1

Land Drainage Consents

NRA
National Rivers Authority
Severn-Trent Region

Under the Water Resources Act 1991, the National Rivers Authority, Severn-Trent Region has a duty to exercise the general supervision of all matters relating to Flood Defence within its area.

In order to carry out its role successfully, the NRA must receive details of any proposed works affecting watercourses and grant permission for the work to proceed, requesting any modifications which may be necessary. Consequently, riparian owners/developers etc. must obtain a Land Drainage Consent from the NRA **before** the work commences.

The reason for this is to ensure that any works do not endanger life or damage land and property elsewhere by increasing the risk of flooding.

The NRA, Severn-Trent Region has adopted common standards and methods of approach for land drainage consenting and planning liaison. Information sheets are available which summarise the principal requirements for the most common proposed works.

Land drainage legislation differentiates between Main Rivers and "ordinary" watercourses.

Main Rivers
Main Rivers are designated as such on maps held by the Ministry of Agriculture, Fisheries & Food and the NRA. The term also includes any structures in the bed or bank for controlling or regulating the flow of these watercourses. The NRA has permissive (not mandatory) powers to carry out maintenance and improvement works on Main Rivers.

Under Section 109 of the Water Resources Act 1991, any person intending to carry out any work on, over, under or adjacent to a Main River watercourse must obtain consent from the NRA.

The NRA, Severn-Trent Region also has Land Drainage Byelaws which require persons to obtain the NRA's consent for activities in or adjacent to Main Rivers and their floodplains. Such activities include erection of fences, tree planting, disposal of rubbish, excavation affecting the bed and banks of rivers, erection of jetties or walls etc. Copies of the Byelaws are available on request.

"Ordinary" Watercourses
The term "ordinary" watercourse describes the remaining watercourses which may be tributaries of Main Rivers. The NRA has certain regulatory powers, but has no powers to carry out work on "ordinary" watercourses. Local Authorities have powers relating to flood prevention, maintenance of flow and the making of byelaws on such watercourses. Under

Section 23 of the Land Drainage Act 1991, any proposals to construct or alter any mill dam, weir or similar obstruction to flow require consent from the NRA. The erection of, or alteration to a culvert likely to affect the flow also require consent from the NRA. Under Section 17 of the Land Drainage Act 1991, any drainage works against flooding carried out by a Local Authority require a Land Drainage Consent from the NRA.

Standards of Protection

Where appropriate, an application for Land Drainage Consent should include hydraulic capacity calculations consistent with the NRA's standard of protection aims. These are expressed as the return period between floods and are as follows:

1 in 100 years	- Urban areas and villages.
1 in 50 years	- Agricultural land of high value and isolated properties.
1 in 25 years	- Agricultural land, (mainly arable).
1 in 15 years	- Agricultural land, (mainly pasture).
1 in 5 years	- Grass floodplain.

However, in no case shall the level of protection of the proposed works be lower than the existing level of flood protection.

How to Obtain Consent

Application forms for Land Drainage Consents must be obtained from the Flood Defence Section at the appropriate Area office. Upon receipt of the application, the NRA has two months in which to grant or refuse a Land Drainage Consent. The granting of a Land Drainage Consent may be subject to conditions such as the time and manner in which the work may be carried out.

Application Charges

In accordance with Section 110(1) of the Water Resources Act 1991 and Section 23(2) of the Land Drainage Act 1991, the National Rivers Authority is authorised to charge £50 [No VAT is charged] for each individual application for Land Drainage Consent. A fee is normally applicable for each individual structure proposed, but groups of identical minor structures in the same river reach, such as fishing platforms, may be subject to a single fee.

Further information and details of any exemptions will be provided upon request for an application form.

Weirs & Impounding Works

Where an applicant wishes to install a weir or impounding works, they must request an application form package from the Water Resources and Planning Department at the appropriate Area office. This serves as a request for an Impounding Licence under the Water Resources Act 1991.

The applicant is responsible for identifying the extent of the likely flooding, and must demonstrate that the agreement of those affected has been obtained before a Land Drainage Consent will be granted.

Nature Conservation
The NRA has a duty under the Water Resources Act 1991 and the Land Drainage Act 1991 to conserve and enhance the natural environment and must therefore consider the nature conservation implications of any proposals when determining Land Drainage Consents.

Right of Appeal
If the applicant believes that a Land Drainage Consent has been unreasonably withheld, then he/she has the right of appeal to an independent arbitrator or Government Minister as appropriate.

Failure to Obtain Land Drainage Consent
The failure to obtain a Land Drainage Consent prior to carrying out the works may be a criminal offence. Any person acting in contravention of any of the NRA's Land Drainage Byelaws, or Section 23 of the Land Drainage Act 1991, may be liable, on conviction, to a fine of up to £5,000, and to a further fine of up to £40 for every day on which the contravention is continued after conviction.

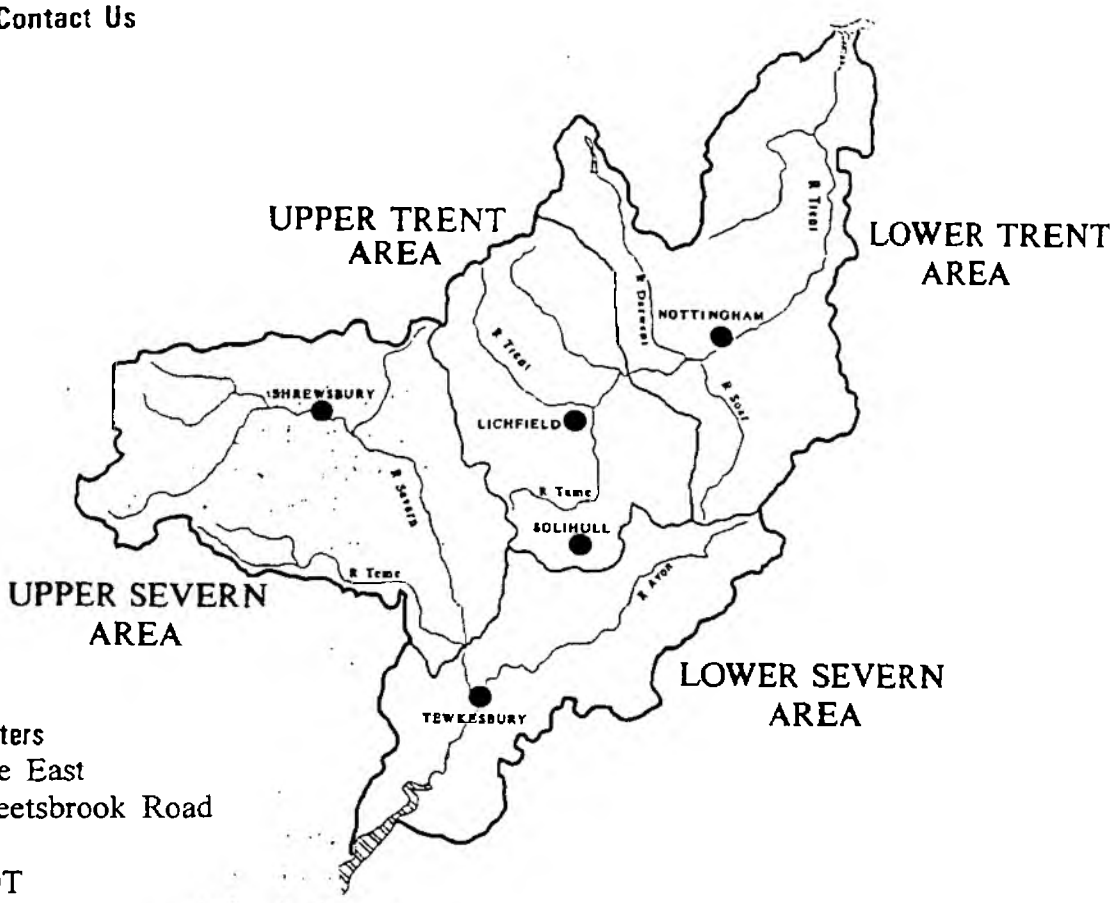
Under Section 109 of the Water Resources Act 1991, the NRA may remove, alter or pull down any unauthorised work in, over or under a Main River, and recover from the offender the expenses incurred in doing so.

Other Permissions
The issue of a Land Drainage Consent by the NRA does not absolve a person proposing to execute works from the need to obtain any other licences, consents or permissions which may be required in law.

Further Information
Advice and further information may be obtained from the Flood Defence Department at the appropriate Area office. (Addresses overleaf).

Flood Defence Information Sheets containing details of the Authority's design recommendations for structures such as culverts, outfalls, pipe crossings etc. are available on request.

How to Contact Us



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Nottingham
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Flood Defence
Information Sheet No. 2

Riparian Owners

NRA
National Rivers Authority
Severn-Trent Region

The term "Riparian Owner" describes any person who owns property alongside a natural watercourse. Under common law they possess rights and responsibilities relating to the stretch of the watercourse which falls within the boundaries of their property.

Often a riparian owner owns land up to the centre line of a non-tidal watercourse and not just the bank(s). However, this is not always the case and legal advice must be sought where doubt exists.

Riparian owners are responsible for accepting water from the section of watercourse owned by their upstream neighbour and transferring this, together with drainage from their own property, to their neighbour immediately downstream.

Riparian owners are entitled to:-

1. Protect their property against flooding;

2. Prevent erosion of the banks of their watercourses.

Before undertaking such works. a riparian owner must first obtain a **Land Drainage Consent** from the National Rivers Authority. This is to ensure that any such works do not have an adverse effect on adjacent riparian owners. Consent is required under Section 109 of the Water Resources Act 1991, or Section 23 of the Land Drainage Act 1991, and the Byelaws of the National Rivers Authority, Severn-Trent Region.

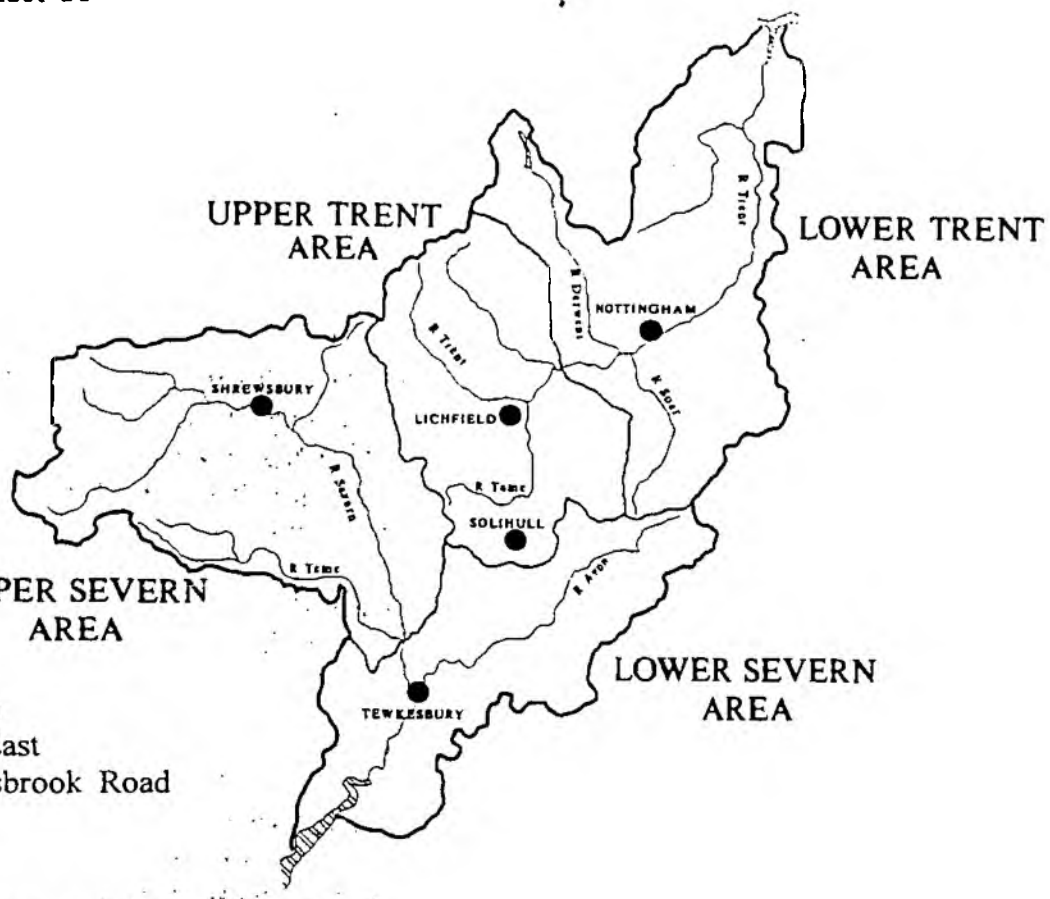
The issue of a Land Drainage Consent by the NRA does not absolve a person proposing to execute works from the need to obtain any other licence, consent, approval or permission which may be required in law.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office. (Addresses overleaf).

An information sheet titled "*Land Drainage Consents*" is available on request.

How to Contact Us



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Flood Defence Information Sheet No. 3

Outfalls

NRA
National Rivers Authority
Severn-Trent Region

Any person intending to construct an outfall into a watercourse requires the approval of the National Rivers Authority. In the case of a Main River watercourse, and also an "ordinary" watercourse where the flow is likely to be affected by the structure, a Land Drainage Consent is required.

Typical Requirements

In order to ensure that outfalls do not create an obstruction to flow or jeopardise the stability of the banks of the watercourse, the following points must be taken into account:

1. The outfall pipe should discharge obliquely to the watercourse in the direction of flow, (ideally 45°).

2. The invert of the pipe should be a minimum of 225mm above the apron of the outfall to enable sampling.

3. The outfall pipe should project a minimum of 50mm beyond the headwall to allow the discharge to be sampled. Where flapvalves are fitted flush with the headwall, the lip must project a minimum of 50mm. In awkward or dangerous locations, the NRA's Pollution Control Officer may require a sampling chamber to be constructed in a safe location.

4. The outfall apron should be set just above normal summer water level.

5. The footing of the outfall structure should be taken down at least 600mm below the bed of the watercourse.

6. The headwall and wingwalls should neither project beyond nor above the line of the bank.

7. Anti-scour protection may be required to the watercourse bed and/or banks, (refer to Flood Defence Information Sheet No. 9). Where the discharge velocity exceeds 1.2m/s, a stilling basin, upstream drop chamber or baffle chamber is required.

8. Screens on outfalls should be avoided unless there are exceptional circumstances.

9. Underdrainage outfalls should be either a proprietary make or follow one of the designs in Appendix E of the ADAS "Technical Note on Workmanship and Materials for Field Drainage Schemes" (1979). Underdrainage outfall pipe inverts should be a minimum of 150mm above normal summer water level.

10. Where appropriate, flapvalves should be fitted.

11. Where an outfall pipe passes through a flood defence structure, eg. a floodbank, the NRA requires that a flapvalve and manually operated penstock be provided. The number of separate outfalls at one location should be kept to a minimum.

12. The following drawings are available on request:

Sheet 1	Typical Pipe Outfall Structure.
Sheet 2	Typical Pipe Outfall Structure with Stilling Basin.
Sheet 3	Typical Pipe Outfall Structure for pipes below 300mm diameter.

The typical details are meant as an illustration of the NRA's general recommendations. They are not meant to be misconstrued as the only design acceptable to the Authority. Whilst an outfall structure must satisfy basic engineering requirements, each one must be designed for the particular application.

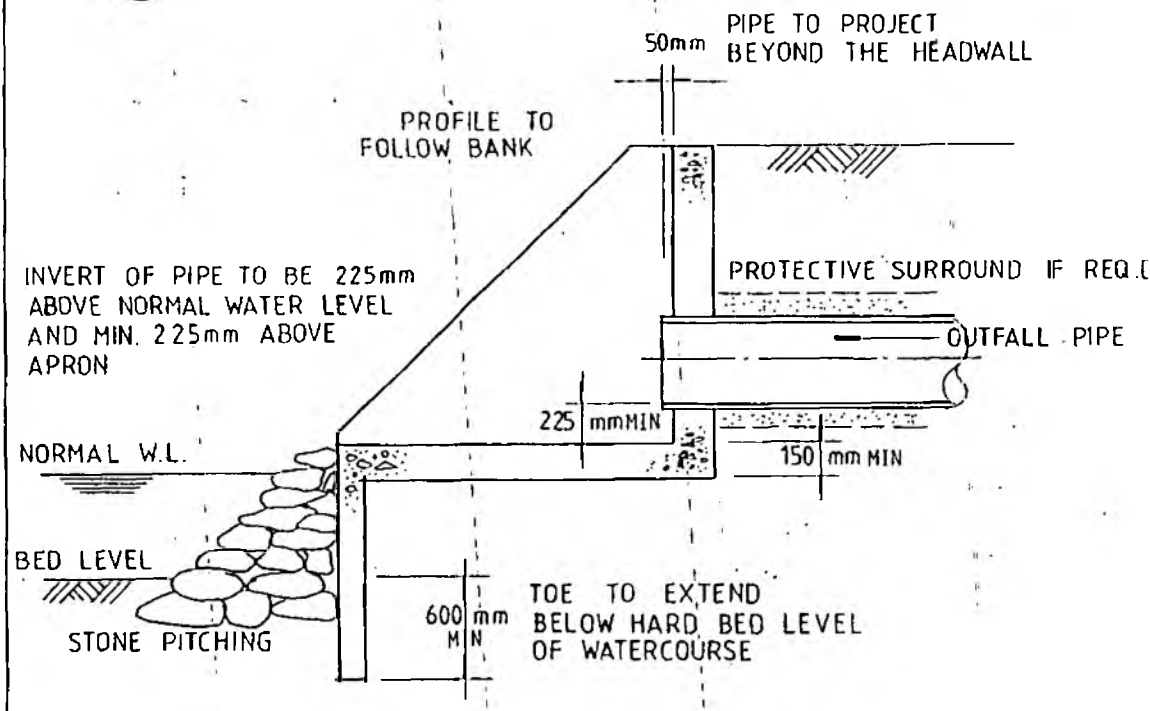
Environmental Implications

In accordance with its duties under Sections 16 and 17 of the Water Resources Act 1991, and Sections 12 and 13 of the Land Drainage Act 1991, the Authority must consider the environmental implications of any application for Land Drainage Consent. It is therefore recommended that applicants consider carefully the choice of materials for any outfall structure to be compatible with the environment in which it is going to be constructed.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.

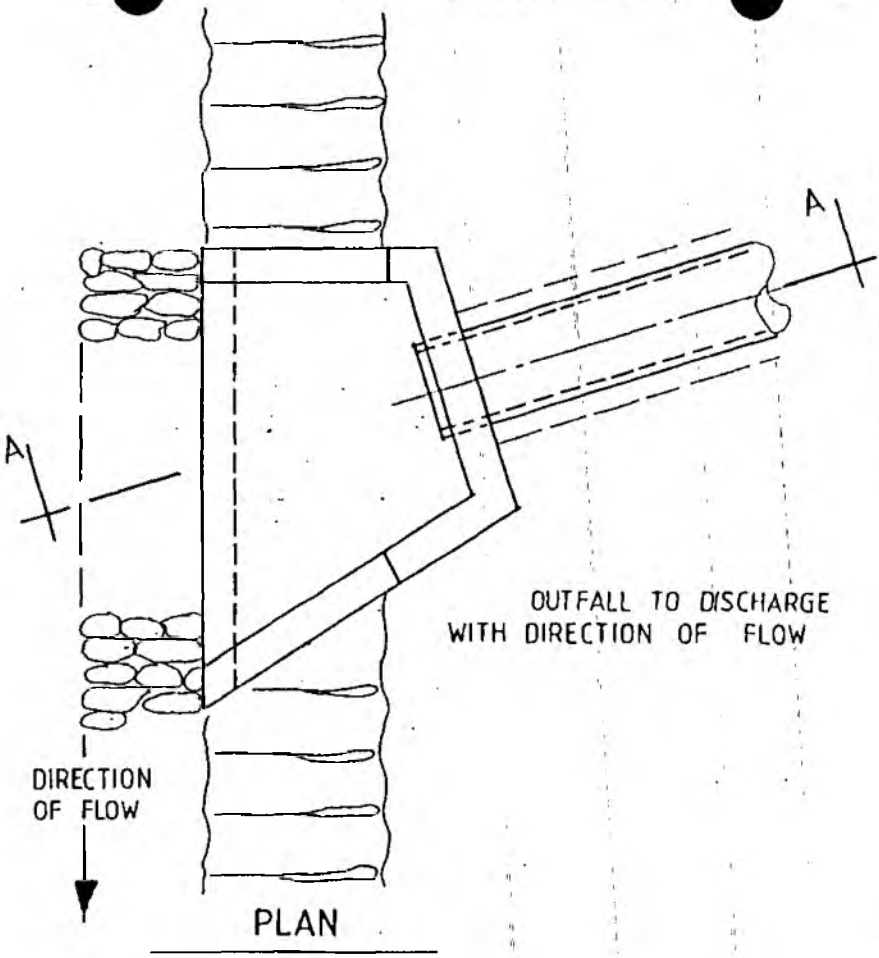


SECTION TAKEN ON LINE A – A

GENERAL NOTES

1) PIPE OUTFALL EXIT VELOCITY SHOULD NOT EXCEED 1.2 M/S.
2) THE HEADWALL AND WINGWALLS SHOULD NOT PROJECT BEYOND OR ABOVE THE LINE OF THE BANK.
3) NO PART OF THE STRUCTURE SHOULD CUT INTO ANY FLOOD EMBANKMENT.
4) ALL SURPLUS SPOIL FROM EXCAVATIONS FOR STRUCTURE AND PIPE MUST BE REMOVED FROM SITE.
5) STONE PITCHING MAY BE REQUIRED TO PROTECT THE BED AND OPPOSITE BANK DOWNSTREAM OF THE OUTFALL AND SHOULD CONFORM TO THE NRA'S SPECIFICATION FOR STONE PITCHING REFERRED TO IN INFORMATION SHEET NO.9.
6) THE EXACT LOCATION OF THE OUTFALL MUST BE INDICATED.
7) WHERE REQUIRED, A FLAPVALVE MUST BE FITTED. WHERE AN OUTFALL PIPE PASSES THROUGH A FLOOD DEFENCE STRUCTURE, EG. A FLOODBANK, A FLAPVALVE AND MANUALLY OPERATED PENSTOCK ARE REQUIRED.

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

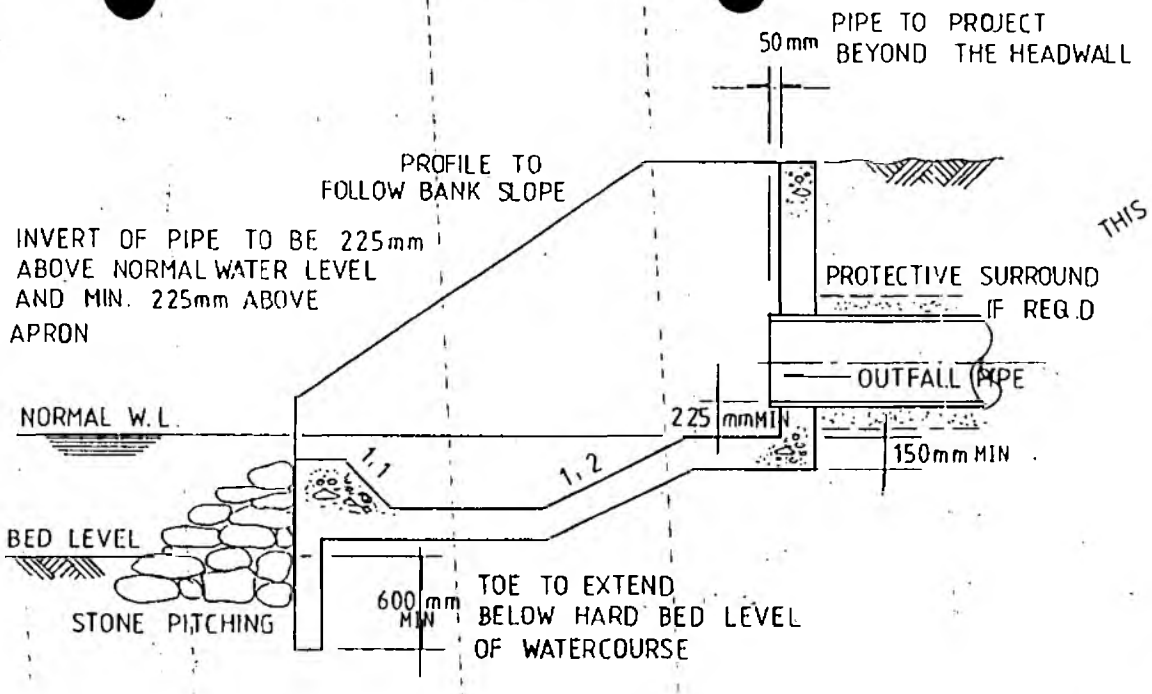


TYPICAL PIPE OUTFALL STRUCTURE

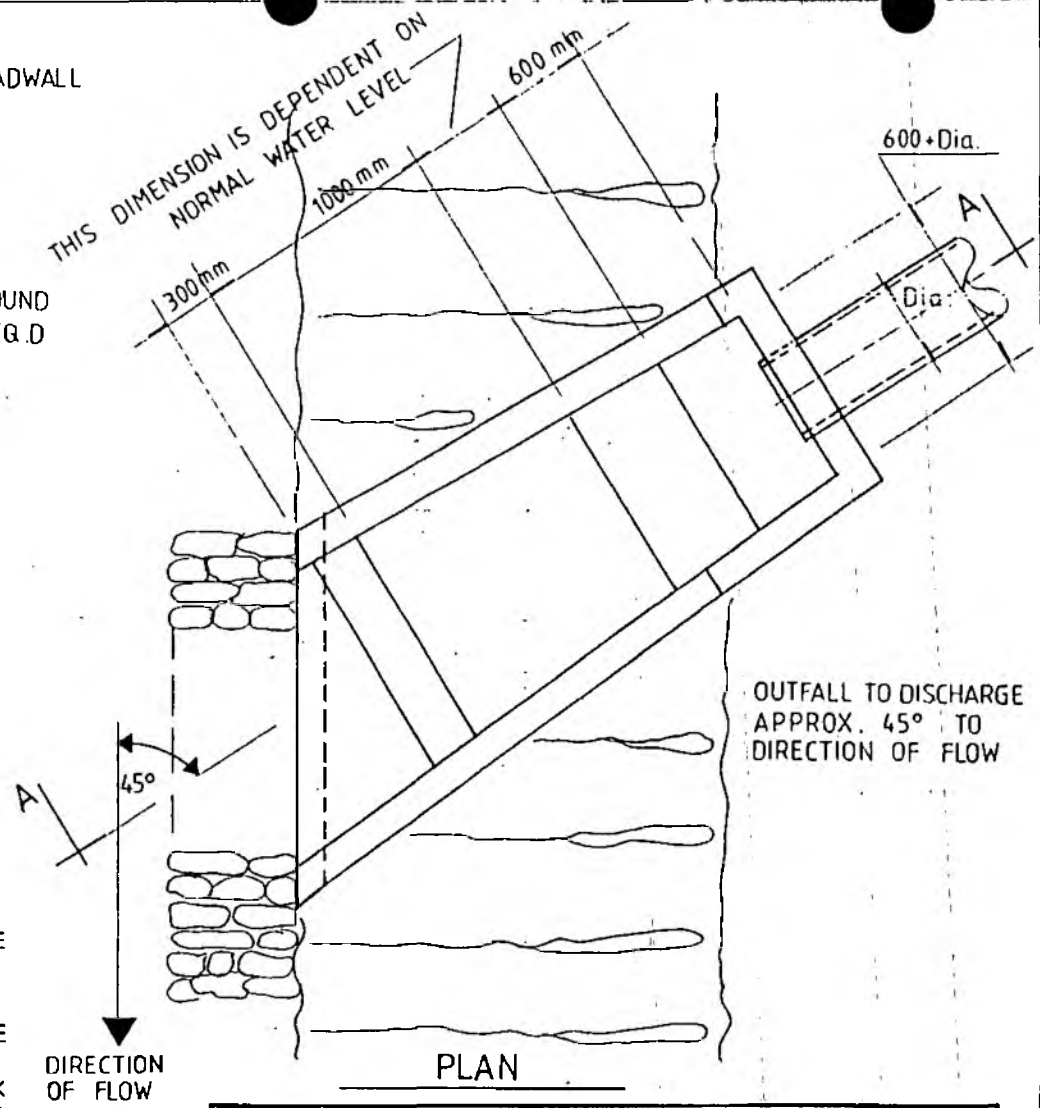
NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

scale:	date:	drawing no.
NOT TO SCALE	MAY 1994	FDIS3 - SHEET 1



SECTION TAKEN ON LINE A — A



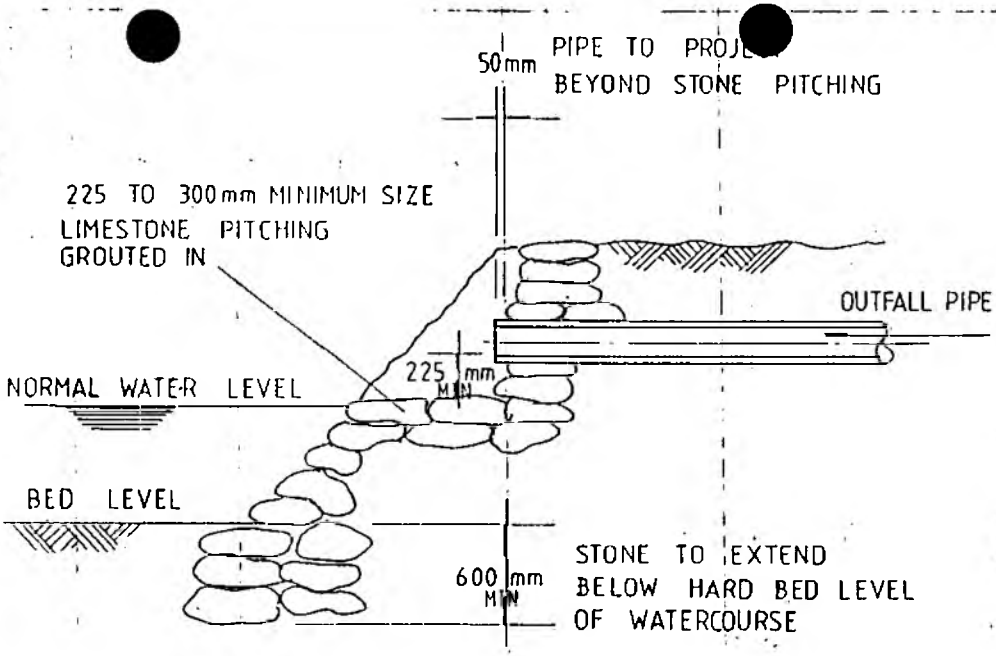
PLAN

GENERAL NOTES

1) PIPE OUTFALL EXIT VELOCITY SHOULD NOT EXCEED 1.8 M/S.
2) THE HEADWALL AND WINGWALLS SHOULD NOT PROJECT BEYOND OR ABOVE THE LINE OF THE BANK.
3) NO PART OF THE STRUCTURE SHOULD CUT INTO ANY FLOOD EMBANKMENT.
4) ALL SURPLUS SPOIL FROM EXCAVATIONS FOR STRUCTURE AND PIPE MUST BE REMOVED FROM SITE.
5) STONE PITCHING MAY BE REQUIRED TO PROTECT THE BED AND OPPOSITE BANK DOWNSTREAM OF THE OUTFALL AND SHOULD CONFORM TO THE NRA'S SPECIFICATION FOR STONE PITCHING REFERRED TO IN INFORMATION SHEET NO.9.
6) DIMENSIONS OF STILLING BAISN ARE MINIMUM ONLY AND MAY HAVE TO BE VARIED ACCORDING TO SIZE AND/OR EXIT VELOCITY IN EXCESS OF THAT QUOTED ABOVE.
7) THE EXACT LOCATION OF THE OUTFALL MUST BE INDICATED.
8) WHERE REQUIRED, A FLAPVALVE MUST BE FITTED. WHERE AN OUTFALL PIPE PASSES THROUGH A FLOOD DEFENCE STRUCTURE, EG. A FLOODBANK, A FLAPVALVE AND MANUALLY OPERATED PENSTOCK ARE REQUIRED.

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

TYPICAL PIPE OUTFALL STRUCTURE WITH STILLING BASIN		
NRA	NATIONAL RIVERS AUTHORITY Severn-Trent Region	
scale: NOT TO SCALE	date: MAY 1994	drawing no. FDIS3 - SHEET 2

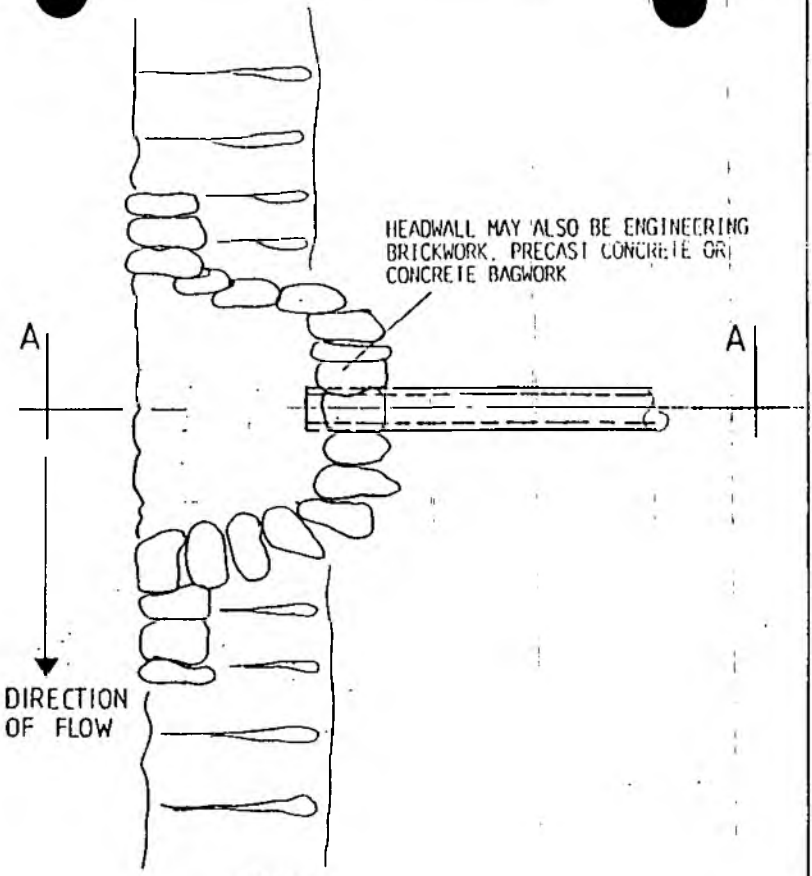


SECTION TAKEN ON LINE A — A

GENERAL NOTES

1) PIPE OUTFALL EXIT VELOCITY SHOULD NOT EXCEED 1.2 M/S.
2) THE HEADWALL AND WINGWALLS SHOULD NOT PROJECT BEYOND OR ABOVE THE LINE OF THE BANK.
3) NO PART OF THE STRUCTURE SHOULD CUT INTO ANY FLOOD EMBANKMENT.
4) ALL SURPLUS SPOIL FROM EXCAVATIONS FOR STRUCTURE AND PIPE MUST BE REMOVED FROM SITE.
5) STONE PITCHING MAY BE REQUIRED TO PROTECT THE BED AND OPPOSITE BANK DOWNSTREAM OF THE OUTFALL AND SHOULD CONFORM TO THE NRA'S SPECIFICATION FOR STONE PITCHING REFERRED TO IN INFORMATION SHEET NO.9.
6) THE EXACT LOCATION OF THE OUTFALL MUST BE INDICATED.
7) WHERE REQUIRED, A FLAPVALVE MUST BE FITTED. WHERE AN OUTFALL PIPE PASSES THROUGH A FLOOD DEFENCE STRUCTURE, EG. A FLOODBANK, A FLAPVALVE AND MANUALLY OPERATED PENSTOCK ARE REQUIRED.

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.



PLAN

TYPICAL PIPE OUTFALL STRUCTURE
FOR PIPES BELOW 300MM DIAMETER

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

scale:	date:	drawing no.
NOT TO SCALE	MAY 1994	FDIS3 - SHEET 3

Flood Defence Information Sheet No. 4

Culverts

NRA
National Rivers Authority
Severn-Trent Region

Any person intending to construct a culvert on any watercourse requires a Land Drainage Consent from the National Rivers Authority.

The NRA was formed with responsibilities for the protection of the water environment. Because of the environmental effects of culverting watercourses, leading to a loss of habitat and amenity, the NRA Severn-Trent Region seeks to discourage the use of culverting wherever possible.

Proposers of culverting schemes are encouraged to find alternatives which utilise the watercourse as a feature, and enhance the area. Refusal of Land Drainage Consent may be appropriate on environmental grounds if the Authority is not satisfied with the submitted proposals. Should applicants feel aggrieved at this approach, it will be up to them to prove that their proposal is environmentally and technically acceptable.

Where culverting is appropriate, the following are design standards which the NRA expect to be met in Land Drainage Consent applications:

1. The hydraulic capacity of culverts should be consistent with the NRA's standard of protection aims. These are expressed as the return period between floods and are as follows:

   1 in 100 years - Urban areas and villages.
   1 in 50 years - Agricultural land of high value and isolated properties.
   1 in 25 years - Agricultural land (minimum level of protection).

2. Culverting proposals should include inlet and outlet hydraulic control calculations.

3. Culverting proposals should include longitudinal sections of the watercourse upstream and downstream of the culvert in order to adequately demonstrate the effect of the proposal on the watercourse.

4. The minimum culvert diameter should be 450mm, as smaller sizes are prone to regular blockage.

5. Culverts under motorways and other major road embankments should be a minimum of 1,050mm diameter to allow access for maintenance.

6. Culverts should have access points for rodding, or manholes at least every 100 metres, and at changes of direction, section and changes of property. On culverts

with slow bends, manhole spacings should be more frequent.

7. The exit velocity under the design flood conditions should be limited to 1.2m/s, (2.0m/s in upland watercourses), unless erosion protection is provided.

8. Protection against erosion should be provided up to flood level at both the culvert entry and exit.

9. Headwalls should be provided at entry and exit. They should be adequately keyed into the banks and bed to prevent erosion.

10. Safety fencing should be provided at entry and exit wherever there is public access.

11. Upstream screens should only be used where there is a real danger to public safety or where rubbish or tree branches are likely to block the culvert and cause flooding. Screens should be designed for easy raking and have a horizontal top section allowing additional flow capacity for when the inclined section becomes blocked. Adequate arrangements must be made to ensure that screens are kept clear of debris at all times. (A typical drawing is available on request).

12. In some situations it is appropriate for the inverts of box culverts to be set 600mm below the design bed level to allow for future regrading of the watercourse. The void between the invert and the existing bed level should be filled with suitable inert material.

13. Because of the cost of replacement, the inverts of large circular pipe culverts should also be set 600mm below present bed level if future regrading is likely. To avoid oversizing, a temporary upstream drop structure can be constructed. Smaller pipe culverts should have their inverts set at hard bed level (as a minimum) when the watercourse has been recently dredged, or 300mm below existing bed level when in an unimproved state. The likelihood of future regrading, the cost of culvert replacement and the culvert hydraulics are considered by the NRA when approving the diameter and invert level.

14. For all shapes of culvert the required hydraulic capacity must be available above the bed level at all times.

15. Where a box culvert is proposed in preference to a bridge, 600mm freeboard must be provided above design flood level in the culvert. A similar freeboard of 600mm is also required for large circular bridge openings for ⅔ of the width of the opening at design flood level. These freeboard requirements are to allow floating debris to pass freely through the culvert.

16. For smaller circular bridge openings lesser freeboards may be acceptable.

17. No development will be permitted over or within 3 metres of the outer walls of Main River culverts. A similar policy will be applied to culverted "ordinary"

watercourses. In addition, an overland flood route should be retained extending to 3 metres either side of a culvert to cater for floods in excess of the design capacity, or blockages.

18. Syphons are a source of continuous maintenance problems and their use is discouraged.

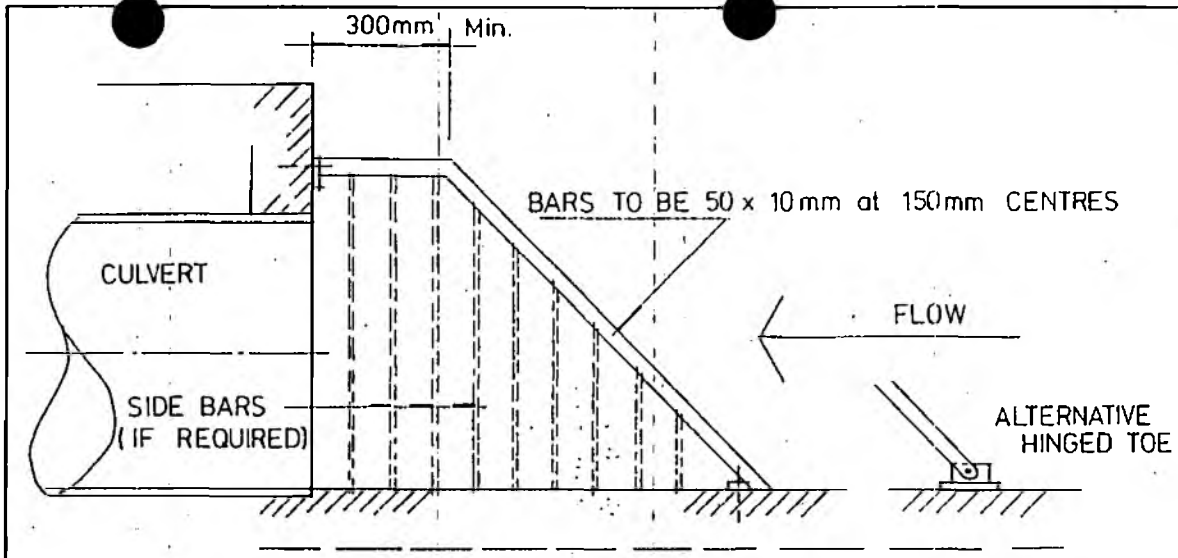
19. The use of multi-pipe culverts is discouraged. Where site conditions prevent a single pipe or box culvert, a minimum number of pipes should be used. Cutwaters should be provided between the pipes at the culvert entry.

20. Elliptical and other shapes of culvert can be used provided that they satisfy the hydraulic and operational considerations encompassed in the above criteria.

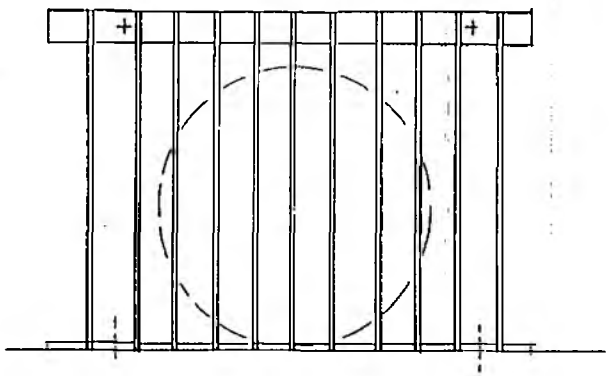
Further Information

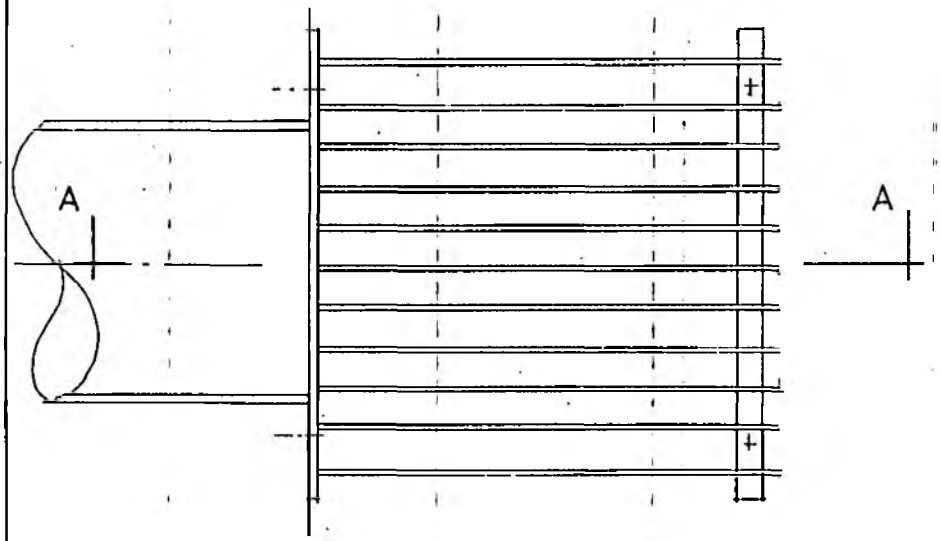
Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.



SECTION TAKEN ON LINE A – A





PLAN

BASIC DESIGN CRITERIA

1) SCREEN SIZE MUST BE SUCH THAT IT WILL ALLOW FULL FLOW THROUGH THE CULVERT EVEN WHEN PARTIALLY BLOCKED.
2) SCREEN MUST BE DESIGNED SO THAT DEBRIS CAN BE CLEARED FROM IT SAFELY UNDER ALL CONDITIONS. PROVISION SHOULD BE MADE FOR STANDING ABOVE SCREEN TO HAND RAKE. HORIZONTAL SUPPORTS OR SPACERS MUST BE OFFSET SO THAT RAKING WILL NOT BE OBSTRUCTED.
3) IT MUST PREVENT ALL DEBRIS CAPABLE OF CAUSING A BLOCKAGE FROM ENTERING THE CULVERT.
4) IT MUST REMAIN STRUCTURALLY SOUND UNDER ALL CONDITIONS OF SERVICE.
5) HINGED SCREEN CONSTRUCTION MAY BE USED TO ALLOW FOR MAINTENANCE ACCESS INTO CULVERT.

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

RAKEABLE TRASH SCREEN

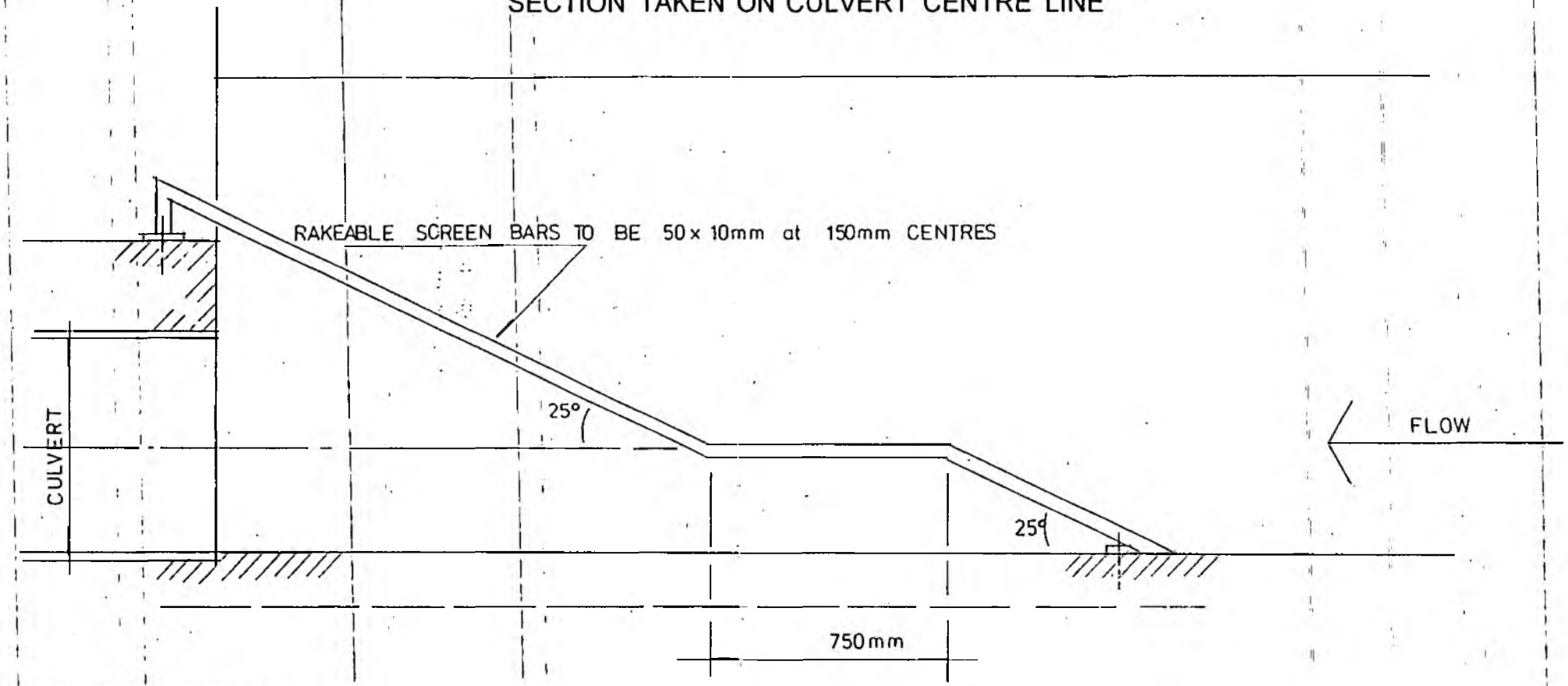
TYPICAL DETAIL

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

scale:	date:	drawing no.
NOT TO SCALE	MAY 1994	FDIS4 - SHEET 1

SECTION TAKEN ON CULVERT CENTRE LINE



BASIC DESIGN CRITERIA

1) SCREEN SIZE MUST BE SUCH THAT IT WILL ALLOW FULL FLOW THROUGH THE CULVERT EVEN WHEN PARTIALLY BLOCKED.
2) SCREEN MUST BE DESIGNED SO THAT DEBRIS CAN BE CLEARED FROM IT SAFELY UNDER ALL CONDITIONS. PROVISION SHOULD BE MADE FOR STANDING ABOVE SCREEN TO HAND RAKE. HORIZONTAL SUPPORTS OR SPACERS MUST BE OFFSET SO THAT RAKING WILL NOT BE OBSTRUCTED.
3) IT MUST PREVENT ALL DEBRIS CAPABLE OF CAUSING A BLOCKAGE FROM ENTERING THE CULVERT.
4) IT MUST REMAIN STRUCTURALLY SOUND UNDER ALL CONDITIONS OF SERVICE.
5) HINGED SCREEN CONSTRUCTION MAY BE USED TO ALLOW FOR MAINTENANCE ACCESS INTO CULVERT.

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RAKEABLE TRASH SCREEN

FOR LARGE CULVERTS

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

scale:	date:	drawing no.
NOT TO SCALE	MAY 1994	FDIS4 - SHEET 2

Flood Defence Information Sheet No. 5

Bridges

NRA

National Rivers Authority
Severn-Trent Region

Bridge structures must not create an obstruction to flow in the watercourse or create an unacceptable obstruction to future access for maintenance.

Any person intending to construct a bridge over a watercourse requires the approval of the National Rivers Authority. In the case of a Main River, and also an "ordinary" watercourse where the flow is likely to be affected by the structure, a Land Drainage Consent is required.

The following criteria must be taken into account:

1. Bridge soffit levels and flood spans should be 600mm above the design flood level, (or maximum known flood level on minor watercourse), in order to allow floating debris to pass freely through the structure. If the promoter does not provide hydraulic calculations for the design flood level, 1 metre above the maximum known flood level will be required.

2. The top of abutment footings of bridges with a soft invert should be set a minimum of 600mm below the existing hard bed level.

3. Solid inverts should be set 600mm below the existing hard bed level to allow for future regrading. The void up to the existing bed level should be filled with a suitable inert material.

4. Clear span bridges should be provided where possible. Open-type parapets are preferred to allow some over deck flow in case of the bridge becoming partially blocked or an extreme flood event.

5. Where additional flood openings are proposed, a model study would normally be expected in order to identify the optimum number, size and location. A physical model is likely to be required in complex situations and/or where there is a wide floodplain necessitating a number of flood openings.

6. Ideally, the soffit should be no lower than either of the upstream bank tops. If a lower clearance is necessary on technical grounds, a wider span may be required to compensate.

7. Consideration should be given to possible local scour of the piers and abutments. A study of bridge failures has indicated that 60-70% are caused by hydraulic action.

8. Velocities should be limited to between 1.5m/s and 2.0m/s under flood conditions. However, with a sheet piled opening and upstream and downstream training walls, a velocity of 3.5m/s may be permitted.

9. Machine access is required by the NRA along at least one side of Main Rivers. The normal requirement at bridges is a 5 metre wide, 1 in 3 gated ramp up and over the obstruction, unless a 5 metre high and 5 metre wide access is provided under the bridge soffit which could double as an access. It must be remembered that the option of ramping up and over does not exist where the bridge is carrying a motorway or major dual carriageway with crash barriers, and alternative access facilities must be provided.

10. Afflux calculations should be provided by the promoter.

11. Consideration must be given to the choice of materials and the environmental implications of all works affecting a watercourse.

12. Bridges provide important nesting sites for a number of species of birds and bats. Nest boxes can be incorporated into the design of new bridges. Advice may be obtained from the NRA's Area Fisheries, Recreation, Conservation and Navigation Staff.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.

Flood Defence Information Sheet No. 6

Pipe Crossings

NRA
National Rivers Authority
Severn-Trent Region

The National Rivers Authority wishes to ensure that pipe crossings of watercourses:

- do not obstruct the flow in the watercourse, either directly or indirectly as a result of encouraging the build up of debris;
- do not prohibit the maintenance or future improvement of the watercourse;
- are appropriately integrated into the environment visually.

Pipe Crossings Below Bed Level

1. Cover requirements should take into account both future regrading and existing freeboard.

2. A minimum cover of 1 metre must be provided above the highest part of the pipe or concrete surround to the firm bed level and the pipe must remain at this level for at least 3 metres on each side of the channel with the following provisos:

   - This clearance is required to permit possible future deepening and widening of the watercourse. The owner of the pipe or cable must allow any additional clearance required to protect his apparatus.
   - On smaller "ordinary" watercourses, the cover may be reduced to 600mm minimum subject to agreement with the NRA.
   - Where heavy maintenance plant will track along the river bank, consideration should be given to increasing the horizontal length of the pipe under that bank. The amount depends on the profile of the bank and pipe, and on the cover required for the pipe strength and the loading.

3. It is important that the level above Ordnance Datum of the highest part of the pipe or concrete is shown on any drawing.

4. Permanent marker posts which show the owner of the apparatus must be set in one bank if a channel is less than 10 metres wide and in both banks if wider.

5. Bank protection, where required, should be provided beyond the disturbed width and be adequately keyed into both the beds and banks.

6. Pipe crossings which may limit the NRA's maintenance activities, (eg. high pressure gas mains), will require a commuted sum payment for the higher operational costs.

7. A drawing showing typical details is available.

Pipe Crossings Above Water Level

1. The underside of pipes should be 600mm above the design flood level, (or maximum flood level on minor watercourses), to allow floating debris to pass freely. If the promoter does not provide hydraulic calculations for the design flood level, 1 metre above maximum know flood level will be required on Main Rivers and "ordinary" watercourses.

2. Where an existing bridge gives less clearance, a pipe or cable may be fixed on the downstream bridge face to the same clearance as the bridge, but an agreement will be required whereby the undertaker agrees to move the service to a higher level at his own cost if the bridge is replaced in the future.

3. The level above Ordnance Datum of the underside of the apparatus must be shown on any drawing.

Environmental Implications

Consideration must be given to the choice of materials for any bank protection works and the environmental implications of all works affecting a watercourse.

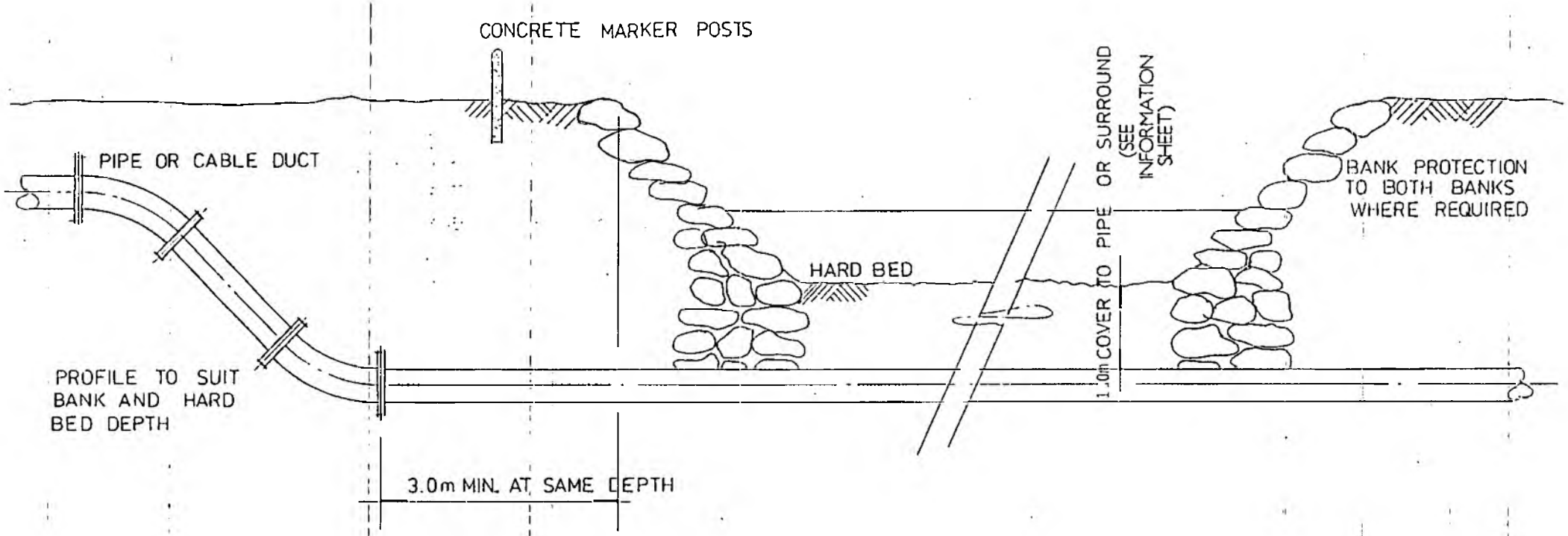
NRA Consents

Any person intending to construct a pipe crossing is advised to consult the NRA at least two months prior to any construction work being carried out. In the case of Main River, and also on "ordinary" watercourses where the flow is likely to be affected by the structure, a Land Drainage Consent is required from the NRA.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.



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PIPE CROSSING

BELOW BED LEVEL

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

scale:	date:	drawing no.
NOT TO SCALE	MAY 1994	FDIS6 - SHEET 1

Flood Defence
Information Sheet No. 7

Fishing Platforms

NRA
National Rivers Authority
Severn-Trent Region

Any person intending to construct a fishing platform in a watercourse requires a Land Drainage Consent from the National Rivers Authority. In order to reduce the possible obstruction to flow in the watercourse which can be caused by poorly designed and constructed fishing platforms, the NRA's general requirements are as follows:-

1. It is recommended that fishing platforms should be let into the banks to create less obstruction to flow. They should not project out from the waters edge at normal water level more than 1 metre, and they should be solidly staked down.

2. Platforms insecurely attached to the bank are **not** permitted as these can be torn away during a flood and cause an obstruction at a downstream bridge or culvert.

3. Fishing platforms must be parallel to the river flow and should be constructed so as not to pose a river maintenance problem.

4. The access ramp/steps/ladder to the platform should be designed so as not to make the banks unstable or create erosion or obstruct flow.

5. At all locations, the method of construction and materials used should be carefully chosen so as to be compatible with the river environment.

6. One possible form of construction is illustrated overleaf.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

NRA Fisheries, Conservation, Recreation and Navigation staff will also be pleased to advise on the appropriate methods of construction at specific sites.

An information sheet titled "*Land Drainage Consents*" is available on request.

NOTES

1) SURPLUS EXCAVATED MATERIAL TO BE REMOVED TO ABOVE THE BANK TOP TO A POSITION WHERE IT DOES NOT AFFECT THE FLOODPLAIN. DO NOT THROW SPOIL INTO THE RIVER.

2) ALL TIMBERS MUST BE SECURELY FIXED.

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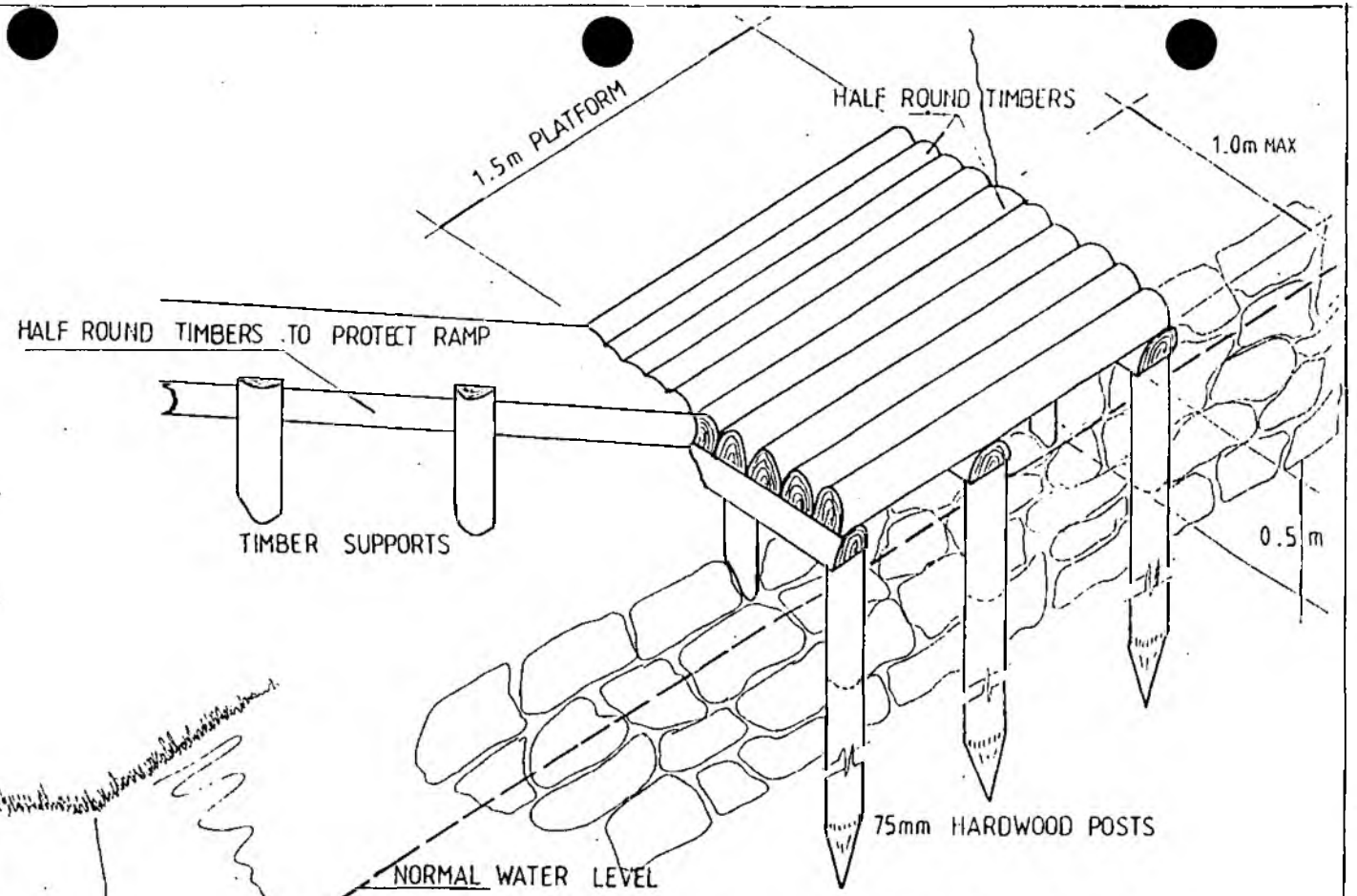
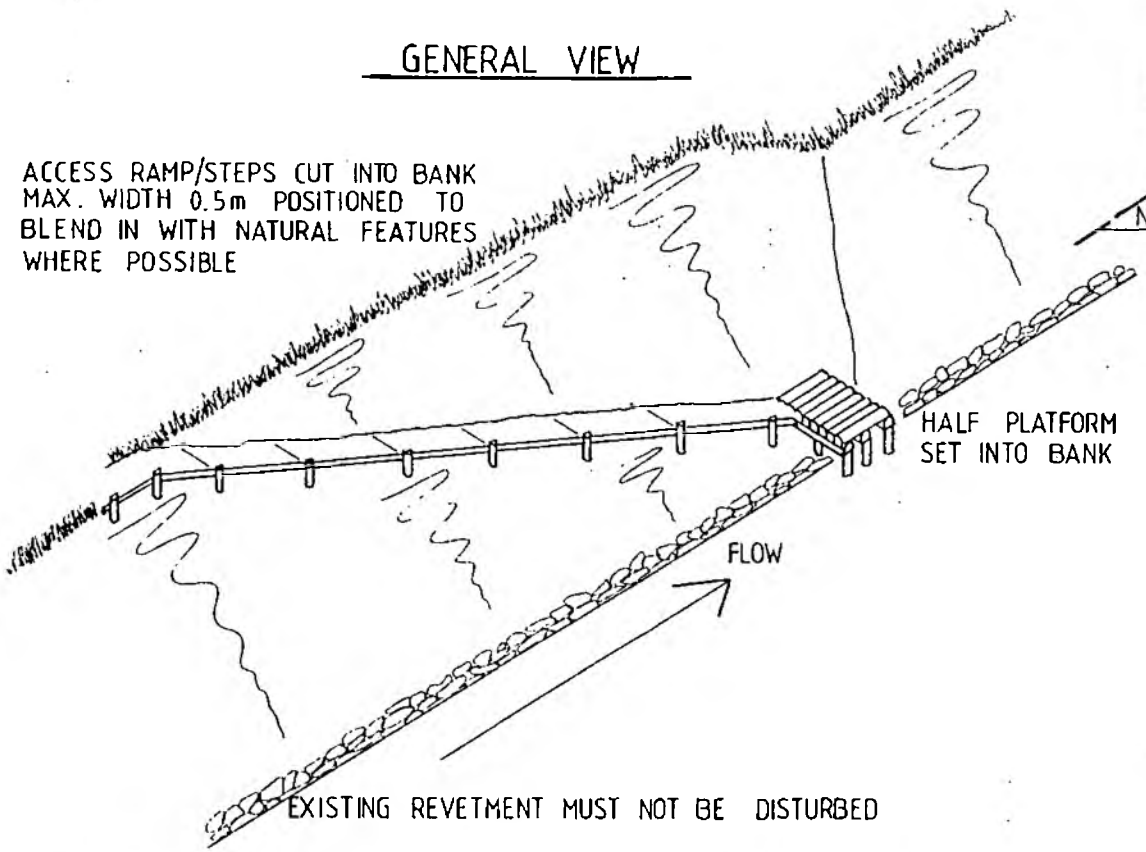


TYPICAL PLATFORM CONSTRUCTION

GENERAL VIEW



FISHING PLATFORM

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

scale:	date:	drawing no.
NOT TO SCALE	MAY 1994	FDIS7 - SHEET 1

Flood Defence Information Sheet No. 8

Cattle Drinks

NRA
National Rivers Authority
Severn-Trent Region

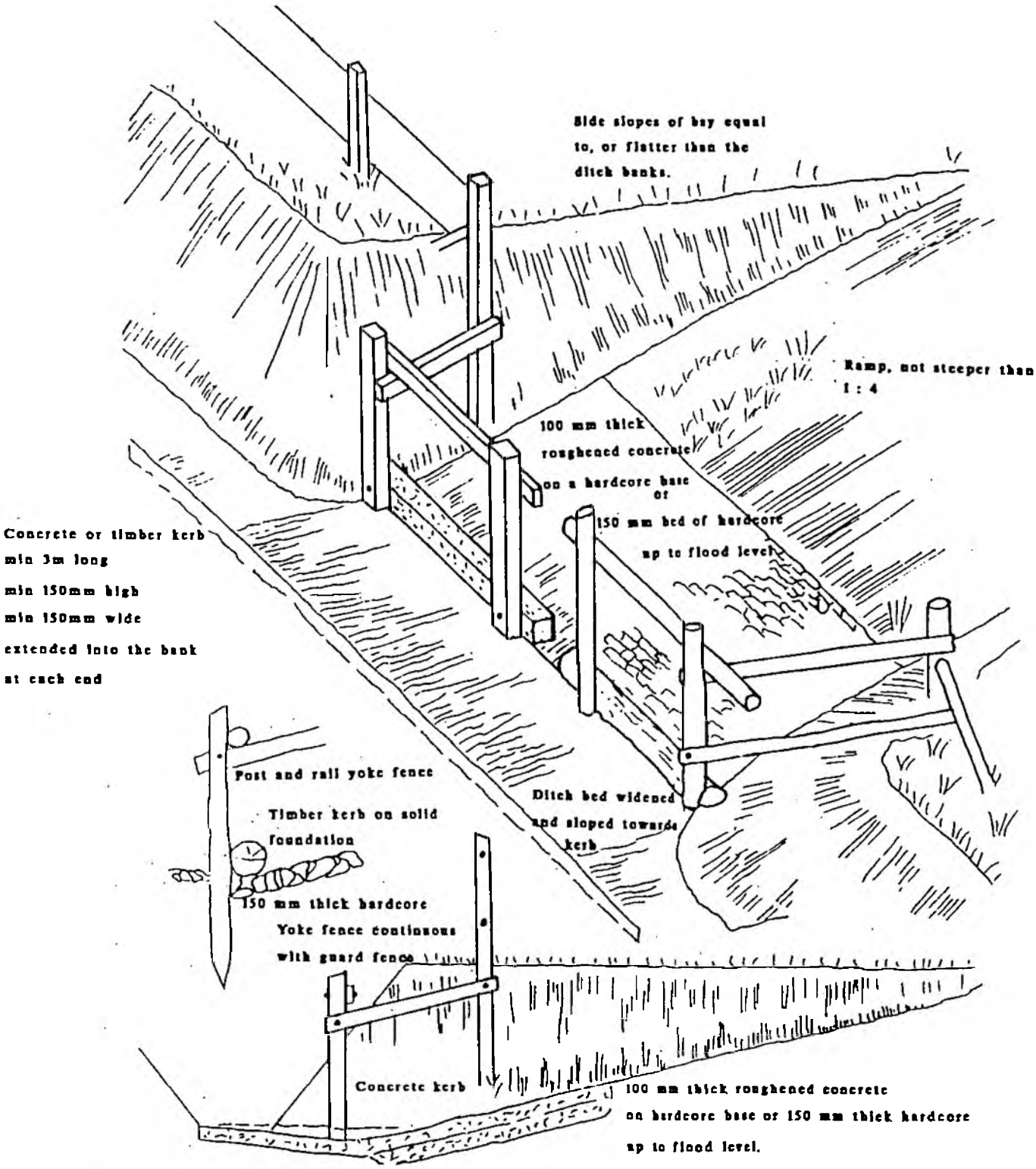
Any person intending to construct cattle drinking facilities in a watercourse requires a Land Drainage Consent from the National Rivers Authority. This is to ensure that any works do not obstruct the watercourse and damage land and property by increasing the risk of flooding.

The following features are recommended:-

1. Cattle should be kept out of the river bed by stout post and rail fencing.
2. Access ramps should not exceed a 1 in 4 slope.
3. Access ramps should be fenced on the waterside when parallel with the bank.
4. The drinking bay should not be less than 3 metres wide.
5. A concrete or hard-core base should be provided below normal water level.
6. A typical construction is illustrated overleaf.

Further Information
Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.



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CATTLE DRINKING BAY

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

Scale :	Date :	Drawing no.:
NOT TO SCALE	MAY 1994	FDIS8 - SHEET 1

Flood Defence
Information Sheet No. 9

Bank Protection

NRA
National Rivers Authority
Severn-Trent Region

Riparian owners are responsible for protecting their property from erosion. Nevertheless, bank protection works on a Main River watercourse require a Land Drainage Consent from the National Rivers Authority to ensure that such works do not create problems for neighbouring landowners. The NRA recommends that wherever possible, natural forms of bank protection or revetment are used, and that the use of hard man-made revetments are restricted to a minimum.

Where used, bank protection should have an adequate toe which should be taken down a minimum of 600mm below firm bed level. It is equally important to key the upstream and downstream ends of the protection works into the bank by a recommended length of 600mm at 45° to prevent erosion around the back.

Natural Vegetation
The use of natural vegetation, with or without "open" forms of revetment, is encouraged. Riparian owners should cut back, coppice or pollard rather than remove vegetation. Advice may be obtained from the NRA's Area Conservation & Recreation Officers.

Willow Spiling
Willow spiling involves weaving willow withies (thin willow branches) between fresh winter-cut willow stakes to form a fence-like structure. This method has the advantage that after a time the willow roots and sprouts providing living protection and additional stability. The method may be satisfactory for the protection of steep or vertical banks, but is not suitable as a retaining structure. A typical design is illustrated on the attached drawing.

Geotextiles
Geotextiles are generally flexible fabrics and/or mesh matting which can be placed over a slope or area of potential erosion and pinned in place to provide stability. For nature conservation reasons, biodegradable products constructed from natural materials are preferred. The use of geotextiles is only suitable for slopes of moderate gradient and is likely to fail on steep slopes or in high energy environments.

Timber Piling
Timber piling can be used to support the toe of a bank and provide protection from erosion. It is not suitable for high energy environments and does not last as long as sheet piling. A typical design is illustrated on the attached drawing.

Stone Pitching
Where stone pitching is proposed, consideration should be given to the size of the stone with regards to washing out, and to the risk of vandalism. A typical design is illustrated on

the attached drawing.

Gabions
The selective use of gabion baskets and mattresses, particularly below normal water level, is acceptable, but large scale use above normal water level will not be permitted as it creates a visually obtrusive form of bank protection. Typical designs are illustrated on the attached drawing.

Bagwork Bank Protection
Bagwork bank protection is constructed using concrete filled hessian bags laid in a brickwork pattern. Extensive bagwork will not be permitted as it creates a visually obtrusive form of bank protection. A typical design is illustrated on the attached drawing.

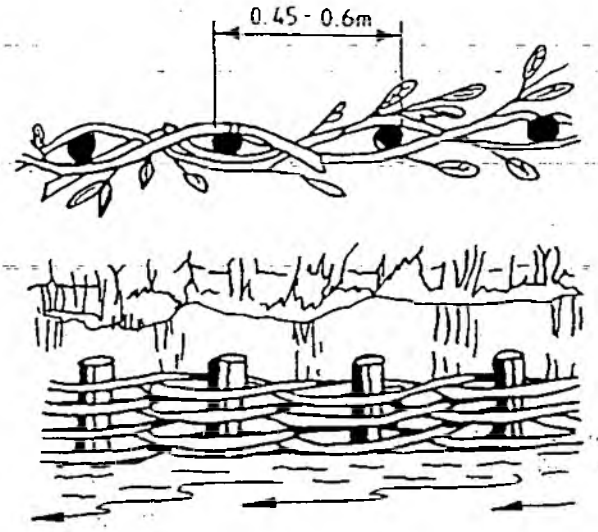
Steel Sheet Piling
This technique is environmentally unsympathetic obliterating any bankside habitat and its use will be discouraged. Typical designs are illustrated on the attached drawing.

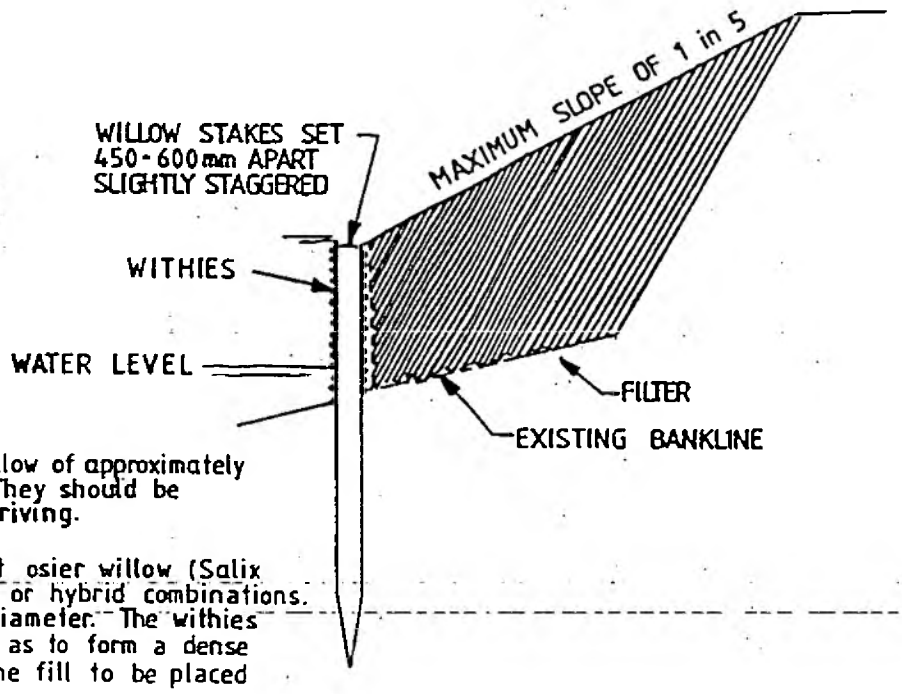
Hard Revetments
The use of hard revetments such as steel sheet piling, concrete retaining walls, precast concrete channels or solid revetment blocks is discouraged. If their use is unavoidable in certain locations they may be faced with more attractive natural visual materials such as stone or timber to provide a more visually acceptable solution.

Other Types of Revetment
Other types of revetment may be considered, but if in doubt please consult with the appropriate Area office prior to any detailed design of such works.

Further Information
Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.





STAKES: should be of fresh winter-cut willow of approximately 100mm diameter and at least 1m long. They should be straight and pointed at one end for driving.

WITHIES: should be of fresh winter-cut osier willow (Salix viminalis), sallow willow (Salix cinera) or hybrid combinations. They should be no more than 50mm in diameter. The withies should be woven between the stakes so as to form a dense continuous mat capable of supporting the fill to be placed against the spiling.

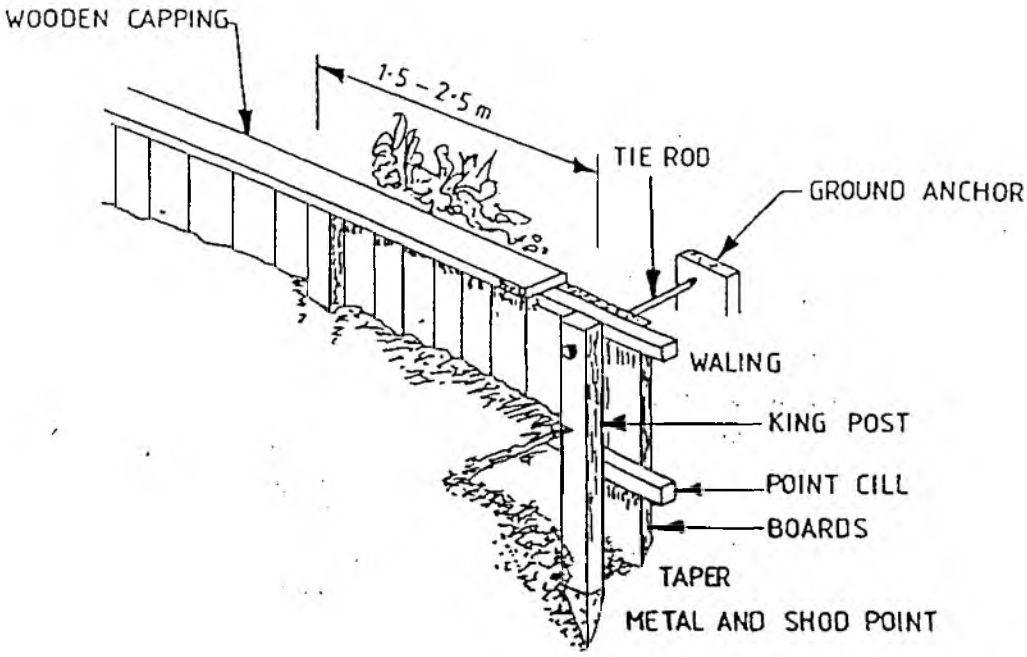
The best time to carry out this work is between November and February.

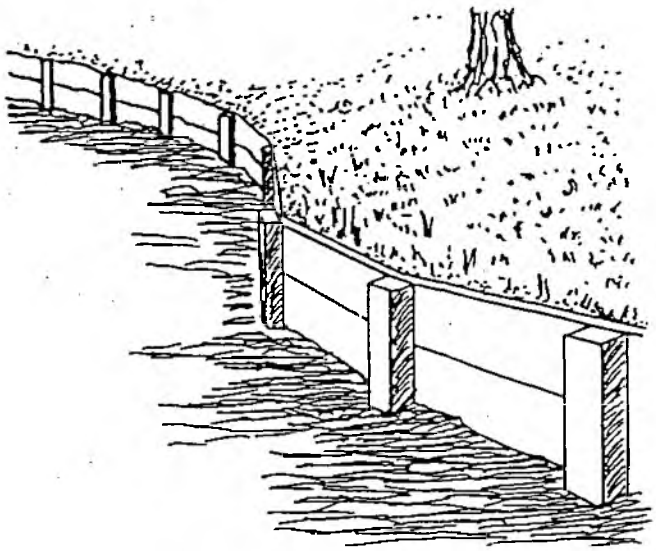
This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Each individual proposal must be submitted for formal land drainage approval. Please contact the Area office for advice and further information.

WILLOW SPILING

NATIONAL RIVERS AUTHORITY
Severn-Trent Region
NRA

Scale :	Date :	Drawing no.:
NOT TO SCALE	MAY 1994	FDIS9 - SHEET 1





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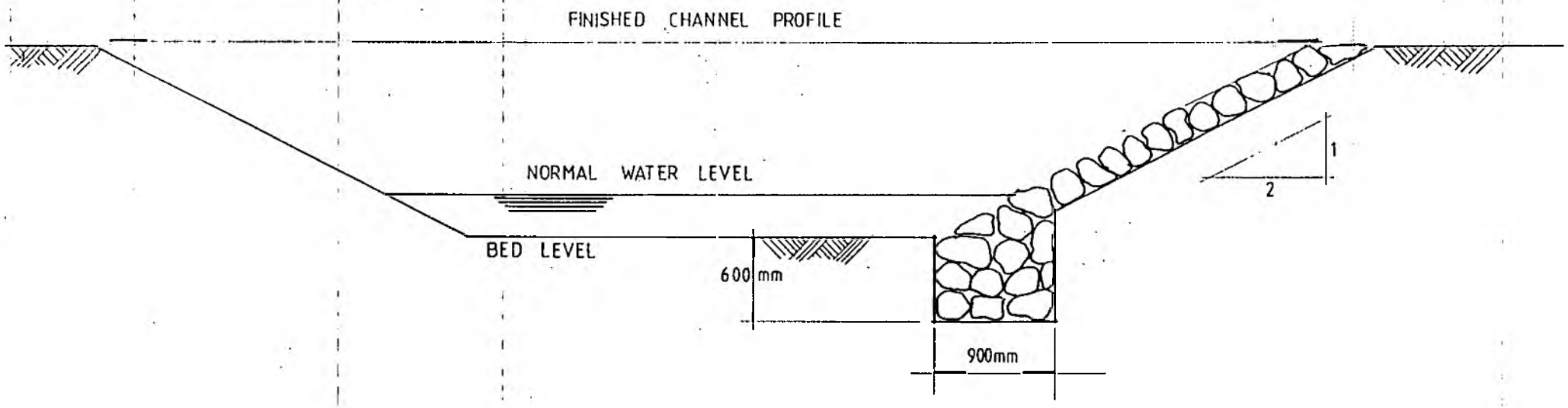
TIMBER PILING

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

Scale :	Date :	Drawing no.:
NOT TO SCALE	MAY 1994	FDIS9 - SHEET 2



GENERAL NOTES

1) ALL STONE MUST BE APPROVED BY THE NRA BEFORE USE.
2) STONE MUST BE HARD, DENSE, HOMOGENEOUS AND FREE FROM FOREIGN MATTER. IT MUST BE RESISTANT TO THE EFFECTS OF FROST AND SHOULD HAVE A NOMINAL SIZE OF 225MM - 300MM.
3) ROUGH LUMP STONE MAY BE ACCEPTED PROVIDED THAT THE DIMENSIONS ARE NOT GREATER THAN 380MM OR LESS THAN 150MM MEASURED ON ANY FACE.
4) THE STONE SHALL BE HAND PACKED AND WELL RAMMED LEAVING THE MINIMUM OF VOIDS AND PLACED TO THE CORRECT BATTER FACE AND LEVEL TO THE SATISFACTION OF THE NRA.
5) FOR DEALING WITH OR PREVENTING EROSION PROBLEMS ON LARGER RIVERS, LARGER STONE SIZES THAN SPECIFIED ABOVE MAY BE APPROPRIATE SUBJECT TO THE APPROVAL OF THE NRA.
6) THE FOLLOWING PROPERTIES SHALL APPLY TO THE STONE:
   (i) AGGREGATE CRUSHING VALUE NOT GREATER THAN 26%.
   (ii) MAGNESIUM SULPHATE SOUNDNESS NOT GREATER THAN 8%.
   (iii) WATER ABSORPTION VALUE NOT GREATER THAN 3½%.
7) GROUTED STONE PITCHING - WHERE THE NRA ADVISES, THE DEVELOPER SHALL FILL WITH CEMENT MORTAR, AS SPECIFIED, THE SURFACE HOLES AND JOINTS IN THE PITCHING. THE MORTAR SHALL BE CAREFULLY APPLIED TO ENSURE THAT THE UPPER INTERSTICES OF THE PITCHING ARE FILLED.

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

STONE PITCHING

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

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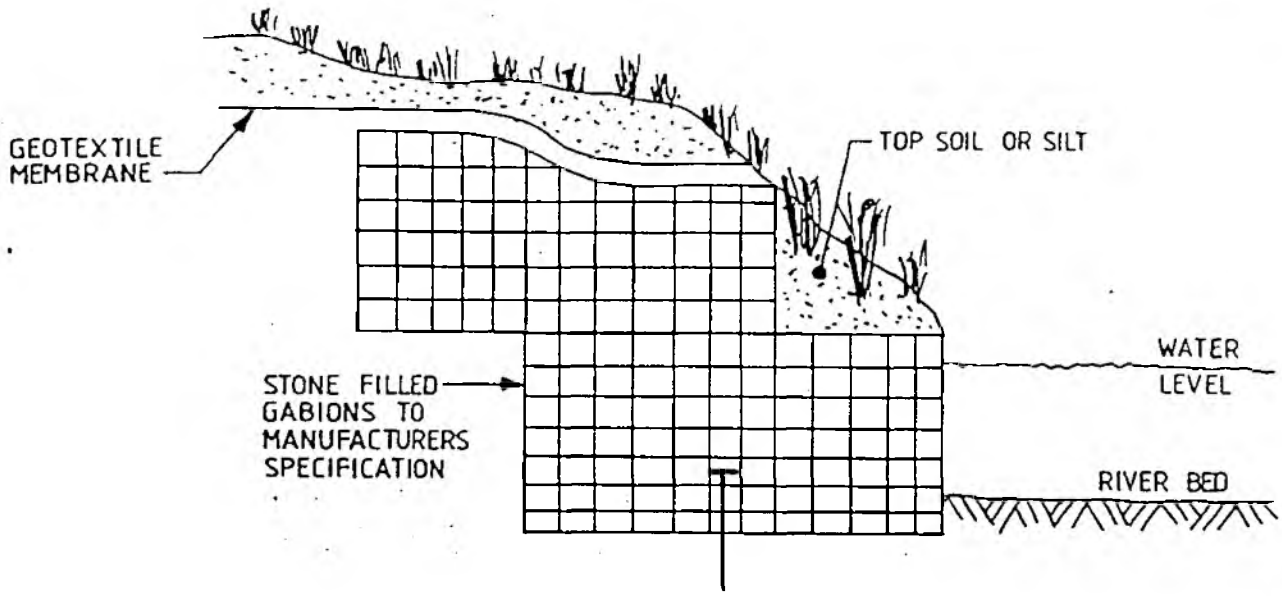
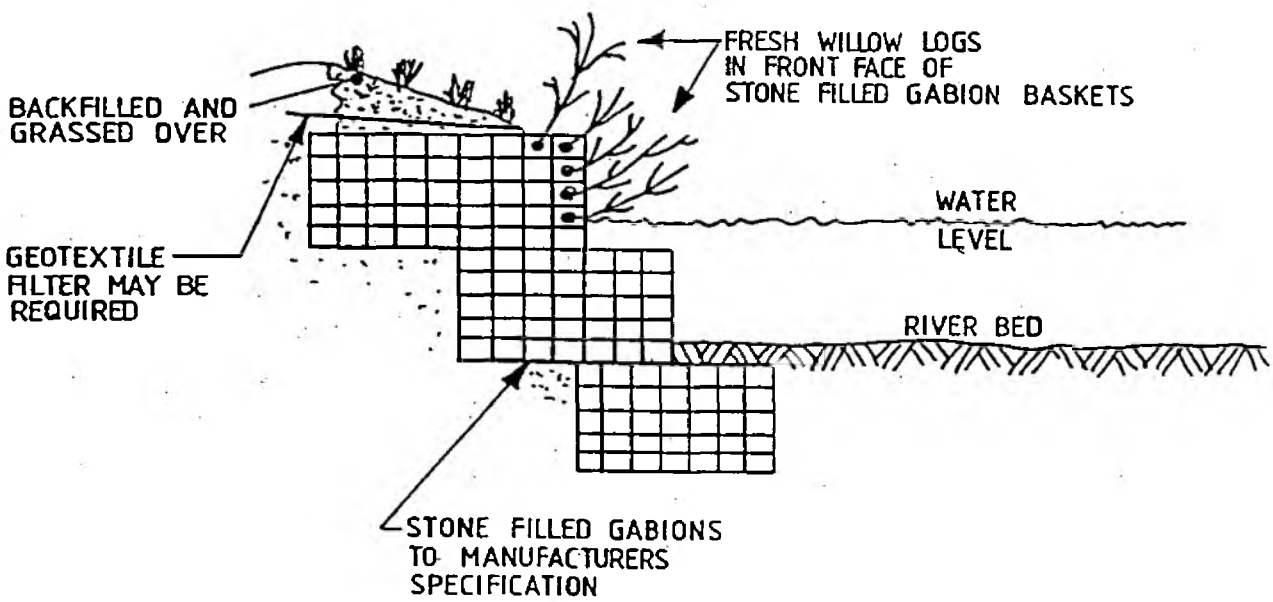


OPTION A



OPTION B

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Each individual proposal must be submitted for formal land drainage approval. Please contact the Area office for advice and further information.

GABIONS

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

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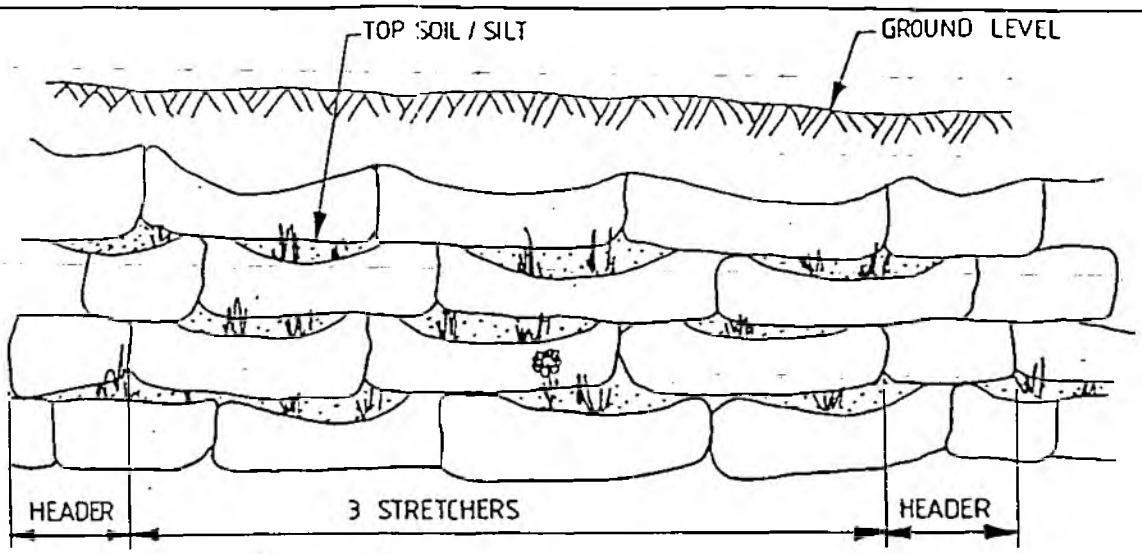
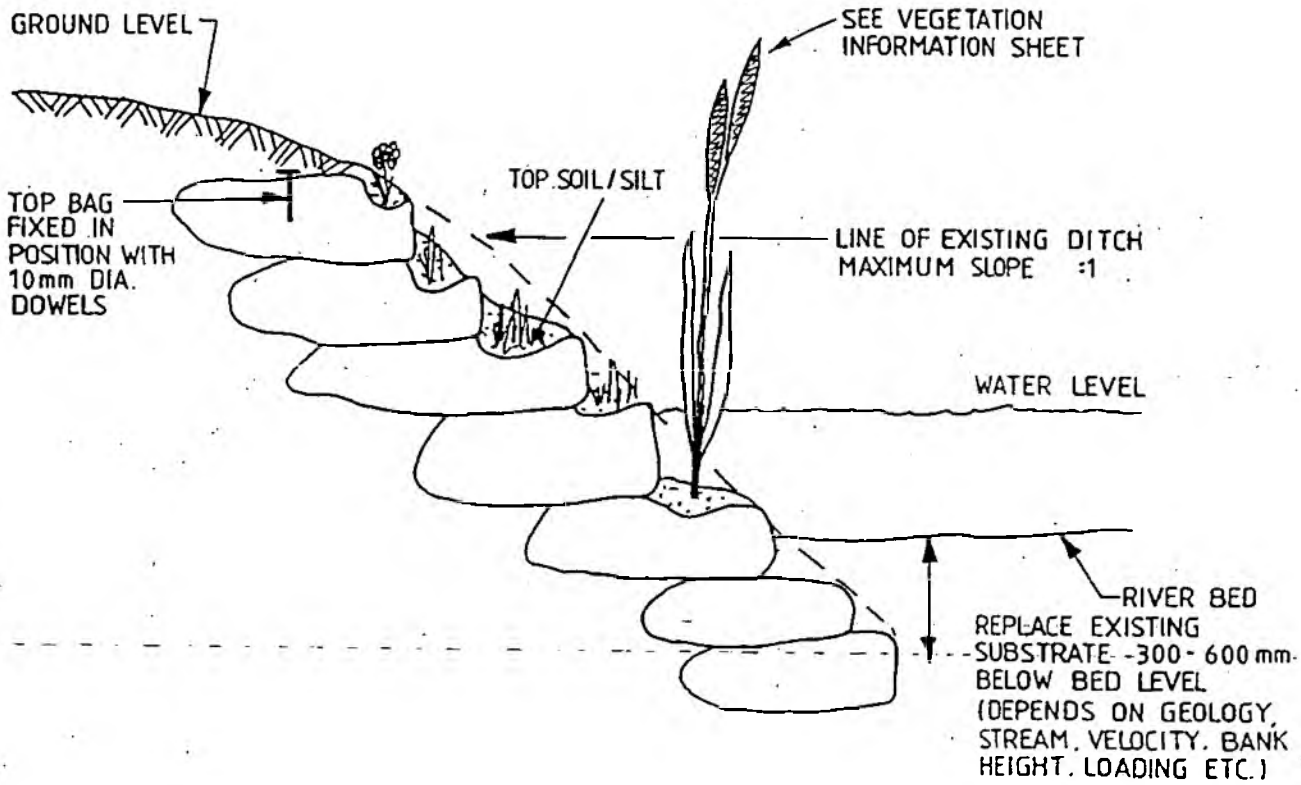


ELEVATION



SECTION

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Each individual proposal must be submitted for formal land drainage approval. Please contact the Area office for advice and further information.

BAGWORK BANK PROTECTION

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

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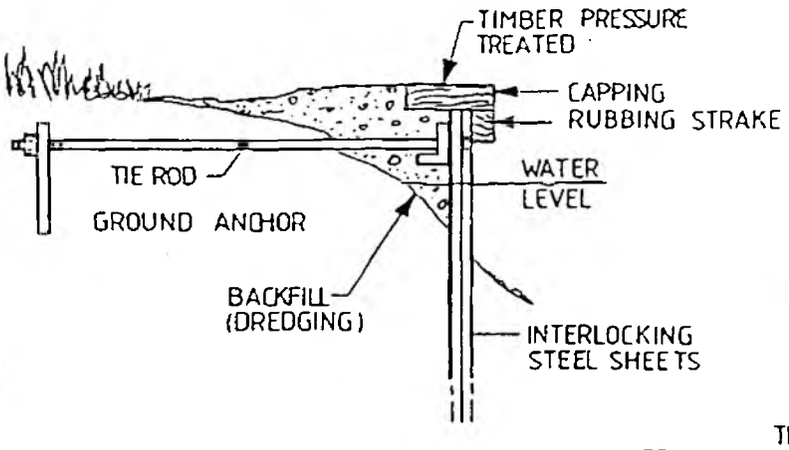

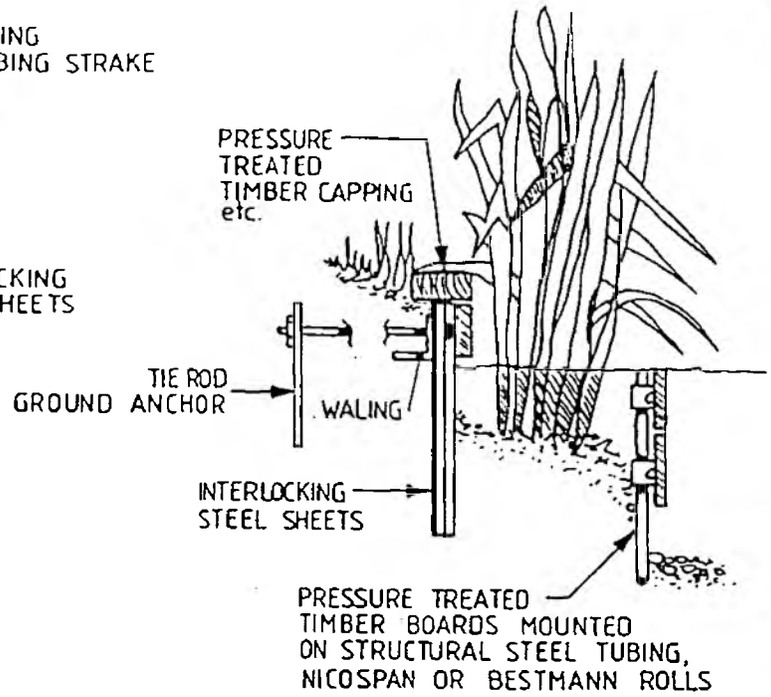

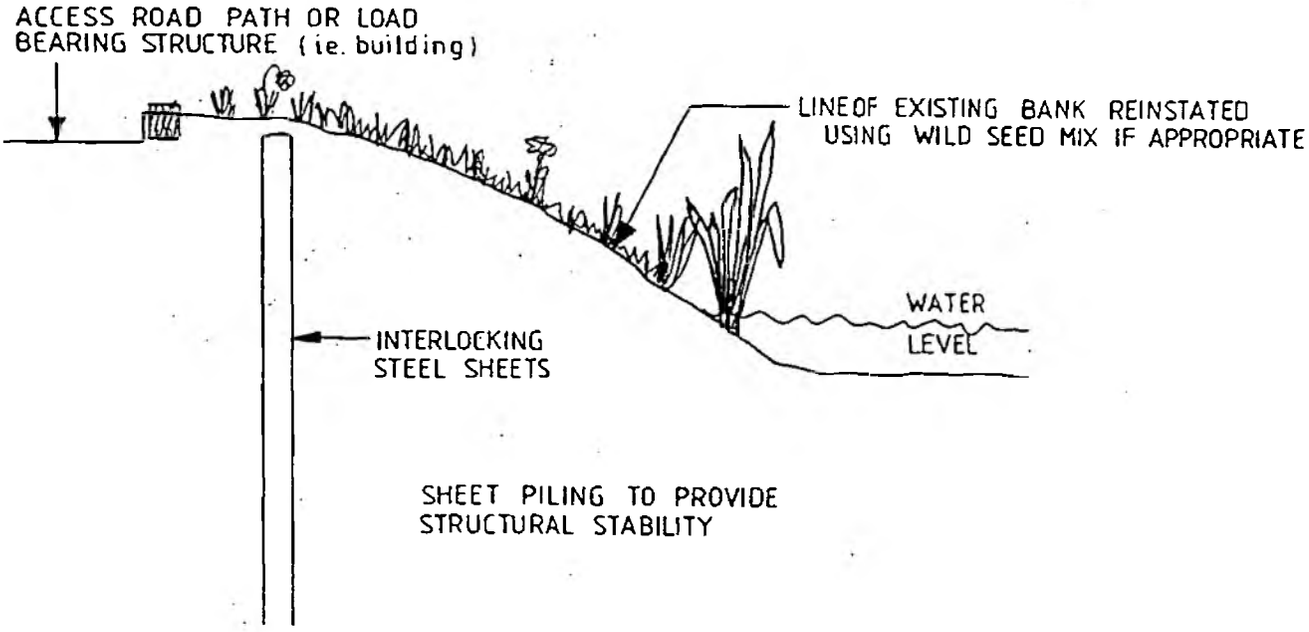

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STEEL SHEET PILING

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

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Flood Defence
Information Sheet No. 10

Temporary or Diversion Works

NRA
National Rivers Authority
Severn-Trent Region

SPECIAL REQUIREMENTS OF THE NATIONAL RIVERS AUTHORITY, SEVERN-TRENT REGION IN RELATION TO TEMPORARY OR DIVERSION WORKS AFFECTING WATERCOURSES AND ASSOCIATED FLOODPLAINS, EXCAVATION IN FLOODBANKS AND CONSTRUCTION OF TEMPORARY FLOODBANKS.

Temporary or Diversion Works

1. Details of any temporary works affecting a watercourse should be submitted to the appropriate Area office of the NRA for consent under the Water Resources Act 1991 or the Land Drainage Act 1991 prior to commencement of works. (Consent for the permanent works should already have been obtained.

2. Consent will normally be granted subject to reasonable conditions which might include restrictions on the timing and scale of works as detailed below.

3. (a) The works shall be carried out between _____ (date) and _____ (date).

   (b) The actual date of commencement of temporary works shall be notified to the NRA's Area Flood Defence Manager, and the date of removal of such works shall also be notified.

4. Temporary cofferdams shall not:

   (a) Reduce the width of the river by more than _____%, measured at normal water level/at flood level, or reduce the width of any flood openings by more than _____% measured at flood level.

   (b) Be constructed with the top higher than _____ metres AOD, which is approximately _____ metres above normal water level.

5. Temporary supports, staging or scaffolding founded below flood level shall not:

   (a) Reduce the width of the river by more than _____%, measured clear between supports at normal water level/at flood level, or reduce the width of any flood openings by more than _____%, measured at flood level.

   (b) Be erected with supports closer than _____ metres, measured at right angles to the flow of the watercourse.

(c) If erected at the same time as cofferdams of the maximum permissable width given in 3(a), cause a further reduction in the width of the river or flood openings.

6. Temporary diversion of a watercourse shall have the same dimensions as the original channel unless a smaller size is agreed with the Area Flood Defence Manager.

7. Any floating debris which may accumulate against supports or cofferdams shall be cleared immediately.

8. The Contractor shall take all reasonable precautions to prevent the contamination of the watercourse with any matter used in or resulting from the construction of the works.

9. Temporary discharges to the watercourse shall be so situated or contrived as to prevent any erosion of the river banks or bed.

10. (a) There shall be no stock piling or storing of materials on the flood berms.

(b) There shall be no temporary stock piling or storing of materials in the floodplain unless in broken heaps parallel to the direction of flood flow and subject to NRA approval.

(c) Where there is a significant risk of urban flooding due to restricted width of floodplain caused by temporary stock piling or bunding, the width reduction must be limited to a maximum of _____% of the floodplain width in the absence of hydraulic calculations.

11. On completion of the works, the Contractor shall restore any erosion, shoaling or other damage in the watercourse which is attributable to the works.

12. Any material or debris connected with the works which falls into the watercourse shall immediately be removed and on completion of the works the river bed and the banks shall be left clear of any debris attributable to the works.

13. The ends of backfilled diversion channels, disused channels or the face of excavations in the river bank shall be protected with pitching of approved stone to the satisfaction of the Area Flood Defence Manager.

Excavation in Floodbanks

14. The turf shall be stripped from the area of excavation in the floodbank and removed from site. (See notes below).

15. The excavated material from the floodbank shall be stored at the rearward side of the bank.

16. A concrete cut-off wall shall be erected around any pipes passing through the

floodbank, extending for a distance of 0.75 metres and placed at the position of the centre line of the floodbank. (See notes below).

17. The backfill shall be reinstated in 0.2 metre layers, except for the first one which shall be 0.4 metres, and shall be well rammed and consolidated. The material used shall be approved by the Area Flood Defence Manager and be free from stones, rubbish or other unsuitable matter.

18. The floodbank shall be covered with a minimum of 0.2 metres of good quality top soil, well rolled and turfed.

19. The finished top soil level shall be that of the original bank, giving suitable allowance for settlement, and the batters shall conform to those existing.

20. After a period of six months, any settlement from the profile before disturbance shall be made good.

Construction of Temporary Floodbanks

21. The crest level width and profile shall be not less than the existing floodbank.

22. The material shall be well consolidated in 0.2 metre to 0.3 metre layers by a heavy tracked vehicle.

23. Any access over the bank shall not be allowed to depress the proper crest level.

24. There shall be no excavation within six metres of the floodbank while it is in effective use.

25. The soil shall be suitable for the purpose and approved by the Authority.

26. Where it is necessary to remove flood defences, temporary defences must be constructed prior to the demolition of the existing defences. On completion of the main works, the permanent flood defences must be reinstated prior to the removal of the temporary defences.

Notes

With regard to 14 above, it is essential that vegetable matter is not mixed with soil in the core of the floodbank on reinstatement, since this rots and produces fibrous areas which cause instability.

With regard to 16 above, the cut-off wall is intended to apply to pipes passing through the floodbank but not necessarily to pipes passing well below the floodbank.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.
An information sheet titled "*Land Drainage Consents*" is available on request.

Flood Defence Information Sheet No. 11

Legal Aspects & Other Regulations Relating to Fish Farms

NRA
National Rivers Authority
Severn-Trent Region

There are certain legal requirements governing the setting up of fish farms. It is most important that potential fish farmers contact the National Rivers Authority in relation to the following matters:

Abstraction Licence

An abstraction licence is NOT required if the fish farm complies with ALL four of the following conditions:

1. The farm must produce fish exclusively for food.

2. The water supply must be a surface, (not underground), source.

3. The water supply must be contiguous with the farm at the point of abstraction.

4. The quantity of water abstracted does not exceed 20 cubic metres (4,400 gallons) per day.

If any of these conditions do not apply, an abstraction licence is required from the NRA's Water Resources and Planning Department, who also advise on licensing matters. A new licence, or variation of an existing licence for other purposes, will require advertisement to safeguard the interests of other water users. An annual charge is payable to the NRA for the abstraction rights conferred by the licence. (The granting of an abstraction licence does not imply that the water quality is suitable for fish farming).

Impounding Licence

An impounding licence must be obtained before the construction of any weir or dam in a watercourse, eg. for the purpose of diverting the flow into the fish farm. The licence is required in addition to any licence for abstraction and application should be made to the NRA. In certain cases where water is to be impounded, the NRA will also require a special agreement to ensure adequate protection to downstream interests. A large impoundment of more than 25 megalitres above natural ground level is subject to additional control to ensure the safety of the dam, and specialist engineering advice must be obtained from a Panel Engineer appointed under the Reservoirs Act 1975.

Land Drainage Consent

A Land Drainage Consent will be required on Main River watercourses and may be required on "ordinary" watercourses.

Consent to Discharge Effluent

The effluent from a fish farm falls within the definition of "trade effluent" for the purposes of the Water Resources Act 1991, and therefore requires the consent of the NRA for discharge to a watercourse. The quality conditions imposed on each individual discharge will be determined by the particular requirements of the receiving stream, but the following guidelines should be used:

1. If possible there should be a single outlet for the discharge, and facilities must always be provided to enable samples of the effluent to be obtained.

2. Provisions may be required for measurement of the volume of water abstracted and discharged.

3. The quality of the effluent discharged will be required to be substantially of the same quality as the abstracted water. The NRA's Environmental Quality Department should be consulted for further information.

4. Nothing should be added during the fish farming activities to cause the effluent discharged to be toxic to fish, fish spawn or the food of fish or to any other river life.

5. Prior to ponds being emptied or sterilised, the NRA should be informed in order that an Officer may be present, if considered necessary.

Under normal circumstances, all these requirements can be achieved by good husbandry. It should be pointed out however, that drainage from ponds which have been in use may require settlement to reduce the suspended solids before being discharged to a stream.

Consent to Introduce Fish

Under the terms of the Salmon and Freshwater Fisheries Act 1975, it is forbidden to transfer any fish or fish eggs from one water to another within the Severn-Trent Region, or from outside Severn-Trent's region, without the previous written consent of the NRA, unless the inland water to which the fish are being transferred is a fish farm. Enquiries should be made to the Area Fisheries, Conservation, Recreation and Navigation Department. In addition, if fish are coming from an Infected Area designated under the Diseases of Fish Act 1937, (as amended), the consent of the Ministry of Agriculture, Fisheries and Food (MAFF) is required. Live salmonids may not be imported from outside Great Britain, while salmonid eggs or coarse fish imports require a health certificate and a licence from MAFF. Introductions of certain non-native species and grass carp also require consent under the Wildlife and Countryside Act 1981.

Planning Consents

Prospective fish farmers must obtain permission from the local Planning Authority before carrying out any construction work.

Flood Defence
Information Sheet No. 12

Floodplains & Washlands

NRA
National Rivers Authority
Severn-Trent Region

Introduction
Throughout this leaflet, the term "*floodplain*" is used to describe areas sometimes referred to as either floodplain, washlands or floodways etc. in other text. Attempts to describe the technical differences between such areas have, in the past, led to confusion.

Definition
In many cases, a major flood has a flow several times greater than the bankfull capacity of the normal channel of the watercourse. When flows exceed that capacity, water spills out over the banks onto adjoining land or floodplain.

The flooding which occurs serves one or both of two purposes:-

1. It provides additional capacity to carry away the excess discharge;

   and/or

2. It provides temporary storage for water which the river system is unable to discharge. The part which floodplains play in a river system is similar to the function of a "*balancing reservoir*". They impound a large quantity of water and release it over a long period of time, at a rate small enough to be taken by the existing drainage channels. It would be uneconomical to enlarge existing drainage channels to a size capable of taking a large quantity of water for a very short period of time without overflowing.

Historically, restrictions have been artificially created by bridges, towns and other development situated in the floodplain. These tended to create higher flood levels locally, and sometimes increased the flooding in the towns which had themselves created the restrictions. The consequence of any new development would be to further exacerbate flooding problems by depriving the floodplain of its additional flow capacity and storage volume which is displaced elsewhere, and by increasing the rate of runoff to the river system.

This is clearly undesirable, and Severn-Trent Region's policy has been developed to resist encroachment upon the floodplain, and development which would create a restriction in the floodplain, thus pursuing its objective to maintain and, where practical, restore the capacity of the natural floodplains of the river system.

Objectives

In its consideration of development and redevelopment proposals likely to affect floodplains, the NRA has established five broad aims. These are:-

1. That no development should be permitted which is liable to flood.

2. That no development should cause or exacerbate flooding in other areas.

3. That no development should be permitted which will prevent or obstruct future watercourse improvements or maintenance works from taking place.

4. That no development should be permitted which will cause detriment to the existing regime of a watercourse or its environment.

5. To maintain and, where practical, restore the capacity of the natural floodplains.

Policy

The NRA's policy with regards to development within a floodplain is as follows:-

> ***The NRA will oppose any new development within the 1 in 100 year floodplain of a watercourse, unless remedial works are undertaken to the satisfaction of the National Rivers Authority and the Local Authority, in order to avoid flooding of the proposed development site and the exacerbation of flood risks. Buildings on stilts will also be strongly opposed.***

Reasoned Justification

The NRA classifies floodplains by the likelihood to flood. A 1 in 100 year floodplain has a one percent chance of flooding in any one year. The NRA advises that floodplains up to this level of risk remain free from development. The reason is not only to protect the developments themselves from flooding, but also because development within the natural floodplain impedes the flow of flood water and reduces the capacity of the floodplain to store water leading to a worsening of flooding in other parts of the river.

On some sites, it may be possible to increase the developable area by undertaking remedial works to maintain the area available for flood water storage. These might include the improvement of watercourses to remove specific bottlenecks or carrying out earthworks to rationalise the floodplain. Development would not be permitted on the floodplain unless satisfactory works were undertaken.

The NRA has found from practical experience, that it is impossible to ensure that the free passage of water beneath buildings constructed on stilts is maintained. It has been found that the areas are either used for the storage of materials etc., or even sealed up to facilitate other uses. The NRA is therefore opposed to such designs.

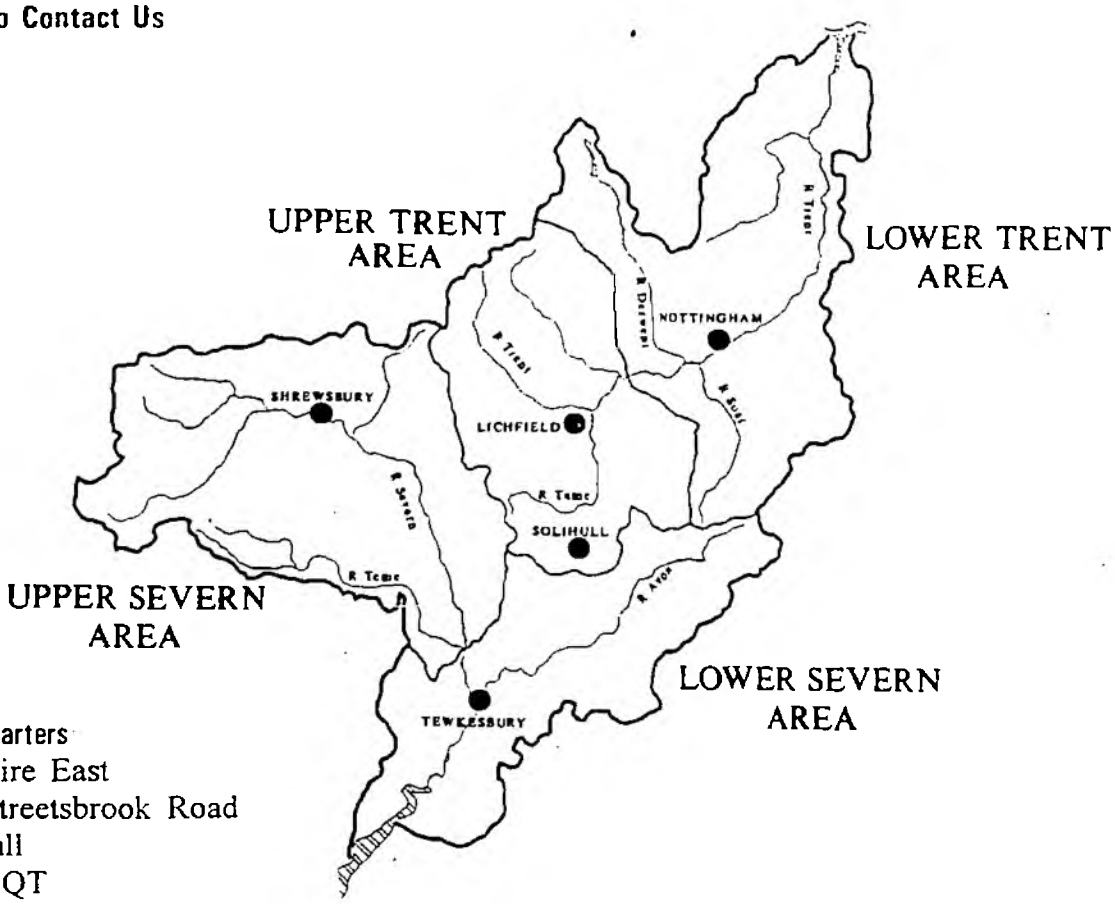
It is appreciated that individual works are often very small compared with the extent of the floodplain so the effect of each one on water levels and flows is imperceptible. However.

the effect is cumulative and progressive encroachment of this sort ultimately results in significant adverse effects.

Further Information

Advice and further information may be obtained from the Flood Defence Section at the appropriate Area office. (Addresses overleaf).

How to Contact Us



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Flood Defence Information Sheet No. 13

Development in Flood Risk Areas

NRA
National Rivers Authority
Severn-Trent Region

Guardians of the Water Environment

The National Rivers Authority is a public body whose task is to protect and improve the water environment in England and Wales, and provide protection against flooding from rivers and the sea.

Throughout Severn-Trent Region, over 40,000 properties and 60,000 hectares of agricultural land are protected by flood defences. These defences include flood walls and banks, pumping stations, sluices and flood storage lakes.

Flood Defence responsibilities of the NRA include:-

- the design, construction and maintenance of flood defences;
- exercising a general supervision over land drainage matters via:
  - planning liaison with local authorities;
  - examining and consenting proposals for work in, under, over or adjacent to watercourses; and
  - providing advice to the public.

In Severn-Trent Region, these activities are carried out through four Area offices and are co-ordinated through a Regional Headquarters in Solihull.

Priorities for Construction of Defences

Financial constraints mean that the NRA has to carry out maintenance and improvement works in priority order. The highest priority is given to schemes in urban areas where there is most life and property at risk. The protection against flooding of poor quality agricultural land is given the lowest priority.

Development Control

The NRA is asked for its views on all planning applications which have implications for flood defence and land drainage, and can recommend that the proposals which the developer has put forward are either adopted or rejected. **However, the decision as to whether or not any development takes place is the responsibility of the Local Planning Authority.**

The NRA seeks to obtain the co-operation and support of the planning authorities in restricting development which would have an adverse effect on flooding. This leaflet sets out the policy which has been adopted by the Severn-Trent Region of the NRA for responding to such applications so that applicants are aware of it, and of the general advice which we provide to the district councils in our area.

Our Policy

The National Rivers Authority objects to the development of land which is at risk of flooding, or where the development would have adverse effects on the drainage system.

The aim of this policy is:-

- to ensure that new developments are not at risk from flooding which could damage property and even endanger life;
- to ensure that land and existing developments are not subjected to an increased risk of flooding as a result of new developments;
- to ensure that any work which is required to mitigate the effects of new development on flooding is paid for by the developer and not the public.

Development in Floodplains

The NRA will object to proposed development, however small, that will:-

- obstruct the flow of water in a floodplain;
- take up floodwater storage space within a floodplain and increase the risk or severity of flooding. (Unless the developer can show conclusively that he has been able to provide for additional storage capacity on the site).

Additional comments and advice on other related matters such as minimum ground or floor levels may be made.

It is appreciated that individual works are often very small compared with the extent of the floodplain, and that the effect of each one on water levels and flows may be imperceptible. However, the effect is cumulative, and progressive encroachment of this sort ultimately results in significant adverse effects.

Acceptable Uses of Floodplain

The NRA would recommend that floodplains be used for the following:-

- recreational activities;
- short stay car and lorry parks at existing ground levels;
- agriculture;
- sites dedicated for conservation or environmental purposes.

"Protected Areas"

In areas protected by existing flood defences to a standard appropriate for urban areas, it is recommended that:-

- floor levels of new development should be raised as a measure of protection against flooding in the extreme event of overtopping or breaching of the defences;
- provision is made for the disposal of surface water runoff from the new development during flood times when gravity discharge is impeded.

Development Affecting Others

Where the development could increase the risk of flooding to other people and property, eg. through runoff of water from the site, the NRA strongly recommends that the application should be refused unless the developer enters into an agreement with the planning authority, in consultation with the NRA, to carry out the necessary flood protection works.

Surface Water Storage Areas

Certain areas of land are designated as controlled washland or balancing ponds and are used for flood water storage. These are regarded as critical areas for flood defence work and it is essential that they are retained. No development will be permitted in such areas.

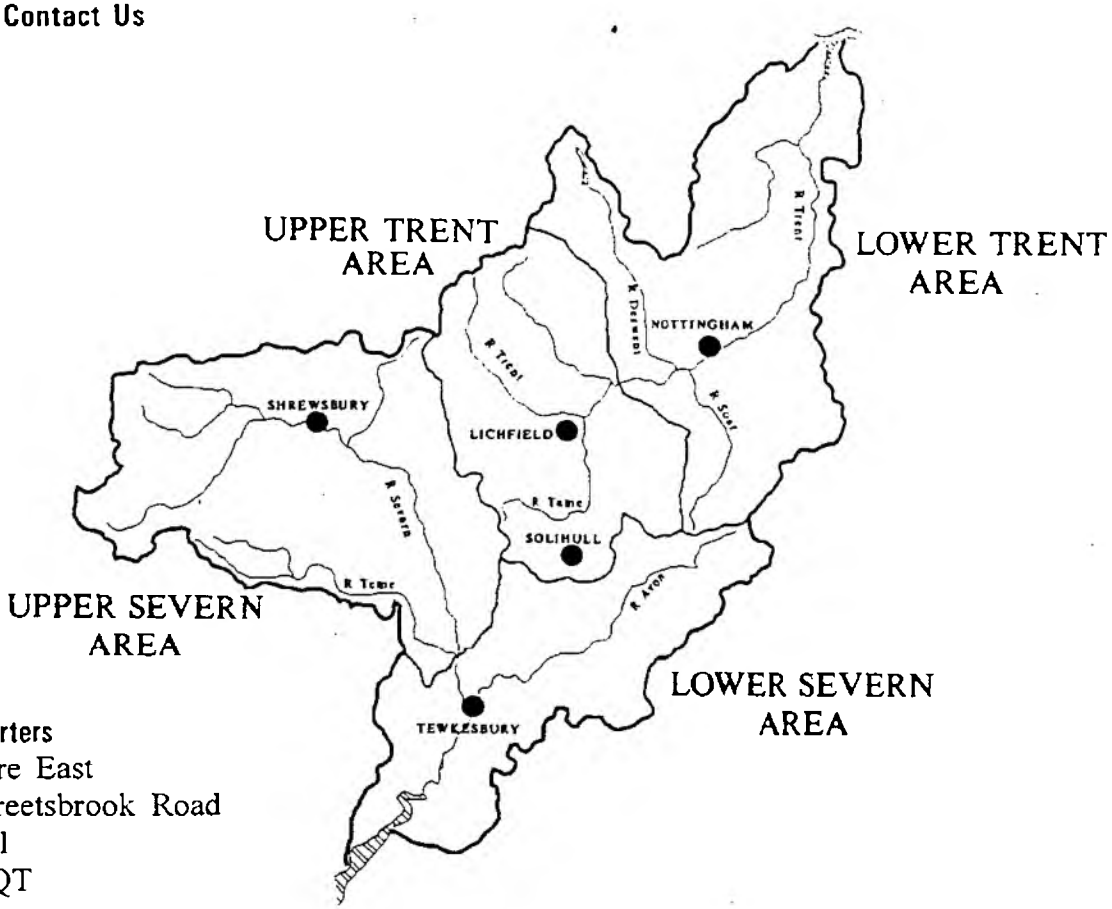
Consents and Licences

In addition to planning permission, developers are reminded that separate consents or licences for works affecting a watercourse may be required from the NRA. Further information leaflets are available on request.

Further Information

Advice and further information may be obtained from the Flood Defence Department at the appropriate Area office. (Addresses overleaf).

How to Contact Us



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Flood Defence Information Sheet No. 14

Caravan Sites in Flood Risk Areas

NRA
National Rivers Authority
Severn-Trent Region

Introduction

The National Rivers Authority will treat caravan parks in the same manner as any other development within the floodplain. It is imperative that any development meets all of the following criteria:-

- Any new development should not itself flood.
- Development should not increase existing, or cause any new flooding problems on land or to property.
- Development should allow adequate access for future maintenance or improvement of the river channel.
- Development should not preclude the solution of existing flooding problems.
- Development should not cause detriment to the existing regime of the watercourse and its environment.

Policy

The following statements outline the NRA's policy:-

1. **Caravans must not be positioned within flood risk areas.**
   Floods can occur at any time of the year, and such development would cause an increase in flood risk to adjacent sites by reducing flood storage volumes and flow routes as follows:

   a) The positioning of any new structures within the floodplain potentially reduces the capacity of the floodplain to store water. The raising of caravans on piers is **not** an acceptable alternative, as the voids beneath the caravan cannot be effectively policed to prevent their use for storage or from being walled off. The argument that an application examined in isolation would have a negligible effect cannot be accepted, as the cumulative effect of all development within the floodplain must be considered.

   b) The positioning of caravans on flow routes presents several problems. The caravans and their associated fencing and planting cause obstructions to the passage of flood waters. In extreme events these obstructions can be swept away to form greater blockages downstream.

2. **Caravans must not be isolated from dry land in the event of a flood.**
Such developments would increase the demand on the emergency services to warn, assist and rescue residents during flood times. The stresses and expense of being flooded or surrounded by flood water should also be considered.

3. **Existing sites within flood risk areas must not be extended or have their conditions relaxed to permit consolidation of their position.**
Experience has shown that there is an irresistible progression from touring caravan park, through static caravans, to all year habitation, mobile homes and, occasionally, permanent housing. Once sites are established, applications for changes in use and for the relaxation of conditions become more difficult for the NRA and the Planning Authority to refuse. Any application to change the usage of a site should be taken as an opportunity to redress past bad practise.

4. **Ancillary buildings must not be positioned within the floodplain.**
The development of a caravan park will inevitably require the erection of ancillary buildings, toilet/shower blocks, shops, clubhouse and cafe facilities. The NRA will object to the positioning of any such buildings within the floodplain for the reasons given above.

5. **Provision must be made to reduce the risk to public safety on existing sites.**
Where sites already exist in flood risk areas, the NRA recommends that:

   a) The site be equipped with an adequate flood warning system.

   b) The caravans be restricted to the touring variety.

   c) The site be restricted to summer occupancy only.

Further Information

Advice and further information may be obtained from the Flood Defence Department at the appropriate Area office.

Flood Defence Information Sheet No. 15

The Control of Surface Water Runoff from Development

NRA
National Rivers Authority
Severn-Trent Region

Introduction

One of the fundamental aims of the National Rivers Authority's Flood Defence Section is to prevent the overloading of river systems downstream of proposed developments due to the increased rate of runoff from impermeable areas. Unless carefully controlled, two types of problem can occur. The first is the increased risk of flooding and the second is physical damage to the river environment.

Policy

The NRA's policy with regard to discharge of surface water from development sites is as follows:-

> ***The NRA will oppose any development which will aggravate flooding problems either on the site or elsewhere by way of additional surface water discharge direct into a watercourse. In such cases, the NRA will recommend that the Local Authority refuses planning permission for development, unless the developer implements appropriate remedial measures.***

Remedial Measures

Where uncontrolled discharges from a development would result in an increased flooding risk, the following options must be considered:-

- The receiving watercourse may be "improved" to the required standard, providing this can be achieved in an environmentally appropriate way.
- Where appropriate, surface water balancing may be permitted on or adjacent to the watercourse. Future extension of the balancing area to cope with further development should be catered for if possible.
- Consideration should be given to a well designed on-sewer balancing system.
- Where possible, the use of source control methods or on-site disposal of storm water by the use of ground filtration or percolation techniques should also be considered.
- A combination of any of the above works may be the preferred option.

The perceived drainage strategy for the particular catchment concerned will dictate the solution which is most appropriate.

The NRA will often recommend watercourse improvements to cater for the increased runoff from development, particularly where this will also resolve existing flooding problems in the watercourse. In some locations. it is recognised that such improvements will be impractical or incompatible with environmental considerations, and here other options must be considered. Where a surface water balancing solution is adopted, the developer must demonstrate that adequate provision for the future maintenance of the balancing device has been made.

The NRA recommends that the design of all schemes be considered in the context of the watercourse catchment as a whole and not merely in relation to individual development sites. Design parameters may therefore vary for different catchments within the Region.

Further Information

Advice and further information may be obtained from the Flood Defence Department at the appropriate Area office.

Flood Defence
Information Sheet No. 16

Maintenance Access

NRA
National Rivers Authority
Severn-Trent Region

Introduction
Rivers and other watercourses require periodic maintenance and repair, much of which is carried out by machinery. In order to ensure that this work can be carried out, it is essential that development proposals retain an adequate working strip either side of the watercourse, ideally as public open space. This strip must be kept free of all buildings, fences, walls. areas of dense planting and other obstructions.

Policy
The NRA's policy with regard to access for maintenance of watercourses is as follows:

> ***In order to allow access for maintenance and improvement work, the NRA will oppose any development within 8 metres of a Main River watercourse as classified by the Water Resources Act 1991. For "ordinary" watercourses the width of the access strip required will vary between 5 and 8 metres depending on the size and location of the watercourse.***

The National Rivers Authority has direct powers to control development adjacent to Main River watercourses by virtue of the Water Resources Act 1991 and NRA Byelaws. We also seek to adopt similar policies on "ordinary watercourses" by influencing planning authorities.

Points to Remember
Where possible, access should be preserved on both banks, particularly if the watercourse is large and it would be impractical to carry out operational dredging from one bank only.

At bridges, a 5 metre wide, 1 in 3 gated ramp up and over the obstruction are the normal requirement unless a 5 metre high and 5 metre wide access is provided under the bridge soffit which could double as an access for landowners.

It must be remembered that the option of ramping up and over does not exist where the bridge is carrying a motorway or major dual carriageway with crash barriers, and alternative access facilities must be provided.

Further Information
Advice and further information may be obtained from the Flood Defence Department at the appropriate Area office.

Flood Defence
Information Sheet No. 17

Piers, Moorings & Marinas

NRA
National Rivers Authority
Severn-Trent Region

Introduction
The development of new navigational facilities can have an effect not only on the immediate location, but also throughout the navigation.

Whilst the NRA would not wish to discourage the use of boats on navigable rivers, there must be control over piers, moorings and marinas to ensure that they do not create an unacceptable obstruction to flow which could, in turn, create flooding problems.

The NRA also wishes to ensure that the development of navigational facilities remains balanced in relation to the functional and environmental capacity of rivers.

Policy
The NRA recommends that wherever possible, boats are moored in marinas and not on rivers. This policy is to ensure that the impedance to flow, particularly as a result of associated development in the watercourse or floodplain, is kept to a minimum.

Marinas
Points to remember are:-

- Marinas will be treated the same way as any other development in flood risk areas. Buildings should be built on higher land adjacent to the floodplain, not in the floodplain. If necessary, marinas can be constructed on the edge of the floodplain with a long connecting channel to the river. Buildings on stilts will not be permitted.

- Close boarded fencing perpendicular to the river flow will not be permitted around marinas or boatyards situated in floodplains as its use can create a serious impediment to flood flows. Mesh security fencing can also cause impediment if it traps debris.

- The NRA will oppose any landscaping involving raising of ground levels which would, if permitted, be contrary to its floodplain policy.

Piers & Moorings
Where piers and moorings are permitted, the following criteria will apply to both fixed and floating types:-

- Moorings should be parallel to the river flow and should be constructed so as to create minimum obstruction to flow and so as not to pose a river maintenance problem.

- On fluvial rivers, moorings should not generally project out from the waters edge at normal water level more than 1 metre and they should be solidly secured.

- It is recommended that any new moorings should be let into the banks to create less obstruction to flow.

- Double berthing will not be permitted where it will result in a significant obstruction to the waterway.

- Piers and jetties will not normally be permitted except on the wider reaches of the major Main Rivers.

Land Drainage Consents and Other Permissions

Before undertaking works affecting watercourses, a Land Drainage Consent must first be obtained from the National Rivers Authority. The environmental impact of any proposal will be taken into account in the determination of an application for NRA consent. Other licences, approvals or permissions may also be required in law. In particular, where a Navigation Authority exists, it's approval will be required.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.

Flood Defence Information Sheet No. 18

Weirs

NRA

National Rivers Authority
Severn-Trent Region

Introduction

Weirs may be used to control flow or water levels, improve water quality, measure flow, reduce the gradient of an erosive river, for amenity reasons or as a source of renewable energy. However, weirs can obstruct flow which enhances water levels upstream, thereby causing flooding problems and can cause erosion problems on the watercourse downstream.

Policy

The NRA recommends that if possible, weirs should not be constructed and that alternative means of achieving the objective be sought. Weirs will only be consented where such alternatives are impractical and appropriate measures can be implemented to mitigate adverse flooding or environmental effects.

Any person intending to construct, remove or modify a weir on any watercourse requires a Land Drainage Consent and in many cases an Impounding Licence from the National Rivers Authority. Wholly submerged weirs still require Consent from the NRA.

Points to Remember

The following are requirements which the NRA expect to be incorporated in Land Drainage Consent Applications:

1. The promoter should demonstrate, by calculations, the extent of the backwater effect due to the weir. The agreement of affected upstream landowners should have been obtained.

2. The design must prevent the passage of water under or around the weir and should dissipate the energy of falling water without causing progressive scour of the bed and sides of the channel downstream.

3. Adequate bed and bank protection against erosion must be provided downstream of the weir.

4. The design should incorporate adequate provision for migratory fish and must be environmentally sensitive.

Further Information

Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office. An information sheet titled "*Land Drainage Consents*" is available on request.

Advice as to whether an application for an Impounding Licence is required should be sought from the NRA.

Advice on Fisheries, Conservation, Recreation, Navigational and Hydropower aspects is also available on request.

Flood Defence Information Sheet No. 19

Floods

NRA

National Rivers Authority
Severn-Trent Region

Why do Floods Occur ?

The flow in a river depends upon the amount of rain falling on its catchment which reaches the river system. Some of the rainfall is "lost" by evaporation, or "stored" in natural or man-made reservoirs. Rainfall, evaporation and storage are, in the short term, very variable, and so in consequence are the flows in rivers. In this country, it is quite common for heavy rainfall, of the sort that occurs once or twice in every year, to increase the flow in a river to 80 or 100 times the flow in dry weather. Up to a point, a river system is able to cope with this, but inevitably, a flow occurs which exceeds the capacity of the river and flooding occurs.

Floodplains

In its natural state, a river usually has a defined channel which is sufficient to take the varying flows for most of the year. Adjoining the channel there will be a "floodplain", also usually quite clearly defined, over which the river will spill during times of flood.

Flooding of this kind is a normal and expected event, although it attracts news media attention when it occurs on a large scale, or property is flooded. Floodplains often consist of very fertile land and, with proper drainage, they can be under intensive cultivation. This is not significantly disturbed by the occasional flooding, most of which takes place during the winter. Problems occur if building takes place in the floodplain of a river. Pressure from developers usually relates to the fringes of the floodplain where flooding only occurs at rarer intervals after the most severe storms. The NRA opposes all new development which encroaches into the natural floodplain of a river system. Building on a floodplain is often part of a more general development including roads and bridges. These can make the situation worse where the natural river channel is "pinched" by bridges and culverts which are too small. These throttle the flow and cause more flooding upstream by backing up the water.

Flood Control

Where historic development has taken place in the floodplain of a river, it is likely that from time to time the buildings will be subject to flooding causing inconvenience and damage. Although further development can now be restricted through normal planning control, there is already a great deal of development in the floodplain. The National Rivers Authority has to try to protect these buildings from flooding. The following methods can be used:-

a) Channel Works

By keeping the river channel free from blockages and obstructions, the occasions when flooding occurs can be reduced. In particular, it is important that man-made

rubbish dumped in the river, as well as natural debris, is regularly removed if the capacity of the channel is to be maintained.

The most obvious method of reducing floods is to enlarge the river channel so that it will carry a much higher flow before the water spills over to inundate the floodplain. However, this may be an expensive solution. In addition, and most importantly, enlargement of a river channel conveys the water downstream somewhat quicker, and may merely transfer the flooding problem to somewhere further downstream which previously had no trouble.

b) Flood Defences

Another option is to construct flood defences, walls, floodbanks etc. around the property at risk. This again may be an expensive solution which might also transfer the problem elsewhere.

c) Storage Areas/Balancing

A flood in a natural river valley covers the floodplain which stores the water until the flood starts to subside. When the run-off from the catchment reduces, the river channel itself is able to carry away the water which has been stored in the floodplain. This natural effect can be adapted for flood control wherever there are areas to which the floodwaters can be diverted and temporarily stored.

Measures can also be taken to control the speed at which rainfall runs off from individual developed areas and into the river system. By regulating this runoff it can be ensured that all areas do not discharge at the same time. The river is thus able to cope better with a series of peak flows rather than one big peak. This technique employed by engineers, is known as surface water balancing and can be achieved by the use of balancing tanks, soakaways and other on site drainage measures.

d) Flood Warning Systems

Flood defence works are not always practical, since the risk of flooding can never be totally eliminated, it can only be reduced. The NRA therefore, liaises closely with the Police, Local Authorities, and Emergency Services to ensure that people living in areas at risk receive a flood warning service.

Generally, the NRA provides this service for areas on Main Rivers where more than two hours warning is possible. The provision of a warning service would not itself overrule the presumption against new development in flood risk areas.

Further Information

Advice and further information may be obtained from the Flood Defence Department at the appropriate Area office.

Flood Defence
Information Sheet No. 20

Erosion

NRA
National Rivers Authority
Severn-Trent Region

All alluvial rivers are able to change their course by the process of erosion and sedimentation. This is a natural phenomenon. The behaviour of a river is frequently termed the "regime" of the river. A river with a stable regime neither scours or silts. However, all watercourses are unstable to some extent.

Under the Water Resources Act 1991, the National Rivers Authority, Severn-Trent Region has a duty to exercise a general supervision over all matters relating to flood defence within its area. The power to carry out maintenance and improvement works are, however, restricted to Main River watercourses. The NRA's permissive powers enable the implementation of anti-erosion measures on Main River watercourses, but there is no duty to do so.

Riparian owners may look to the NRA feeling that it has a duty to ensure that all rivers and watercourses should be constrained to flow in defined channels, whatever the circumstances. Clearly, the NRA cannot accept such an obligation and indeed has no direct powers to undertake such works on ordinary watercourses.

In exercising its flood defence powers, the NRA undertakes erosion prevention and control works only in those situations where flood defence interests are adversely affected. This precludes the stoning or revetment of a river bank solely to prevent land loss through erosion. However, it may include anti-erosion measures in those cases where there is a danger of the river bank giving way and causing extensive flooding to occur to lower lying land beyond the river bank.

Riparian owners are entitled to protect their property from erosion, but the construction of expensive anti-erosion measures at one location could lead to increased scour elsewhere and thereby transfer the problem without solving it.

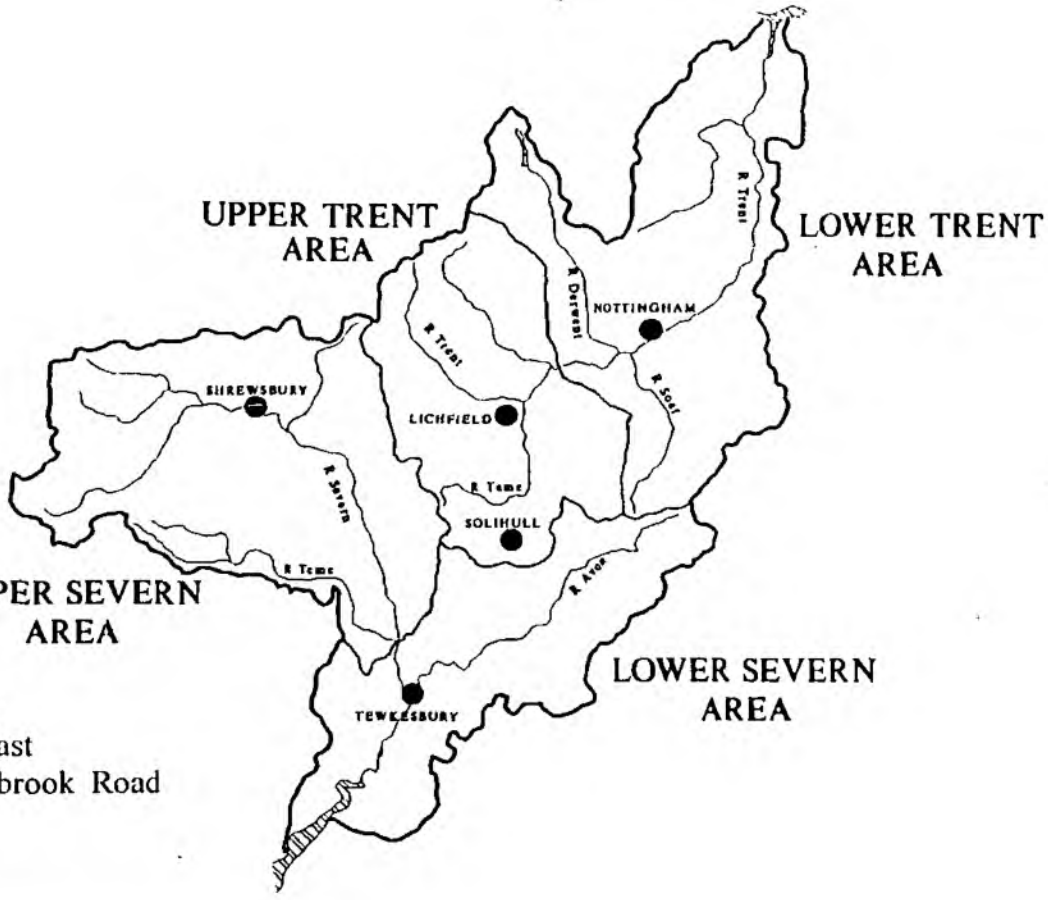
Before undertaking such works, a riparian owner must first obtain a Land Drainage Consent from the National Rivers Authority. This is to ensure that any such works do not have an adverse effect on either the upstream or downstream owners.

Further Information

Advice and further information may be obtained from the Flood Defence Department at the appropriate Area office. (Addresses overleaf).

Information sheets titled "*Land Drainage Consents*" and "*Bank Protection*" are available on request.

How to Contact Us



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Flood Defence
Information Sheet No. 21

Otter Holts

NRA
National Rivers Authority
Severn-Trent Region

The National Rivers Authority, in conjunction with national and local nature conservation bodies is actively encouraging the re-colonisation of river corridors by otters. Where appropriate, the riparian owners will be encouraged by the NRA to construct artificial holts.

A typical example of an artificial holt, which is compatible with the NRA's requirements, is illustrated overleaf.

Riparian owners are strongly recommended to seek the advice of the NRA's Area Fisheries, Recreation, Conservation and Navigation staff, or the appropriate local conservation organisation before embarking on works of this nature.

Please note that works affecting a watercourse may require a Land Drainage Consent under the Water Resources Act 1991 or the Land Drainage Act 1991. Application for Land Drainage Consent must be made to the Flood Defence Section of the NRA.

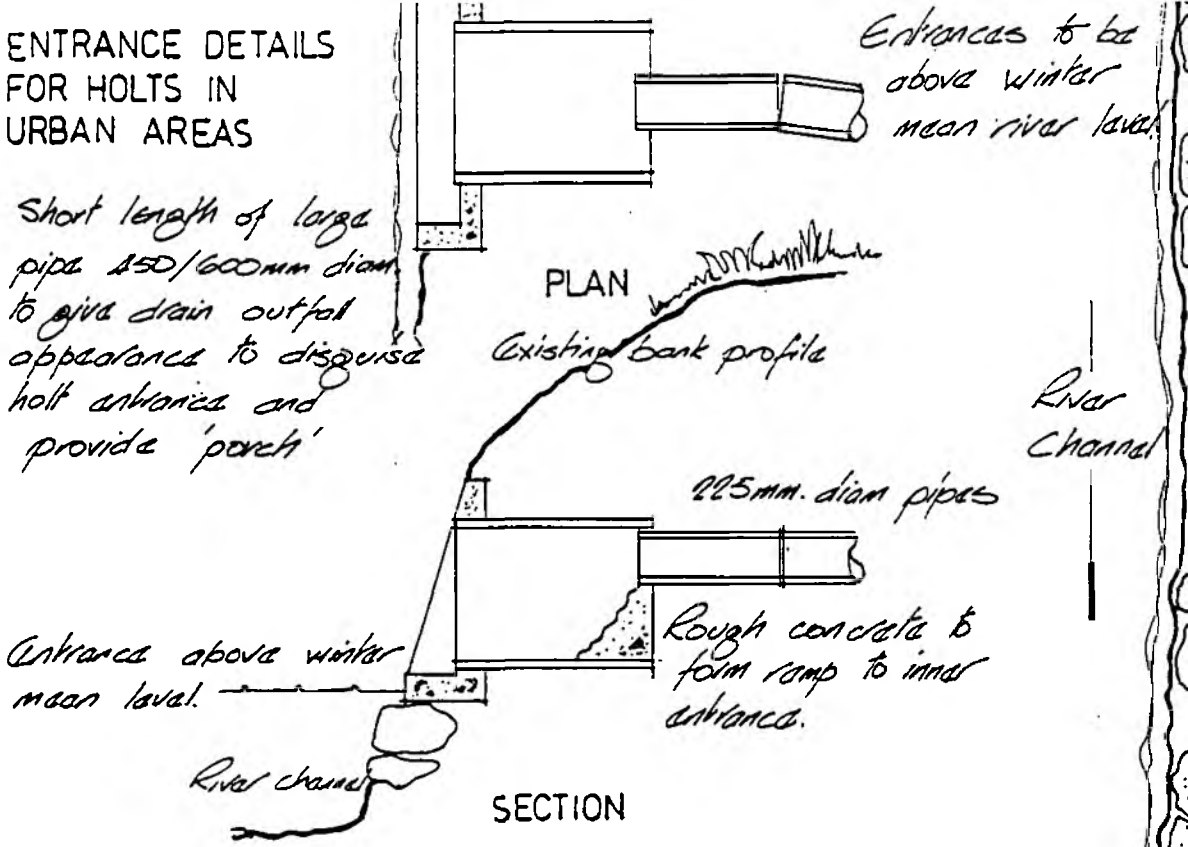
Further Information

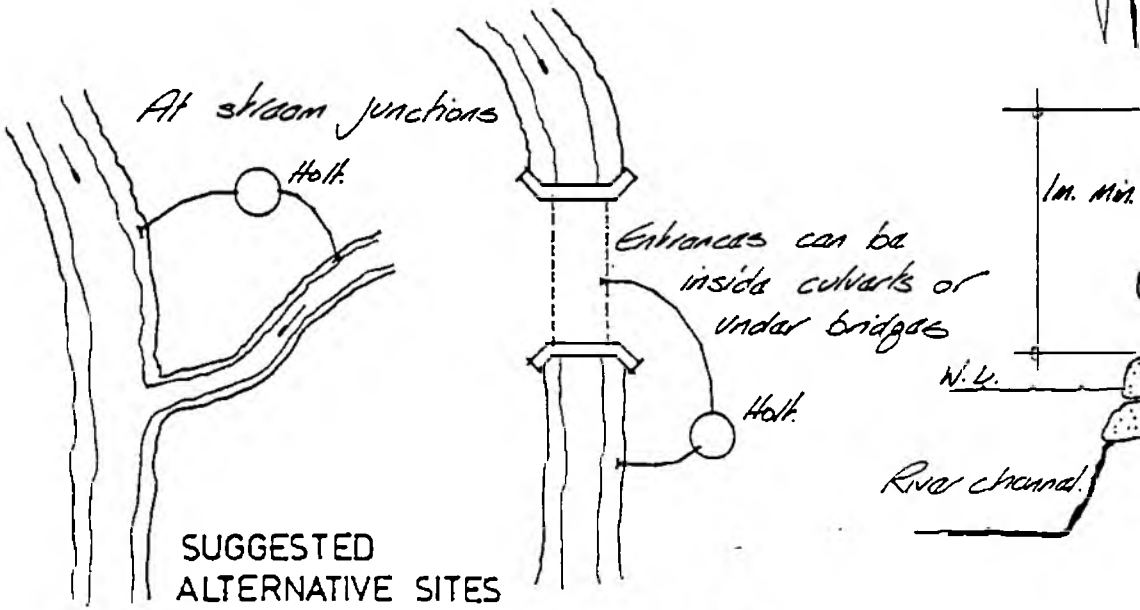
Advice and further information on Land Drainage Consents may be obtained from the Flood Defence Department at the appropriate Area office.

An information sheet titled "*Land Drainage Consents*" is available on request.

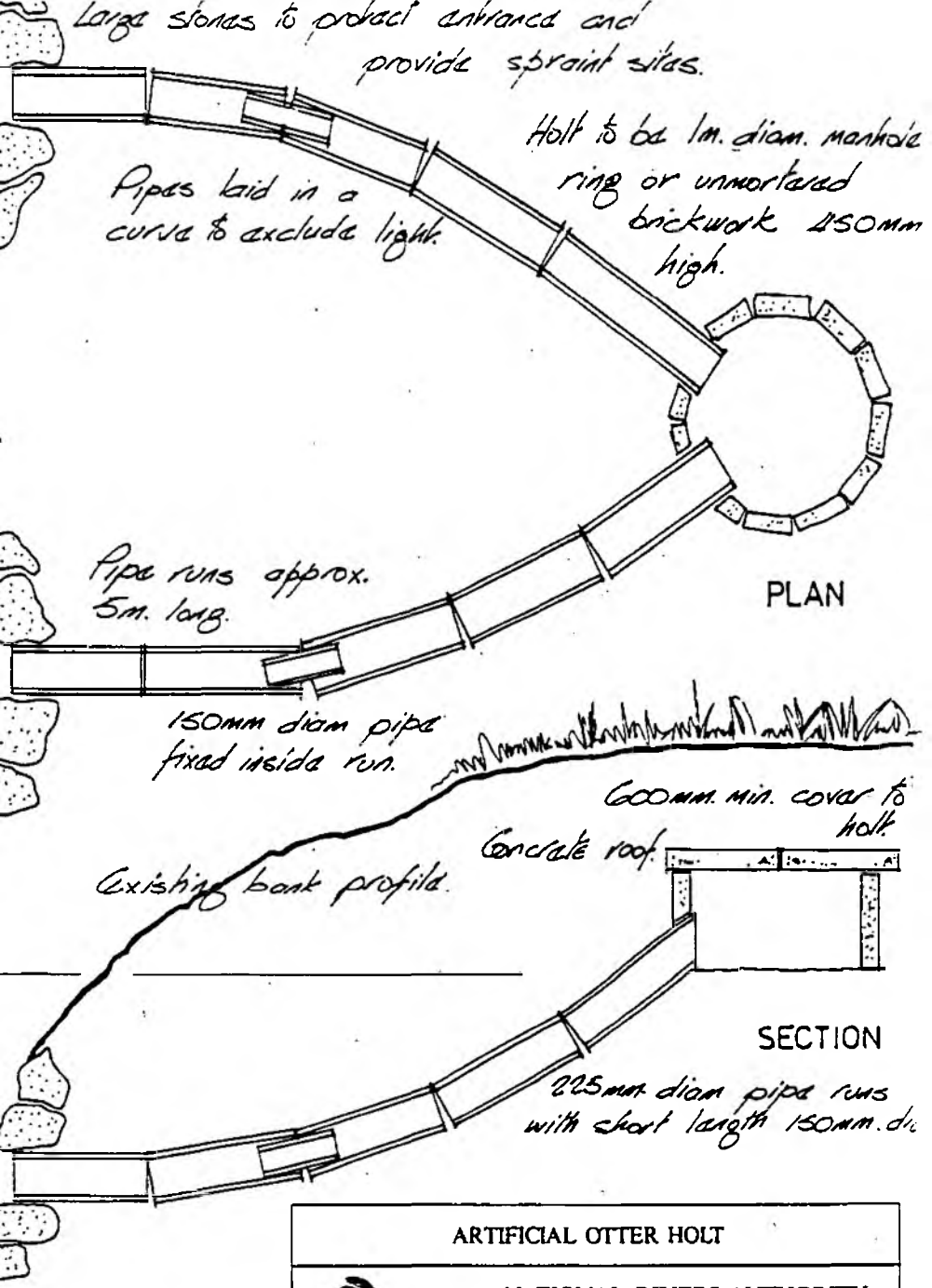
Further information is given in the NRA's Conservation Technical Handbook Number 3 "Otters and River Habitat Management" and "The New Rivers and Wildlife Handbook" by RSPB, NRA and RSNC.

ENTRANCE DETAILS FOR HOLTS IN URBAN AREAS





SUGGESTED ALTERNATIVE SITES



ARTIFICIAL OTTER HOLT		
NRA	NATIONAL RIVERS AUTHORITY Severn-Trent Region	
scale: NOT TO SCALE	date: AUGUST 1991	drawing no. SHEET 1

Flood Defence Information Sheet No. 22

NRA
National Rivers Authority
Severn-Trent Region

Guidelines for Planting Beside Rivers

Whilst the National Rivers Authority, has a duty under Sections 16 and 17 of the Water Resources Act 1991, and Sections 12 and 13 of the Land Drainage Act 1991 to enhance the environment along watercourses and elsewhere, the planting of trees and bushes near watercourses needs to be controlled to prevent the creation of significant obstructions to flood flow.

Anyone wishing to plant trees etc. alongside or within the floodplain of a watercourse is requested to first seek the advice of the NRA's Area Fisheries, Recreation, Conservation and Navigation staff. They will be pleased to assist, not only on matters relating to the location of the planting, but also to advise on the suitability of specific species.

In general terms, the following will apply:

1. Clear stemmed trees which, when mature, present less hydraulic resistance to flood flows are preferable to shrubs or hedges.

2. The planting of trees or shrubs will not be permitted within the channel of a watercourse unless the design of the channel makes provision for such planting in terms of channel capacity.

3. Dense or very extensive clumps of trees should be avoided.

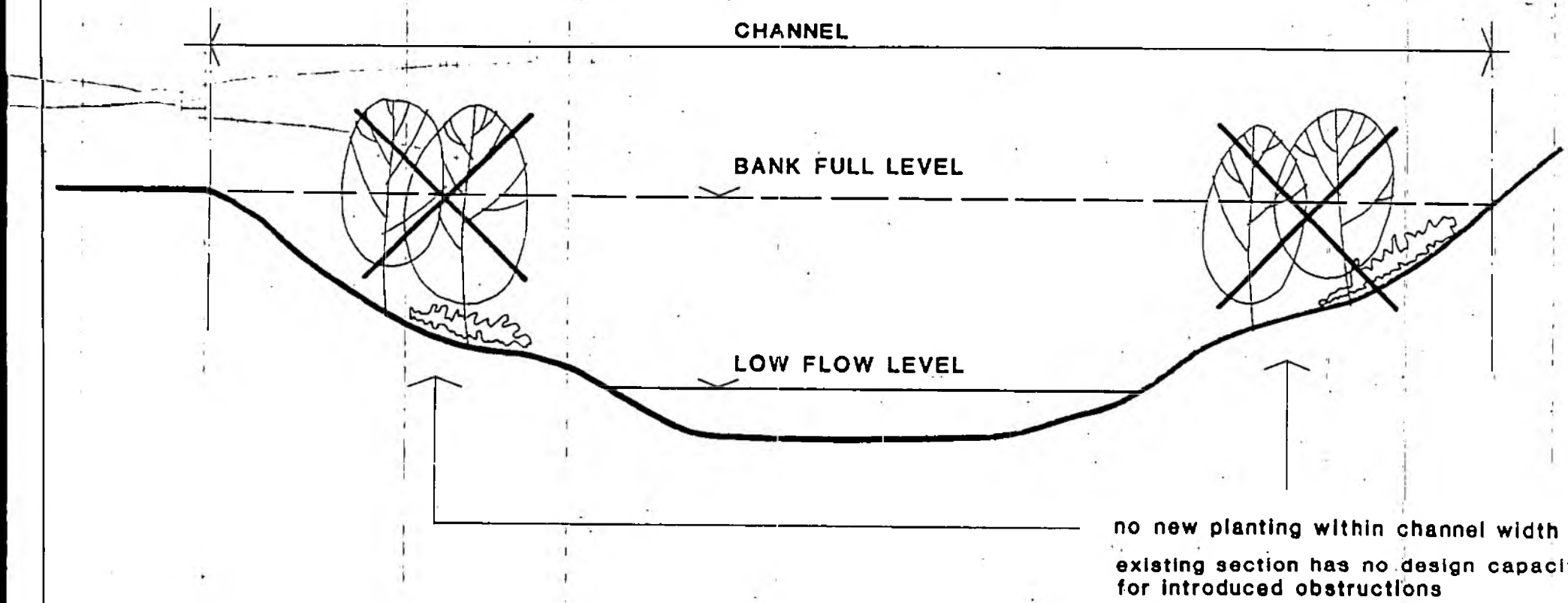
4. Groups of trees should be planted in linear form, parallel with the river flow where possible.

5. Maintenance access should not be prejudiced.

6. Sketches of typical requirements are attached.

Land Drainage Consents and Other Permissions

A Land Drainage Consent is required for certain works affecting watercourses. Advice and further information may be obtained from the Flood Defence Department of the National Rivers Authority. Other licences, approvals or permissions may also be required in law.



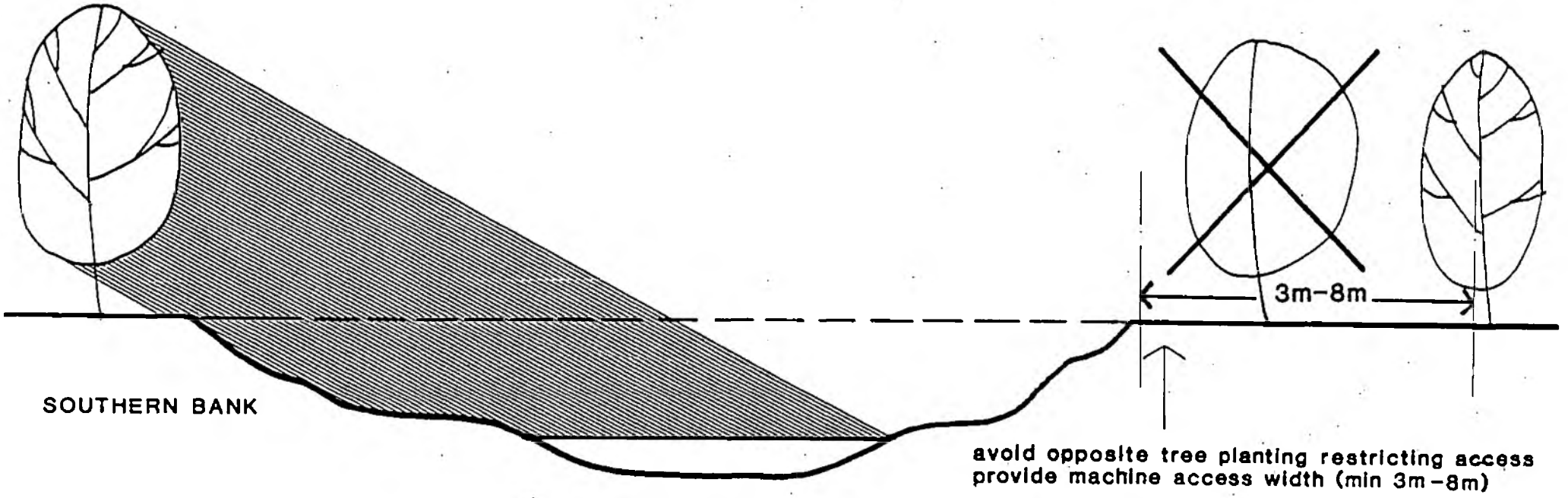
This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

GUIDELINES FOR PLANTING BESIDE RIVERS
PLANTING WITHIN CHANNEL
NATURAL CHANNEL - NO FLOODBANKS

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

Scale :	Date :	Drawing no.:
NOT TO SCALE	MAY 1994	FDIS22 - A1



1) at all times consider needs of landowner
2) do not restrict access on opposite banks
3) prefer south bank planting if appropriate

This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

GUIDELINES FOR PLANTING BESIDE RIVERS
PLANTING AT TOP OF BANK
NATURAL CHANNEL - NO FLOODBANKS

NRA
NATIONAL RIVERS AUTHORITY
Severn-Trent Region

Scale :	Date :	Drawing no.:
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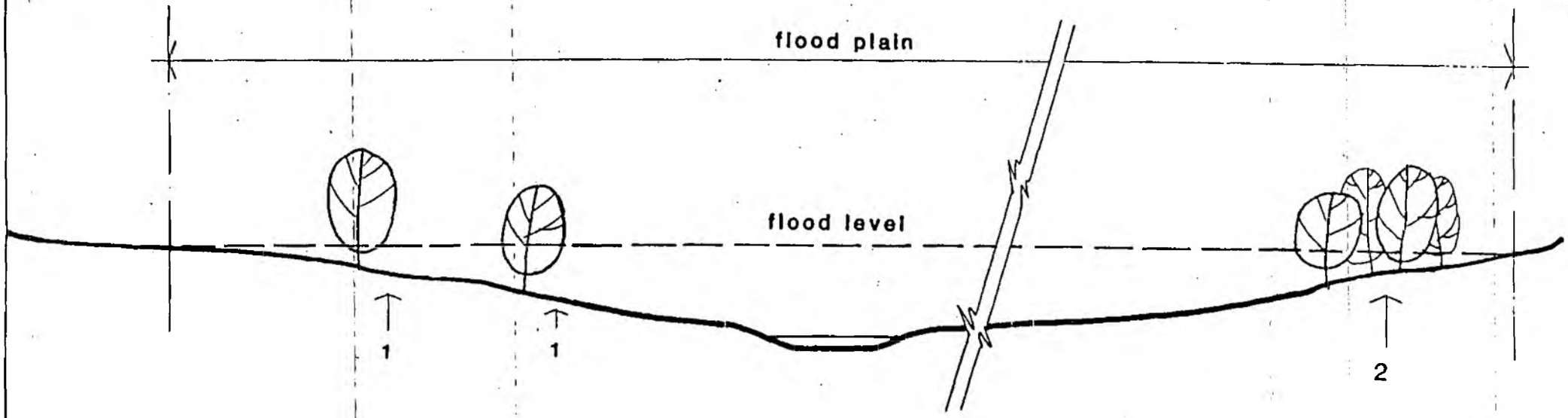


Planting in floodplain should be either:-

1) minimal planting parallel to flow or

2) small group planting in selected positions

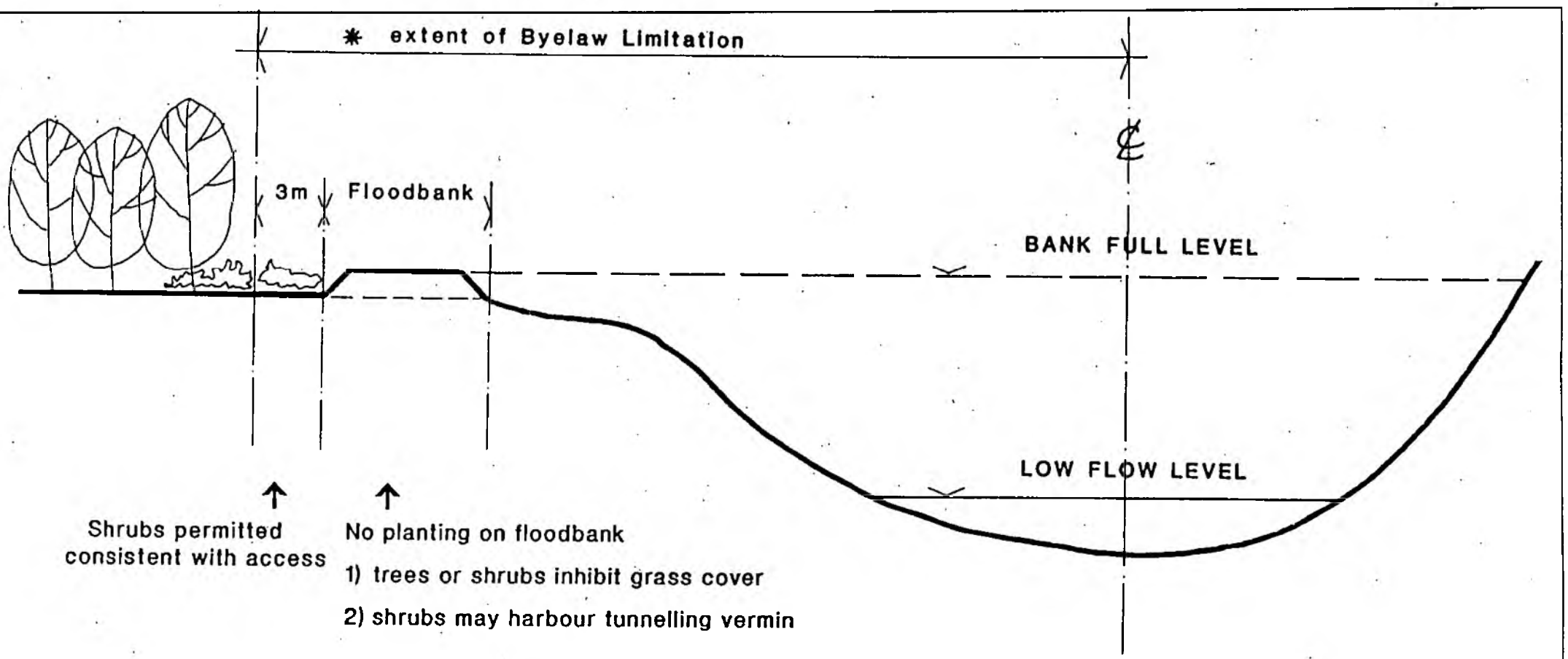
This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

GUIDELINES FOR PLANTING BESIDE RIVERS
FLOODPLAIN PLANTING
NATURAL CHANNEL - NO FLOODBANKS

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

Scale :	Date :	Drawing no.:
NOT TO SCALE	MAY 1994	FDIS22 - A3



* planting subject to consent

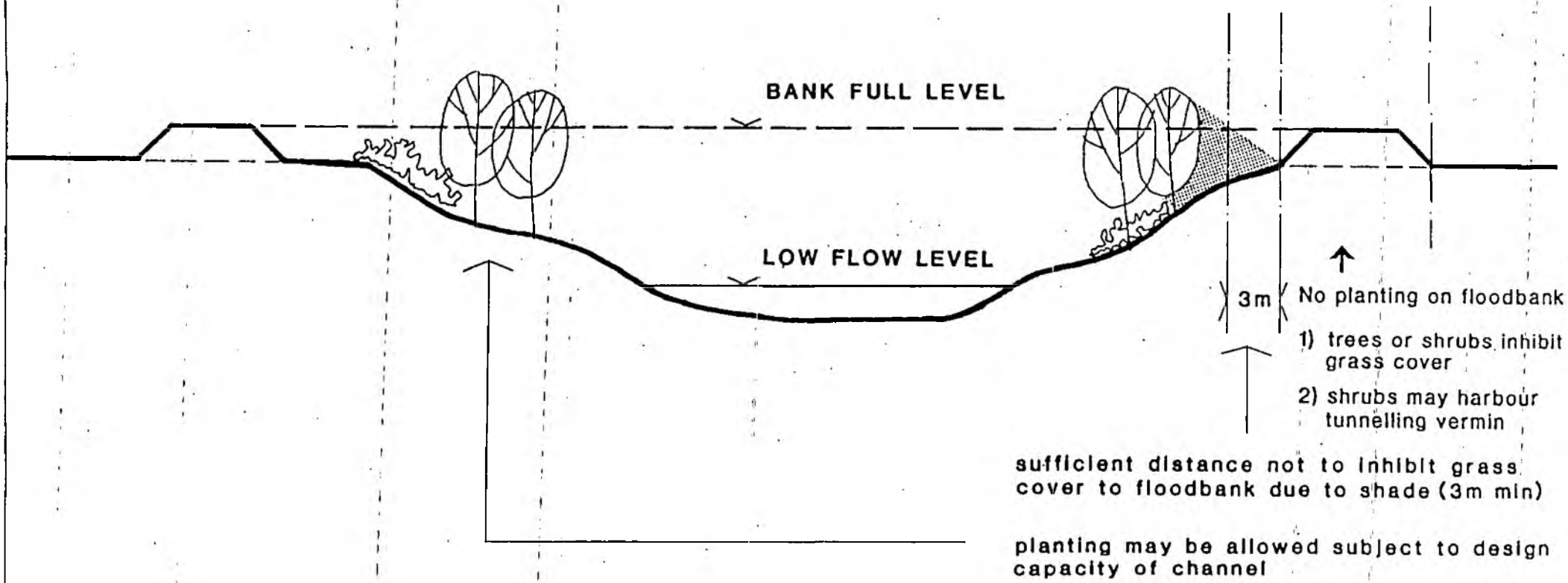
This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

GUIDELINES FOR PLANTING BESIDE RIVERS
PLANTING ON LANDWARD SIDE
OF FLOODBANKS

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

Scale :	Date :	Drawing no.:
NOT TO SCALE	MAY 1994	FDIS22 - BI



This sketch and the accompanying information are intended for guidance only and do not constitute a detailed design. Individual designs must satisfy local requirements. Please contact the Area office for advice and further information.

GUIDELINES FOR PLANTING BESIDE RIVERS
PLANTING WITHIN THE CHANNEL/FLOODPLAIN
ON THE RIVER SIDE OF FLOODBANKS

NRA

NATIONAL RIVERS AUTHORITY
Severn-Trent Region

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NOT TO SCALE	MAY 1994	FDIS22 - B2

Flood Defence
Information Sheet No. 23

Main River

NRA
National Rivers Authority
Severn-Trent Region

The Main River system is the system of watercourses identified on the statutory set of Main River maps held by the National Rivers Authority and the Ministry of Agriculture, Fisheries and Food (MAFF). Main River powers extend to any structure in the bed or bank of the watercourse which controls the flow of water into or out of the watercourse. Powers for carrying out work on Main Rivers are exercisable by the NRA and by others with the NRA's consent.

The Main River map may be altered by the Ministry of Agriculture, Fisheries and Food at the request of the National Rivers Authority. Before doing so, the Minister must give notice of his intention. This is usually carried out by advertising in local newspapers. All objections to the proposals will be considered by the Minister.

In relation to watercourses which are not designated as Main River, the NRA has certain regulatory powers, but has **no** powers to carry out work.

Principles for Main River Extension

The following criteria are used by the NRA, Severn-Trent Region in deciding whether to make an application to MAFF for changing the status of a watercourse.

1. Main River shall be continuous from the estuary to a suitable point, (eg. a bridge or other structure), where:-

   (a) the population in the remainder of the upstream catchment is less than 10,000;

   or

   (b) the average width of floodplain in the remainder of the upstream catchment is less than 300 metres per kilometre of watercourse;

   or

   (c) there is no single community greater than 3,000 persons further upstream.

   Whichever is the furthest upstream.

2. Main River shall also extend upstream to the point of discharge of:-

   (a) outfalls from sewage works with an average daily flow greater than 5 megalitres;

   (b) untreated water reservoirs that impound more than 1,000 megalitres;

   (c) the downstream outfall of an internal drainage board.

3. Where balancing storage is provided as an essential part of the system of surface water drainage, consideration should be given to extending Main River up to the point of intake of such balancing storage.

4. A flexible approach will be adopted, and consideration may also be given to extension of Main River in particular circumstances, (eg. to receive the surface water drainage from a motorway, an embanked watercourse or to the upstream boundary of urban areas for development control and byelaw purposes).

Where "ordinary" watercourses accord with the above policies, and improvements are carried out by Local Authorities to standards approved by the NRA, the NRA may recommend to the Ministry of Agriculture, Fisheries and Food that the watercourse should be included as part of the Main River system.

Further Information

Advice and further information may be obtained from the Flood Defence Section at the appropriate Area office.

A11. ENVIRONMENTAL INFORMATION REGULATIONS 1992

NRA POLICY IMPLEMENTATION NOTE

THE ENVIRONMENTAL INFORMATION REGULATIONS 1992

CE/LL/003

1. Introduction

The above Regulations came into force on 31 December 1992. They implement an EC Directive of 1990, the objective of which is "to ensure freedom of access to, and dissemination of, information on the environment held by public authorities".

Copies of the Regulations are held by all Heads of Functions and Section Heads and all staff should take steps to familiarise themselves with them. The Department of the Environment has issued a Code of Guidance to the Regulations but this is only one interpretation of how they are to be implemented. The Code is also available from Heads of Functions and Section Heads. Only the Courts can give authoritative decisions on their interpretation.

2. Application

The Regulations apply to any information which:

a) relates to the environment;

b) is held by the NRA in an accessible form and other than for the purposes of any judicial or legislative functions; and

c) is not either:

- information which is required, in accordance with any statutory provision, to be provided on request to every person who makes a request; or

- information contained in records which are required, in accordance with any statutory provision, to be made available for inspection by every person who wishes to inspect them.

It follows that the types of information held and required to be made available by the NRA under Part VIII of the Water Resources Act 1991, eg:

- the contents of the register of abstraction and impounding licences;

- the contents of the 'pollution control register', fall outside the 1992 Regulations. However the Regulations do effect the existing

arrangements. See Section 6. It should also be noted that register data prior to August 1985 will be covered by the Regulations.

Also excluded is information which is held in other than accessible form. The Regulations are not intended to impose on those subject to them an undue burden of sorting or collating information to respond to a request. In addition Section 5 contains exceptions.

3. Information Covered

Information relates to the environment if it relates to:

a) the state of any water or air, the state of any flora or fauna, the state of any soil, or the state of any natural site or other land eg biological data;

b) any activities or measures which adversely affect anything mentioned above or are likely adversely to affect anything so mentioned;

c) any activities or administrative or other measures (including any environmental management programmes) which are designed to protect anything so mentioned. These might include:

- sampling programmes;
- details of river monitoring;
- river corridor surveys.

Many NRA staff are potential recipients of requests for information on the environment and consequently all staff must be aware of the Regulations. 'Information' includes anything contained in any 'records' which include registers, reports and returns, computer records and records kept otherwise than in a document.

4. The Duty Imposed

The Regulations place a duty on the NRA, where it holds information to which they apply, to make that information available to every person who requests it. Further, the request must be responded to within two months of the date it was made. However if it will take longer than 2 months to produce the information requested, a holding reply should be sent within the first five days. Should a request be refused (see Section 5) then confirmation must be obtained from a Senior Manager who should liaise with the Regional/Head Office Solicitor. The refusal must be in writing and the reasons for refusal given. It is possible to refuse a request for information where that request is manifestly unreasonable, is formulated in too general a manner or falls within the permitted exceptions (see Section 5).

The NRA is under a duty to the person who requests information to make information available to him/her. Failure to comply with this duty may lead to the Authority being challenged in the High Court. In some circumstances an 'aggrieved customer' may seek redress through the Parliamentary Commissioner ('Ombudsman').

5. Exceptions

There is no requirement to disclose information which under the terms of the Regulations:

a) is manifestly unreasonable ie. request is too general (non specific) in nature or places a substantial burden on the NRA.

b) is capable of being treated as confidential eg:

- public security; national defence;
- anything which is or has been the subject matter of legal or other proceedings, including disciplinary, local and public inquiry proceedings;
- the internal communications of the NRA: minutes of officers' meetings, PINs, policy and planning documents;
- incomplete documents, records, pieces of work and draft reports;
- matters of commercial or industrial confidentiality or affecting any intellectual property, R&D reports, Market Testing issues, NRA copyright.

c) must be treated as confidential:

- contravene any statutory provision or rule of law or breach of agreement;
- personal information contained in records held in relation to that person and their permission for disclosure is not given;
- matters where the supplier of the information was under no obligation to supply it and has not agreed to its disclosure, ie data belonging to someone else;
- disclosure might increase likelihood of damage to the environment.

In assessing whether the information requested is confidential, reference should also be made to the Regulations and DoE guidance.

The officer responsible for responding to a request for information shall obtain the confirmation of a Senior Manager who should liaise with the Regional/Head Office Solicitor that the information is confidential or is capable of being treated as confidential. The Regional Solicitor and Senior Manager shall particularly satisfy themselves that information relating to financial or manpower statistics or NRA procedures has been considered by the Market Testing Unit.

If it is possible to separate exceptions from other information which can be provided in response to a request, this should be done.

6. Existing Statutory Requirements

The Regulations affect existing statutory requirements to make information available, eg pollution control register. Arrangements to secure compliance with such requirements must ensure that:

a) responses to requests are made as soon as possible and no later than two months after the requests are made;

b) refusals are in writing and state reasons;

c) charges for the supply of the information are reasonable.

Section 204 Water Resources Act 1991 - if the information requested falls within the restriction of disclosure of information under Section 204 and the information is capable of being treated as confidential (see 5b) the information must not be disclosed. However if consent is obtained from the relevant person or the information is not capable of being treated as confidential then the information can be released.

Advice should be obtained from the Regional Solicitor where an enquiry involves Section 204.

7. Charging for Information

The current charging rates are shown in PIN FI/FI/013 'Income from External Works'. All information is chargeable unless the request comes from

a) statutory or regulatory bodies providing information free on an established reciprocal basis;

b) a water undertaker and relates to hydrometric and other data covered by the Water Resources Act 1991 and Water Industry Act 1991;

c) the press prior to an agreed media interview (requests to facilitate the writing of an article should be charged);

d) a school child or student, is specific and does not involve more than half an hour of staff time;

e) an individual by telephone and can be answered immediately by telephone and where the information is not of obvious commercial value (where there is commercial value then the caller should be asked to apply in writing);

f) an individual or organisation and related to NRA publicity material, information leaflets with no cost attributed.

8. Charging Procedures

Once it has been established that the information requested is subject to charges the following procedure should be followed:

a) estimate costs of provision of the information (see PIN FI/FI/013);

b) provide estimate in writing to the person or body making the request;

c) where possible obtain confirmation in writing of the data requested and acceptance of the estimated costs;

d) request payment prior to despatch of information;

e) ensure Finance/Administration are aware of incoming payment and ensure notification is received from them on receipt of payment following which the information should be forwarded;

f) no adjustment to charges should be made even if actual costs differ from estimate.

Steps a) to d) at minimum should be completed within 2 months of receiving the request. See section 4.

9. Information Request Form

For all chargeable requests, whether refused or replied to, the Information Request Form (Appendix A) must be completed.

In addition details of refusals on non chargeable requests must also be separately recorded and then included in Appendix B. See section 1.

10. Disclaimers

All responses to information requests under the Regulations should include a covering letter containing the disclaimer clause as follows:

> "The information provided is based on that currently available to the Authority. The Authority and its officers accept no liability whatsoever for any loss or damage arising from the interpretation or use of the information".

Great care must be exercised in responding to a request where the information held is based on opinion or judgement rather than actual data.

11. Arrangements for Implementation

Regions and Head Office shall make appropriate provision to comply with the requirements of the Regulations and it is recommended that a nominated officer has responsibility for advising on requests under the regulations.

In addition, since any one request for information may be directed at several functions, and there may be many components to that request, there is a need for the regions and Head Office to establish a procedure to co-ordinate multifunctional or sensitive requests.

The Head Office contact officer will be the PIN Co-ordinator, based within the Operations Directorate at Head Office, who will

a) co-ordinate requests where data covers more than one region;

b) co-ordinate requests where requests are made direct to Head Office;

c) be a 'Help Desk' for all queries from regions, particularly those relating to sensitive requests from Research Institutes or Foreign Government Departments, for example.

Each region should nominate a contact officer whose identity shall be made known to all managers within the region and to the Head Office PIN Co-ordinator. The regional contact officer will be the link person between Region and Head Office and will provide a 'Help Desk' in Region.

The Directive requires Member States to report on the experience gained in operating the Directive, consequently the NRA is required to report to the Department of the Environment. In order to fulfil the requirements, the regional contact officer shall collate details of chargeable requests and non-chargeable refusals and submit them to the PIN Co-ordinator quarterly using Appendix B as a proforma. The PIN Co-ordinator will compile Appendix B for requests to Head Office.

CE/LL/003
DECEMBER 1993

APPENDIX A

REFERENCE: .....

NATIONAL RIVERS AUTHORITY

ENVIRONMENTAL INFORMATION REQUEST FORM
(WHERE CHARGE APPLICABLE)

RECEIVED BY ..... DATE .....

1. NAME, ADDRESS, TELEPHONE ETC OF APPLICANT

2. INFORMATION REQUIRED LATEST DATE REQUIRED .....

IF THE REQUEST IS TO BE REFUSED COMPLETE SECTIONS 7 AND 8

3. CALCULATION OF ESTIMATED CHARGE APPLICABLE COST .....

4. INVOICE/PAYMENT REQUEST SENT DATE .....

5. PAYMENT RECEIVED DATE .....

6. DATA SENT DATE .....

7. REFUSAL LETTER SENT DATE .....

8. REASONS FOR REFUSAL

Note:

1. The Environmental Information Regulations 1992 oblige the NRA to make available within 2 months, free or at reasonable cost, information on the environment which it holds. Detailed guidance on the Regulations is available and any queries should be directed, in the first instance, to your Section Head.

2. Please refer to the sections on Charging for Information and Charging Procedures if you have any queries on the completion of this form.

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APPENDIX B QUARTERLY RETURN OF REQUESTS MADE FOR INFORMATION UNDER

EC DIRECTIVE - ACCESS TO INFORMATION ON THE ENVIRONMENT

..... REGION/H.O. .....QUARTER 199...

	Number	Comments
Number of Written Requests where charge levied		
Number answered within 2 months (Statutory period)		
Number answered in excess of 2 months		
Number of chargeable requests refused		
Number of non chargeable requests refused		
Reasons for refusal - Confidential		
- Legal		
- Non Accessible		
- Unreasonable		
- Incomplete Data		
- Other		

NRA POLICY IMPLEMENTATION GUIDANCE NOTE

THE APPLICATION OF THE AUTHORITY'S CONSERVATION DUTIES UNDER S16 OF THE WATER RESOURCES ACT 1991

CE/LL/001

1. Introduction

1.1 Approach

Section 16(1) of the Water Resources Act 1991 (previously Section 8(1) of the Water Act 1989) requires the NRA to adopt a new approach when :-

- preparing any proposals relating to *all of its functions* which are likely to have an effect on the water environment.

- considering any proposal, whatever its origin, where the NRA has a role to play as consenting or approving authority and in certain circumstances as consultee.

This new approach involves an assessment of the effect of a proposal on the environment.

1.2 Application

With regard to the NRA's own proposals, this new approach should be applied whilst the proposal is being formulated. With regard to other parties' proposals, it may often be that a proposal has to be considered, and hence approved or rejected, as submitted. However, wherever possible the NRA should seek to participate in the formulation of a proposal in order to ensure that its impact upon the water environment is adequately addressed at the earliest possible stage.

2. What Constitutes "A Proposal"

2.1 Definition

So far as the NRA is concerned, a proposal includes :-

- a proposal by the NRA relating to its own functions, e.g. flood defence works.

- a proposal put forward by any person (including a water undertaker, sewage undertaker and Internal Drainage Board) in which the NRA has a role to play, whether advisory or regulatory e.g. land development proposals and proposals in connection with discharge consents, or abstraction licences.

2.2 Application to Other Bodies

The new approach must also be adopted by the other bodies concerned with water, sewerage and land drainage functions as well as by the NRA. It is also applicable to the Secretary of State and the Director General of Water Services in relation to their functions including any proposals which may be put forward by the NRA itself.

3. The Environmental Duties in S16 of the 1991 Act

There are three duties which arise when the NRA is formulating its own proposals or considering proposals from other parties. These are :-

- **to TAKE INTO ACCOUNT any effect which proposals would have on the beauty or amenity of any rural or urban area or on any flora, fauna and geological or physiographical features of special interest and on buildings, sites and objects or archaeological, architectural or historic interest.**

- **to HAVE REGARD to the desirability of protecting and conserving buildings, sites and objects or archaeological, architectural or historic interest.**

[This latter duty imposes a more positive requirement than the former, involving consideration whether, and if so, how such places or objects should be protected and conserved and will usually call for specialist advice]

- **to EXERCISE ANY POWER conferred on it (so far as may be consistent with the purposes of any enactment relating to the NRA functions) with respect to the proposals AS TO FURTHER the conservation and enhancement of natural beauty and the**

conservation of flora, fauna and geological and physiographical features of special interest.

This is the most active duty and is the one likely to create the best opportunities for enhancing the conservation values of water and associated land under NRA control but raises difficult issues. The guidelines are therefore directed mainly towards the application of this duty, which is referred to throughout as the "new conservation duty".

It is noted that the duty is qualified by the words "so far as may be consistent with the purposes of any enactment". A single section of an act of Parliament is an enactment. The general purpose of a particular section is usually reasonably clear. For example, the general purpose of Section 23 of the Land Drainage Act 1991 is to provide the means of controlling the erection of certain structures in a non-main river. The means of control is to require the consent of the drainage authority to be obtained before any such action is begun. It follows that a secondary or subsidiary purpose of the enactment is to permit actions whose obstructive effect on the flow of a watercourse are, or can be made, acceptable in land drainage terms.

So the requirement that the new conservation duty places on the NRA, often applied by individual officers, is to exercise the NRA's powers so as to achieve improvement in terms of conservation whilst recognising that the power has to be used consistently with achievement of the objectives (i.e. the purposes) for which the power is granted. The balancing exercise involved may not always be an easy one and the following guidelines may help.

4. The Application of the New Conservation Duty

4.1 Purpose

The general purpose of the particular legislation under which the proposal comes forward should be kept in mind throughout consideration of the proposal. There may be one or more subsidiary purposes also to be identified and kept in mind.

4.2 Refusal

If a proposal is inadequate or unsatisfactory in the context in which it is put forward then the most suitable course may be to refuse Consent or authorisation or to reject it without going on to consider the application of the new conservation duty.

4.3 Test

The new conservation duty can first be applied by asking **"HOW DOES THIS PROPOSAL AFFECT CONSERVATION?"**.

This may be difficult to establish and work may need to be done in discovering or calculating the answer. The applicant will clearly have a role to play, in either providing additional information or undertaking or funding the necessary investigative work.

4.4 Categorisation

Once a provisional answer to the question of application has been reached it should be possible broadly to categorise the likely conservation effects as beneficial, neutral or harmful.

4.5 Beneficial Effects

Where the conservation effects are beneficial the new conservation duty will be fulfilled if the proposal goes ahead in the manner proposed. Any later variations of a proposal should be similarly assessed.

4.6 Harmful Effects

Where the effects on conservation are harmful there is obvious reason to query the proposal and indeed it may later be appropriate to reject it. There will, however, be cases where the proposal is of such significance in terms of a function of the NRA e.g. water resources, that the proposal ought, if at all possible, to be modified rather than refused. In these, and sometimes in other less sensitive cases, it will be necessary to identify the damaging features of the proposal and to raise the question whether such features need take the form in which they are proposed. Generally in these circumstances modifications should be sought on the basis that the unmodified proposal would not be acceptable.

4.7 Neutral Effects

Where the effect of a proposal is broadly neutral the desirable objective is to have some further input of conservation benefit brought into it so that the exercise of the power to consent or to approve is no longer held back by the new conservation duty. How substantial this input should be is a matter of judgement in each individual case.

4.8 Consequences of Failure to Satisfy

- A proposal which fails to satisfy the new conservation duty and is incapable of further modification or substitution to meet it may well be one that is inadequate to secure its particular objective in a reasonable way. In other words the application of the new conservation duty might formalise what might otherwise be a "gut feeling" about the unsatisfactory nature of such a proposal.

- There may be cases where the benefit of a proposal to flood defence, water resources, or some other function is so great that its failure to fulfil all the requirements of the new conservation duty, after all reasonable modifications have been considered, may be accepted.

- If the proposal is environmentally damaging and is one that has no significance for any NRA function (for example in an extraneous land development proposal) then consent or authorisation will have to be refused. This may be the only way to secure modification if the project is not then abandoned.

5. Making a Quantitative Judgement

The words of the new conservation duty express no obvious quantitative test. No answer appears to have to be given to the questions to what extent conservation must be benefited or "furthered" by a proposal. However, the whole basis of the concept of furthering or advancing conservation lies in its quantitative element. It is therefore important to have regard to the scale of the project when considering the benefits to conservation that it is expected to bring. There should be some element of proportionality. It is necessary to consider the overall consequences of a proposal in the context of the river catchment in order to assess its likely quantitative effects. This will be required even though it involves asking the applicant for more information than he may have expected to provide. An early warning to the applicant of the likelihood of such a request might help him.

THE CONSERVATION DUTIES OUTLINE HEREIN APPLY TO THE AUTHORITY IN THE EXERCISE OF ALL ITS FUNCTIONS AND NOT JUST THOSE RELATING TO LAND DRAINAGE.

CE/LL/001
JANUARY 1992

NATIONAL RIVERS AUTHORITY - SEVERN TRENT REGION

REQUIREMENTS RELATING TO PROPOSALS TO CONSTRUCT IMPOUNDING WORKS ON WATERCOURSES

Any person wishing to construct new, or alter existing impounding works on a watercourse in the Authority's area, must first obtain from the Authority:-

(i) an impounding licence pursuant to the Water Resources Act 1991.

(ii) a consent pursuant to the Land Drainage Act 1991 or the Water Resources Act 1991.

An impounding licence can only be issued after the proper application procedure, including advertising, has been followed. It is likely that consent under the Land Drainage Act or the Water Resources Act will also be required for which a separate application must be made. All enquiries should be addressed initially to the Abstraction Control Officer or the Development Control officer for the area within which the proposal is located. A list of addresses is given below and a map outlining the Region's operational areas is attached.

Before the licence and consent can be issued the Authority needs to be satisfied about the following aspects of the proposals:-

(i) the effect on the water resources of the area and in particular the means to be used for controlling the flow in the watercourse and maintaining compensation or prescribed flows as necessary.

(ii) the effect of the works on the land drainage of the area.

It is emphasised that the Authority's duties extend only to the water resources and land drainage aspects of the proposals and the responsibility for the safety of the structure rests entirely with the promoter. Apart from the Authority's requirements, the promoter may also require approval from other interests i.e. planning permission in certain areas may be required and compliance with the Reservoirs Act 1975 where the reservoir is capable of holding more than 25,000 cubic metres above the natural level of any part of the land adjoining the reservoir.

The applications should be submitted separately with the appropriate application charges to your Area NRA office (see over) accompanied by three sets of engineering drawings, with relevant levels quoted to Ordnance Datum, showing:-

(i) a plan of the impounding structure and upstream reservoir area (usual scale 1:500) showing location of overflow spillways, drawdown pipes or culverts, by pass or compensating flow arrangements, outfalls, service crossings and full extent of backwater effects under normal and flood conditions. For reservoirs where the stored volume of water is in excess of about 15,000 cubic metres (3.3 million gallons) the plan must include contours at 0.5 metres intervals up to the crest level of the dam. Boundaries of land adjacent to the reservoir and works, not in the occupation of the promoter must also be shown.

(ii) a cross section of the impounding structure at its maximum height (usual scale 1:1000).

(iii) a longitudinal section of the impounding structure (usual scale 1:250).

(iv) details of the overflow spillways, drawdown pipes or culverts, by pass or compensation flow arrangements (usual scale 1:100).

(v) typical detailed watercourse cross-section looking downstream (usual scales 1:100 or 1:500) at 100m intervals (reducing to 50m in urban areas and on very small watercourses) and at bridges or culverts, extending a minimum of 10m from the top of each bank, from an agreed location downstream of the impounding structure to the limit of the backwater effect under an appropriate agreed flood return period.

(vi) a watercourse long section (scale 1:100 vertical and 1:100 horizontal) locating the impounding structure, cross-sections and showing soft and hard bed levels, normal water level and the backwater curve for the agreed flood return period.

(vii) an Ordnance Survey map of the area surrounding the proposed works at 1:10,000 scale and showing the boundary of the land in the ownership or occupation of the applicant.

(viii) any other details necessary to the consideration of the proposal including the volume to be impounded, the volume and nature of any material excavated from within the impounding area, details of local drainage arrangements etc.

Provision should be made in all impounding works for draining the reservoir when required. The same arrangements can sometimes be used for providing compensation or prescribed flows as necessary. The requirements of the licence will need to be known before these details can be finalised.

In the case of flood balancing storage basis, the Authority needs to be satisfied that:-

(i) balancing is preferable to increasing the watercourse capacity.

(ii) adequate storage is provided to balance storm run-off for a return period appropriate to the location and for planned future development upstream.

(iii) adequate arrangements are made for the future maintenance of the basin.

The design and construction of water retaining structures requires professional expertise. The failure of an impounding structure, even though it may only retain relatively small quantities of water, can have severe consequences involving, in some cases, a risk to life. The Authority, therefore, recommends that the design and supervision of construction of impounding works be carried out by a qualified and experienced civil engineer.

ADDRESSES

National Rivers Authority
Severn Trent Region

Lower Severn Area Office Riversmeet House Newtown Industrial Estate Northway Lane TEWKESBURY GL20 7JG Tel No: 0684-850 951	Severn catchment below River Teme confluence - including Avon catchment	Upper Trent Area Office Sentinel House 9 Wellington Crescent Fradley Park Lichfield Staffs WS13 8RR Tel No: 0543-444 141	Trent catchment down to and including River Dover confluence
Upper Severn Area Office Hafren House Welshpool Road SHREWSBURY SY3 8BB Tel No: 0743-272828	Severn catchment down to and including River Teme confluence	Lower Trent Area Office Trentside Scarrington Road off Lady Bay Bridge West Bridgford NOTTINGHAM NG2 5FA Tel No. 0602-455 722	Trent catchment below River confluence

Regional Office
Sapphire East
550 Streetsbrook Road
SOLIHULL
B91 1QT
Tel No: 021-711 2324
Contact: Regional Authorisations or Flood Defence Sections

WATER RESOURCES ACT 1991 - IMPOUNDING AND ABSTRACTION LICENCES

There is an application pack available in five parts as follows :

1. Pack folder giving details of the application procedure.

2. (a) Licence application form required for all applications (Part A).

   (b) Application for a licence under Section 24 to abstract water (Part B).

   (c) Application for a licence under Section 25 to obstruct or impeded the flow of an inland water by means of impounding works (Part C).

3. A Regional information sheet.

To assist applicants for 2(c) above, an information sheet titled 'Requirements of the Authority Relating to Proposals to Construct Impounding Works on Watercourses' is available (see Appendix 13). This informs the applicant about the engineering drawings required by the NRA. In addition to giving general advice, the sheet emphasises that the responsibility for the safety of the structure rests entirely with the promoter.

The application pack details the requirements for the publication of the Notice of Proposals which is the duty of the applicant and Standard Notice forms are also included for this purpose. The applicant is also required to serve the Notice on any appropriate navigation, harbour authority, internal drainage board and water undertakers. The pack sets out the inspection and representation periods prescribed by the Water Resources Act 1991 and lists the necessary documentation to be submitted, together with the completed application form.

The applicant should have discussed his proposals and agreed the engineering drawings with the NRA prior to advertising.

Once the formal application has been made in the correct manner, the NRA will formally acknowledge the application and then has three months from the date of receipt to give its decision on the application. If the NRA has not given a decision within this period the application is deemed to be refused. However, in certain circumstances, the period can be extended by agreement. When an application is approved, a licence is issued by the Regional General Manager.

There must be close liaison between Flood Defence and Abstraction Control personnel over both impounding and abstraction works details since, in the case of Main River, both types of works require a Land Drainage Consent. On 'ordinary' watercourses, an impounding structure would require a Land Drainage Consent whereas abstraction works generally would not.

The NRA does not promote impounding licences for its own flow gauging stations, whereas the issue of land drainage 'consent' is normal practice for such structures particularly those involving weirs.

Note that, as a matter of policy, the NRA does not require an impounding licence when :

a) The upstream water level is not raised outside of the normal wetted perimeter of the inland water under non-flood conditions, and

b) The flow regime is not temporarily or permanently modified to the extent that the effects are potentially detrimental to other protected rights, lawful users, or the environment.

Note also that, as a matter of law, impounding licences are not required in the following circumstances :

c) Navigation, harbour and conservancy authorities do not require licences to constuct or alter impounding works in the course of their functions as such (Water Resources Act 1991, Section 26 (2).

d) The NRA or water undertakers may carry out works under a drought order which would otherwise require an impounding licence (Water Resources Act 1991, Sections 74 and 78).

e) Operations by or on behalf of the Crown, or any land occupied by a government department or in the right of a Crown or Duchy interest (Water Resources Act 1991, Section 222).

f) Impounding works authorised by an 'alternative statutory provision' (See Water Resources Act 1991, Section 25(4) to (7)) do not need an impounding licence as well.

g) Diversion works, other than those in connection with the construction or alteration of impounding works, do not fall within the definition of 'impounding works'. (Note that the abstraction of water resulting from such works may, however be licensable).

h) Maintenance operations, such as desilting, where the level or control structures of the impoundment are not altered in any way.

WATER RESOURCES ACT 1991 - SCHEDULE 10 - DISCHARGE CONSENT PROCEDURES

Schedule 10 of the Water Resources Act 1991 sets out the procedure for consenting discharges to controlled waters. Application charges are now applicable to such applications.

Consent application forms and fees should be submitted to the appropriate Area office via the PO Box number address. Once recorded and acknowledged, the application will be copied out to all interested parties for consultation on the need to advertise.

The Area Consents Officer (ACO) co-ordinates and arranges the issue of the discharge consent and deals with any formal objectors to the proposals. The statutory period for the determination of a consent application is four months. Should advertising be necessary an additional period of one month will be required to complete the process. The time to determine a consent may be extended if agreed in writing with the applicant and this may be required in particularly complex situations.

Pollution Control staff require access to an outlet at all times for the taking of samples. Should access be restricted the NRA may require the applicant to provide a sampling chamber to allow the collection of a representative sample of the effluent.

Since the ACO will be sending details of all proposed discharges to Flood Defence for consultation on advertising, it will be assured that any problems would be identified at this time and the Flood Defence department would conctact the applicant if a Land Drainage Consent is required, or would put forward any relevant comments to the ACO for consideration.

A16. WASTE DISPOSAL LICENCES

WASTE DISPOSAL LICENCES

From 1 May 1994 the Environmental Protection Act and associated Waste Management Licencing Regulations 1994 cover the issue of waste management licences. Waste disposal on land requires both planning permission (County Planning responsibility) and a waste management licence from the Waste Regulation Authority (County Council, Metropolitan Borough or Welsh District).

The Area Flood Defence Department has the opportunity to comment upon the planning application through the planning liaison system, but the Planning Authority is not required to take note of its views. The NRA is, however, a statutory consultee for waste management licences and can, therefore, veto an application, or request specific conditions to be imposed.

The Waste Regulation Authority (WRA) forward a copy of the licence application to the Groundwater Section at Regional Headquarters who have 21 days from receipt (or a longer period if mutally agreed in writing) in which to make representations. The Groundwater Section forward a copy of the application to the Area Pollution Control Officer who, in turn, will consult the Flood Defence Department where appropriate, and co-ordinate the reply back to Regional Headquarters, within 14 days if possible. This gives a further 7 days for a reply to be formulated, typed and posted back to the WRA.

The WRA has a duty to issue a licence to cover the operating conditions for the site, provided :-

1. planning permission has been granted,

2. it is satisfied that it will not cause pollution of water, or

3. it will not be a danger to public health.

In the case of dispute the matter is referred to the Secretary of State for a decision.

In the past under the Control of Pollution Act 1974 Part 1 the licence only covered operating conditions for the duration of tipping. Matters such as final restoration details and monitoring needed to be included in the planning conditions. This has changed under the Environmental Protection Act to a certain extent since the licence will exist until a certificate of completion is issued by the WRA after consultation with the NRA. The site will require monitoring and maintenance until such time as they are "unlikely to cause pollution of water" and the completion certificate is issued. Responsibility for the site then reverts to the WRA.

Further information of a general nature is contained in Waste Management Papers Nos. 4 and 26 published by the DoE. The Groundwater Section at Regional Headquarters is the point of contact regarding waste management licensing matters. They co-ordinate the responses to consultations from WRAs throughout the region and have expertise in waste disposal matters.

Points of concern to the Flood Defence Department where a landfill is proposed in the floodplain. :-

1. There is considerable pressure to find landfill sites for pulverised fly ash (PFA) from power stations. Such sites are usually worked out sand and gravel pits. PFA does not settle and forms a low permeability barrier to groundwater movement. Provision should be made for groundwater movement around the site or through it via areas of gravels which are left insitu.

2. Domestic and similar refuse degrades and settles over a 5 to 10 year period. For this reason a domed cap, often of clay is favoured for pollution control grounds. Since there is a tendency for larger landfill sites, on economical grounds, the height of cap required could be considerable. This would obstruct flood flow in the flood plain and would be at risk of erosion. In addition, the effect of rapid run-off from large clay caps has to be considered. The NRA should insist that where the future tipped material is domestic refuse, gravel extractions are carried out in a series of cells so that each cell can ultimately be capped by a small dome rather than a single dome covering the entire site. Selected fill sites are being monitored on a national basis and this should provide a better understanding of the amount and rates of settlement for differing waste material filled by differing methods in the future.

3. Many licences are issued for inert wastes only. The Area should attempt to get conditions concerning final levels and the site restoration for such sites included in the planning consent.

4. Bunds are required around landfills to prevent any washing out of the waste material during a flood. The bund top will be specified at around 500 mm above the highest known major flood event. No more than 30% of the flood plain width should be obstructed at any one time subject to consideration of the effect on upstream flooding. This restriction will mean some liaison with the operators to discuss phasing.

5. A landfill site operator may wish to culvert a watercourse passing through his site. However, except in the case of inert waste sites this is not recommended for pollution control reasons. Culverts invariably leak. Where other options, such as water diversion around the site are inappropriate then culverting may be permissible with suitable engineering precautions. Particular wastes will require very high culvert standards such as a concrete surround, followed by a polythene wrap, followed by a clay surround with self expanded cork filler in the pipe joints.

   Alternatively, if bitumen impregnated wood filler is used at joints, since it biodegrades, each joint will require wrapping. The culvert would require a land drainage consent and close co-operation with the Pollution Control Officer is required. Whilst the preferred solution is to divert the watercourse around the site, the matter will probably be decided by cost.

6. A waste management licence is required for the tipping of all controlled wastes. Certain materials are exempt from waste disposal licensing, but still require planning permission. These include agricultural wastes and mineral deposits.

7. Where large tips are completed outside of floodplain areas they are invariably capped with a low-permeability material (clay or membrane). The run-off potential is, therefore, considerably enhanced, especially where the completed landform is contoured above the original ground level. Some sites are now constructed entirely above ground. Site proposals should be checked to ensure that stream capacity is sufficient to take the run-off from storm events in certain cases.

RESERVOIRS ACTS

The Reservoirs Act 1975 was enforced in two stages :-

Under stage one, essential enabling Regulations, and Regulations covering the appointment of new panels of engineers to carry out various functions prescribed for qualified civil engineers under the Act, came into force.

Under stage two the responsibility for the register and enforcement provisions in the Act passed to the County Councils as from 1 April 1985. They are called the "Enforcement Authority".

The Enforcement Authority is responsible for the following activities :-

a) Maintaining a register of large reservoirs with prescribed information and to be kept in a prescribed place and be available for public inspection.

b) Ensuring that undertakers i.e. reservoir owners, comply with the requirements of the Act.

c) Reporting to the Secretary of State prescribed information as to steps taken to ensure compliance by undertakers.

d) Serving notice on undertakers who are commissioning new or altered reservoirs and who are not complying with the provisions of the Act requiring them to appoint qualified civil engineers to inspect and report etc.

e) As for d) above where large reservoirs are being brought back into use after abandonment.

f) Serving notice on undertakers, where inspection reports have not been made at the required frequency or where recommendations contained in such reports have not been complied with, to require an inspection to be made or to put into effect such recommendations.

g) Serving notice on undertakers where reservoirs are not under the supervision of either a construction engineer or a supervising engineer requiring them to appoint a supervising engineer.

h) Where undertakers fail to act in accordance with notices served in d) to g) above the enforcing authority may appoint a qualified engineer itself for the purpose specified in the notice i.e. to make an inspection OR to carry out the recommended works under his/her supervision.

i) To take such EMERGENCY ACTION as appears to the enforcement authority to be necessary in the interests of public safety to mitigate the effects of the consequences of potential failure of unsafe large (including abandoned) reservoirs.

j) To grant powers of entry to persons required to enter land for the purpose of carrying out surveys inspections etc.

k) To receive information in the prescribed form from undertakers relating to the appointment of qualified engineers, construction of new or altered reservoirs, abandonment of reservoirs etc.

The Act requires three types of qualified engineer to be appointed :-

i) the "construction engineer" to supervise design and construction of new or altered reservoirs leading up to the final certificate

ii) The "inspecting engineer" to carry out inspections of all reservoirs covered by the Act at frequencies of not more than 10 years

iii) The "supervising engineer" to supervise the reservoirs between inspections and to monitor seepage flows, movements etc as required by the inspecting engineer.

DEREGULATION PROPOSALS

It has been suggested that there is a need for a single body such as the NRA to be made responsible for reservoir safety matters ie for the creation of a single Enforcement Authority.

This would also bring the UK generally in line with European practice. The UK Government is also considering further deregulation but no definite timescale for any changes is currently available.

One deregulation proposal could for example provide for silted up reservoirs whose capacity (above the lowest level of the surrounding land) falls below 25,000 cubic metres (the lower threshold for reservoirs to come within the scope of the Act) to be taken outside the scope of the Act.

FLOOD STORAGE RESERVOIRS

Independent advice has been sought and confirms that a flood storage reservoir which is designed to hold water during a flood event is a large raised reservoir (whether it is an online or offline reservoir) if it stores more than 25,000 cubic metres. All proposals for flood storage reservoirs, controlled washlands etc require examination therefore to see if they constitute a registerable reservoir under the Act. Non-compliance with the Act is now a crimal offence.

Guidance on the application of the Reservoirs Act 1975 to flood storage reservoirs etc is contained in the attached document.

GUIDANCE ON THE APPLICATION OF THE RESERVOIRS ACT 1975 TO FLOOD STORAGE RESERVOIRS

1. Background

1.1 The Reservoirs Act 1975 makes provisions against escapes of water from large reservoirs or from lakes artificially created or enlarged.

1.2 A reservoir is a **raised reservoir** if "it is designed to hold, or capable of holding, water above the natural level of any part of the land adjoining the reservoir"; and a raised reservoir is a **large raised reservoir** if "it is designed to hold, or capable of holding, more than 25,000 cubic metres of water above that level".

1.3 This definition does not require the reservoir to normally hold water and therefore if large enough, a flood storage reservoir comes within the definition. The Regulations that cover certificates and registers under the Act require the level to be stated to which water may be stored, "exclusive of flood storage". This is based on the premise that water is stored up to the "top water level" which is usually the level of the overflow weir, and flood water is that which can enter the reservoir, when full to top water level, and flow out and not be stored or held. In the case of a flood storage reservoir there is a design implication to hold or store flood water and the top water level should be the maximum design level for storing flood water.

1.4 Independent advice has been sought and confirms that a flood storage reservoir which is designed to hold water during a flood event is a large raised reservoir, (whether it is an online or offline reservoir) if it stores more than 25,000 cubic metres.

2. Application Of The 1975 Act

2.1 It is desirable that a consistent approach to interpretation of the provisions of the Act is adopted by the NRA. Three distinct categories of flood storage area have been identified and are designated as Types A, B and C, as shown by the sketches in Appendix 1.

2.2 Type A are online flood storage reservoirs with a flow regulator designed to impede flow and cause a higher water level upstream of the regulator. This type becomes a large raised reservoir within the provisions of the Act if it stores more than 25,000 cubic metres of water and should be registered and inspected.

2.3 Type B are offline control flood storage reservoirs or washlands where water enters an area through an inlet sluice or weir. An outlet structure with a penstock, throttle pipe or pumping station maintains a differential head between stored water level and the river level at the point of discharge. Where the stored volume is in excess of 25,000 cubic metres above the natural river bank level at the point of discharge it is considered that this forms a large raised reservoir within the provisions of the Act and should be registered and inspected.

2.4 Type C are offline uncontrolled washlands where there is no inlet structure but there is an outlet sluice or pumping station. The primary purpose of the outlet is to evacuate water from the washland or flood storage area after flood levels in the river recede. This type is not considered to form a large raised reservoir within the provisions of the Act.

2.5 The application of these principles may in some cases be inconclusive. In these instances the overriding consideration should be:

(a) whether the area is designed or designated as a flood storage area; and

(b) water is impounded by means of a structure which controls, regulates or restricts the outflow such that water is intentionally stored; and

(c) the volume stored is more than 25,000 cubic metres above the adjacent ground level.

If all three conditions are met the area is considered to be a large raised reservoir within the terms of the Act and should be registered and inspected.

3. Application Of Reservoirs Act 1975

3.1 Application of the types identified would lead to a number of flood storage areas and washlands owned by the NRA being identified as being reservoirs under the Reservoirs Act 1975, although they may not yet have been so designated. This would require registration, inspection by a panel engineer and appointment of a supervising engineer. Regular surveillance and the implementation of safety recommendations, keeping of records and drawings, etc would also be required.

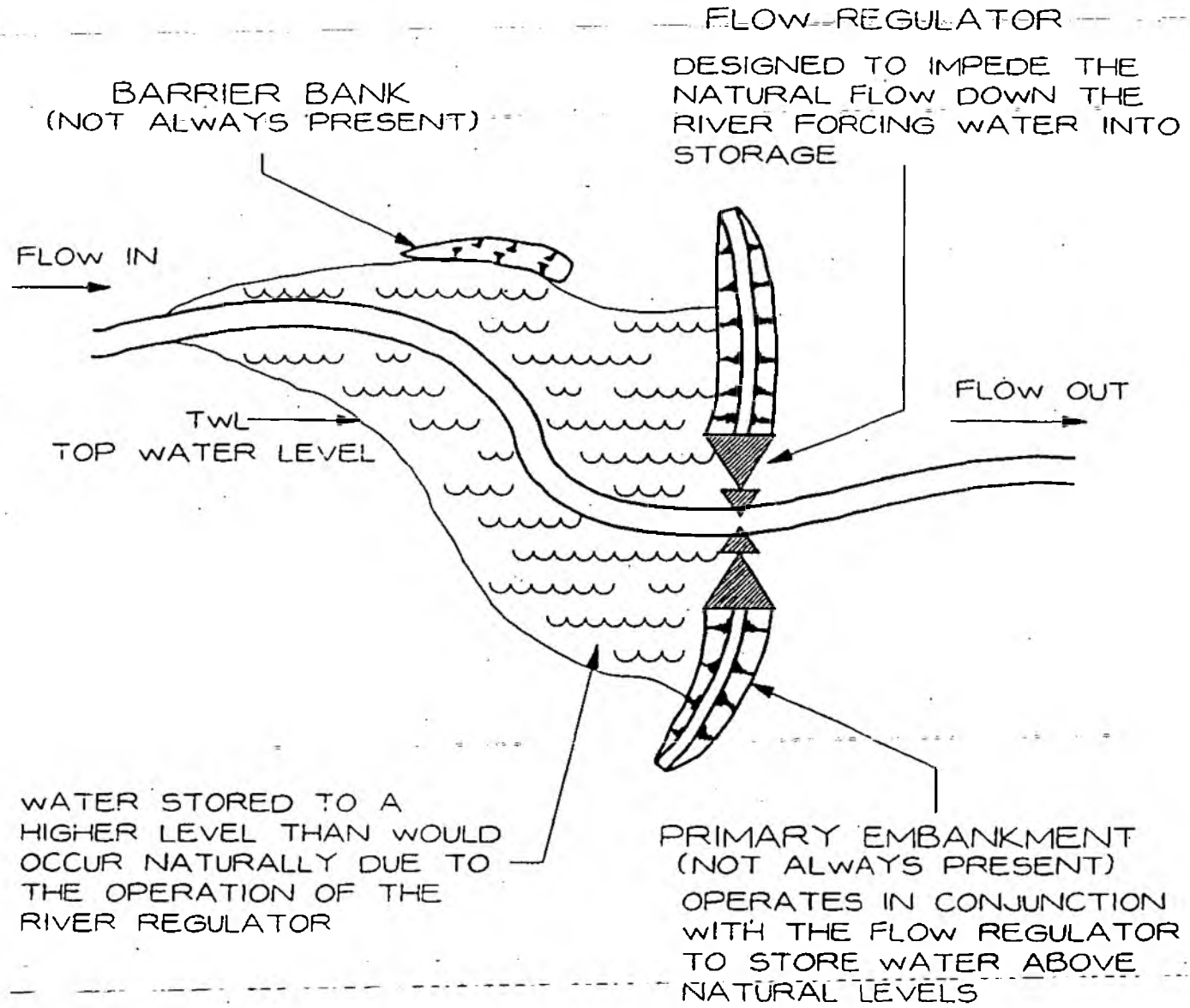
3.2 Dam break analyses and contingency plans in the event of a safety incident or failure are not required under the Act. The NRA is reviewing its policy in this respect and will publish guidance in due course.

3.3 It is likely that within the NRA some 200 or more sites could be considered to fall within the terms of the 1975 Act. Initial work suggests that the cost of compliance would on average be £20,000 and there is clearly a significant resource implication in applying the Act. Regions should therefore carry out a desk study to identify all potential sites and carry out a preliminary assessment of their status as type A, B or C. The risks to surrounding areas should there be a failure of any of the impounding structures should be considered. From this work a priority list for detailed inspection and categorisation of sites should be drawn up.

3.4 Once a site has been defined as a large raised reservoir then an inspecting engineer should be appointed to carry out a preliminary assessment and recommend any safety works that are necessary. The reservoir should be registered with the enforcement authority and the necessary inspections by supervising engineer put in place. Any identified safety works should be carried out to a programme agreed by the Inspecting Engineer.

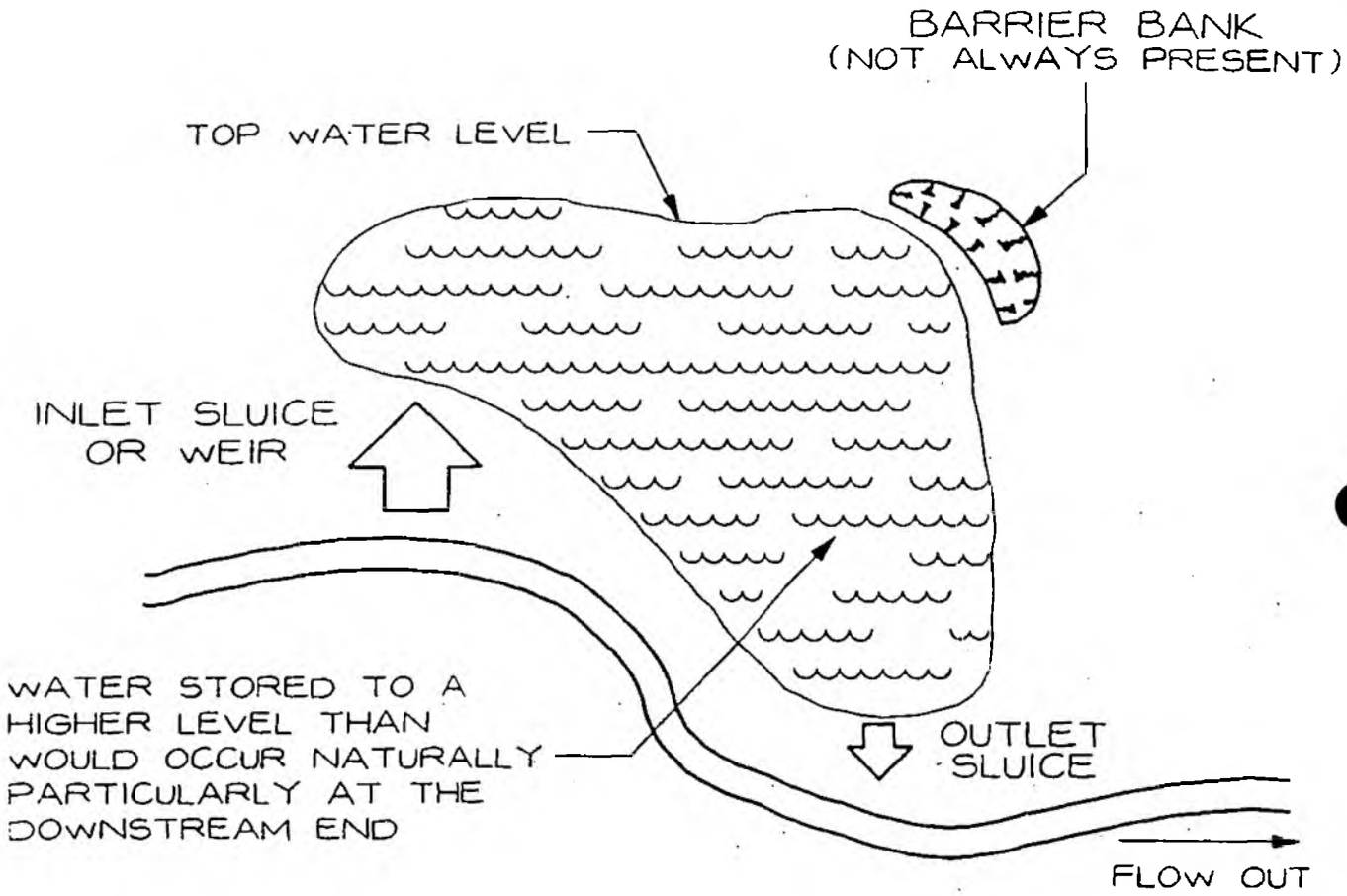
3.5 The programme for all this work should be drawn up such that all reservoirs have been registered, inspected and the required safety works carried out by 31 April 2002.

3.6 The construction of any new such storage areas or washlands would require the design and construction to be under an appropriate panel engineer.



TYPE A

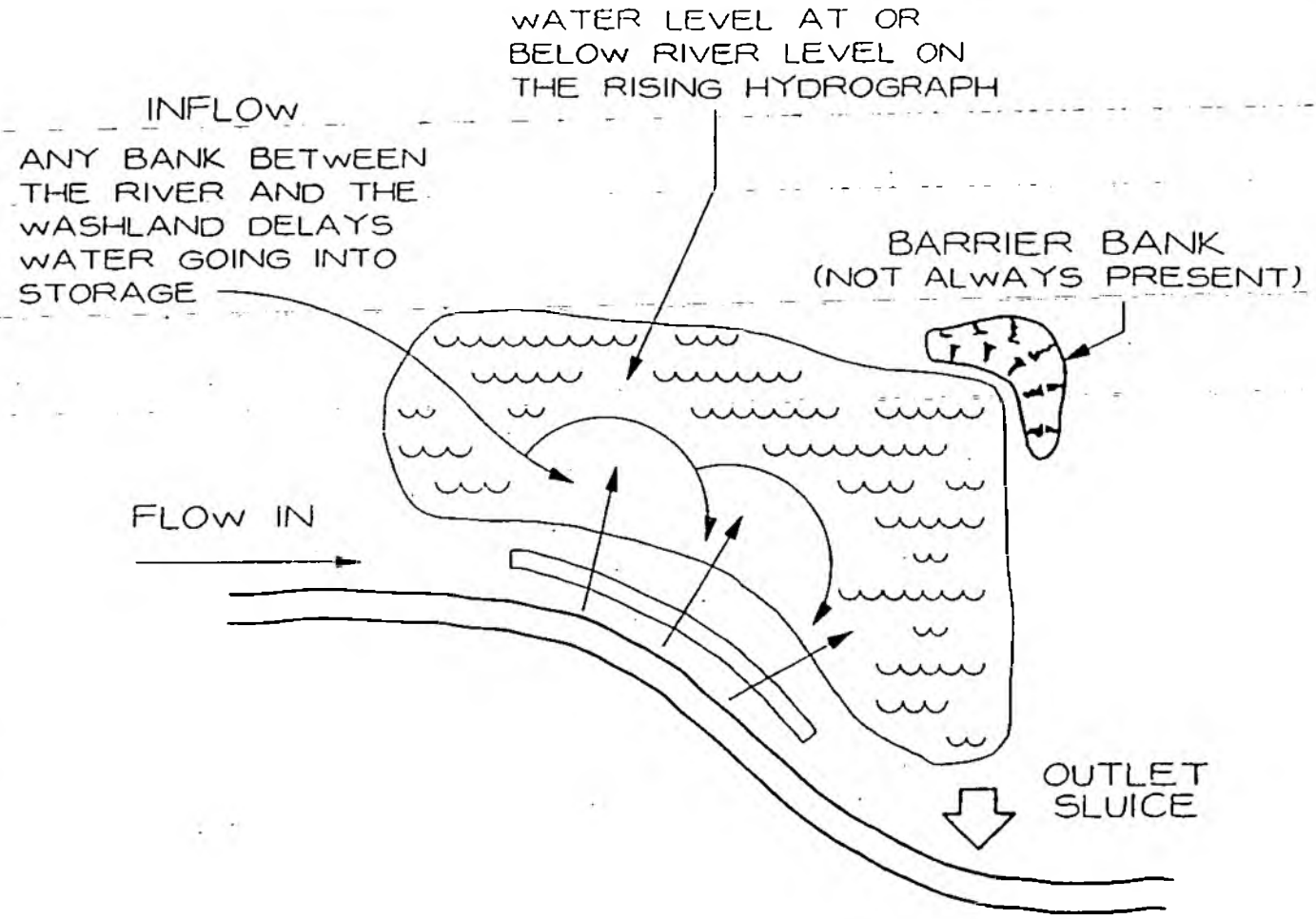
ON-LINE CONTROLLED WASHLANDS



1. THE OUTLET SLUICE WILL CONTAIN A MOVEABLE PENSTOCK OR A THROTTLE PIPE IN ORDER TO MAINTAIN A DIFFERENTIAL HEAD BETWEEN STORED WATER LEVEL AND THE RIVER FLOOD LEVEL AT THE POINT OF DISCHARGE.

TYPE B

OFF-LINE CONTROLLED WASHLANDS



1. THE OUTLET STRUCTURE MAY CONTAIN A MOVEABLE PENSTOCK OR THROTTLE PIPE
UNLIKE THE CONTROLLED WASHLANDS THE THE OUTLET IS NOT REQUIRED TO MAINTAIN A DIFFERENTIAL HEAD BETWEEN WASHLAND LEVEL AND RIVER LEVEL AT THE POINT OF DISCHARGE. THE PRIMARY PURPOSE OF THE OUTLET IS TO EVACUATE WATER FROM THE WASHLAND AFTER FLOOD LEVELS IN THE RIVER HAVE STARTED TO RECEDE.

2. DURING FILLING THE WATER LEVEL IN THE WASHLAND WILL FOLLOW THE FLOOD STAGE IN THE RIVER.

3. WORKS PERFORMED BY THE NRA OR PREDECESSORS HAVE BEEN DESIGNED TO OPTIMISE THE NATURAL OPERATION OF THE FLOOD PLAIN.

4. WHERE FAILURE OF THE BARRIER BANK WOULD POSE A SIGNIFICANT RISK OF DAMAGE, IT MAY BE PRUDENT TO DESIGN AND MAINTAIN THE BANK TO LARGE RESERVOIR STANDARDS.

TYPE C

OFF-LINE UNCONTROLLED WASHLANDS

A15. NAVIGATION INTERESTS
ON WATERCOURSES

NAVIGATION INTERESTS ON WATERCOURSES

1. Work on a watercourse subject to the jurisdiction of a Navigation Authority should not be undertaken without consultation with that authority. Such works may require a stoppage to navigation and the appropriate authority will contact boating organisations and also issue any "stoppage notices". Special protection for statutory navigations is contained in Schedule 22 of the Water Resources Act 1991 and Schedule 6 of the Land Drainage Act 1991. The consent of the appropriate navigation authority is required before a notice under Section 26(3) LDA 91 and 107(3) WRA 91 requiring the removal of obstructions can be served.

2. The main offices of major navigation interests in the Severn-Trent Region are :-

1. British Waterways

(a) Head Office : Willow Grange
Church Road
Watford
WD1 3QA

Tel : 0923 226422

(b) Midlands & South West Region : Peels Wharf
Lichfield Street
Fazeley
Staffordshire
B78 3QY

Tel : 0827 252000

Local Office :	Llanthony Warehouse Gloucester Docks Gloucester GL1 2EJ Tel : 0452 318000	Controls Severn Navigation from Stourport to Gloucester Docks
Local Office :	Fradley Junction Alrewas Burton on Trent Staffordshire DE13 7DN Tel : 0283 790236	Controls Trent Navigation from Alrewas Wychnor

(c) North East Region : P O Box 9
1 Dock Street
Leeds
LS1 1HH

Tel : 0532 436741

Local Office :	Lock Lane Long Eaton Nottingham Tel : 0602 461017	Controls Trent Navigation from Shardlow to Trent Bridge, Nottingham; Wreake Navigation from Syston to Soar confluence and Soar Navigation from Leicester to Trent confluence.

Local Office :	Mill Lane Mill Gate Newark Notts NG24 4TT. Tel : 0636 704481	Controls Trent Navigation from Trent Bridge Nottingham to Gainsborough Bridge
(d) North West Region:	Navigation Road Northwich Cheshire CV8 1BH Tel : 0606 74321	
Local Office :	Top Lock Church Lane Marple Cheshire SK6 6BN Tel : 0614 271079	Controls Churnet Navigation from Consall Wood to Consall Forge
2. <u>Associated British Ports</u>	P O Box 1 Port House Corporation Road Hull HU1 3ER Tel : 0482 27171	Controls Trent Navigation from Gainsborough Bridge to Trent Falls

3.	Gloucester Harbour Trustees	2nd Floor St Lukes House Llanthony Road Gloucester Tel : 0452 413009	Controls Severn Navigation from Sharpness to Bristol
4.	Port of Bristol	St Andrews Road Avonmouth Bristol BS11 9DQ Tel : 0272 820000	Controls Severn Navigation from Avonmouth to Bristol
5.	Upper Avon Navigation Trust Ltd.	Bridge 63 Anchor Lane Harvington Evesham Worcestershire Tel : 0386 870526	Controls Avon Navigation from Alveston to Evesham Lock
6.	Lower Avon Navigation Trust Ltd.	Mill Wharf Mill Lane Wyre Piddle Pershore Worcestershire WR10 8JF Tel : 0386 552517	Controls Avon Navigation from Evesham Lock to Severn Confluence

7. Other Bodies

National Trust, Stratford on Avon Canal Office, Lapworth, Solihull.

Inland Waterways Association, 114 Regents Park Road, London, BW1 8VQ.

Association of Pleasure Craft Operations, Harborough Marine Ltd, The Canal Basin, Leicester Road, Market Harborough, Leics, LE16 7BJ.

A19. FLOODING SURVEY
& M o U

MEMORANDUM OF UNDERSTANDING

DEVELOPMENT AND FLOOD RISK

NATIONAL RIVERS AUTHORITY
ASSOCIATION OF COUNTY COUNCILS
ASSOCIATION OF DISTRICT COUNCILS
ASSOCIATION OF METROPOLITAN AUTHORITIES

March 1994

MEMORANDUM OF UNDERSTANDING BETWEEN NATIONAL RIVERS AUTHORITY AND THE ASSOCIATIONS OF COUNTY COUNCILS, DISTRICT COUNCILS AND METROPOLITAN AUTHORITIES.

DEVELOPMENT AND FLOOD RISK

1. INTRODUCTION

1.1 Department of the Environment (DOE) Circular 30/92 (Welsh Office (WO) 68/92; Ministry of Agriculture, Fisheries and Food (MAFF) FD 1/92), 'Development and Flood Risk', provides guidance to local planning authorities (LPAs) and others on the arrangements for ensuring that planning decisions take account of any risk of flooding, whether inland or from the sea. This guidance requires a large data collection initiative by the National Rivers Authority (NRA). The task is made more difficult by the need to verify and update the existing flood data, which is frequently inaccurate.

1.2 The NRA is anxious to comply with the Circular and intends to embark on a programme of data determination, collection and manipulation and the giving of advice to allow it to make a proactive input to the development plan the Government requires. The work programme will be concentrated and comprehensive to reflect the urgency of the situation.

1.3 Before committing substantial resources, the NRA wishes to ensure that results meet with the needs of the planning authorities, in content, timescale and priority, by involving them at an early stage. The Associations of County Councils (ACC), District Councils (ADC) and Metropolitan Authorities (AMA) have been invited to represent the English and Welsh planning authorities. Discussions with the Associations will help form the basis of NRA national guidelines, which will be issued to NRA Regions where work will be undertaken and coordinated.

1.4 This Memorandum of Understanding is an endorsement of the NRA/ACC/ADC/AMA involvement outlined above. Its purpose is to initiate implementation of the Circular by publicising, consistently and formally, the agreed overall programme to be employed by the NRA, so that all planning authorities may be aware of the general approach to be taken by their local NRA Regions.

1.5 In general, the relevant legislation and guidance will be found in the following documents.

This Memorandum of Understanding does not supplant such legislation and guidance; on the contrary, it should be read in conjunction with the appropriate parts of these documents.

The Water Resources Act 1991

The Land Drainage Act 1991

The Town & Country Planning Act 1990, as amended by the Planning & Compensation Act 1991

The Town & Country Planning (Development Plan) Regulations 1991

The Town & Country Planning (Assessment of Environmental Effects) Regulations 1988

The Town & Country Planning General Development Order 1988 (as amended)

The NRA Regional Byelaws and Section 339 of The Highways Act 1980 (for NRA regulatory functions)

Circular: Development and Flood Risk (DOE 30/92; WO 68/92; MAFF FD 1/92)

DOE Planning Policy Guidance (PPG) Note 12

DOE/WO Planning Policy Guidance (PPG) Note 20

1.6 This list is not considered exhaustive and other documents may be applicable.

2. ACTIONS TO INITIATE CIRCULAR 30/92

2.1 The timescales and co-ordinated approach contained within this Memorandum must complement the following actions specified in Circular 30/92 for both the NRA and the LPAs. The relevant data should not only be available but be properly-considered for both effective development plans and more effective development control to be achieved. Through the development plan and development control processes, developers need to be made aware of the risks in a specific area, the consequent constraints on development and ways in which these may be overcome.

2.2 Development Plans

2.2.1 The NRA:

(a) *'is a statutory consultee in the preparation of developments plans, and will make an input (including objections to deposited draft plans, where necessary) in respect of flood defence issues. The Government wishes the main NRA input to development plan preparation to be the surveys which section 105(2) of the Water Resources Act 1991 requires the NRA to carry out.' (Para 6)*

(b) *'should therefore copy the results of the surveys, as they become available, to local planning authorities in order to inform their development plan and development control functions.' (Para 7)*

(c) *'surveys should indicate the areas where flood defence problems are likely. In particular, they should help to identify the extent of the floodplains, washlands and other land liable to flood in relation to risk; along some coastlines they may identify set-back lines beyond which development should be avoided.' (Para 6).*

2.2.2 The LPAs:

(a) *'[should take into account] the results of section 105 surveys and other information provided by the NRA as they prepare their structure and local plans (including minerals and waste plans).' (Para 8)*

(b) *'should bear in mind the Government's policy that new development in areas of flood risk should make provision for flood defence; and grant aid for flood alleviation works is not available for new developments.'*

'Plans should not therefore provide for development on land at high risk from flooding which is not currently protected, or in respect of which there is not already significant development unless a developer is willing to protect the land to the appropriate standard as part of the development.' (Para 9)

(c) *'should take account of advice from the MAFF, the WO and the NRA on sea level rise and global warming.' (Para 10)*

2.3 <u>Development Control</u>:

2.3.1 The NRA:

(a) *'will advise how proposed development would itself affect flood risk.' (Para 12)*

(b) *'[is expected] to make an initial response to consultation on planning applications within 14 days of the date of notification by the planning authority.' (Para 15)*

(c) *'the NRA may be expected to respond to consultation in a number of ways. It may, for example:...*
- *Indicate that the risk of flooding can reasonably be overcome by alleviation works and suggest conditions which would need to reflect the advice in DOE Circular 1/85 (WO 1/85) or planning obligations (see DOE Circular 16/91 (WO 53/91).' (Para 16)*

2.3.2 The LPAs:

(a) *'will need to consult the NRA on individual applications before granting permission for development, including their own, where significant flood defence considerations may arise.' (Para 11)*

(b) *'should seek to agree with the NRA areas and types of development about which consultation will take place.' (Para 13)*

(c) *'should take [the risk of rapid flooding] into account when considering development proposals for land protected [by defences from inundation by the sea].' (Para 14)*

(d) *'should be ready to explain its reasons to the NRA, if it decides not to follow advice received as a result of consultation on an application.' (Para 16)*

2.4 Run-Off From New Development:

2.4.1 The NRA *'may provide a broad assessment of the potential flooding affect, and of the scope for engineering works to alleviate it.' (Para 18)*

2.4.2 The LPAs *'should take steps to ensure that development is not brought into use until [any necessary alleviation works] have been designed and carried out.' (Para 19)*

2.5 Holiday Parks, Caravans and Camping Sites:

2.5.1 The LPAs *'should consult NRA and take their views into account when considering all such applications for planning permission.' (Para 22)*

3. NRA NATIONAL GUIDELINES

3.1 The NRA National Guidelines and overall strategy will be as that defined in Appendix 1.

3.2 Parameters 'A' and 'B' indicate the range of data and information which could be applicable; others might also be appropriate. Before the surveys are undertaken, NRA Regions and the local planning authorities will agree the type of data and information, including infrastructure requirements, that must be derived to satisfy the development plan requirements for each location under review.

4. GENERAL WORKING ARRANGEMENTS

4.1 The nominated individual in each NRA Region will inform nominated individuals of the planning authorities within their boundary of the start of the survey project and the proposed completion dates for phases 1, 2 and 3. In addition, they will outline the expected content of the survey and the proposed consultation to form a work programme with each planning authority. The surveys will include both main river and ordinary watercourses, and tidal and coastal waters.

4.2 Each planning authority, having regard to the timescales involved, will assist with the identification of areas likely to require flood risk assessment over the following 15 years and with an estimate of the urgency of that assessment. This may depend on the size, timescale, type of development, likely flood risk, effect on other areas, costs of protection works and any other appropriate parameters.

4.3 To satisfy phase 1 of the Guidelines, each NRA Region will formulate an overall work programme in consultation with the LPAs, which will seek to address the estimated priorities but which will have some regard to the economy of scale and the technical needs of establishing accurate river models. In addition and wherever possible, each NRA Region will furnish each planning authority within its boundary with a copy of the survey data, collected under Section 24(5) of the Water Act 1973, currently being used to assess flood risk, to indicate the known or estimated scale of flooding within the relevant area. NRA Regions will emphasise any deficiencies associated with these surveys.

4.4 The NRA intends that its Regions should have completed 50% of the work programme on priority watercourses to the standard outlined in Appendix 1 by the end of phase 2 and all of the work programme by the end of phase 3. NRA Regions will release flood risk data to their planning authorities as it becomes available.

4.5 The timescale in Appendix 1 represents the minimum rate of progress on data capture and supply. NRA Regions may have further data or produce data more quickly.

5. JOINT REVIEW COMMITTEE

5.1 A Joint Review Committee, composed of at least two but not more than four officials from each party, will meet as the need arises to review the working of this Memorandum. Special meetings may be called by any party to resolve any major or countrywide operational difficulties. The chair will be taken by each party in turn, for the duration of one meeting. The NRA will chair the first meeting.

FOR: NATIONAL RIVERS AUTHORITY

.....

DATE 31/3/94

FOR: ASSOCIATION OF COUNTY COUNCILS

Frank Thompson

DATE 31.3.94

FOR: ASSOCIATION OF DISTRICT COUNCILS

.....

DATE 31.3.94

FOR: ASSOCIATION OF METROPOLITAN AUTHORITIES

.....

DATE 31.3.94

IMPLEMENTATION PROGRAMME: (Identified areas only; includes all watercourses)

TIMESCALE (0=START)	PHASE		DETAILS
0 → 9 Months	1	a)	Issue of existing S24(5) survey data to each LPA; obvious updates to be included if possible; intended to impart general but representative nature of flooding to LPAs; LPAs must be made aware of limitations.
		b)	Agreement of a programme of work with LPAs, including, where possible, the appropriate level of survey data for each location (parameters A & B, or other) beyond that required for NRA use.
0 → 2 Years (1996)	2	a)	Completion of 50% of accurate flood envelope delimitation work; map scales as specified below.
		b)	Surveys to include agreed Primary data, which may be selected from Parameters A below.
2 → 5 Years (1999)	3	a)	Completion of full work programme to phase 1 standards above.
		b)	All surveys to include agreed Secondary data, which may be selected from Parameters B below.
1999 onwards	4	a)	Inclusion of remainder of watercourse lengths (essentially rural watercourses with little/no development potential); degree of data and accuracy to be subject of future agreement if surveys required.

TYPES OF DATA WHICH MAY BE APPLICABLE:

Physical or Primary Data (Parameters A)	Calculated or Secondary Data (Parameters B)
* Min map scales (i) Rural 1:10,000 (ii) Urban 1:2500 or 1250	Essentially supporting data, eg.:-
* Flood envelopes: at least 100 Yr, with consistently agreed flow data.	* Storage/discharge details.
* Relevant boundaries (+ SSSI's etc.)	* Surface water profiles.
* NRA assets + details + areas protected.	* Channel spillage regime.
* Non NRA defences + details + areas protected.	* "End dates" of assets.
* Floodplain contours + plus survey (→ 0.25m intervals in sensitive areas).	* Blockage possibilities (via modelling runs).
* Channel cross-sections + survey data.	* Erosion/accretion details.
* Strategic flood storage areas (boundaries).	* River corridor survey data.
* Land use + SoS data.	* Managed retreat/Set back.
* Natural defences.	* Coastal erosion.
* Tidal inundation limit (200 yr SWL min.)	* Development constraints.
* Vulnerable areas: esp. from wave action/surges.	* Measures to overcome flood risk constraints.
* Maintenance requirements (accesses)	* Urban 'green corridors'
* Threshold levels of endangered properties.	Application beyond NRA use to be agreed with LPA for each location.

HYDROLOGY AND HYDRAULICS

(A) Design Flood Estimation

(B) Hydraulics of Culvert Flow - Design Flow Chart

(C) Hydraulics of Culvert Flow - Worked Examples

Example 1: New Culvert

Example 2: Analysis of Existing Culvert

FLOOD ESTIMATION-NO RECORDS-FLOOD STUDIES REPORT CATCHMENT CHARACTERISTICS METHOD

SHORT GUIDE TO CALCULATION

$\bar{Q} = m.(AREA)^a.(STMFRQ)^b.(S1085)^c.(SOIL)^d.(RSMD)^e.(1+LAKE)^f$. - (Vol I p338-340)

Where "m" depends on number of independent variables used; ie. for six variables above, Vol I p340, for Region 4 Severn-Trent.

m = 0.0213	d = 1.23
a = 0.94	e = 1.03
b = 0.27	f = -0.85
c = 0.16	

1. AREA, STMFRQ, S1085
   Use standard "A" size tracing sheets to trace catchment boundary and all blue watercourses within catchment area from O.S. 1:25000 maps. Use this tracing to planimeter catchment area, (AREA) measure main stream length, (MSL) count stream junctions (N) and mark off 0.1 and 0.85 MSL (measured upstream from the outlet). Note that the O.S. 1:25000 First Series differs from the Second Series as to which watercourses are included. Use First Series if possible. If not use conversion factor for number of stream junctions. No. juncts. Series 1 = 0.74 x No. juncts, Series 2.

   (Measure MSL using dividers set to 0.1 km @ 1:25000 ie. 4mm)

   Point of estimate counts as one junction in "N" count.

2. SOIL
   Use Soil Winter Rain Acceptance Potential Map, Fig 1.4.18 (S) to estimate fractions of catchment in each soil class. If catchment is large enough and/or located to encompass more than one soil type, plot catchment boundary using grid references on A4 tracing sheet using grid overlay for the soil map. Use fine transparent graph paper overlay and count squares to estimate fractions.

   Soils are divided into 5 Winter Rain Acceptance Classes. - Vol I p303 (Fig 1.4.18s)

   eg. Class 1 = Very High = V Low Runoff
   Class 5 = Very Low = V High Runoff

3. RSMD = 1 day Rainfall Excess for 5 year return period (mm) - Vol I p311

   (a) Find ratio "r" = (M5-60 mins)/(M5-2D) from Fig II 3.2 Vol V.
   (b) Find M5-24 hrs: M5-2D (as a percentage) for above value of "r" from Table 3.7, Vol II.
   (c) Find 5 year return period, 2 day rainfall (M5-2D) from Fig II 3.2 Vol V.
   (d) Calculate M5-24 hrs rainfall, multiply (b) x (c).
   (e) Convert M5-24 hrs to M5-1 day rainfall by dividing by 1.11 - Table 3.1 Vol V.
   (f) Find Areal Reduction Factor (ARF) for Catchment Area from Fig 5.1 Vol II.
   (g) Multiply M5 - 1 day by ARF.
   (h) Find Effective Soil Moisture Deficit from Fig I, 4.19 (S), Vol 5.
   (i) Subtract SMD from (g) to deduce RSMD.
   (j) Check RSMD value against Flood Studies Conference map to ensure that it is not unreasonable.

4. LAKE — Area of Catchment Draining through Lake + Catchment Area (No.) (Actual area of lake must be > 1% of catchment area draining to it).

5. URBAN — Modify $\bar{Q}$ for $\bar{Q}$ URBAN according to FSR Supplementary Report No. 5. Note that growth factor curves also affected.

6. Return Periods other than Mean Annual - Table 2.39, Vol I, p173.

METHOD
FLOOD STUDIES REPORT

FLOOD FLOW ESTIMATE
WATERCOURSE _____
SUBCATCHMENT _____
LOCATION _____
NGR _____

CATCHMENT CHARACTERISTICS
Region 4 Hydrometric Areas 28 & 54
α parameter equation m = 0.0213
(OS 1:25,000 1ST SERIES MAPS)

CHARACTERISTICS

CATCHMENT AREA	= _____ km² (AREA)	$AREA^{0.94}$	= _____
STREAM JUNCTIONS	= _____ N		
STREAM FREQUENCY - $^{N}/_{AREA}$	= _____ (STMFRQ)	$STMFRQ^{0.27}$	= _____
MAIN STREAM LENGTH	= _____ km (MSL)		
ELEVATION @ MSL x 0.85 = _____ ft AOD			
ELEVATION @ MSL x 0.1 = _____ ft AOD			
H = (H@MSL x 0.85 - H@MSL x 0.1) = ft + 3.281	= _____ m		
STREAM SLOPE = $^{H}/_{0.75}$ x MSL	= _____ (S 1085)	$(S\ 1085)^{0.16}$	= _____

SOIL INDEX (Soil Map Vol V, Fig 1.4 18)

Soil Class	Fraction Area	
1 High Perm	..... x 0.15=	
2	..... x 0.30=	
3	..... x 0.40=	
4	..... x 0.45=	
5 Low Perm	..... x 0.50=	= _____ (SOIL)

$(SOIL)^{1.23}$ = _____

RAINFALL MINUS SOIL MOISTURE DEFICIT (Net 5 yr return - 1 day rainfall)

a) $^{M5\text{-}60\ min}/_{M5\text{-}2day}$ (Vol V, Fig II.3.5) = r

b) $^{M5\text{-}2Hr}/_{M5\text{-}2day}$ (Vol II, Table 3.7 for value of "r" from a) = %

c) M5-2 day rainfall (Vol V, Fig II.3.2) = mm

d) M5-24 hr rainfall - c) x b) = mm

e) M5-1 day rainfall = d) ÷ 1.11 (Vol II. Table 3.1) = mm

f) Areal Reduction Factor (Vol II, Fig 5.1 (24 hrs) = ARF

g) M5-1 day x ARF = mm

h) Effective Soil Moisture Deficit (Vol V, Fig 1.4.19) = mm (SMD BAR)

i) RAINFALL minus SMD BAR = mm (RSMD) $(RSMD)^{1.03}$ = _____

LAKE INDEX
(For lakes with surface area > 1% area draining through them)
Area draining through Lake(s) = a = km²

Fraction AREA draining through Lake(s) $^{a}/_{AREA}$ = (LAKE)

1 + LAKE = l $(1 + LAKE)^{-0.85}$ = _____

MEAN ANNUAL FLOOD PEAK DISCHARGE

$\bar{Q} = 0.0213 \times AREA^{0.94} \times STMFRQ^{0.27} \times S1085^{0.16} \times SOIL^{1.23} \times RSMD^{1.03} \times (1+LAKE)^{-0.85}$ cumec Q = _____ cumec

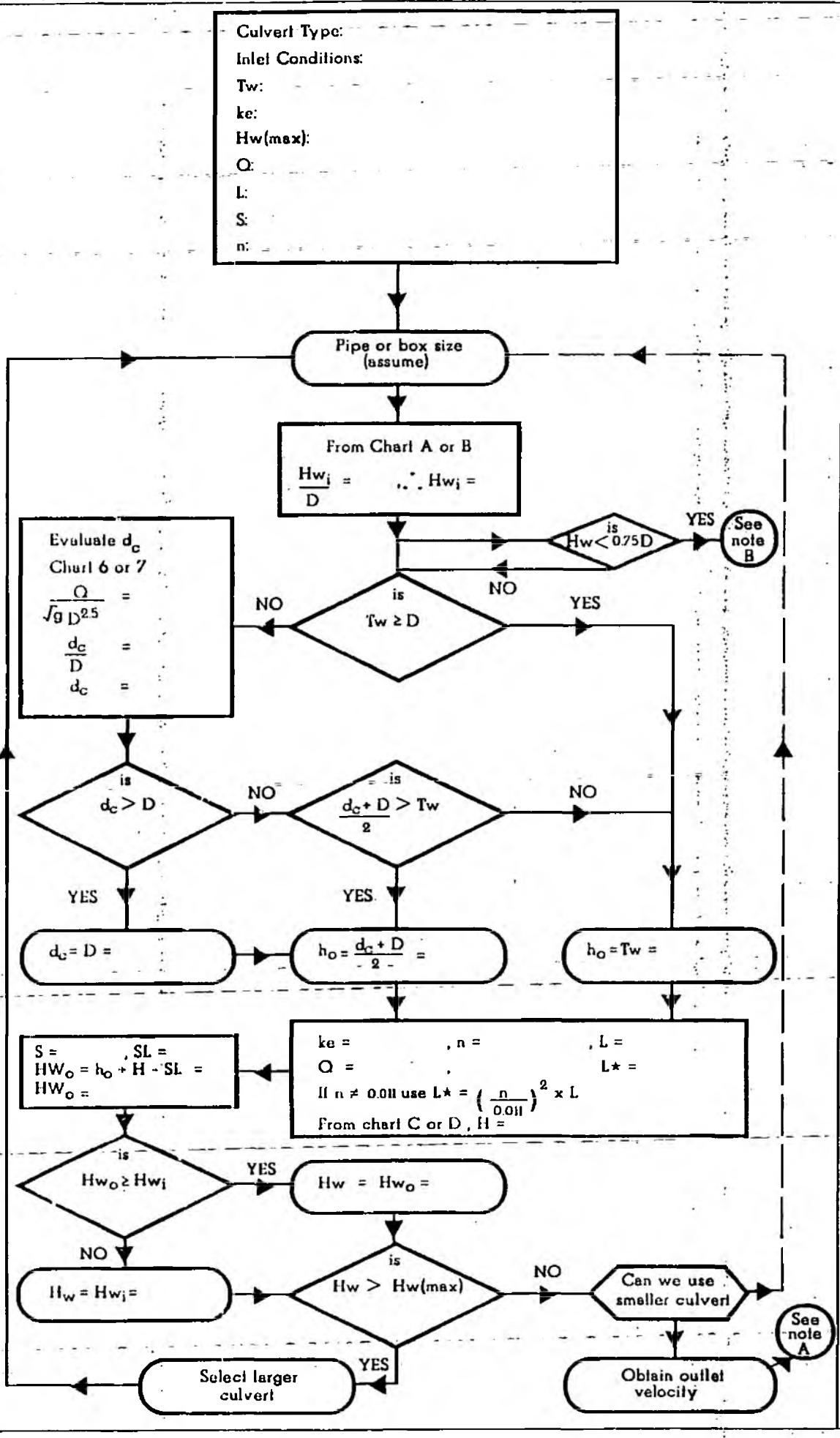
Q_t OTHER RETURN PERIODS

RETURN PERIODS T (YRS)	2	5	10	25	50	100
GROWTH FACTOR $Q_t/\bar{Q}$ (Vol I, Table 2.39)	0.89	1.23	1.49	1.87	2.20	2.57
Q_t cumecs	___	___	___	___	___	___

URBAN ADJUSTMENT See FSR Supplementary Report No. 5
OS 1:25,000 2nd Series Adjustment of STMFRQ "N" S1 = 0.74 "N" S2
See FSR Supplementary Report No. 11

HYDRAULICS OF CULVERT FLOW - DESIGN FLOW CHART

based on Rocla Manual



NOTE A

OUTLET VELOCITY

Outlet Control

$V = \frac{Q}{\text{Area of flow}}$

if:

(i) Tw ≥ D use full area

(ii) Tw ≤ d_c use area to d_c

(iii) d_c ≤ Tw ≤ D use area to Tw

D = , Tw= , d_c =

Prop. depth= %

using tables:-

Prop. area= %

Area= $\frac{\pi D^2}{4}$ x

Area= m^2

$V = \frac{Q}{A}$

∴ V = m/s

Inlet Control

$R = \frac{D}{4}$ = m

From Fig 1a

Vfull = m/s

Qfull = A x Vfull = $\frac{\pi D^2}{4}$ x Vfull=

Qfull = m^3/s

$\frac{Q}{Qfull}$ = ___ =

From Fig 2

$\frac{d}{Dfull}$ =

∴ d = m

From Fig 2

$\frac{V}{Vfull}$ =

∴ V= m/s

NOTE B

continued overleaf

NOTE B

If $Hw < 0.75\ D$ The outlet control charts are inaccurate.

Is $Tw < d_c$ If Yes, use equation A

If No, use equation B

Equation A $Tw < d_c$

$$HW_o = d_c + \frac{V_c^2}{2g} + \frac{V^2}{2g}\left(ke + \frac{19.62\ n^2\ L}{R^{1.333}}\right) - SL$$

Equation B $Tw > d_c$

$$Hw_o = Tw + \frac{V_{TW}^2}{2g} + \frac{V^2}{2g}\left(ke + \frac{19.62\ n^2\ L}{R^{1.333}}\right) - SL$$

Evaluate d_c from chart 6 or 7

$V_{TW} = \frac{Q}{A_{TW}}$ where A_{TW} = area to Tw depth.

$V_c = \frac{Q}{Ac}$ where Ac = area to critical depth.

V = mean velocity using Manning formula for part full flow.

$$Q = A \times \frac{1}{n} \times \left(\frac{A}{P}\right)^{\frac{2}{3}} i^{\frac{1}{2}}$$

Substitute from values & formulas for A & P in terms of d. By trial & error work out d.

$$V = \frac{Q}{A_{(d)}}$$

$$R = \frac{A}{P}$$

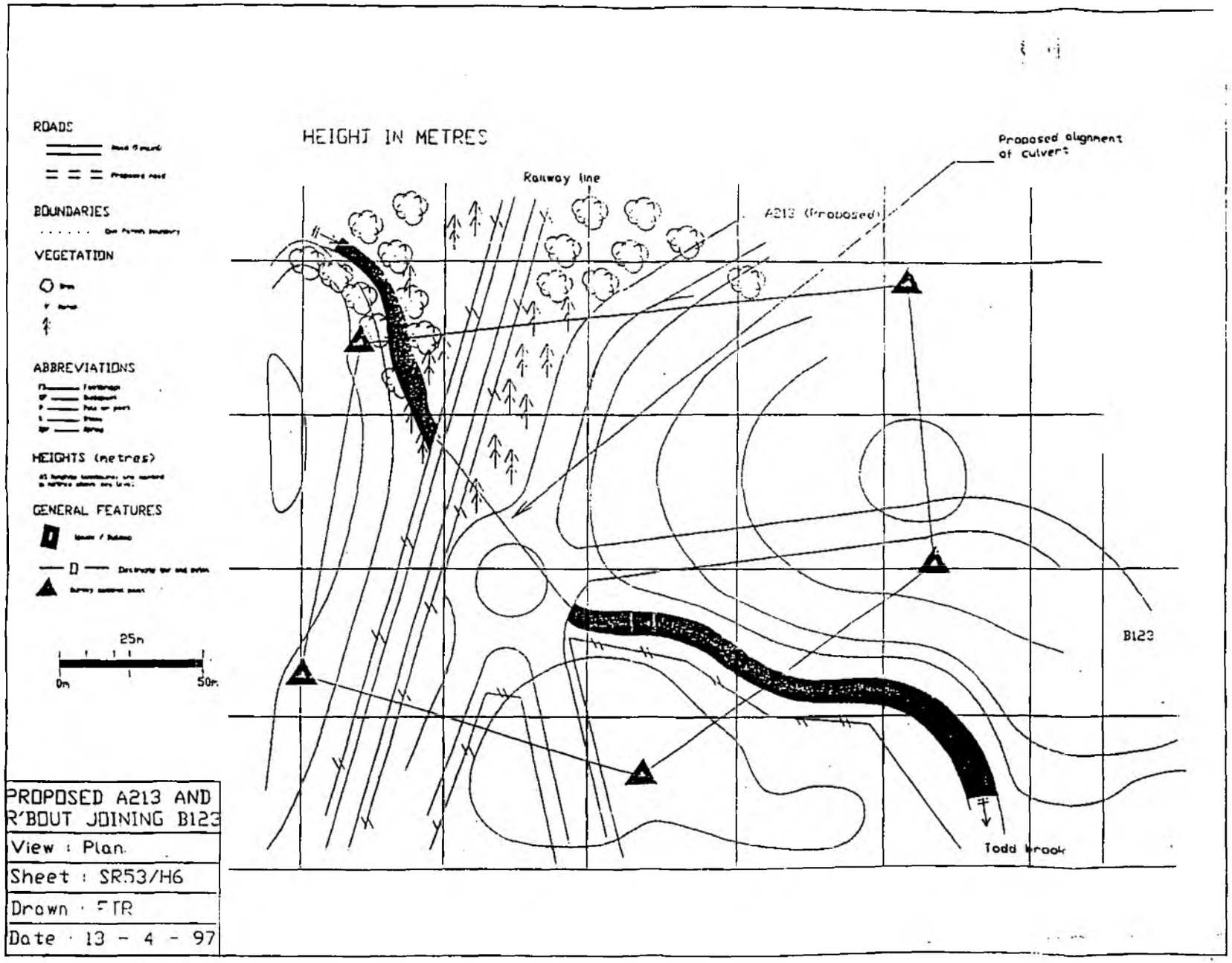
SAHCFD/C.52

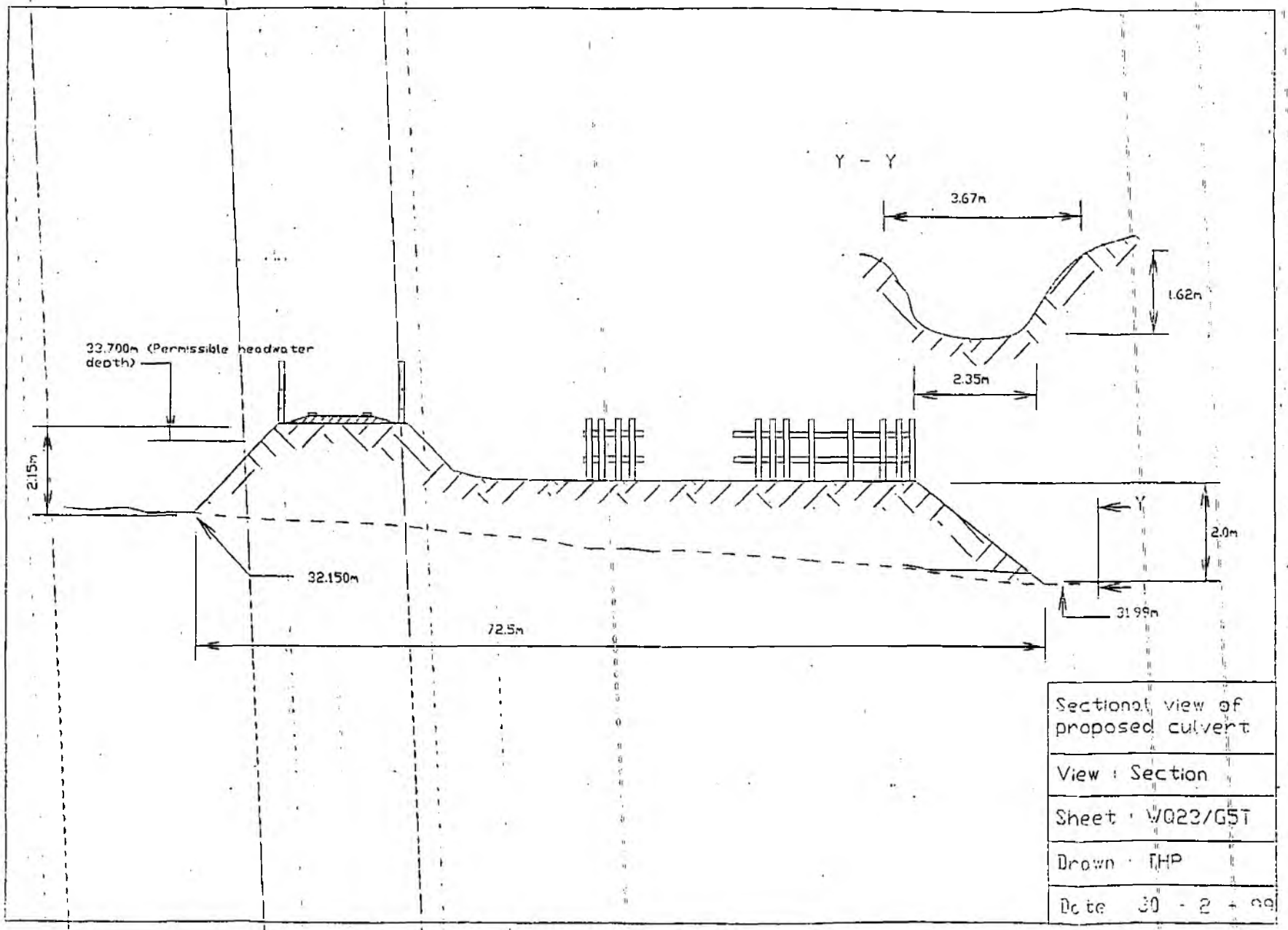
Brief for Design Example 1

A new culvert is to be designed to pass under a proposed highway and railway running alongside. Due to reasons beyond the control of the hydraulic engineer the culvert has to pass under the railway embankment and a roundabout. A site plan, sheet SR53/H6, and sectional view, sheet WQ23/G5T, are provided along with site survey data. The culvert should be designed to pass a flow of 2.8 m^3/s and the tailwater should be estimated using normal flow conditions. For the purpose of the normal depth calculation the downstream channel section can be approximated to a suitably simple geometric shape. The channel bed slope downstream of the culvert is 1 in 1000. Use either concrete pipe, or box or corrugated metal pipe structures.

i) Carry out a complete design to provide suitable culvert to satisfy the design requirements. You may use any type of inlet if you can justify its use and in some circumstances the cost. Make suitable assumptions where appropriate or ask for clarification if necessary.

ii) If over a five year period it is anticipated that the roughness of the barrel will increase by 20% determine the increase in HW for the design flow.


ROADS
BOUNDARIES
VEGETATION
ABBREVIATIONS
HEIGHTS (metres)
GENERAL FEATURES
25m
0m
50m
HEIGHT IN METRES
Railway line
A213 (Proposed)
Proposed alignment of culvert
B123
Todd Brook
PROPOSED A213 AND R'BOUT JOINING B123
View : Plan
Sheet : SR53/H6
Drawn : FTR
Date : 13 - 4 - 97


Y - Y
3.67m
1.62m
2.35m
33.700m (Permissible headwater depth)
2.15m
32.150m
72.5m
Y
2.0m
31.99m
Sectional view of proposed culvert
View : Section
Sheet : W022/G5T
Drawn : THP
Date 30 - 2 - 99

Description of land use (Ex 1)

Upstream

Land either side of the water course upstream of the culvert is mainly wooded with large deciduous trees, some of which over hang the brook. There are a small number of spruce trees intersperced within the wood. Immediately upstream of the culvert location there is light brush on the flood plain and on the sides of the channel. Weed growth is evident along the sides of the channel to a point 300mm from the channel bed.

Downstream

The channel downstream of the culvert has light brush, approximately 300mm in height, on the banks and sides of the channel . Half way down the channel sides and towards the channel bed there is an increase in weed growth with quite large patches of long weed on the channel bed. This pattern of brush and weed growth is similar along the length of the brook from the culvert to a flow measurement weir approximately 800m downstream.

Soil description downstream of culvert

The soil at the outlet of the culvert is a sandy - gravel, yellowy-green in colour, with particles between 0.2mm and 35mm in size. The material is well graded with large stones having a smooth texture. Field tests established that the bed material was relatively loose in compactness with a 500mm peg being easily driven into the ground. Scattered across the channel bed are small patches of quite large cobbles giving the channel quite a rough look. At a depth of approximately 1.8m below the channel bed there is a 300mm layer of stiff siltly clay followed by sound grey chalk with a high flint content.

Possible solution to Design Example 1

Data

Design discharge	: 2.8m³/s	: 98.88cfs
Culvert length	: 72.5m	: 237.9ft
Barrel slope	: 1 in 453	: 1 in 453
Downstream Slope	: 1 in 1000	: 1 in 1000
Permissible headwater depth	: 1.55m	: 5.085ft

From description of downstream channel select Mannings n value of 0.040

Types of culverts allowed :	Concrete pipe culvert	: n = 0.012
	Concrete box culvert	: n = 0.012
	Corrugated metal culvert	: n = 0.024

Calculation of tailwater depth from normal flow conditions

Approximate downstream channel to rectangular section with B = 3m

$Q = \frac{AR^{2/3}S^{1/2}}{n}$, by using $A = By_n$ and $R = A / P = By_n / (2y_n + B)$ then

y_n = 1.448m = 4.751ft from above equation for design discharge.

Select trial size

Use scour velocity method

From soil description downstream select coarse gravel / Non Colloidal = 1.22 - 1.83m/s
Say choose 1.5m/s
Correct for depth of flow, say 1.08
V_{scour} = 1.62m/s
Trial area = Q / V_{scour} = 2.8 / 1.62 = 1.73m²
For pipe culverts diameter D = 1.48m = 4.86ft
For box culverts square section = 1.32m x 1.32m = 4.33ft x 4.33ft
Round these up to standard sizes

Pipe = 60" (5feet)
Box = 54" (4.5feet)

Inlet control analysis

Using Chart 3 from : CPC with beveled inlet b/D = 0.042, a/D = 0.063, c/D = 0.042, d/D = 0.083.
HW/D = 0.82
HW = 4.1feet = 1.250m

Using Chart 9 : CBC with flared wingwalls 18 - 33.7 degrees and beveled top edge
Q/B = 21.97cfs/ft
HW/D = 0.84

HW = 3.78feet = 1.152m

Using Chart 2 : CMC with headwall
HW/D = 0.85
HW = 4.25feet = 1.295m

Therefore for all culverts flowing under inlet control $HW_c < HW_p$

Outlet control analysis

Using Chart 5 : CPC , $K_e = 0.2$ for beveled inlet
H = 0.77 feet
TW < D but TW > d_c + D / 2
HW = H + TW - LS
HW = 0.77 + 4.751 - 237.9/453
HW = 4.996 feet

HW(outlet control) > HW(inlet control) therefore coutlet control is governing flow type.
HW(outlet) < HW_p
Difference = 0.089 feet = 0.027m - very close , especially if trash is expected

Using Chart 15 : CBC . $K_e = 0.2$
H = 0.83 feet
TW > D
HW = H + TW - LS
HW = 0.83 + 4.751 - 237.9/453
HW = 5.056 feet

Again outlet control governs and $HW_c < HW_p$ but now difference is 0.029 feet or 0.0088m which is too close for comfort.

Using Chart 6 : CMC

H = 1.65 feet
TW < D but TW > d_c + D / 2
HW = H + TW - LS
HW = 1.65 + 4.751 - 237.9/453
HW = 5.876 feet
$HW_c > HW_p$ therefore not acceptable (as expected for CMC)

Resize culvert by increasing box culvert dimensions

Increase to box culvert of 5' x 5'
Using Chart 9 as before
H = 0.5 feet
TW < D
dc = 2.35ft Q/B = 98.88 / 5 = 19.78 cfs/ft
d_c + D / 2 = 3.675 feet
TW > d_c + D / 2 therefore use TW in HW equation
HW = 0.5 + 4.751 - 237.9/453

HW = 4.726 feet
HWc < HWp
Difference = 0.359 feet = 0.109m : this seems suitable

Check for scour

Select Box culvert 5' x 5' = 1.524m x 1.524m
Area = 2.323m²
V = Q/A = 2.8/2.323 = 1.205m/s
This is less than V_{scour} = 1.62m/s thereofre acceptable velocity in downstream channel

20% increase in Mannings n value

0.012 changes to 0.0144
Compute new effective length
$L_1 = L(n_1/n)^2 = 72.5(0.0144/0.012)^2 = 104.4m = 342.5$ feet

Using chart 15
H = 0.6 feet
No change in TW or $d_c + D / 2$
HW = 0.6 + 4.751 - 237.9/453 : use normal length again in this calculation as we only need the effective length to determine the head loss over the barrel with increased roughness
HW = 4.826 feet = 1.471 m < HWp which is an increase in HW of 0.1 feet.

Brief for Design Example 2

A construction company is proposing to build a new executive housing estate (New House Estate) close to a roundabout joining the A111(M) with the A111 and A123 because of its scenic views of a small brook running through the area.. A new access road, Gopher Street, will link the estate with the roundabout, see sheet A17/4. There is an existing culvert, culvert TL42/1UY, passing flow from Wet brook under the A111(M). The culvert built from concrete pipe sections has a projecting inlet for some 2.5m upstream of the concrete headwall, see sheet LQ4/1P. Downstream of the culvert there has been some evidence of scouring but this is not extensive. Due to the proposed development it is proposed that the culvert be upgraded to pass a flow of 1.6 m^3/s instead of the present design flow of 1.5 m^3/s. The tailwater depth can be assumed to be the normal depth at the outlet section and the channel geometry can be simplified for this calculation. The channel slope in the downstream section is 1 in 1500.

i) Check to ensure that the culvert will pass the existing design flow, assuming n = 0.012.

ii) Following a more detailed inspection of the culvert it is found that the condition of the barrel walls and joints have deteriorated with substantial cracking, spalling and algal growth. This has resulted in an increased roughness value for the barrel. Select a roughness value that you feel is appropriate for these conditions and check that the culvert will pass the existing design flow.

iii) Now assess the culvert for the proposed discharge and if necessary modify the existing or size a new culvert.

Description of land use (Ex 2)

Upstream

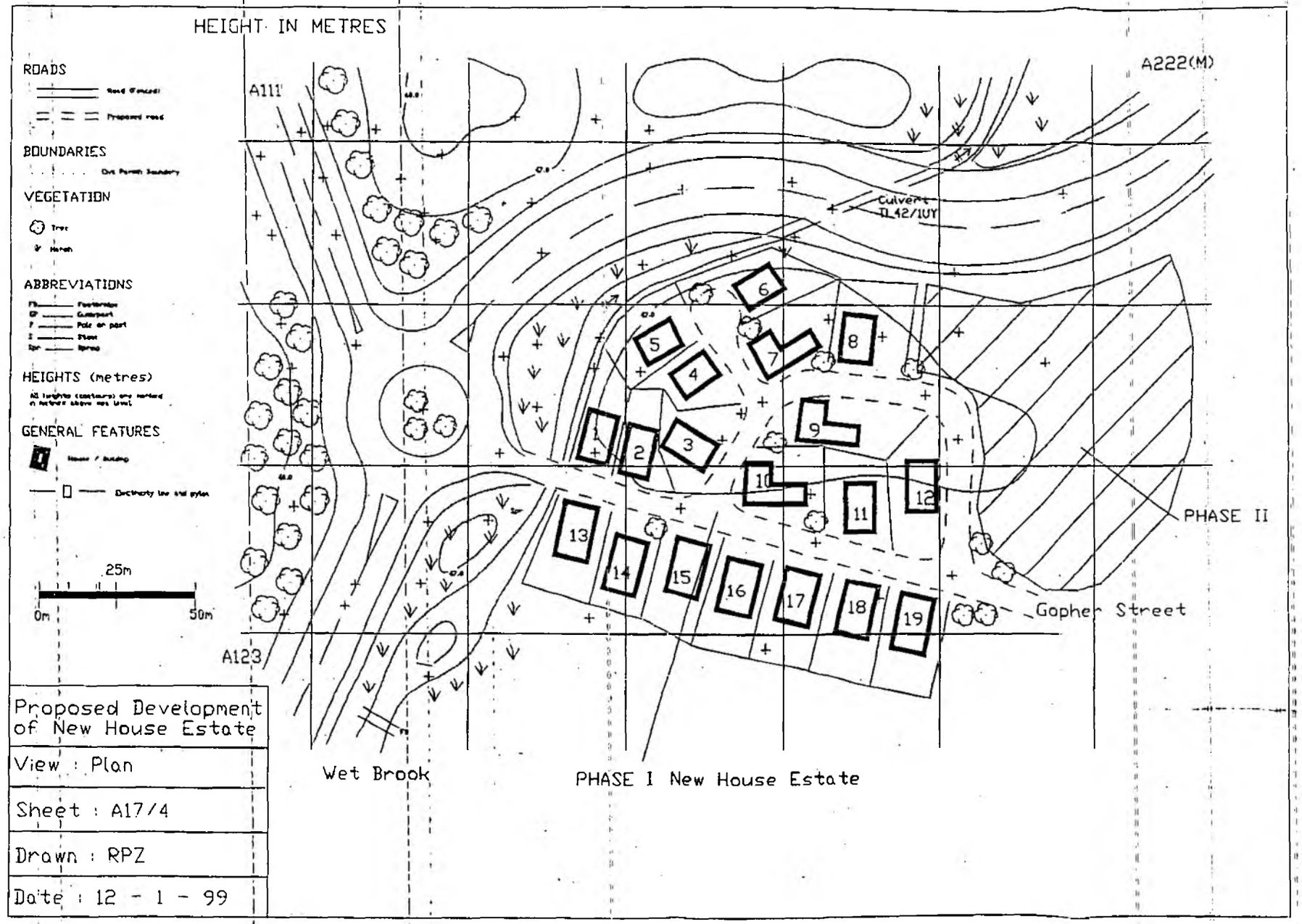
Land upstream of the culvert is mainly open, undulating with short marsh land grasses approximately 200mm high. A few bushes are scattered around but none within the main channel. The schannel sides are lined with a mixture of long (>250mm) weeds and short grasses to a point 400mm from the bed where no grass or weed growth is evident. Beyond the point where the brook passes under the proposed access road the land becomes mainly agricultural in nature with short crops grown for three quarters of the year.

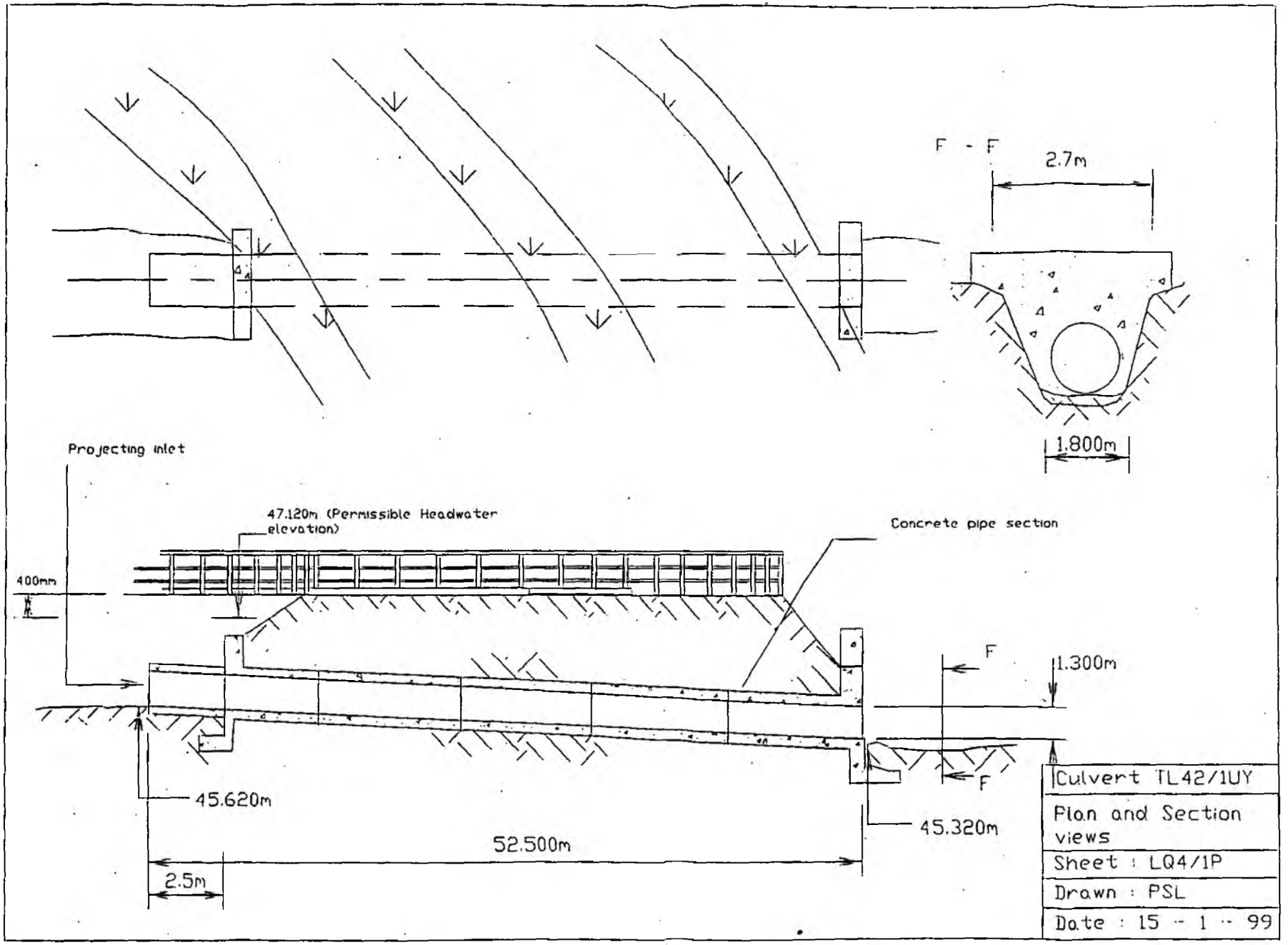
Downstream

Heavy brush and bush growth is found on the banks and flood plain reducing to long grass and weed on the channel sides. A few small branches from over hanging trees were found lodged on the sides and at intervals along the stream there is some growth of long weed within the channel. In some cases this growth exceeds 500mm in length. Shorter weed growth is apparent to a point approximately 500mm from the bed. Beyond this point the banks become open and exposed.

Soil description downstream of culvert

A very dense hetrogeneous gravel with particle sizes of between 2 and 60mm. This material is mixed with brown sand in the voids and there is some evidence of clay ingress to depths of 1m. A walk over survey has identified a small area of sandy gravel a short distance downstream of the culvert outlet, see sketch below. This material is loosely compacted. A small shingle bank has been formed approximately 4m from the tailwall.


HEIGHT IN METRES
ROADS
BOUNDARIES
VEGETATION
ABBREVIATIONS
HEIGHTS (metres)
GENERAL FEATURES
25m
0m
50m
A111
A222(M)
A123
Culvert
TL 42/1UY
PHASE II
Gopher Street
Wet Brook
PHASE I New House Estate
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
Proposed Development of New House Estate
View : Plan
Sheet : A17/4
Drawn : RPZ
Date : 12 - 1 - 99


F - F
2.7m
1.800m
Projecting inlet
47.120m (Permissible Headwater elevation)
Concrete pipe section
400mm
F
1.300m
F
45.620m
45.320m
52.500m
2.5m
Culvert TL42/1UY
Plan and Section views
Sheet : LQ4/1P
Drawn : PSL
Date : 15 - 1 - 99

Possible solution to Design Example 2

Data

Pipe culvert		
Design discharge	$1.5m^3/s$	
Proposed discharge	$1.6m^3/s$	
Permissible headwater depth	1.5m	: 4.92 feet
Barrel slope	1 in 174.3	: 1 in 174.3
Culvert diameter	1.3m	: 51.18 inches
Slope of downstream channel	1 in 1500	: 1 in 1500

From description of downstream channel select Mannings n value of 0.048

Compute normal depth for tailwater

$$Q = 1.5 = \frac{AR^{2/3}S^{1/2}}{n} \qquad y_n = 1.63m = TW_1$$

$$Q = 1.6 = \frac{AR^{2/3}S^{1/2}}{n} \qquad y_n = 1.713m = TW_2$$

Using a channel bed approximation of B = 2.25m

Inlet control analysis

Use sharp edged inlet as this is the worst case given in the Nomographs
HW/D = 0.735 for design discharge
HW = 3.134 feet which is less than the permissible headwater elevation.

Outlet control analysis

L = 52.5m = 172.2 feet

Use K_e = 0.5 as 0.9 is not available
H = 0.49 feet
TW > D
HW = 0.49 + 5.348 - 172.2/174.3
HW = 4.850 feet
$HW_c < HW_p$ as 4.850' < 4.92'

Increase Mannings n value for culvert

new n = 0.017
new L = 105.4m = 345.7 feet

From outlet control nomograph
H = 0.61 feet

HW = 0.61 + 5.348 - 172.2/174.3
HW = 4.970 feet
$HW_c > HW_p$ therefore not acceptable

Now check design to pass proposed discharge of 1.6m³/s

Remove projecting inlet
Smooth barrel to n = 0.012
Fit beveled inlet
Need to check for inlet control again as discharge has changed

Use groove end with headwall
HW/D = 0.75
HW = 3.198 feet
$HW_c < HW_p$

Outlet control

L = 50m = 164 feet
$K_e = 0.2$
TW = 1.713m = 5.62 feet
TW > D
H = 0.44 feet
HW = 0.44 + 5.62 - 164/174.3
HW = 5.119 feet : this is too high therefore try an alternative method

Try making the barrel very smooth

n = 0.010
new length = 113.9 feet = 34.7m
H = 0.4 feet
HW = 5.079 feet : still too high by 0.159 feet or 0.048m

Need to resize the culvert for proposed discharge

Try pipe culvert of D = 1.4m = 55 inches
n = 0.012
L = 50m = 164 feet
We know that it will pass the flow for inlet control so only need to check for outlet control

From nomograph
H in this case is just off of nomograph but can estimate this to be 0.3 feet
TW > D
HW = 0.3 + 5.62 - 164/174.3
HW = 4.979 feet = 1.518 m

If we recheck for D = 1.5m the analysis gives a pass for the proposed discharge

A21. HIGHWAYS ACT

HIGHWAYS ACT 1980 -SUMMARY

SECTION 339

Section 339 of the Highways Act requires a highway authority to obtain NRA consent but Section 339 only applies to the following.:-

Section 45	Powers to win materials eg. gravel extraction.
Section 100	Drainage from highways.
Section 101	Powers to fill in roadside ditches.
Section 110	Powers to divert non-navigable watercourses and to carry out other works on watercourses. BUT Section 110(2) - This section does not apply to any works which a highway authority are authorised to carry out by virtue of an order or scheme made in accordance with Schedule 1.
Section 294	Powers of entry.
Section 299	Right to discharge water.
Schedule 22	Includes widening, footpaths, street furniture etc.

ORDERS

Schedule 1 gives powers to a highway authority to make orders in relation to:-

Section 10	Trunk roads
Section 14	Powers as respects roads that cross-or-join-trunk or classified roads.
Section 18	Supplementary orders relating to special roads.
Section 106	Orders and schemes providing for construction of bridges over or tunnels under navigable waters.
Section 108	Power to divert navigable watercourses.

of any expenditure incurred by the parish or community council in maintaining the footpath or bridleway.

(3) The power of a parish or community council under subsection (1) above is subject to the restrictions for the time being imposed by any enactment on their expenditure, but for the purposes of any enactment imposing such a restriction their expenditure is to be deemed not to include any expenditure falling to be defrayed by a highway authority or district council by virtue of subsection (2) above.

Person liable to maintain highway may agree to maintain publicly maintainable highway.

44. Where any person is liable under a special enactment or by reason of tenure, enclosure or prescription to maintain a highway, he may enter into an agreement with the highway authority for that highway for the maintenance by him of any highway maintainable at the public expense by the highway authority; but nothing in this section affects the duty of a highway authority to maintain a highway as respects which any such agreement is made.

Power to get materials for repair of publicly maintainable highways.

45.—(1) For the purpose of repairing highways maintainable at the public expense by them, a highway authority may exercise such powers with respect to the getting of materials as are mentioned in this section.

(2) Subject to subsection (3) below, the authority may search for, dig, get and carry away gravel, sand, stone and other materials in and from any waste or common land (including the bed of any river or brook flowing through such land).

(3) The authority—

(*a*) shall not in the exercise of their powers under subsection (2) above divert or interrupt the course of any river or brook, or dig or get materials out of any river or brook within 50 yards above or below a bridge, dam or weir;

(*b*) shall not in the exercise of those powers remove such quantity of stones or other materials from any sea beach as to cause damage by inundation or increased danger of encroachment by the sea; and

(*c*) shall not exercise those powers in any land forming part of a common to which section 20 of the Commons Act 1876 applies, except in accordance with that section. 1876 c. 56.

(4) Subject to subsection (5) below, the authority may gather and carry away stones lying upon any land in the county or London borough within which the stones are to be used.

PART IV

(5) The authority—

(*a*) shall not exercise the powers conferred by subsection (4) above in a garden, yard, avenue to a house, lawn, park, paddock or inclosed plantation, or in an inclosed wood not exceeding 100 acres in extent;

(*b*) shall not in the case of any other inclosed land exercise those powers unless either they have obtained the consent of the owner and of the occupier of that land, or a magistrates' court has made an order authorising them to exercise those powers in the case of that land; and

(*c*) shall not in the exercise of those powers remove such quantity of stones or other materials from any sea beach as to cause damage by inundation or increased danger of encroachment by the sea.

(6) If the authority cannot get sufficient materials by the exercise of their powers under the foregoing provisions of this section, a magistrates' court may make an order authorising them to search for, dig, get and carry away materials in and from any inclosed land in the county or London borough within which the materials are to be used, other than any such land as is mentioned in subsection (5)(*a*) above.

(7) For the purpose of repairing a bridge maintainable at the public expense and so much of a highway so maintainable as is carried by the bridge or forms the approaches to the bridge up to 100 yards from each end of the bridge, the authority may take and carry away the rubbish or refuse stones from any quarry in the county within which the materials are to be used or, if the materials are to be used in Greater London, from any quarry in Greater London.

(8) Subject to subsection (9) below, for the purpose of repairing or reconstructing a bridge maintainable at the public expense, the authority may be authorised by an order of a magistrates' court to quarry stone from any quarry in the county in which the bridge is or, if the bridge is in Greater London, from any quarry in Greater London.

(9) No order shall be made under subsection (8) above in relation to a quarry which has not been worked at any time during the 3 years immediately preceding the date on which a complaint for such an order is made; and no stone shall be taken from a quarry situated in a garden, yard, avenue to a house, lawn, paddock or inclosed plantation, or in land on which ornamental timber trees are growing, except with the consent of the owner of the quarry.

PART IV

(10) An authority who exercise any of the powers conferred by this section shall pay compensation to persons interested in any land for any damage done thereto by the carriage of the materials obtained by the authority and also, in cases falling within subsection (6) or subsection (8) above, for the value of those materials.

(11) At least one month before making a complaint to a magistrates' court for an order under subsection (5) or subsection (6) above the authority shall give notice of their intention to make such a complaint to the owner, and to the occupier, of the land from which they propose to get materials.

(12) In relation to highways in respect of which a district council's powers of maintenance under section 42 above are exercisable, references in this section and section 46 below to a highway authority include references to the district council ; and for the purposes of this section—

"inclosed land" includes any land in the exclusive occupation of one or more persons for agricultural purposes, though not separated by a fence or otherwise from adjoining land of another person, or from a highway ; and

"London borough" includes the City of London.

Supplemental provisions with respect to the getting of materials under section 45.

46.—(1) Where an excavation is made by a highway authority in the exercise of powers conferred by section 45 above, the authority shall—

(*a*) while work is in progress, and thereafter so long as the excavation remains open, keep the excavation sufficiently fenced to prevent accidents to persons or animals,

(*b*) if no materials are found therein, fill up the excavation within 3 days from the date on which the excavation was made,

(*c*) if materials are found, then within 14 days from the date on which sufficient materials have been obtained, fill up the excavation or slope it down and fence it off, if the owner or occupier of the land in question so requires, and thereafter keep it so fenced, and

(*d*) when filling up an excavation, make good and level the ground and cover it with the turf or clod dug therefrom.

C

PART V
Drainage of highways.

100.—(1) The highway authority for a highway may, for the purpose of draining it or of otherwise preventing surface water from flowing on to it, do all or any of the following:—

(*a*) construct or lay, in the highway or in land adjoining or lying near to the highway, such drains as they consider necessary;

(*b*) erect barriers in the highway or in such land as aforesaid to divert surface water into or through any existing drain;

(*c*) scour, cleanse and keep open all drains situated in the highway or in such land as aforesaid.

(2) Where under subsection (1) above a drain is constructed or laid, or barriers are erected, for the purpose of draining surface water from a highway or, as the case may be, diverting it into an existing drain, the water may be discharged into or through that drain and into any inland waters, whether natural or artificial, or any tidal waters.

(3) A highway authority shall pay compensation to the owner or occupier of any land who suffers damage by reason of the exercise by the authority of any power under subsection (1) or (2) above.

(4) If a person, without the consent of the highway authority, alters, obstructs or interferes with a drain or barrier which has been constructed, laid or erected by the authority in exercise of their powers under subsection (1) above, or which is under their control, then—

(*a*) the authority may carry out any work of repair or reinstatement necessitated by his action and may recover from him the expenses reasonably incurred by them in so doing, and

(*b*) without prejudice to their right to exercise that power, he is guilty of an offence and liable to a fine not exceeding three times the amount of those expenses.

(5) Without prejudice to their powers under the foregoing provisions of this section, a highway authority may, for the purpose of the drainage of a highway or proposed highway for which they are or, as the case may be, will be the highway authority, exercise any powers exercisable by a water authority under the Public Health Act 1936 for the purposes of the drainage of highways within the area of that authority.

1936 c. 49.

(6) Where the highway authority are a county council they shall, before exercising any powers under the Public Health Act 1936 by virtue of subsection (5) above, give notice of their intention to do so to the district council, and the water authority, within whose area the powers are proposed to be exercised.

PART V

(7) A person who is liable to maintain a highway by reason of tenure, enclosure or prescription shall, for the purpose of draining it, have the like powers as are conferred on a highway authority by subsections (1) and (2) above for that purpose, and subsections (3) and (4) above shall have effect in relation to a highway so maintainable as if references therein to a highway authority and to subsection (1) or (2) above included references to the person liable to maintain that highway and to this subsection respectively.

(8) This section is without prejudice to any enactment the purpose of which is to protect water against pollution.

(9) In this section—

" drain " includes a ditch, gutter, watercourse, soak-away, bridge, culvert, tunnel and pipe ; and

" owner ", in relation to any land, means a person, other than a mortgagee not in possession, who is for the time being entitled to dispose of the fee simple in the land, whether in possession or in reversion, and includes also a person holding or entitled to the rents and profits of the land under a lease the unexpired term of which exceeds 3 years.

Power to fill in roadside ditches etc.

101.—(1) If it appears to the highway authority for any highway that a ditch on land adjoining or lying near to the highway constitutes a danger to users of the highway, the authority may—

(*a*) if they consider the ditch unnecessary for drainage purposes and any occupier of the land known to the authority agrees in writing that it is unnecessary for those purposes, fill it in ; or

(*b*) place in the ditch, or in land adjoining or lying near to it, such pipes as they consider necessary in substitution for the ditch, and thereafter fill it in.

(2) A highway authority shall pay compensation to the owner or occupier of any land who suffers damage by reason of the exercise by the authority of any power under subsection (1) above.

(3) If a person, without the consent of the highway authority, opens up or keeps open any ditch which has been filled in under subsection (1) above (except as may be reasonably necessary for the purpose of doing work on any pipes placed in the ditch), then—

(*a*) the authority may carry out any work of repair or reinstatement necessitated by his action and may

PART V

recover from him the expenses reasonably incurred by them in so doing; and

(*b*) without prejudice to their right to exercise that power, he is guilty of an offence and liable to a fine not exceeding three times the amount of those expenses.

1936 c. 49

(4) Nothing in section 263 of the Public Health Act 1936 (which prohibits the culverting of watercourses in certain districts without the approval of the local authority) applies to anything done under subsection (1) above.

(5) A highway authority shall not exercise their powers under subsection (1) above in such a manner as to be likely to cause damage to or affect the drainage of any land or works used for the purposes of a railway or canal undertaking, except—

(*a*) after giving not less than 14 days' notice to the undertakers of the manner in which it is proposed to exercise those powers; and

(*b*) in accordance with any reasonable requirements of the undertakers of which notice is given to the authority within 14 days from the date of service of the authority's notice;

and any question whether any such requirement is reasonable shall, in default of agreement, be determined by the Minister.

(6) In this section, "ditch" includes a watercourse and any part of a ditch or watercourse, and "pipes" including culverts, tunnels and other works.

Provision of works for protecting highways against hazards of nature.

102.—(1) The highway authority for a highway maintainable at the public expense may provide and maintain such barriers or other works as they consider necessary for the purpose of affording to the highway protection against snow, flood, landslide or other hazards of nature; and those works may be provided on the highway or on land which, or rights over which, has or have been acquired by the highway authority in the exercise of highway land acquisition powers for that purpose.

(2) The powers conferred by subsection (1) above to provide any works shall include power to alter or remove them.

(3) A highway authority shall pay compensation to any person who suffers damage by reason of the execution by them under this section of any works on a highway.

Provision of posts to indicate depth of flood water.

103.—(1) It shall be the duty of a highway authority to provide, in connection with any highway for which they are the highway authority and which is subject to flooding to any considerable depth, graduated posts or stones in any case where

PART VI

Power to divert non-navigable watercourses and to carry out other works on any watercourse.

110.—(1) Subject to the provisions of this section, a highway authority may divert any part of a watercourse, other than a navigable watercourse, or carry out any other works on any part of a watercourse, including a navigable watercourse, if, in the opinion of that authority, the carrying out of the works is necessary or desirable in connection with—

(*a*) the construction, improvement or alteration of a highway;

(*b*) the provision of a new means of access to any premises from a highway; or

(*c*) the provision of a maintenance compound, a trunk road picnic area, a lorry area or a service area.

(2) This section does not apply to any works which a highway authority are authorised to carry out by virtue of an order or scheme which has been made or confirmed in accordance with Schedule 1 to this Act.

(3) Before carrying out any works under this section, the highway authority shall consult every council in whose area the works are to be carried out.

(4) Where works are carried out by a highway authority under this section and any person suffers damage in consequence thereof by the depreciation of any interest in any land to which he is entitled or by reason of the fact that his right of access to a watercourse is extinguished or interfered with, then, unless the works are carried out on land, or in the exercise of rights, acquired compulsorily in the exercise of highway land acquisition powers, that person is entitled to recover from the highway authority compensation under this subsection in respect of the damage.

(5) Subject to subsection (7) below, a highway authority who propose to carry out any works under this section shall serve on the owner and the occupier of the land affected a notice stating their intention to carry out those works and describing them and informing him that he may within 28 days after service of the notice on him by notice to the authority object to the proposed works.

(6) If within that period the owner or occupier of the land affected objects to the proposed works and the objection is not withdrawn, then—

(*a*) if the objection is to works proposed to be carried out by the Minister, he shall consider the objection before carrying them out; and

(*b*) if the objection is to works proposed to be carried out by a local highway authority, they shall not carry them

PART VI

out without the consent of the Minister who may grant such consent either unconditionally or subject to such terms and conditions as he thinks just.

(7) Subsections (5) and (6) above do not have effect in relation to works that are to be carried out—

(*a*) on land that has been acquired by the highway authority in question, either compulsorily or by agreement, in the exercise of highway land acquisition powers, for the purpose of carrying out those works, or

(*b*) in the exercise of rights so acquired by that authority for that purpose.

Interpretation

Interpretation of Part VI.

111.—(1) In this Part of this Act "navigable waters" and "navigable watercourse" means waters or a watercourse, as the case may be, over which a public right of navigation exists; and any waterway comprised in the undertaking of the British Waterways Board which is for the time being specified in Part I or Part II of Schedule 12 to the Transport Act 1968 (commercial and cruising waterways) is to be deemed to be navigable waters and a navigable watercourse for the purposes of this Part of this Act.

1968 c. 73.

(2) References in this Part of this Act to an order or scheme which provides for the construction of a bridge over or a tunnel under navigable waters are to be construed in accordance with section 106(8) above.

PART VII

PROVISION OF SPECIAL FACILITIES FOR HIGHWAYS

Provision of picnic sites and public conveniences for users of trunk roads.

112.—(1) The Minister may provide on land adjoining, or in the vicinity of, a trunk road that is not a special road a picnic site for motorists and others likely to use the road with space for parking vehicles and a means of access to and from a highway.

An area of any such land as aforesaid in which there are, or are to be, provided such a picnic site, parking space and means of access as aforesaid is in this Act referred to as a "trunk road picnic area".

(2) The Minister may erect buildings and execute works on a trunk road picnic area for the purpose of providing all or any of the following:—

(*a*) parking places for vehicles,

PART XIV

placed or left on or in any land in exercise of a power conferred by section 289 above, is guilty of an offence and liable to a fine not exceeding £50.

(4) If a person who, in compliance with the provisions of section 289 or 291 above, is admitted into a factory, workshop or workplace discloses to any person any information obtained by him therein as to any manufacturing process or trade secret, then, unless the disclosure is made in the course of performing his duty in connection with the purposes for which he was authorised to enter the land, he is guilty of an offence and liable—

(*a*) on summary conviction to a fine not exceeding the prescribed sum within the meaning of section 32(9) of the Magistrates' Courts Act 1980 (£1,000 or such other sum as may be fixed by order under section 143(1) of that Act); or

1980 c. 43.

(*b*) on conviction on indictment to imprisonment for a term not exceeding 2 years or to a fine, or both.

Powers of entry for purposes connected with certain orders relating to footpaths and bridleways.

293.—(1) A person duly authorised in writing by the Secretary of State or other authority having power under this Act to make a public path creation order, a public path extinguishment order or a public path diversion order may enter upon any land for the purpose of surveying it in connection with the making of the order.

(2) For the purpose of surveying land, or of estimating its value, in connection with a claim for compensation payable by an authority in respect of that or any other land under section 28 above, or under that section as applied by section 121(2) above, a person who is an officer of the Valuation Office or who has been duly authorised in writing by the authority from whom the compensation is claimed may enter upon the land.

(3) A person authorised under this section to enter upon any land shall, if so required, produce evidence of his authority before entering; and a person shall not under this section demand admission as of right to any land which is occupied unless at least 7 days' notice in writing of the intended entry has been given to the occupier.

(4) A person who wilfully obstructs a person acting in the exercise of his powers under this section is guilty of an offence and liable to a fine not exceeding £50.

Entry, etc., of premises by highway authority or council for certain purposes.

294.—(1) If, in the discharge of functions conferred or imposed on an authority, being a highway authority or council, by a provision of this Act to which this section applies, it becomes necessary for an authorised officer of the authority to enter, examine or lay open any premises for the purpose of—

(*a*) surveying,

(*b*) making plans,

(*c*) executing, maintaining or examining works,

(*d*) ascertaining the course of sewers or drains,

(*e*) ascertaining or fixing boundaries, or

(*f*) ascertaining whether any hedge, tree or shrub is dead, diseased, damaged or insecurely rooted,

and the owner or occupier of the premises refuses to permit the premises to be entered, examined or laid open for any such purpose, the authority, after giving notice to the owner or occupier of their intention to do so, may make a complaint to a magistrates' court for an order authorising the authority by any authorised officer to enter, examine and lay open the premises for any such purpose.

(2) If on the hearing of the complaint no sufficient cause is shown against the making of the order for which the complaint is made, the court may make the order, and thereupon any authorised officer of the complainant authority may, subject to subsection (3) below, at all reasonable times between the hours of 9 a.m. and 6 p.m., enter, examine or lay open the premises described in the order for such of the purposes mentioned in subsection (1) above as are specified in the order.

(3) Except in a case of emergency, no entry shall be made on any premises, and no works shall be begun therein, under subsection (2) above unless at least 7 days' notice of the intended entry, and of the object thereof, has been given to the occupier of the premises.

(4) Where, in the course of an entry on or examination or laying open of premises authorised by an order under this section, damage is caused to land or to chattels, any person interested in the land or chattels may recover compensation in respect of that damage from the authority on whose complaint the order was made; and where by reason of any such entry, examination or laying open any person is disturbed in his enjoyment of land or chattels, he may recover from that authority compensation in respect of the disturbance.

(5) This section applies to sections 101 and 154(2) above and to the other provisions of this Act specified in Schedule 22 to this Act.

Power of councils to dispose of certain materials.

295.—(1) The council of a county or a council who are a local authority may remove, appropriate, or use, sell or otherwise dispose of all old materials existing in any street other than a highway maintainable at the public expense at the time of the execution by the council of any works in the street, unless those materials are removed by the owners of premises in the street within 3 days from the date of service of a notice from the

information in their power which may reasonably be required by the Greater London Council for the purpose of enabling that Council to discharge their functions under this Act.

PART XIV

299.—(1) Where there has been constructed or laid in land, or in the exercise of rights, acquired by a highway authority in the exercise of highway land acquisition powers, any drain or other work for the purpose of draining surface water from a highway, proposed highway, maintenance compound, trunk road picnic area, lorry area or service area, the water may be discharged into or through that drain or other work and into any inland waters, whether natural or artificial, or any tidal waters.

Right to discharge water.

(2) A highway authority shall pay compensation to the owner or occupier of any land who suffers damage by reason of the exercise by the authority of any right under subsection (1) above.

(3) This section is without prejudice to any enactment the purpose of which is to protect water against pollution.

300.—(1) No statutory provision prohibiting or restricting the use of footpaths, footways or bridleways shall affect the use by a competent authority of appliances or vehicles, whether mechanically operated or propelled or not, for cleansing, maintaining or improving footpaths, footways or bridleways or their verges, or for maintaining or altering structures or other works situated therein.

Right of local authorities to use vehicles and appliances on footways and bridleways.

For the purposes of this section—

(*a*) the following are competent authorities, namely, the council of any county, district or London borough, the Common Council, the Council of the Isles of Scilly, any parish or community council, or parish meeting, the Sub-Treasurer of the Inner Temple and the Under-Treasurer of the Middle Temple; and

(*b*) "statutory provision" means a provision contained in, or having effect under, any enactment.

(2) The Minister of Transport and the Secretary of State acting jointly may make regulations prescribing the conditions under which the rights conferred by this section may be exercised, and such regulations may in particular make provision as to—

(*a*) the construction of any appliances or vehicles used under this section,

(*b*) the maximum weight of any such appliances or vehicles, or the maximum weight borne by any wheel or axle,

(*c*) the maximum speed of any such appliances or vehicles,

(*d*) the hours during which the appliances or vehicles may be used, and

(2) A consent required for the purposes of subsection (1) above shall not be unreasonably withheld, and if any question arises whether the withholding of a consent is unreasonable either party may require it to be referred to an arbitrator to be appointed, in default of agreement, by the President of the Institution of Civil Engineers.

(3) On an arbitration under this section, the arbitrator shall determine—

(*a*) whether any works which the highway authority or council propose to execute are such works as under subsection (1) above they are not entitled to execute without the consent of the undertakers concerned; and

(*b*) if they are such works, whether the injury, if any, to the undertakers will be of such a nature as to admit of being fully compensated by money; and

(*c*) if the works are of such a nature, the conditions subject to which the authority or council may execute the works, including the amount of the compensation, if any, to be paid by them to the undertakers.

If the arbitrator determines that the proposed works are such works as the highway authority or council are not entitled to execute without the consent of the undertakers and that the works would cause injury to the undertakers of such a nature as not to admit of being fully compensated by money, the authority or council shall not proceed to execute the works; but in any other case they may execute the works subject to compliance with such conditions, including the payment of such compensation, as the arbitrator determines.

(4) For the purposes of this section, dock, harbour and canal undertakers are to be deemed to be concerned with any river, canal, dock, harbour, basin, lock, reservoir, towing path, wharf, quay or land if it belongs to them and forms part of their undertaking, or if they have statutory rights of navigating on or using it, or of demanding tolls or dues in respect of navigation thereon or the use thereof.

(5) This section applies to section 230(7) and section 294 above and to the provisions specified in Schedule 22 to this Act, but subsections (2) and (3) above do not apply as respect a consent required in relation to section 230(7).

(6) In this section " canal " includes inland navigation.

Saving for works etc. of drainage authorities etc.

339.—(1) Subject to the provisions of this section, nothing in any of the provisions of this Act to which this section applies authorises a highway authority or any other person to use or interfere with any watercourse (including the banks thereof), or

PART XIV

any drainage or other works, vested in or under the control of a water authority or other drainage body within the meaning of the Land Drainage Act 1976 without the consent of that authority or body.

1976 c. 70.

(2) A consent required for the purposes of subsection (1) above shall not be unreasonably withheld, and if any question arises whether the withholding of a consent is unreasonable either party may require it to be referred to an arbitrator to be appointed, in default of agreement, by the President of the Institution of Civil Engineers.

(3) This section applies to sections 45, 100, 101, 110, 294 and 299 above and to the provisions specified in Schedule 22 to this Act.

(4) In its application to sections 100, 110, and 299 above this section applies in relation to a navigation authority as it applies in relation to a water authority or other drainage body within the meaning of the Land Drainage Act 1976.

Preservation of amendments.

340.—(1) Notwithstanding the repeal by this Act of the Highways Act 1959—

1959 c. 25.
1957 c. 42.

(*a*) subsection (10) of section 3 of the Parish Councils Act 1957 (which was inserted by section 310 of the Highways Act 1959 and defines " road " for the purposes of the said section 3) continues to have effect, but subject to the amendments made to that subsection, in consequence of this Act, by Schedule 24 to this Act;

(*b*) the enactments mentioned in Schedule 22 to the said Act of 1959 continue to have effect with the amendments there made but subject, in the case of such of those enactments as are mentioned in Schedule 24 to this Act, to the amendments made, in consequence of this Act, by the said Schedule 24.

1971 c. 41.

(2) Notwithstanding the repeal by this Act of the Highways Act 1971 (referred to below as " the 1971 Act ")—

1967 c. 76.

(*a*) section 29A and section 31(1A) of the Road Traffic Regulation Act 1967 (which were inserted by section 9(1) and (3) of the 1971 Act and are concerned with provision of access to premises through off-street parking places) continue to have effect and section 30(1) and (3) and 32(5) of the said Act of 1967 (which were amended by section 9(2) and (4) of the 1971 Act in consequence of the insertion of section 29A and section 31 (1A)) continue to have effect with the amendments so made;

1964 c. 83.

(*b*) section 3(6) of the New Forest Act 1964 (which provides for the fencing of a source of danger in the New

8. All proceedings, legal or other, begun before the day on which a highway becomes a trunk road and relating to any property or liabilities transferred to the Minister in respect of that highway, may be carried on with the substitution of the Minister as party to the proceedings, in lieu of the authority or council from whom the property or liabilities was or were transferred, and any such proceedings may be amended in such manner as may be necessary for that purpose.

9. The provisions of this Schedule, except paragraph 2, apply in a case where a trunk road ceases to be a trunk road in like manner as they apply where a highway becomes a trunk road, with the substitution, for the references to the former highway authority and to a council, of references to the Minister, and, for references to the Minister, of references to the council who become the highway authority for the road or, as far as relates to functions under any enactment to which section 265 of this Act applies and to property and liabilities vested in or incurred by the Minister for the purposes of those functions, to the council who are to exercise those functions in relation to the road.

SCHEDULE 22

Sections 288, 294, 312, 338, 339, 341.

Provisions of this Act to which Sections 288, 294, 312, 338, 339 and 341 of this Act Apply

1. *Provisions contained in Part IV*

Section 36(6) and (7) and section 38.

2. *Provisions contained in Part V*

Section 66(2) to (8), sections 73 and 77 and section 96(4) and (5).

3. *Provisions contained in Part IX*

Sections 133, and 151 to 153, section 154(1), and 154(4) so far as relating to a notice under 154(1), sections 163 and 165, sections 171 to 174, 176, 178 and 179, section 180 other than subsection (2) and subsection (4) so far as relating to subsection (2), and section 185.

4. *Provisions contained in Part X*

Sections 186 to 188, 190 to 197, 200 and 201.

5. *Provisions contained in Part XI*

The private street works code, sections 226 and 228, section 230(1) to (6), and sections 231, 233, 236 and 237.

6. *Provisions contained in Part XII*

Section 239(6) and section 241.

7. *Provisions contained in Part XIV*

Sections 286, 295, 297, 303, 304, and 305.

Sections 10, 14, 16, 18, 106, 108, Schedule 23, para 5

SCHEDULE 1

PROCEDURES FOR MAKING OR CONFIRMING CERTAIN ORDERS AND SCHEMES

PART I

ORDERS

1. Where the Minister proposes to make an order under any of the following provisions of this Act, that is to say, section 10, section 18, section 106 or section 108(1), or an order relating to a trunk road under section 14 of this Act, he shall prepare a draft of the order and shall publish in at least one local newspaper circulating in the area in which any highway, or any proposed highway, to which the order relates is situated, and in the London Gazette, a notice—

(a) stating the general effect of the proposed order;
(b) naming a place in the said area where a copy of the draft order and of any map or plan referred to therein may be inspected by any person free of charge at all reasonable hours during a period specified in the notice, being a period of not less than 6 weeks from the date of the publication of the notice; and
(c) stating that, within the said period, any person may by notice to the Minister object to the making of the order.

2. Where an order under section 18 or section 108(1) of this Act, or an order relating to a classified road under section 14 of this Act, is submitted to the Minister by a local highway authority, that authority shall publish, in the manner specified in paragraph 1 above, the notice there referred to, and that paragraph shall have effect in relation to a notice published by any such authority as if, for the references to the draft order and the making of the order, there were substituted references to the order as submitted to the Minister and the confirmation of the order respectively.

3. Not later than the day on which the said notice is published or, if it is published on 2 or more days, the day on which it is first published, the Minister or the local highway authority, as the case may be, shall serve on each person specified in such head or heads of the Table set out at the end of this paragraph as apply in the case of the order in question—

(a) a copy of the said notice;
(b) a copy of the draft order or of the order, as the case may be; and
(c) a copy of any map or plan referred to in the draft order or the order relating to a matter which, in the opinion of the Minister or of the local highway authority, as the case may be, is likely to affect the said person.

TABLE

Persons to be served with copies of the documents specified in paragraph 3 of this Schedule

(i) In the case of every order proposed to be made under section 10 or section 106 of this Act, and every order relating to a trunk road proposed to be made under section 14 of this Act—

Every council in whose area any highway or proposed highway to which the proposed order relates is situated.

(ii) In the case of an order proposed to be made under section 10, 14, 18 or 108(1) of this Act which provides for the construction of a bridge over or tunnel under navigable waters or for the diversion of a navigable watercourse, and in the case of every order proposed to be made under section 106 of this Act—

[The National Rivers Authority and every navigation authority] concerned with or having jurisdiction over the waters affected or the area comprising those waters or that watercourse . . .

A22. FLOODPLAIN COMPENSATION WORKS

FLOOD PLAIN COMPENSATION WORKS
CUT AND FILL ON A LEVEL FOR LEVEL BASIS

Introduction

The National Rivers Authority follows a policy of no net loss of floodplain storage and no obstruction to flood flows.

Wherever possible natural floodplain areas should be left undisturbed. On the extremities of a floodplain only, it may sometimes be possible to recontour the land without conflicting with the National Rivers Authority's Policy. Such works are subject to the Authority's Consent under its Byelaws in force under Section 34 of the Land Drainage Act 1976.

Due to the complexities of such works, detailed discussions must be held with the Development Control Officer for the area, at a very early stage to check:

a) If such works are acceptable in principle at a location.

b) What flood level is to be used to define the floodplain boundary.

c) What constraints, if any, are applicable.

Theory

On certain parts of the floodplain, water will be virtually static and the volume of storage available for flood water is the main consideration. In addition to the volume of flood water storage involved, the level and thus the timing at which the storage effect comes into operation is significant. If this volume is reduced for any stage of a flood then the lost storage results in flood waters being diverted elsewhere, leading to third party detriment. The detriment caused by a small encroachment may not be significant, or even measurable, when taken in isolation but the cumulative effect of many such encroachments will be significant, and will lead to increased flood levels and/or flooding over a larger area.

For this reason, any loss of flood storage must be compensated for by the reduction in level of nearby ground, such that the **same volume** is available at **every flood level** before and after the works, and that it can freely fill and drain. It is not adequate compensation to:

a) excavate holes in the floodplain.

b) create landlocked areas of lower ground, even if connected to the main floodplain by channels or culverts.

c) provide low level volumes to replace high level floodplain and vice-versa.

Example

In order to illustrate what to many is a confusing issue the following example might be considered:-

An area of land on the fringes of the floodplain is required for development. The site is partly within and partly out of the floodplain. The terrain at the edge of the floodplain is such that the floodplain boundary is very irregular and the site is not easily developable because of this. As the flood water at this point is not flowing it may be acceptable to realign the floodplain boundary by recontouring the ground such that no storage volume is lost. In order to mirror the existing situation so that for a particular flood, each stage (or level) is provided with the same storage volume, cut and fill must equate on a level for level basis, ie at each level (say at 0.2 metre vertical intervals for example) the excavated and filled volumes are equal. Calculations to show this are required.

The developer must fully understand that the level at which the cut or fill takes place is just as important as the volumes concerned if a significant change in the way in which the floodplain functions is to be avoided.

Nature Conservation

The National Rivers Authority has a duty to further nature conservation. It may be possible that whilst a scheme is acceptable from a hydrology/hydraulics viewpoint it is not acceptable in terms of nature conservation or some other environmental aspect. This should be borne in mind by any person wishing to carry out such works.

A23. SPECIAL REQUIREMENTS

NRA SPECIAL REQUIREMENTS

(A) For highway works only.

(B) For all other types of construction works excluding highways.

HIGHWAYS AGENCY

Guidance Note 27

MCD SPECIAL REQUIREMENTS
FOR THE NATIONAL RIVERS AUTHORITY
&
REVISED MCD CLAUSE 29

Issued for the guidance of
Agent Authorities, Consulting Engineers
and Operating Units Contract Sections
of the Department of Transport
Highways Agency

August 1994

Finance & Procurement Division

INTRODUCTION

1. OU Contracts Sections will be aware of amended ICE Clause 29 and the Special Requirements for the National Rivers Authority (NRA) contained in the Highways Works Model Contract Document (HW MCD) for February 1994 at pages 24 and 65 to 72 respectively.

2. Originally issued as part of Guidance Note 11 in March 1993, the NRA Special Requirements were re-issued in slightly amended form as part of 'Amendment 1' to the HW MCD dated February 1994 - Guidance Note 21 (MCD Circular 1/94).

3. Further to the issue of 'Amendment 1' to the HW MCD, Finance & Procurement Division met recently with senior representatives of the NRA to resolve outstanding issues and reach agreement on a national text for the NRA Special Requirements, together with some minor changes to amended ICE Clause 29.

4. The final form of amended ICE Clause 29 and the Special Requirement agreed with the NRA are attached below at Annexes 'A' and 'B' respectively. Copies of the Guidance Note have been sent to NRA headquarters who will be arranging an internal distribution of the Guidance Note to their own Regional Office network, coinciding with FP Division's distribution to OU Contract Sections.

ACTION REQUIRED

5. OU Contracts Sections should ensure that Project Managers and other Highways Agency/Agent Authority staff together with Consultants involved in the preparation and handling of Highways Agency tender documents are made aware of the revised requirements set out in this Note.

6. **WITH IMMEDIATE EFFECT** the existing version of amended Clause 29 found on page 24 of the HW MCD together with the NRA Special Requirements on pages 65 to 72 inclusive, should be permanently deleted and replaced by Annexes 'A' and 'B' respectively as attached below.

7. It is **NOT** necessary to amend documents on schemes already out to tender, or where the tender invitation date is so imminent that late changes would delay tender invitation arrangements. However, ALL TENDERS INVITED ON AND AFTER FRIDAY 9 SEPTEMBER 1994 MUST INCLUDE THE REVISED VERSION OF CLAUSE 29 AND WHERE APPLICABLE THE NEW NRA SPECIAL REQUIREMENTS.

8. OU Contracts Sections should additionally **MAKE EVERY EFFORT** to apply the changes in documents for schemes going to tender before the above date.

ENQUIRIES

9. Any queries about the content of this Guidance Note, which should preferably be put in writing and routed through OU Contracts Sections, should be addressed to Finance & Procurement 4, Room 11/08, St. Christopher House, London SE1 0TE. Telephone 071-921-4064/4676.

CLAUSE 29

The following sub-clauses are added:-

Protection of Water Resources

(3) The Contractor shall be aware of the Statutory responsibilities of the National Rivers Authority for the protection of water resources. Notwithstanding this subject and without prejudice to any other provision of the Contract the Contractor shall take all necessary precautions in connection with any underground water resources (including percolating water) rivers streams ditches drains cuts culverts dykes sluices lakes ponds reservoirs docks channels creeks bays estuaries or arms of the sea and the like to prevent:-

(i) any interference with the supply to or abstraction from such sources

(ii) silting

(iii) erosion of their beds or banks

(iv) pollution of the water so as to affect adversely the quality or appearance thereof or cause injury or death to animal aquatic or plant life.

Avoidance of Dust and Debris Nuisance

(4) The Contractor shall take all necessary measures to prevent damage loss injury or nuisance caused by:-

(i) mud dirt stones or other material used or generated whilst carrying out the Works. This shall include but not be limited to ensuring that no fuel or lubricant mud dirt stones or other material is spilled or deposited on the highway whether or not it is open to traffic.

(ii) smoke or dust generated whilst carrying out the Works.

GUIDANCE NOTES

The Special Requirements opposite have been agreed with the headquarters of the National Rivers Authority (NRA) and should only be included when applicable.

The Special Requirement is issued centrally by the Department of Transport (Highways Agency) in consultation with the headquarters of the NRA. The Requirement is issued nationally and variations are a matter for agreement between the headquarters of the Agency and the NRA. Regional variations are NOT permitted, where particular concerns arise on questions of safety, either regionally or scheme specifically, and amended or additional text appears desirable, a case MUST be made in writing to Finance & Procurement Division, via the Agency's regional Operating Unit Contracts Section.

A contact address should be inserted before tenders are invited. Where more than one regional office of NRA is affected, NRA offices should be asked to nominate a single joint contact point to simplify communication with the Contractor. Where EXCEPTIONALLY this proves impossible contact addresses should be inserted for each region affected.

SPECIAL REQUIREMENTS IN RELATION TO THE NATIONAL RIVERS AUTHORITY

1. In these Special Requirements the following terms shall have the meanings assigned to them:-

a) 'The Authority' means the National Rivers Authority.

b) 'Authority's Representative' means the area engineer and appropriately authorised staff of the National Rivers Authority or its Authorised Representatives and Agents.

c) 'Watercourse' means all water resources including ground and/or percolating water together with all rivers streams ditches drains cuts culverts dykes sluices lakes ponds reservoirs docks channels creeks bays estuaries or arms of the sea together with all associated apparatus and appliances administered by 'The Authority' in pursuit of or as part of its Statutory functions.

2. The contractor shall particularly note that The Authority is established by Act of Parliament and that its responsibilities for Watercourses property and premises are the subject of Statutory Law and/or local Bye Law with which the Contractor should familiarise himself.

3. The Contractor shall give the Authority's Representative at least 14 days written notice before commencing any work or moving heavy plant or equipment over any portion of the Site and shall provide the Authority's Representative with an outline programme for the Works which shall be kept fully updated throughout the period of the contract. The Contractor shall give the Authority's Representative NOT LESS than 7 days written notice of any change in programming which affects any Watercourse. The Authority's Representative can be contacted at the following point:-

Address :-

Telephone:- (outside office hours this will be diverted to a 24 hour Control Centre)

Fax:-

4. All operations on in or affecting Watercourses property or premises for which The Authority is responsible shall be carried out in such a manner so as not to endanger the Watercourses property or premises for which The Authority is responsible and/or any persons entitled to be present.

5. The Authority's Representative shall at all reasonable times have access to any part of Watercourses property or premises for which The Authority is responsible on the Site.

6. Where for the purposes of completing the Works in accordance with the Contract excavation is required affecting Watercourses property or premises for which The Authority is responsible the Contractor shall give the Authority's Representative 3 days written notice of

such excavation work so that the Authority's representative may attend upon the Site to supervise the excavation.

7. If the execution of the Works requires access onto or over the floodbank of a Watercourse the Contractor shall provide proper means for such access by way of temporary ramps of suitable gradient surfaced with stone or other material as shall be approved by the Authority's Representative. ON NO ACCOUNT shall the level of the floodbank crest be reduced without the written permission of the Authority's Representative and then ONLY under such conditions and restrictions as the Authority's Representative may require.

8. Where for the purposes of completing the Works in accordance with the Contract there is a requirement for a bank and/or floodbank or part thereof to be temporarily removed such removal shall ONLY be carried out with:-

a) The written permission of the Authority's Representative and then ONLY under such conditions and restrictions as the Authority's Representative may require.

b) The provision of a suitable alternative flood barrier to be approved by the Authority's Representative which shall be maintained to the full height of the original floodbank until such times as reinstatement of the original floodbank is completed to the satisfaction of the Authority's Representative.

9. Throughout the period of the Contract The Contractor MUST take all necessary measures with regard the Watercourse flood plain and/or continued operation of land drainage systems to ensure:-

a) Flow rates are maintained

b) The FULL AND PROPER discharge of any flood waters.

10. The Contractor SHALL NOT at any time construct temporary access or haul roads within the floodplain area whose surface level is higher than the existing floodplain ground level. Upon the completion of the Works all such Temporary Works shall be removed and the floodplain reinstated to the satisfaction of the Authority's Representative.

11. The Contractor SHALL NOT at any time store or stockpile on the floodplain area equipment and/or materials that will float or contaminate a Watercourse in the event of the floodplain being inundated.

12. Throughout the period of the Contract the Contractor shall ensure that the structural integrity of any fluvial tidal and/or sea defence Works is fully protected and maintained.

13. The Contractor shall take all necessary measures to secure the protection of all Watercourses including water in underground strata against silting erosion flooding and/or pollution of the water so as to affect adversely the quality or appearance thereof or cause injury or death to animal aquatic or plant life and/or damage to property and land. Such protective measures shall include, but not be limited to, the following:-

a) All fuel lubricating oil and/or other liquid chemicals stored on the Site shall be located as far as reasonably possible and in any case NOT LESS THAN 10.0M from any Watercourse and such stores shall be sited on impervious bases and surrounded by an effective impervious bund capable of containing the full

contents of the store plus 10% and with a sealed drainage system with no discharge to any Watercourse land or groundwater. All such stores shall be kept locked or otherwise secured when not in use and all containers therein must bear clear labels giving full descriptions of the contents. A stock of absorbent material suitable for use on the contents of the store MUST be maintained on the Site.

b) Any leaking and/or empty oil/fuel/chemical containers shall be removed from the Site immediately.

c) All equipment using fuel/oil shall be located as far as reasonably possible from any Watercourse and shall be surrounded with oil absorbent material to contain spills and leaks.

d) The refuelling of machines shall be strictly controlled and confined to a location as far as reasonably possible from any Watercourse.

e) Providing for silted or discoloured water from the Works and/or the cleaning of vehicles or cement/concrete using plant to be treated or settled in a lagoon prior to discharge into a Watercourse, which discharge shall only take place with the approval of the Authority's Representative.

f) Prevention of the unauthorised abstraction extraction and/or drawing of water for any reason from any Watercourses property or premises for which The Authority is responsible. While protecting any existing abstraction arrangements whether licensed or not together with any domestic abstractions exempt from such licensing requirements. (A list of licensed abstractions is available on a public register).

g) Ensuring that any ford required to allow plant or vehicles to cross a Watercourse consists of steel plank roadway hardcore road and/or exceptionally a series of concrete pipes sufficient to carry the dry weather flow of the Watercourse topped with concrete slabs at such a level that flood water will overtop the obstruction without causing flooding or other adverse effects and that such construction as is permitted by the Authority is entirely removed from the Watercourse upon the completion of the Works and any access ramps or banks shall be fully reinstated to the satisfaction of the Authority's Representative.

h) Ensuring that any plant used in or fording a Watercourse is/does not leak/leaking fuel oil and/or any other fluid.

i) Ensuring that the use of any concrete mixing plant or ready mix vehicle together with the placing of any wet concrete in or adjacent to any Watercourse is strictly controlled in such a manner that cement contamination of the Watercourse does not occur.

j) Ensuring that only material free from polluting toxic substances is used at locations where drainage from new material can directly or indirectly enter any Watercourse.

k) Where for the purposes of completing the Works in accordance with the Contract any work is required on a sewer of any kind in particular a trunk sewer ensuring that such work is only carried out with the full knowledge of the sewer authority and then ONLY under such conditions and restrictions as The

Authority's Representative and the sewer authority may impose.

l) Ensuring that the banks and foreshore of any Watercourse are kept clear of material plant and other items unless actually in use for the purposes of the Works.

m) Ensuring that materials intended for or arising from the Works together with any other plant and/or equipment are not stored or disposed of:-

   i) In the Watercourse.

   ii) Placed in such a manner where such items might fall slip or be washed into any Watercourse.

n) Preventing the spread of the following plant species:-

   i) Japanese Knotweed

   ii) Giant Hogweed.

   In particular any spoil or other such arisings contaminated with or suspected of being contaminated with the rhizomes and/or roots of these species SHALL NOT be spread to areas currently free of these plants but shall be disposed of as directed by the Authority's Representative.

o) In the preparation of his programme for the Works ensuring that the Watercourse is NOT disturbed during:-

   i) the period October to March inclusive where significant populations of salmonoid fish are present

   and/or

   ii) the period April to June inclusive where significant populations of coarse fish are present

   unless otherwise specifically agreed in writing by the Authority's Representative (and then ONLY under such conditions and restrictions as the Authority's Representative may apply).

p) Regularly scraping and maintaining free from deposits of slurry or other debris haul roads on the Site and the approaches to any Watercourse. Any arisings shall be disposed of as directed by the Authority's Representative.

q) Ensure that surface water drains are not contaminated by any debris or other arisings from the Works.

r) Provide suitable sheeting under any structure over a Watercourse where the structure is to be cleaned by mechanical or chemical means and/or painted in order to prevent material entering the Watercourse.

In the event that notwithstanding the taking of such protective measures any incident occurs which may place the Watercourse including water in underground strata or fish populations at risk the Contractor shall IMMEDIATELY inform the Authority's Representative and the Engineer and shall immediately carry out instructions to abate and remedy the situation.

14. The Contractor shall NOT without the specific written permission of the Authority's Representative, (and then ONLY under such conditions and restrictions as the Authority's Representative may require), do any of the following:-

a) Remove 'bed' material for use in the construction of the Works or elsewhere.

b) Remove from any part of the bottom channel or bed of a Watercourse a deposit accumulated by reason of any dam weir or sluice and SHALL NOT undertake such removal by causing the deposit to be carried away in suspension in the waters.

c) Remove vegetation other than fallen trees from or adjacent to any Watercourse.

d) Allow cut vegetation from approved clearance works to enter any Watercourse.

e) i) Remove aquatic weeds in the period May to August inclusive

ii) spray aquatic weeds.

f) Use floating plant barges and/or pontoons and the like in any Watercourse.

g) Display any advertisement or other material, except as specifically required by this Special Requirement, on or above Watercourses property or premises for which The Authority is responsible.

h) Discharge surface water of any kind in any way into Watercourses property or premises for which The Authority is responsible.

i) Construct any Temporary Works in the Watercourse and/or temporarily divert obstruct and/or pipe any Watercourse and/or obstruct any floodplain by spoil heaps or by any other means except where and to the extent that approval has been specifically given and/or previously obtained.

j) Close any navigable Watercourse to waterborne craft or traffic without giving the Authority's Representative at least 28 days written notice. (The granting of permission for such a closure MUST NOT be presumed).

k) Notwithstanding the approval of any other Statutory and/or Regulatory body use explosives in or adjacent to any Watercourse property or premises for which the Authority is responsible (permission for such use by The Authority will ONLY be granted IN THE MOST EXCEPTIONAL CIRCUMSTANCES).

15. Where for the purposes of completing the Works in accordance with the Contract any work is required above or in the Watercourse the Contractor shall, except where otherwise specified in the Contract or agreed in writing by the Authority's Representative:-

a) Provide and maintain a minimum height clearance as shall be specified in writing by the Authority's Representative above the water surface of the Watercourse or highest expected water surface where this is variable.

b) Stockpile keep clean and replace on completion of the Works

any 'bed' material necessarily removed from the Watercourse in the course of the construction of the Works.

c) Submit to the Authority's Representative written proposals for maintaining at all times the free passage of fish.

THE CONTRACTOR SHOULD PARTICULARLY NOTE WHEN PLANNING ANY WORK IN RELATION TO THE WATERCOURSE THAT THE AUTHORITY CANNOT GUARANTEE ANY PARTICULAR WATER LEVEL OR DEPTH NOR PREVENT ANY FLUCTUATIONS TO SUCH WATER LEVEL DEPTH OR SPEED OF FLOW IN ANY WATERCOURSE.

16. Where for the completion of the Works in accordance with the Contract work is required on or near the edge of a navigable Watercourse and such work involves projections of any kind into the navigable channel and/or anywhere vertically above the line of its edge the Contractor shall:-

a) Throughout the course of the Works provide permanent markers on the extremities from the bank of the projection by the placing thereon of warning markers/notices/lights as specified by the Authority's Representative.

c) If the projection of the work into the navigable channel exceeds 0.5m the projecting works shall be protected from the impact of passing waterborne craft as specified by the Authority's Representative.

d) Provide notice boards of a type size shape colour and with a written warning as specified by the Authority's Representative shall be sighted on the Watercourse edge as required by the Authority's Representative.

17. Any floating plant barge and/or pontoon on the Watercourse for which the Contractor has obtained the permission of the Authority's Representative shall at all times be properly secured so as not to constitute a hazard to navigation and/or Watercourse management and all reasonable precautions shall be taken by the Contractor to prevent accidental or malicious casting adrift or sinking.

18. If any plant floating plant barge and/or pontoon falls or sinks or is cast adrift in the Watercourse the Contractor shall immediately inform the Authority's Representative and the Engineer and take immediate steps to make the hazard known to users of the Watercourse. The Contractor shall immediately arrange the salvage/re-securing of the plant floating plant barge and/or pontoon from the Watercourse and until such salvage/re-securing has been completed the Contractor shall provide buoys, and markers and erect warning notices indicating the navigation hazard to Watercourse users to the satisfaction of the Authority's Representative.

19. The Contractor shall not reduce the width of any Watercourse at any time without the written approval of the Authority's Representative. In order to consider a request for a temporary reduction in the width of any Watercourse the Authority's Representative will require fully detailed proposals, which show evidence that the Contractor has made every effort to minimise:-

a) The risk of damage to the Watercourse and/or its channel;

b) The risk of flooding at all potential flow conditions within the Watercourse;

c) The length of time such reduction in Watercourse width will be required.

20. If for the purposes of completing the Works in accordance with the Contract work necessitates the closure and/or the reduction in width of any Watercourse access or footpath the Contractor shall give to The Authority at least 7 days written notice and shall provide to the satisfaction of the Authority's representative:-

a) An alternative pedestrian access with a minimum width of 2.0m with adequate fencing to each side which shall be smoothly surfaced with 75mm of ashes or such similar material as may be specified by the Authority's Representative.

b) An alternative emergency access for The Authority's plant and equipment with a minimum width of 3.5m and adequately surfaced for the passage of vehicles plant and/or equipment which surface shall have a maximum gradient of 1 in 10.

21. The Contractor shall keep the Watercourses property or premises for which The Authority is responsible free from rubbish. The Contractor shall not leave rubbish on or in Watercourses property or premises for which The Authority is responsible and shall subject to the approval of the Engineer clear away and remove all constructional plant surplus materials and Temporary Works from Watercourses property or premises for which The Authority is responsible as and when these cease to be required for the purposes of the Works.

22. Unless otherwise expressly stated in the contract upon completion of the Works the Contractor shall remove any ford coffer dam and/or other Temporary Works from the Watercourses property or premises for which The Authority is responsible.

23. Except where otherwise provided for in the Contract every part of the bank and/or channel of the Watercourse shall be fully reinstated by the Contractor to the surrounding bank profile topsoiled seeded and/or turfed as appropriate.

24. Except where otherwise provided for in the Contract all property and premises affected by the Works for which The Authority is responsible shall be fully reinstated and all damage to land property or premises for which the Authority is responsible shall be made good by the Contractor to the satisfaction of the Authority's Representative.

EMERGENCY ACTION

25. The following actions shall be taken by the Contractor in the event of any breach and/or risk of major pollution to a Watercourse or land drainage area or any incidence of fish kill:-

a) IMMEDIATELY inform The Authority the Engineer and (if required) the Emergency services in that order.

FOR THE AUTHORITY telephone:- '0800 807060'

b) Secure the area from the approach of traffic and/or the general public.

c) Render every assistance to The Authority and/or the Emergency Services as shall be requested for the purposes of mitigating damage and/or for the purposes of securing public safety.

d) With regard to landslope and any apparent flow direction of any water flowing from any breach, construct if possible and as necessary dams bunds with earth board and/or sheet to prevent or restrain loss of water from the Watercourse and/or

flows inundating any adjacent property.

e) With regard to landslope and any apparent flow direction of any potentially polluting material or liquid, construct if possible and as necessary dams bunds with earth board and/or sheeting to prevent or restrain such material from reaching the Watercourse and/or flows inundating any adjacent property.

f) Where not withstanding the above potentially polluting material or liquid has entered a Watercourse construct if possible dams/booms with board and/or sheet materials to retain and limit the extent/effect of such pollutants within the Watercourse pending instructions for full remedial action while permitting the continued flow of water.

26. Compliance with the above requirements shall not relieve the Contractor of any of his obligations under the Contract.

SPECIAL REQUIREMENTS IN RELATION TO THE NATIONAL RIVERS AUTHORITY

1. In these Special Requirements, the following expressions shall have the meanings assigned to them:

   i) The "Authority" means the National Rivers Authority

   ii) "Area Engineer" means:

   Area Flood Defence Manager
   Area Manager
   National Rivers Authority
   ..... Area

   (NB Title of required contact officer to be inserted together with area name, address and telephone number)

   Telephone:- and outside office hours this will be diverted to the 24 hour Control Centre.

   iii) "Proper Officer(s)" means the Officer(s) of the Authority having responsibility for specific functions of the Authority in relation to the works or its Authorised Representatives and Agents.

   iv) "Watercourse" means all rivers, streams, ditches, drains, cuts, culverts, dykes, sluices, lakes, ponds, reservoirs, docks, channels, creeks, bays, estuaries or arms of the sea (Water Resources Act 1991).

General Matters

2. Attention is drawn to the following legislation:

   Water Resources Act 1991
   Land Drainage Act 1991
   Byelaws of the National Rivers Authority
   Salmon and Freshwater Fisheries Act 1975

Wildlife and Countryside Act 1981
Ancient Monuments and Archaeological Areas Act 1979
Badgers Act 1991
The Environmental Protection Act 1990
Navigation Acts

and any subsequent amendments to the above legislation.

3. All workmen, agents or persons employed by the Contractor whilst in areas in which the powers of the Authority apply, shall be subject to the byelaws, rules and regulations of the Authority to the reasonable orders and requirements of the Proper Officers of the Authority.

4. All necessary consents and licences from the Authority must be obtained before any works commence. Early consultation is advised.

5. Where these requirements are included in Contract Documents they must be read in conjunction with those documents and will not detract from them.

6. The use of explosives for removing obstacles in or near watercourses shall not be permitted, except under exceptional circumstances with the express permission of the Authority and other regulatory bodies as necessary.

7. Fourteen days notification in writing shall be given to the Area Engineer of the Contractor's intention to enter into or commence work within any watercourse within their jurisdiction. Not less than two working days notice shall be given of any change of programme which affects the watercourse. The Area Engineer will be responsible for informing the Proper Officers in all other departments of the Authority which have an interest in the works.

8. The Area Engineer or his appointed representative shall at all times have access to the Site where work is being carried out in the vicinity of watercourses or on floodplains, or where the Proper Officers consider that water in the underground strata could be adversely affected.

Flood Defence Requirements

9. The Contractor's attention is drawn to the Land Drainage Act 1991, the Water Resources Act 1991 and Byelaws.

   i) The proposals for any works, and/or temporary works, to be carried out in, over, under or adjacent to a watercourse may require the formal and prior consent of the Authority. A consent application should be submitted to the Authority with full and detailed information of the proposed works.

   ii) The Authority's Land Drainage Consents Information Sheet is attached for the Contractor's attention. Any consent issued by the Authority will not relieve the Contractor of his responsibilities regarding Temporary Works and the Authority will not be held liable for any damage resulting from the construction thereof.

10. At all times during the Contract period the Contractor shall, whilst working within a channel of a river or drainage course or floodplain, take all necessary measures for the adequate discharge of flood waters and for the continued operation of all land drainage systems in the area.

11. Any proposal for temporary diversion, obstruction or piping of a watercourse during construction shall be subject to the consent of the Authority as shall be the temporary obstruction of the floodplain by spoil heaps or by any other means.

12. The construction of any access or haul roads in floodplain areas shall be to a finished level no higher than existing ground level. On completion of the works the access road shall be removed and the route reinstated to the original ground levels or other agreed levels to the satisfaction of the NRA.

13. No material shall be placed within the channel or floodplain during the construction of the Temporary Works without consent of the Area Engineer and any such material and surplus, however arising shall be removed by the Contractor as soon as its function has been fulfilled. Where the site working area includes floodplain it shall be kept clear at all times of all materials and equipment that will float.

14. The Contractor should ensure that any work do not damage the structural integrity of fluvial, tidal or sea defences.

Control of Pollution Requirements

15. The Contractor's attention is drawn to control of pollution provisions in the Water Resources Act 1991. He shall take all necessary precautions to ensure that no polluting discharge either of solid or liquids is made to any watercourse or to the underground strata and that no work carried out in any watercourse is done in such a manner as to cause pollution. Any materials which may accidentally fall into any watercourse shall be removed immediately.

In particular, but not by way of derogation from the generality of this Clause, the Contractor shall:

i) Obtain the prior written consent and/or approval of the Authority before making any discharge to any watercourse or to the underground strata.

The Authority's Pollution Prevention Guidelines sheets are attached for the Contractor's attention.

ii) Ensure that all fuel, lubricating oils or chemicals stored in bulk on the site are located as far as reasonably possible, and in no case closer than 10 metres from any watercourse and that such stores are sited on impervious bases and surrounded with an effective and impervious bund capable of holding the full contents of the store plus 10%; all stores shall be kept locked when not in use. All containers must be clearly labelled with their contents. A stock of oil absorbent material should be maintained on site. The drainage system of the bund shall be sealed with no discharge to any watercourse, land or groundwater.

iii) Locate all equipment using fuel oil as far away as reasonably possible from any watercourse and shall surround them with oil-absorbent material to contain spills or leaks. Refuelling of equipment should also be remote from any watercourse or drain.

iv) Ensure leaking or empty oil drums or chemical containers are removed from the site immediately.

v) Provide for silted or discoloured water pumped from excavations either to be irrigated over grassland or settled in a lagoon prior to any discharge to a watercourse.

vi) Not use plant in a watercourse or ford the watercourse with vehicles without the prior consent in writing of the Area Engineer and shall ensure plant/vehicles do not leak. Regular river crossings should be by way of temporary bridges or culverts by prior agreement of the Authority.

vii) Regularly scrape and maintain free from deposits of slurry haul roads on the site and approaches to watercourse. Any slurry so removed must be disposed of in an agreed location avoiding pollution of the watercourse. Precautions should be taken to ensure surface water drains are not contaminated by solids from workings and associated transport.

viii) Prevent the discharge or seepage of cement slurry from any concreting work, mixing plant or ready-mix vehicle into any watercourse.

ix) Agree with the Area Engineer his plant, vehicle parking and servicing areas and wheel washing facilities.

x) Ensure that any imported fill or construction material is free from polluting or toxic substances where drainage from the material can directly enter surface or underground waters.

xi) Provide suitable sheeting under any structure over a watercourse which is to be cleaned by mechanical or chemical means, and or painted in order to prevent material entering the watercourse.

16. In executing the Works the Contractor shall take all necessary precautions to secure the efficient protection of all rivers, streams and waterways and the like, together with water in underground strata, against silting, erosion and pollution.

17. The Contractor shall not without the written consent of the Area Engineer remove from any part of the bottom, channel or bed of a watercourse a deposit accumulated by reason of any dam, weir or sluice, and shall not undertake such removal by causing the deposit to be carried away in suspension in the waters. Sediments so removed shall be disposed of through an approved route.

18. The Contractor shall provide details to the Authority of any site investigations undertaken on suspected contaminated sites, such as gas works, chemical works.

Water Resources Requirements

19. The Contractor's attention is drawn to the Water Resources Act 1991. The Contractor shall take all necessary precautions to secure the efficient protection of water abstractions whether licensed or not. A list of licensed abstractions is available on a public register but the Contractor's attention is also drawn to the possible existence of domestic abstractions exempt from licensing.

20. No works shall be carried out by the Contractor which will reduce or materially alter the rate of flow passing down a watercourse whether of a temporary nature or not.

21. Works in a watercourse of a permanent nature which result in impounding of the water may require a licence from the Authority, and the Contractor is urged to contact the Area Engineer as soon as possible to initiate the procedures.

22. The abstraction of water from surface sources or underground sources for use in the works may require an abstraction licence from the Authority and the Contractor is urged to contact the Area Engineer as soon as possible to initiate the procedures.

Conservation and Fisheries Requirements

23. The Contractor's attention is drawn to the Salmon and Freshwater Fisheries Act 1975, the Water Resources Act 1991, the Wildlife and Countryside Act 1981, Ancient Monuments and Archaeological Areas Act 1979, and the Badgers Act 1991, and he shall take all precautions to ensure that no work in any watercourse corridor is done in such a manner as to cause damage to flora and fauna.

In particular, but not by way of derogation from the generality of this Clause, the Contractor shall:-

i) Not remove any bed or bankside material for use in construction or temporary bunds.

ii) Stockpile, remote from the watercourse and keep clean any bed material

necessarily removed in the course of construction and replace on completion of works, or as otherwise agreed with the Area Engineer.

iii) Not remove vegetation other than fallen trees from or adjacent to any watercourse unless previously agreed with the Area Engineer.

iv) Submit to the Area Engineer for prior approval by the Authority his proposals for maintaining at all times the free passage of fish.

v) Take all necessary measures in the preparation of his programme of works to ensure that the disturbance of the channel is avoided where significant populations of salmonid fish are present in the period from the beginning of October to the end of March, unless otherwise agreed with the Area Engineer. Similarly where significant coarse fish populations are present in river works should be avoided in the period 31 March to 30 June inclusive.

vi) Not without the prior consent of the Area Engineer:

a) Remove aquatic weeds in the period from the beginning of May to the end of August.

b) Spray aquatic weeds at any time.

vii) Not allow cut vegetation from approved clearance works to enter any watercourse.

viii) Take all necessary precautions to prevent the spread of Japanese Knotweed and Giant Hogweed. In particular, any spoil contaminated with the rhizomes or roots of these species should not be spread to areas where the plants are not currently growing.

Navigation Requirements

24. The Contractors attention is drawn to several Navigation Acts (generally specific to individual watercourses) which regulate the use of navigable waters.

In particular, but not by way of derogation from the generality of this Clause the Contractor shall:

i) provide and maintain a permanent marker in both banks of the watercourse to indicate the presence of concealed works.

ii) Not reduce the width of any watercourse by any means without the prior written approval of the Area Engineer.

iii) Obtain written approval of the Area Engineer as to the timing and method of working to include clearance above the navigation.

All enquiries are to be addressed to:

(name, address and telephone number of the Proper Officer to whom reference should be made (Environmental Quality, Flood Defence, Water Resources, Conservation, Fisheries, Recreation and Navigation).

In the event of an Emergency eg, Fish kill, Pollution, Flood

Please telephone

0800 807060 IMMEDIATELY

A24. GLOSSARY

GLOSSARY OF TERMS

ADAS	-	Agricultural Development and Advisory Service: part of the Ministry of Agriculture, Fisheries and Flood (MAFF).
Afflux	-	The difference in water level either side of a bridge or other obstruction.
Bankfull	-	A river condition when the flow is only just contained within the banks of the low flow channel or within flood defences as appropriate.
Catchment	-	The geographical area from which rainfall will drain, by gravity, to a particular river and its tributaries.
Culvert	-	A covered channel for carrying a watercourse below ground level.
Design flood	-	The maximum flood for which the flood alleviation works will provide protection.
Dry Weather Flow	-	The flow in a watercourse not directly due to runoff from rainfall, determined as the flow found after a defined period of dry weather.
Field Capacity	-	Describes the situation where soil is saturated with water, so that there is no soil moisture deficit.
Floodbank	-	An earth bank, stone or concrete wall, steel sheet piling etc, used to confine the flow of a watercourse to a defined channel.
Flood Q_T	-	The flood with a recurrence interval or return period of T years.
Floodplain	-	The area of land adjacent to a watercourse which is inundated when the flow in the watercourse exceeds the capacity of the channel.

The outer limit is usually the maximum extent of past recorded floods or the 1 in 100 year flood whichever is the greater identified.

Flume - A gauging structure which operates by constricting the channel through which the water flows.

Fluvial - Relates to rivers and their flows.

Freeboard - The difference in level between normal water level and ground level required to ensure adequate drainage of agricultural areas. This varies from 1.0-1.6 m dependent on soil texture and the land slope.

Geomorphology - The study of earth surface features and their formation.

Groynes - Structure to deflect culvert and protect land from erosion.

Head (Hydraulic) - A measure of pressure by reference to the height of a column of water which would produce that pressure.

Hydraulic Gradient - The slope of the surface of the water flowing uniformly in an open channel, where the gradient of the channel is relatively small.

Hydraulics - Study of the behaviour of flowing water.

Hydrograph - A graphical record of river flows or groundwater levels.

Hydrology - The scientific study of the hydrological cycle.

Hydrometry - The measurement of flows in all stages of the hydrological cycle.

Landfill - Disposal of waste material into quarries etc.

Main River - The watercourses shown on the statutory 'Main River maps' held by NRA and the Ministry of Agriculture, Fisheries and Food. The

NRA has permissive powers to carry out works of maintenance and improvement on these rivers.

Mean annual flood $\bar{Q}$ - The arithmetic average of annual maximum floods.

Ness - Promontory or headland.

Normal water level - The water level under average flow conditions.

Outfall - The point at which a sewer, drain or conduit discharges to the sea or to a river.

Overland Flow - Flow over the ground surface, including both paved and unpaved surfaces and roofs.

Return Period - The average length of time separating flood events of the same magnitude.

Revetment - Facing built to support a bank.

Riparian - Relates to the banks of a river or adjoining land.

Runoff - That part of precipitation which flows from a catchment area and finds its way into streams etc.

Soil Moisture Deficit - A measure of the effective rainfall which would theoretically be necessary to saturate the soil.

Underdrainage - The drainage required in fields to ensure that the whole area drains satisfactorily to farm ditches or arterial watercourses. This may be tile drains, mole drains or subsoiling.

Washland - The area of land adjacent to rivers which is subject to flooding (see Floodplain).

Wetlands - Any waters or washlands of ecological, botanical, zoological, or hydrological significance.

Circular 1/85
(Department of the Environment)
Circular 1/85
(Welsh Office)

Joint Circular from the

Department of the Environment
2 Marsham Street, London SW1P 3EB

Welsh Office
Cathays Park, Cardiff CF1 3NQ

Sir *7 January 1985*

The use of conditions in planning permissions

1. The power to impose conditions when granting planning permission is very wide, and can enable many development proposals to proceed where it would otherwise have been necessary to refuse planning permission. The objectives of planning, however, are best served when that power is exercised in such a way that conditions are clearly seen to be fair, reasonable and practicable. This Circular, with its Annex, sets out guidance on how this can be achieved.

2. Attention is particularly drawn to paragraphs 11-15 of the Annex, which stress that conditions should only be imposed where they are both necessary and reasonable, as well as enforceable, precise and relevant both to planning and to the development to be permitted. Those paragraphs advise in particular that in considering whether a condition is necessary authorities should ask themselves whether planning permission would have to be refused if the requirements of that condition were not imposed. If it would not, then the condition needs special and precise justification.

3. It is essential that the operation of the planning system should command public confidence. The sensitive use of conditions can improve development control and enhance that confidence. The use of conditions in an unreasonable way, however, so that it proves impracticable or inexpedient to enforce them, will damage such confidence and should be avoided.

4. When applications come to appeal, the Secretaries of State or Planning Inspectors welcome reasoned suggestions from either of the parties as to conditions which they would find acceptable if permission were granted. Such suggestions will be fully examined and may or may not be adopted, but conditions will not be imposed if they are considered to be invalid or if they are unacceptable on policy grounds.

Other Advice

5. This Circular does not deal in detail with certain technical areas, such as the control of mineral working. Additional advice about conditions to meet particular problems is in the Circulars "Planning and Noise" (DOE 10/73; WO 16/73), "Nature Conservation and Planning" (DOE 108/77; WO 150/77), "Trees and Forestry" (DOE 36/78; WO 64/78), "Planning Control over Mineral Working" (DOE 58/78; WO 103/78), "Safeguarding of Aerodromes" (DOE 39/81; WO 62/81), "The Town and Country Planning (Minerals) Act 1981" (DOE 1/82: WO 3/82), "Re: Disabled Persons Act 1981" (DOE 10/82: WO 21/82), "Development in Flood Risk Areas" (DOE 17/82; WO 15/82) and "Planning Gain" (DOE 22/83; WO 46/83) and also in the Annex to the Circular "Development for Agricultural Purposes" (DOE 24/73; WO 49/73).

Effect on Local Government Manpower and Expenditure

6. This Circular repeats and brings up to date existing advice, and should therefore have no effect on local government manpower or expenditure.

Cancellation of Circulars

7. Ministry of Housing and Local Government Circulars 5/68 (WO 5/68) and 17/69 (WO 19/69), and paragraph 11 of Annex A to Department of the Environment Circular 9/81 (WO 16/81), are now cancelled.

We are, Sir, your obedient Servants

I H NICOL *Assistant Secretary*

A E PEAT *Assistant Secretary*

The Chief Executive
- County Councils } in England and Wales
- District Councils }
- London Borough Councils
- Urban Development Corporations
- Council of the Isles of Scilly

The Town Clerk, City of London

The Director General, Greater London Council

The National Park Officer
- Lake District Special Planning Board
- Peak Park Joint Planning Board

[DOE PLUP3/737/4]
[WO P31/96/03]

Index to Annex

Annex

References below to "models" are to the model conditions shown in Appendix A.

POWERS

Summary of powers

1. Conditions may only be imposed within the powers available. Advice on these powers is given below. This advice is intended to be a guide, and it must be stressed that it is not definitive. An authoritative statement of the law can only be made by the courts. The principal powers are in Sections 29 and 30 of the Town and Country Planning Act 1971 (referred to below as "the Act"). Sections 41 and 42 of the Act require the imposition of time-limiting conditions on most grants of planning permission (see paragraphs 42 to 45 below). Powers to impose conditions are also conferred on the Secretaries of State or their Inspectors by sections 35, 36 and 88B and Schedule 9. In some areas there may also be powers under local Acts which complement or vary the powers in the 1971 Act.

General power

2. Section 29(1) of the Act enables the local planning authority in granting planning permission to impose "such conditions as they think fit". This power is not, however, as wide as it appears, and has to be interpreted in the light of court decisions.

Powers for conditions on land outside application site and temporary permissions

3. Section 30(1) amplifies the general power in section 29(1) in two ways. It makes clear that the local planning authority may impose conditions regulating the development or use of land under the control of the applicant even if it is outside the site which is the subject of the application. (The courts have held that the question whether land is under control of an applicant is a matter to be determined according to the facts of the particular case, and is not dependent on the existence of a freehold or leasehold interest: only such control over the land is needed as is required to enable the developer to comply with the condition). The section also makes clear that the local planning authority may grant planning permission for a specified period only.

Power to vary or remove the effect of conditions

4. Section 32(1)(b) allows an applicant to seek to have the requirements of an existing condition lifted. It provides that applications can be made for permission to retain buildings or works, or continue a use, without complying with one or more conditions imposed on the original permission. If the permission has not yet been implemented, therefore, an application under section 32(1)(b) cannot be made. These applications are dealt with under the same powers as applications under section 29. The local planning authority may thus either relieve the applicant altogether of the need to comply with the condition at issue, or substitute for it one or more less onerous conditions which vary the original requirements or impose different ones with the same purpose. On an application under section 32(1)(b) additional conditions relating to other matters may not be imposed.

OTHER CONSTRAINTS

Policy and other constraints

5. The limits of the enabling powers are not the only constraints on the use of conditions. Conditions should normally be consistent with national planning policies, as expressed in Government circulars, Development

Control Policy Notes, and other published material. They should also normally be consonant with the provisions of development plans and other policies of local planning authorities. Where a certain kind of condition is specifically endorsed by a development plan policy, however, it is still necessary to consider whether it is justified in the particular circumstances of the proposed development. Conditions restricting development of the kinds set out in Part II of Schedule 8 to the Act (read with section 278)—notably certain changes of use and some agricultural development—may give rise to liability to pay compensation.

PRACTICE

Role of informal discussions

6. Even before an application is made, informal discussions between an applicant and the local planning authority are very helpful. They can allow the applicant to formulate the details of a project so as to take full account of the requirements of the authority, and assist the authority in making sure that those requirements are reasonable in the light of the development proposed. They can reduce the need for conditions, explore the possible terms of conditions which remain necessary, and ensure that these are tailored to the circumstances of the case.

"Standard conditions"

7. Lists of model conditions can be of great benefit. They can improve consistency of decision, the use of staff resources, and the speed of processing of planning applications. They may also, however, encourage the use of conditions as a matter of routine, without the careful weighing of each condition which every applicant should be able to expect. They therefore need to be treated with caution. Such lists can usefully be made available locally so that developers can take account of possible conditions at an early stage in drawing up their proposals, but should contain a warning that they are not comprehensive and that conditions will always be devised or adapted where appropriate to suit the particular circumstances of a case.

Reasons

8. By virtue of the requirement in Article 7 of the Town and Country Planning General Development Order 1977 that an authority deciding to grant permission subject to conditions shall state the reasons for their decision, reasons must be given for the imposition of every condition. Reasons such as "to comply with the policies of the Council", "to secure the proper planning of the area" or "to maintain control over the development" are vague, and can suggest that the condition in question has no proper justification. The phrase "to protect amenity" can also be obscure, and will often need amplification. If the reasons for the imposition of conditions are clearly explained, developers will be better able to understand the need for them and to comply with them in spirit as well as in letter. The likelihood of proper and acceptable conditions being challenged on appeal, so that development proposals are held up, will also be diminished.

Notes or "informatives"

9. Sometimes local planning authorities will wish to give guidance to an applicant for outline planning permission as to the kind of details of reserved matters which they would find acceptable (cf paragraph 38 below). On occasions, a local planning authority may wish to draw the attention of an applicant to other statutory consents (eg listed building consent or a footpath diversion order) which must be obtained before development can

commence. This should not be done by imposing a condition: instead a note may be appended to the planning permission. A note may also be desirable to draw the attention of the applicant to his or her right to make an application for relief from the requirements of a condition under section 32(1)(b) of the Act, or indeed for other purposes.

Section 52 agreements

10. It may be possible to solve a problem posed by a development proposal equally well by imposing a condition on the planning permission or by concluding an agreement under section 52 of the Act or under other powers. The Secretaries of State consider that in such cases the local planning authority should impose a condition rather than seek to deal with the matter by the making of an agreement, since the imposition of restrictions by means of an agreement deprives the developer of the opportunity of seeking to have the restrictions varied or removed by an application or appeal under Part III of the Act if they subsequently become inappropriate or too onerous.

TESTS

Six tests for conditions

11. On a number of occasions the High Court has laid down the general criteria for the validity of planning conditions. In addition to satisfying the Court's criteria for validity, conditions should not be imposed unless they are both necessary and effective, and do not place unjustifiable burdens on applicants. Conditions should only be imposed where they are:

(a) necessary,
(b) relevant to planning,
(c) relevant to the development to be permitted,
(d) enforceable,
(e) precise and
(f) reasonable in all other respects.

NEED FOR A CONDITION

Test of need

12. In considering whether a particular condition is necessary, authorities should ask themselves whether planning permission would have to be refused if that condition were not to be imposed. If it would not, then the condition needs special and precise justification. The argument that a condition will do no harm is no justification for its imposition: as a matter of policy, a condition ought not to be imposed unless there is a definite need for it. The same principles, of course, must be applied in dealing with applications for relief from a condition under section 32: a condition should not be retained unless there are sound and clear-cut reasons for doing so.

13. In some cases a condition is clearly unnecessary, such as where it would repeat provisions in another condition imposed on the same permission. In other cases the lack of need may be less obvious, and it may help to ask whether it would be considered expedient to enforce against a breach—if not, then the condition may well be unnecessary.

Need for requirements

14. Conditions should be tailored to tackle specific problems, rather than impose wide-ranging controls. In so far as a condition is wider in its scope than is necessary to achieve the desired objective, it will fail the test of need. Where an extension to a dwellinghouse in a particular direction would be unacceptable, for example, a condition on the permission for its erection

should specify that, and not simply remove all rights to extend the building. Permissions should not be overloaded with conditions, however: it might be appropriate, for example, to impose on a permission in a conservation area a requirement that all external details and materials should be in complete accordance with the approved plans and specifications, rather than recite a long list of architectural details one by one.

Completion of development

15. Conditions requiring development to be carried out in its entirety, or in complete accordance with the approved plans, often fail the test of need by requiring more than is needed to deal with the problem they are designed to solve. If what is really wanted is simply to ensure that some particular feature or features of the development are actually provided or are finished in a certain way, specific conditions to this end (for example, models 14 and 19 in Appendix A) are far preferable to a general requirement. Enforcement action can be taken against development as unauthorised without any such condition, however, if it varies materially from the approved design.

Relevance to Planning

Test of relevance to planning

16. A condition which has no relevance to planning is *ultra vires*. A condition that the first occupants of dwellings must be drawn from the local authority's housing waiting list, for example, would be improper because it was meant to meet the ends of the local authority as housing authority, and was not imposed for planning reasons. Although a condition can quite properly require the provision of open space to serve the permitted development (as part of a housing estate for example) it would be *ultra vires* if it required the open space to be dedicated to the public; other conditions affecting land ownership (requiring, for example, that the land shall not be disposed of except as a whole) would similarly be *ultra vires*.

Other planning controls

17. Some matters are the subject of specific control elsewhere in planning legislation, for example advertisement control, listed building consent or tree preservation. If these controls are relevant to the development the authority should normally rely on them, and not impose conditions on a grant of planning permission to achieve the purposes of a separate system of control (but on trees note paragraph 40 below).

Non-planning controls

18. Other matters are subject to control under separate legislation, yet also of concern to the planning system. A condition which duplicates the effect of other controls will be unnecessary, and one whose requirements conflict with those of other controls will be *ultra vires* because it is unreasonable. A condition cannot be justified on the grounds that the local planning authority is not the body responsible for exercising a concurrent control, and therefore cannot ensure that it will be exercised properly. Nor can a condition be justified on the grounds that a concurrent control is not permanent but is subject to expiry and renewal (as, for example, with certain licences). Nor, as a matter of policy, should conditions be imposed in order to avoid a liability to pay compensation under other legislation. Even where a condition does not actually duplicate or conflict with another control, differences in requirements can cause confusion, and it will be desirable as far as possible to avoid solving problems by the use of conditions instead of, or as well as, by another more specific control.

19. Where other controls are also available, a condition may, however, be needed when the considerations material to the exercise of the two systems of control are substantially different, since it might be unwise in these circumstances to rely on the alternative control being exercised in the manner or to the degree needed to secure planning objectives. Conditions may also be needed to deal with circumstances for which a concurrent control is unavailable (eg to secure the restoration of a waste disposal site, since the waste disposal licence, which terminates on the day that disposal ends, could not achieve the same result). A further case where conditions may be justified will be where they can prevent development being carried out in a manner which would be likely to give rise to onerous requirements under other powers at a later stage (eg to make sure of adequate sewerage and thus avoid subsequent intervention under the Public Health Acts).

Relevance to the Development to be Permitted

Test of relevance to permission

20. Unless a condition fairly and reasonably relates to the development to be permitted, it will be *ultra vires*.

21. Thus it is not sufficient that a condition is related to planning objectives: it must also be called for by the nature of the development permitted or its effect on the suroundings. For example if planning permission is being granted for the alteration of a factory building, it would be wrong to impose conditions requiring additional parking facilities to be provided for an existing factory simply to meet a need that already exists, and similarly wrong to require the improvement of the appearance or layout of an adjoining site simply because it is untidy or congested; despite the desirability of these objectives in planning terms, the need for the action would not be created by the new development. Nevertheless it is proper for conditions to secure satisfactory access, for example, or parking facilities, genuinely required by the users of a *proposed* development. Conditions can also be proper even where they do not directly affect the proposed development, but the need for them arises out of its effects; where a permission will result in intensification of industrial use of a site, for instance, a condition may be necessary requiring additional sound-insulation in the existing factory buildings. It may even be justifiable to require by condition that an existing building be demolished—perhaps where to have both would result in the site being over-intensively developed. Additional advice on related matters is in paragraph 63 below.

Ability to Enforce

Test of enforceability

22. A condition should not be imposed if it cannot be enforced. It is often useful to consider what means are available to secure compliance with a proposed condition, having regard to the powers available under section 87 of the Act. Precision in the wording of conditions may be vital when it comes to enforcement (see paragraph 25 below).

Practicality of enforcement

23. Sometimes a condition will be unenforceable because it is in practice impossible to detect an infringement. More commonly it will merely be difficult to prove a breach of its requirements. For example, a condition imposed for traffic reasons restricting the number of persons resident at any one time in a block of flats would be impracticable to monitor, and pose severe difficulties in proving an infringement. However, where a condition

is intended to prevent harm to the amenities of an area which is clearly likely to result from the development (for example, a condition requiring an amusement centre to close at a certain time in the evening), it will not usually be difficult to monitor, as those affected by contraventions of its requirements are likely to be able to provide clear evidence of any breaches.

Reasonableness of enforcement

24. Other conditions may raise the question whether they can be reasonably enforced. One type of case where this might happen is where a condition is imposed requiring the carrying out of works (eg construction of a means of access) on land within the application site but not, at the time of the grant of planning permission, under the control of the applicant. If the applicant failed to acquire an interest in that land, and carried out the development without complying with the conditions, the local planning authority could enforce the condition only by taking action against the third party who owned the land to which the condition applied, and who had gained no benefit from the development. Such difficulties can usually be avoided by framing the condition so as to require that the development authorised by the permission should not commence until the access has been constructed.

PRECISION

Test of precision

25. The framing of conditions requires care, not least to ensure that a condition is enforceable. A condition, for example, requiring only that "a landscaping scheme shall be submitted for the approval of the local planning authority" is incomplete, since if the applicant were to submit the scheme, and even obtain approval for it, but neglect to carry it out, it is unlikely that the local planning authority could actually require the scheme to be implemented. In such a case the requirement that needs to be imposed is that landscaping shall be *carried out* in accordance with a scheme to be approved by the local planning authority; and the wording of the condition must clearly require this. A condition of this kind also sets no requirement as to the time or the stage of development by which the landscaping must be done, which can similarly lead to enforcement difficulties. Conditions which require specific works to be carried out should state clearly when this must be done.

Vague conditions

26. A condition which is not sufficiently precise for the applicant to be able to ascertain what he must do to comply with it is *ultra vires* and cannot be imposed. Vague expressions which sometimes appear in conditions, for example such as "keep the buildings in a tidy state", or "so as not to cause annoyance to nearby residents", give occupants little idea of what is expected of them. Conditions should not be made subject to qualifications such as "if called upon to do so" or "if the growth of traffic makes it desirable", which do not provide any objective and certain criterion by which the applicant can ascertain what he is required to do.

Discretionary or vetting conditions

27. Conditions which attempt to provide for an arbiter to interpret such expressions or qualifications do not avoid this difficulty. Conditions requiring that tidiness, for example, shall be "to the satisfaction of the local planning authority" make the applicant no more certain of just what is required. Conditions which are imprecise or unreasonable cannot be made

acceptable by phrases such as "except with the prior approval of the local planning authority" which purport to provide an informal procedure to waive or modify their effect. Similarly, conditions restricting the occupation of a building should not set up a vetting procedure for prospective occupiers. Conditions which raise these difficulties, however, are not to be confused with conditions which require the submission of a scheme or details for approval which will, when granted, provide the precise guidelines to be followed by the developer (see paragraph 39 below).

Clarity

28. Conditions should be not only precise but also clear. Where a precise condition may be difficult to follow, it may be helpful to attach to the permission an illustrative plan (eg describing sight lines required at the entrance to an access road).

Reasonableness

Test of reasonableness

29. A condition can be *ultra vires* on the grounds of unreasonableness, even though it may be precisely worded and apparently within the powers available.

Conditions invalid on grounds of unreasonableness

30. A condition may be unreasonable because it is unduly restrictive. Although a condition may in principle impose a continuing restriction on the use of land (provided that there are good planning reasons for that restriction), such a condition should not be imposed if the restriction effectively nullifies the benefit of the permission. For example, it would normally be reasonable to restrict the hours during which an industrial use may be carried on if the use of the premises outside these hours would affect the amenities of the neighbourhood, but it would be unreasonable to do so to such an extent as to make it impossible for the occupier to run his business properly. If it appears that a permission could be given only subject to conditions that would be likely to be held unreasonable by the courts then it will be necessary to refuse permission altogether.

Avoidance of onerous requirements

31. Even where a condition would not be so unreasonably restrictive as to be *ultra vires,* it may still be so onerous that as a matter of policy it should be avoided. Any condition which would put a severe limitation on the freedom of an owner to dispose of his property, or which would obviously make it difficult to finance the erection of the permitted building by borrowing on mortgage, should be avoided on these grounds. An unduly restrictive condition can never be made acceptable by offering the prospect of informal relaxation of its effect (see paragraph 27 above).

Control over land

32. Particular care needs to be taken over conditions which require works to be carried out on land in which the applicant has no interest at the time when planning permission is granted. If the land is included in the site in respect of which the application is made, such conditions can in principle be imposed, but the authority should have regard to the points discussed in paragraph 24 above. If the land is outside that site, a condition requiring the carrying out of works on the land cannot be imposed unless the authority are satisfied that the applicant has sufficient control over the land to enable those works to be carried out (see however paragraph 34 below).

33. It is unreasonable to impose a condition which the developer would be unable to comply with himself, or which he could comply with only with the consent or authorisation of a third party (for example, a condition which requires an aerodrome owner to impose a particular pattern of aircraft flight routeings, when that is a matter for the air traffic control authorities).

Conditions depending on others' actions

34. Although it would be *ultra vires*, however, to require works which the developer has no power to carry out, or which would need the consent or authorisation of a third party, it may be possible to achieve a similar result by a condition worded in a negative form, prohibiting development until a specified action has been taken. The test of whether such a condition is reasonable is strict; it amounts to whether there are at least reasonable prospects of the action in question being performed. Thus for example, if it could be shown that, although current sewerage facilities were inadequate for a new housing estate, improvements were under way which would be completed not long after the houses, it might be right to grant permission subject to a condition that the houses should not be occupied until the relevant sewerage works were complete. In an appropriate case, too, it might be reasonable to use a condition requiring that the development should not commence until a particular highway had been stopped up or diverted, if there were reason to suppose that the highway authority would be able and willing to take the necessary action. The reasonableness of such a requirement will in all cases depend on the likelihood of the precondition being fulfilled within such time as to enable the development to be commenced within the time-limit imposed by the permission.

35. An unreasonable condition does not become reasonable because an applicant suggests it or consents to its terms. The condition will normally run with the land, and may therefore still be operative long after the applicant has moved on; it must always be justified on its planning merits.

Consent of applicant to unreasonable conditions

REGULATION OF DEVELOPMENT

OUTLINE PERMISSIONS

36. An applicant who proposes to carry out building operations may choose to apply either for full planning permission, or for outline permission with one or more of the following matters reserved by condition for the subsequent approval of the local planning authority: the siting of the building, its design, its external appearance, the means of access, or the landscaping of the site ("reserved matters") (cf model 1 in Appendix A). An applicant cannot seek an outline planning permission for a change of use alone or for operations other than building operations.

Outline applications

37. An applicant can however choose to submit as part of an outline application details of any of these "reserved matters". Unless he has indicated that those details are submitted "for illustrative purposes only" (or has otherwise indicated that they are not formally part of the application), the local planning authority must treat them as part of the development in respect of which the application is being made; the

Details supplied in outline applications

authority cannot reserve that matter by condition for subsequent approval, unless the applicant is willing to amend the application by withdrawing the details.

Conditions relating to outline permissions

38. Once outline planning permission has been granted, it cannot be withdrawn except by a revocation order under section 45 of the Act, and any subsequent approval of reserved matters does not constitute the granting of a further planning permission. Any conditions relating to anything other than the reserved matters should be imposed when outline permission is granted. The only conditions which can be imposed when the reserved matters are approved are conditions which directly relate to those matters. For example, if the local planning authority consider that whatever the precise form the development is to take, access to the buildings should be from a particular road (or, alternatively, that there should be no means of access from a particular road), then a condition to this effect must be imposed on the outline permission. Approval of the details of the means of access to the permitted buildings can be refused on the grounds that there should not be access to the site from a particular road only if the need for such a restriction arises from the details of the development which have been submitted for approval (eg from the density which is indicated by submitted details of the design and siting of the buildings). It is desirable that, wherever possible, notes should be appended to an outline permission to give the developer guidance as to what precise form of development will be acceptable to the local planning authority.

Conditions reserving other matters

39. Authorities should seek to ensure, where possible, that conditions other than those relating to reserved matters are self-contained, and do not require further approvals to be obtained before development can begin. Where necessary, however, a local planning authority may also, when granting a full or outline planning permission, impose a condition requiring that details of a specified aspect of the development which was not fully described in the application (eg the provision of car parking spaces) be submitted for approval before the development is begun (cf model 14 in Appendix A). In the case of a full permission such a condition can relate to details (such as landscaping) which might have been reserved matters had the application been made in outline. The applicant has the same right of appeal to the Secretary of State under section 36 if he cannot get the authority's approval, agreement or consent to matters reserved under such a condition as he has in respect of applications for approval of reserved matters.

Treatment of landscaping

40. Landscaping may raise special considerations. The treatment of open space can vary greatly, and it is therefore especially important for the authority to give some advance indication of the essential characteristics of an acceptable landscaping scheme—always bearing in mind that such requirements should not be unreasonable. The visual impact of a development will often need to be assessed as a whole, and this may well involve considering details of landscaping together with other reserved matters. Section 59 of the Act places an express duty on the local planning authority, when granting permission, to ensure whenever appropriate that adequate conditions are imposed to secure the preservation or planting of trees, and that any necessary tree preservation orders are also made under

section 60 of the Act. Where appropriate, conditions may be used to restrict works which would adversely affect existing trees that are to be retained on the site, or to require the planting of new trees. Establishing trees may need work over several months or years, and a condition may require not just initial planting, but also that trees shall be maintained during the first few years (specifying the number of years) and that any which die within that time shall be replaced (model 21). The permanent protection of trees, however, should be secured by tree preservation orders rather than by condition; such orders may also be needed for the temporary protection of existing trees until details of the reserved matters are submitted and it becomes clear whether there is a need to retain the trees. DOE Circular 36/78 (WO 64/78) deals in more detail with the use of conditions in relation to trees.

Enforcement of landscaping requirements

41. To ensure that a landscaping scheme is prepared conditions may require that no development should take place until the scheme is approved, so long as this requirement is reasonable (model 20). Enforcing compliance with landscaping schemes can pose problems, since work on landscaping can rarely proceed until building operations are nearing completion, and only on permissions for a change of use would it be acceptable to provide that the development permitted should not proceed until the landscaping had been substantially completed. Where permission is being granted for a substantial estate of houses, it might be thought appropriate to frame the relevant condition so as to prohibit the erection of the last few houses until planting has been completed in accordance with the landscaping scheme; but in relation to a permission for an industrial or office building it would be possible to impose a condition prohibiting or restricting occupation of the building until such works have been completed.

Time-limits on the Commencement of Development

Statutory time-limits

42. The imposition of time-limits on the commencement of development is not required by the Act for temporary permissions (paragraphs 82–86 below), for permissions under section 32 of the Act for the retention of a building or works or for the continuation of a use, or for permissions granted by a development order or an enterprise zone scheme. Minerals permissions which require the commencement of development within a specified period from the completion of other mineral workings are similarly not subject to an additional statutory time-limit.

Time-limits on full permissions

43. Other grants of planning permission (apart from outline permissions) must, under section 41 of the Act, be made subject to a condition imposing a time-limit within which the development authorised must be started. The section specifies a period of five years from the date of the permission (model 3) (but see paragraph 45 below).

Time-limits on outline permissions

44. Grants of outline planning permission must, under section 42 of the Act, be made subject to conditions imposing two types of time-limit, one within which applications must be made for the approval of reserved matters and a second within which the development itself must be started (models 2 and 4). The periods specified in the section are three years from

the grant of outline permission for the submission of applications for approval of reserved matters, and either five years from the grant of permission, or two years from the final approval of the last of the reserved matters, whichever is the longer, for starting the development.

Variation from standard time-limits

45. If the authority consider it appropriate on planning grounds, however, they may use longer or shorter periods than those specified in the Act, and must give their reasons for so doing. In the absence of specific time-limiting conditions, permission is deemed to have been granted subject to conditions imposing the periods referred to in paragraphs 43 and 44 above. It may be particularly desirable to adopt a flexible approach to the fixing of time-limits where development is to be carried out in distinct parts or phases; section 42(5) of the Act provides that outline permissions may be granted subject to a series of time-limits, each relating to a separate part of the development.

Separate submission of different reserved matters

46. Applications for approval under an outline permission may be made either for all reserved matters at once, or for one at one time and others at another. Even after details relating to a particular reserved matter have been approved, one or more fresh applications may be made for approval of alternative details in relation to the same reserved matter. Once the time-limit for applications for approval of reserved matters has expired, however, no applications for such an approval can be made after that date.

Effect of time-limit

47. After the expiry of the time-limit for commencement of development it is not possible for development to be begun under that permission; a further application for planning permission must be made.

Renewal of permissions before expiry of time-limits

48. Developers who delay the start of development are likely, as the time-limit for implementation approaches, to want their permission renewed. Under Article 5(3) of the Town and Country Planning General Development Order 1977 applications for such renewals may be made simply by letter, referring to the existing planning permission, although the local planning authority have power subsequently to require further information if needed. As a general rule, such applications should be refused only where:

(a) there has been some material change in planning circumstances since the original permission was granted (eg a change in some relevant planning policy for the area, or in relevant highway considerations);

(b) continued failure to begin the development will contribute unacceptably to uncertainty about the future pattern of development in the area; or

(c) the application is premature because the permission still has a reasonable time to run.

49. A condition requiring the developer to obtain *approval* of reserved matters within a stated period should not be used, since the timing of an approval is not within the developer's control. A condition, therefore, should set time-limits only on the *submission* of reserved matters.

Completion of Development

Completion of whole development

50. A condition requiring that the whole of the development permitted be completed is likely to be difficult to enforce. If a development forming a single indivisible whole, such as a single dwellinghouse, is left half-finished it may be possible to secure completion by a completion notice under section 44 of the Act. If, however, the reason for failure to complete is financial difficulties experienced by the developer, neither a completion notice nor the enforcement of conditions would be likely to bear much fruit; in such circumstances the only practical step open to the local planning authority, if they wish to secure the completion of the development, may be the acquisition of the land. If a large development such as an estate of houses is left half-complete, this may well be because of market changes (for example, a shift of demand from four-bedroom to two-bedroom houses), and it would clearly not be desirable to compel the erection of houses of a type for which there was no demand or need. Conditions requiring the completion of the whole of a development should therefore not normally be imposed.

Completion of elements of a development

51. Conditions may be needed, however, to secure that a particular element in a scheme is provided by a particular stage or before the scheme is brought into use, or to secure the provision of an element of a kind a developer might otherwise be tempted to defer or omit. Thus it may be desirable to require that a new access to the site should be constructed before any other development is carried out; or, where an office scheme includes a car park, that the car park is completed before the offices are occupied; or, where the scheme includes both offices and housing, that the offices should not be occupied before the houses are complete. The approach adopted must, of course, be reasonable. Taking the last example, it could well be unacceptable to require that the houses should be completed before the offices are begun: this would be likely to be an unjustifiable interference with the way the development is carried out. Or, to take another example, it could well be unacceptable to demand that all the requirements of a landscaping condition should be complied with before a building is occupied; this could involve the building lying empty for many months, since such a condition will often provide for a considerable maintenance period so that trees may become established (on landscaping, see further paragraphs 40 and 41 above).

Phasing

Phasing required by infrastructure

52. Conditions may also be imposed to ensure that development proceeds in a certain sequence where some circumstance of the case (eg the manner of provision of infrastructure) makes this necessary. Such a condition should follow Model 29.

Phasing of land release

53. Conditions should not be imposed preventing the commencement of development for a period on the grounds that the development plan shows land release as being phased over a period of time and the current year's allocation is exhausted. A condition delaying development over a substantial period is a severe restriction on the benefit of the permission granted; if land is suitable for a particular purpose its development should not be delayed by condition because the authority have adopted a system of rationing the release of land for development.

Highway Conditions

Parking

54. Developments often generate a demand for parking, usually by haulage or delivery vehicles or by cars of residents, visitors or employees. Unless this demand is minimal (as it might be, for example, in the case of some very small firms), and unlikely to cause obstruction, space may need to be set aside as part of the development. Any conditions specifying the number of parking spaces should be reasonable in relation to the size and nature of the development, the availability of public parking nearby, and local traffic management policies and parking standards (although consistency with local parking standards cannot be regarded as the sole test of the reasonableness of a condition). Where there is inadequate space for car parking on the site of the development, the authority may think it appropriate to require the provision of spaces on other land under the control of the applicant; but in such a case the development must be readily accessible from the car park (additional advice on parking provision is given in Appendix B to Circular DOE 22/83 (WO 46/83), "Planning Gain").

55. Sometimes parking space in the form of a lay-by will be satisfactory. More often a parking site separate from the highway will be needed. In the latter case conditions should ensure, where necessary, that space is provided for the turning of vehicles so that they do not have to reverse on to the highway.

Access

56. Where a service road is needed as part of a large development for which outline permission is to be granted, it may be necessary to impose a condition requiring all access to the highway to be by means of the service road. If such a condition is not imposed at outline stage it may not be possible to secure the objective at a later stage (see paragraph 38). Similarly, if it is desired that there should be no direct access on to a main road, or that access must be taken from a particular side road, a condition to that effect should be imposed on the outline permission, as without such a condition these restrictions could not normally be made at the stage of consideration of details.

57. A condition may require the provision or improvement of a service road or means of access even if such works are not included in the application, provided that they can be undertaken on the site in respect of which the application is made, or on other land which is under the control of the applicant and sufficiently relates to the proposed development. The condition should be framed so as to require the laying out or improvement of the means of access, or the relevant section of the service road, on defined land before the relevant buildings are occupied.

Cession of land

58. Conditions may not require the cession of land to other parties, such as the highway authority.

Development of Contaminated Sites

Contaminated land

59. Land formerly used for industrial purposes or for waste disposal can be contaminated by substances that pose immediate or long-term hazards to health or which may damage any buildings erected on such sites. In these circumstances, appropriate conditions may be imposed in order to ensure

that the development proposed for the land will not expose future users or occupiers of the site, or any buildings or services, to hazards associated with the contaminants present. Local planning authorities should recognise that the presence of contaminants which, although potentially harmful to health, do not damage buildings or affect any ancillary services, need not necessarily preclude development for commercial or industrial purposes. Development of contaminated sites for purposes such as housing, gardens, allotments, or agriculture may be undesirable unless suitable remedial action is first taken. Sites which are known to be contaminated by substances that are flammable or likely to attack building materials, or which release toxic or explosive gases, will normally require remedial action before any form of construction is commenced.

Sites of Archaeological Interest

Archaeological sites

60. Scheduled ancient monuments are protected by Part I of the Ancient Monuments and Archaeological Areas Act 1979, and investigation for archaeological purposes is provided for in designated areas by Part II of that Act. Where these provisions apply, their effect should not be duplicated by planning conditions (cf paragraph 18 above), although authorities granting planning permission in such circumstances are advised to draw the attention of the applicant to the relevant provisions of the 1979 Act.

61. Where, however, planning permission is being granted for development which might affect a monument which has not been scheduled, or which might affect land in an area which is considered to be of archaeological interest but which has not been formally designated as such under section 33 of the 1979 Act, the local planning authority may wish to impose conditions designed to protect the monument or ensure that access is given to archaeologists during the course of the carrying out of the permitted operations, provided that the requirements of the condition are reasonable in all the circumstances of the case (Models 37 and 38).

Maintenance Conditions

Maintenance conditions

62. A condition may be imposed, where appropriate, requiring some feature of a development to be *retained*—car parking spaces, for example, or an area of open space in a housing scheme (a better solution, however, is that adopted in Models 18 and 19). A condition requiring something to be *maintained*, in the sense of being kept in good repair or in a prescribed manner, should be imposed only when the local planning authority are fully satisfied that the requirement is both relevant to the development which is being permitted, reasonable in its effects, and sufficiently precise in its terms to be readily enforceable. *Maintenance* conditions should not normally be imposed when granting permission for the erection of buildings, or for works other than works of a continuing nature such as minerals extraction.

Conditions Requiring a Consideration for the Grant of Permission

Planning gain

63. No payment of money or other consideration can be required when granting a permission or any other kind of consent required by a statute, except where there is specific statutory authority. Conditions requiring, for instance, the cession of land for road improvements or for open space, or

requiring the developer to contribute money towards the provision of public car parking facilities, should accordingly not be attached to planning permissions. Similarly, permission cannot be granted subject to a condition that the applicant enters into an agreement under Section 52 of the Act or other powers. However, conditions may in some cases reasonably be imposed to oblige developers to carry out works, eg provision of an access road, which are directly designed to facilitate the development. Further advice on this and on agreements with developers to cover such matters is given in "Planning Gain: Obligations and benefits which extend beyond the development for which planning permission has been sought" (Circular DOE 22/83, WO 46/83).

Conditions Altering the Nature of the Development

Modifying proposed development

64. If some feature of a proposed development, or the lack of it, is unacceptable in planning terms, the best course will often be for the applicant to be invited to modify the application (if the modification is substantial, of course, a fresh application will be needed). It may however, depending on the case, be quicker and easier for the local planning authority to impose a condition modifying the development permitted in some way. The precise course of action will normally emerge during discussion with the applicant. A condition modifying the development, however, cannot be imposed if it would make the development permitted substantially different from that comprised in the application. It would thus be legitimate to require by condition that a factory proposal, for example, should include necessary car parking facilities, but wrong to grant permission for a development consisting of houses and shops subject to a condition that houses be substituted for the shops. Whether a modification would amount to substantial difference will depend upon the circumstances of the case, but a useful test will be whether it would so change the proposal that those interested in it would wish to comment on the modification.

REGULATION AFTER DEVELOPMENT

65. Conditions which will remain in force after the development has been carried out always need particular care. They can place onerous and permanent restrictions on what can be done with the premises affected, and they should therefore not be imposed without scrupulous weighing of the balance of advantage. The following paragraphs give more detailed guidance.

Conditions Restricting Permitted Development or Otherwise Restricting use

Restrictions on use or permitted development

66. It is possible to impose conditions to restrict further development which would normally be permitted by a development order, or to restrict changes of use which would not be regarded as development (whether because the change is not a "material" change within the terms of Section 22(1) of the Act, or by reason of Section 22(2) and the provisions of the Town and Country Planning (Use Classes) Order). Changes of use can be restricted either by prohibiting any change from the use permitted or by precluding specific alternative uses (see Models 33 and 34 and paragraph 70

below). It should be noted, however, that a condition restricting changes of use will not restrict ancillary or incidental activities unless it so specifies; on this see also paragraph 71 below.

Presumption against such restrictions

67. Both development orders and the Use Classes Order, however, are designed to give or confirm a freedom from detailed control which will be acceptable in the great majority of cases. There must therefore always be a general presumption against limiting their application in a particular case, and it would be contrary to the general principles of control for an authority to prevent such permitted development or other changes of use by the widespread imposition of conditions.

68. There may however, occasionally be circumstances where such a condition can be justified—perhaps restricting permitted development under Class II.1 of the General Development Order so as to preserve an exceptionally attractive open plan estate free of fences, or under Class I.1 so as to avoid overdevelopment by extensions to dwellinghouses in an area of housing at unusually high density; or restricting changes of use so as to prevent the use of large retail premises as a food or convenience goods supermarket where such a use might generate an unacceptable level of additional traffic, or so as to limit the storage of hazardous substances in a warehouse.

Specific conditions better than general ones

69. Because of the general presumption against such restrictions on permitted development or on changes of use which are not development, it will always be necessary to look carefully at the planning reasons for any restriction, and to ensure that the condition imposed is no more onerous than can be justified (it may be helpful to refer to paragraph 31 above). It would not be right to use a condition restricting uses where an alternative, more specific, condition would achieve the same end (for example, where it is necessary to restrict the volume of noise emitted from an industrial site, and a condition addressing the problem expressly can be used—see Models 6, 7 and 9—that condition should be imposed, rather than one restricting the permitted uses). Scrupulous care in the giving of proper adequate and intelligible reasons for imposing conditions (see paragraph 8 above) can help authorities to ensure that the conditions they impose are not more onerous than is necessary to achieve their objective.

Restrictions on use

70. It will be preferable if a condition designed to restrict changes of use can be drafted so as to prohibit a change to a particular unacceptable use or uses (provided the list does not become too long), as in Model 34 in Appendix A, rather than in terms which prevent any change of use at all; but in many cases a condition confining the use to the use permitted (Model 33) may be necessary. Some conditions restricting use may give rise to a liability to pay compensation (see paragraph 5 above).

Ancillary uses

71. Conditions are sometimes imposed restricting ancillary or incidental activities. Conditions of this kind can be burdensome to some technologically advanced industries where there may be a need for higher than normal levels of ancillary office research or storage uses, or for short-term changes in uses, or the balance of uses, which would not normally be material changes of use involving development. Such conditions should

therefore not normally be imposed on permissions for manufacturing or service industry, except where they are designed to preclude or regulate activities giving rise to hazard, noise or offensive emissions. Conditions designed to prevent the dominant use of an industrial building being changed to use as an office are unnecessary, as such a change would involve development of the land and thus would require planning permission in any event.

Conditions Restricting the Occupancy of Buildings and Land

Occupancy: general considerations

72. Since planning controls are concerned with the use of land rather than the identity of the user, the question of who is to occupy premises for which permission is to be granted will normally be irrelevant. Conditions restricting occupancy to a particular occupier or class of occupier should only be used when special planning grounds can be demonstrated, and where the alternative would normally be refusal of permission.

Personal permissions

Personal permissions

73. Unless the permission otherwise provides, planning permission runs with the land and it is seldom desirable to provide otherwise. There are occasions, however, where it is proposed exceptionally to grant permission for the use of a building or land for some purpose which would not normally be allowed at the site, simply because there are strong compassionate or other personal grounds for doing so. In such a case the permission may be made subject to a condition that it shall enure only for the benefit of a named person—usually the applicant. A specimen condition is given at Model 24 in Appendix A. This condition will scarcely ever be justified in the case of a permission for the erection of a permanent building.

Occupancy conditions on commercial or industrial property

General undesirability of commercial and industrial occupancy conditions

74. Conditions are sometimes imposed restricting the occupation of commercial or industrial premises to local firms. Where an area of open countryside (eg in a Green Belt) needs to be protected against encroachment, buildings will not become more acceptable because their occupancy is restricted; if the proper course in the light of the policy is to refuse permission, then that course should be followed. Nor will the expansion of a local firm necessarily lead to less pressure for further development (eg housing) than the arrival of a firm from outside. Such conditions can act—undesirably—to protect local businesses against fair competition from outside; if a service, or the employment it generates, is needed in an area, there is no planning reason why it should be provided by one firm rather than another. Conditions of this kind hinder the free movement of industry in response to economic demand; and may lead to offices or factories lying empty for long periods in areas where they could rapidly be put to productive use. The Secretaries of State therefore regard such conditions as in principle undesirable, and deprecate their imposition in any circumstances other than those described in paragraph 75 below.

Exception where occupancy conditions may be appropriate

75. The Secretaries of State accept that there may be circumstances where the need for expansion of a local firm is sufficient to justify a departure from the general restraint policy applying in an area, and that in such a case it

may be essential to ensure that a permission granted under such exceptional circumstances will not be abused. Since such permissions will normally be for the erection of a permanent building, the normal kind of personal condition would not be appropriate in such a case (see paragraph 73 above). It may, however, be reasonable (depending on the circumstances of the case) to impose a condition limiting the occupancy of the building to local firms*, provided that the restriction is imposed for a limited period (10 years is considered to be a suitable maximum), and the extent of the catchment area for potential occupiers is reasonably large (eg the area of the relevant county) (model 31). In order for the requirements to be sufficiently precise to make the condition valid (see paragraph 26 above) it will be necessary to define clearly the class of persons or firms who may occupy the premises. It is unacceptable to attempt to define the class of occupiers by, for example, providing a system of vetting by the local planning authority, or a system whereby the local planning authority will determine whether a vague test (eg "needing to be located in the area") would be satisfied by a particular occupier.

Conditions governing size of unit occupied

76. Conditions requiring that a large commercial or industrial building should be occupied either only as a single unit, or alternatively only in suites not exceeding a certain area of floorspace, represent, in the view of the Secretaries of State, a significant interference with property rights which is likely to inhibit or delay the productive use of the buildings affected. Such conditions therefore should normally be avoided.

Domestic occupancy conditions

Domestic occupancy conditions

77. Subject to the advice about agricultural dwellings in paragraphs 81 and 82 below, if the development of a site for housing is an acceptable use of the land there will seldom be any good reason on land-use planning grounds to restrict the occupancy of those houses to a particular type of person (eg those already living or working in the area, or holidaymakers). To impose such a condition is to draw an artificial and unwarranted distinction between new houses or new conversions and existing houses that are not subject to such restrictions on occupancy or sale. It may deter housebuilders from providing homes for which there is a local demand and building societies from providing mortgage finance. It may also impose hardship on owners who subsequently need to sell. It involves too detailed and onerous an application of development control and too great an interference in the rights of individual ownership. In the view of the Secretaries of State, such conditions should therefore not be imposed save in the most exceptional cases where there are clear and specific circumstances that warrant allowing an individual house (or extension) on a site where development would not normally be permitted.

78. Nothing in this advice should be taken as derogating from that given in paragraphs 3–9 of DOE Circular 12/81 and paragraphs 61/66 of WO Circular 61/81; planning authorities remain urged to encourage the re-use of redundant buildings of historic or architectural merit, whether or not the buildings are statutorily listed, even if it may not be appropriate to define a new residential use tightly by means of an occupancy condition.

*A condition of this type will not be appropriate in relation to small premises of less than about 300 square metres of office floorspace or 500 square metres of industrial floorspace, where occupiers will in any case tend to be of a local character.

"Tied cottage" conditions

79. Where a house is within the curtilage of another building, and the two are in the same occupation, there is likely to be a material change of use if it is proposed to occupy the two buildings separately, so that planning permission would be required for such a proposal even in the absence of a condition; local planning authorities should consider applications for such development sympathetically, since if the need for such a dwelling for the accommodation of an employee, for example, disappears, there will normally be no justification for requiring the building to stand empty or to be demolished. Conditions tying the occupation of dwellings to that of separate buildings (eg requiring a house to be occupied only by a person employed by a nearby garage) should, for similar reasons, be avoided.

Agricultural occupancy conditions

Agricultural dwellings

80. It may happen that the circumstances of a case justify the restriction of occupation of residential accommodation to an agricultural or forestry worker. This may arise in a case where the land is in an area where policies of restraint on development apply (eg Green Belt) but special circumstances (the nature of land-use by the agriculture and forestry industries, and the fact that it is often necessary for a farmer or landowner to provide accommodation for his or her workers near their place of work) make it appropriate to grant planning permission.

81. Where the erection of a house for an agricultural worker is proposed for a site where a house would not normally be permitted, and permission is granted because the house is intended to serve the needs of agriculture, a condition may be imposed requiring that the house be occupied only by a person engaged in agriculture or forestry (Model 32). The condition should never tie the house to occupation by a worker on a particular farm or smallholding. Where an agricultural occupancy condition has been appropriately imposed it will not be appropriate to remove it on a subsequent application unless it is shown that the long-term need for dwellings for agricultural workers, both on the particular farm and in the locality, no longer warrants reserving the house for that purpose.

Temporary Permissions

Temporary permissions

82. Section 30(1) (b) of the Act gives power to impose conditions requiring that a use be discontinued or that buildings or works be removed at the end of a specified period (where permission is granted for the development of the operational land of a statutory undertaker, however, this power does not apply except with the undertaker's consent: section 225(4) of the Act). Conditions of this kind are sometimes confused with conditions which impose a time-limit for the implementation of a permission (paragraphs 42 to 45 above), but they are quite distinct, and different considerations arise in relation to them.

Principles applying to temporary permissions

83. Advice on minerals permissions is given elsewhere. In other cases, in deciding whether a temporary permission is appropriate, three main factors should be taken into account. First, it will rarely be necessary to give a temporary permission to an applicant who wishes to carry out development which conforms with the provisions of the development plan. Next, it is undesirable to impose a condition requiring the demolition after a stated

period of a building that is clearly intended to be permanent. Lastly, the material considerations to which regard must be had in granting any permission are not limited or made different by a decision to make the permission a temporary one. Thus, the reason for granting a temporary permission can never be that a time-limit is necessary because of the effect of the development on the amenities of the area. Where such objections to a development arise they should, if necessary, be met instead by conditions whose requirements will safeguard the amenities. If it is not possible to devise such conditions, and if the damage to amenity cannot be accepted, then the only course open is to refuse permission. These considerations will mean that a temporary permission will normally only be appropriate either where the applicant himself proposes temporary development, or when a trial run is needed in order to assess the effect of the development on the area.

Short-term buildings or uses

84. Where, therefore, a proposal relates to a building or use which the applicant is expected to retain or continue only for a limited period, whether because he has specifically volunteered that intention, or because it is expected that the planning circumstances will change in a particular way at the end of that period, then a temporary permission may be justified. For example, permission might reasonably be granted on an application for the erection of a temporary building to last seven years on land which will be required for road improvements eight or more years hence, although an application to erect a permanent building on the land would normally be refused.

Trial runs

85. Again, where an application is made for permanent permission for a use which may be a "bad neighbour" to existing uses nearby, but there is insufficient evidence to enable the authority to be sure of its character or effect, it might be appropriate to grant a temporary permission in order to give the development a trial run, provided that such a permission would be reasonable having regard to the capital expenditure necessary to carry out the development. However, a temporary permission would not be justified merely because, for example, a building is to be made of wood rather than brick. Nor would a temporary permission be justified on the grounds that, although a particular use, such as a hostel or playgroup, would be acceptable in a certain location, the character of its management may change. A second temporary permission should not normally be granted. A trial period should be set that is sufficiently long for it to be clear by the end of the first permission whether permanent permission or a refusal is the right answer. Usually a second temporary permission will only be justified where highway or redevelopment proposals have been postponed, or in cases of hardship where temporary instead of personal permission has been granted for a change of use.

Restoration of sites

86. If the temporary permission is for development consisting of or including the carrying out of operations, it is important to make provision by condition for the removal of any buildings and works permitted—not merely for the cessation of the use—and for the reinstatement of the land, when the permission expires (Model 28). Where the permission is for temporary use of land as a caravan site, conditions may include a requirement to remove at the expiry of the permission any buildings or structures, such as toilet blocks, erected under Class XXIII of the General Development Order.

Seasonal Use

Holiday caravans and chalets

87. Occasionally it may be acceptable to limit the use of land for a particular purpose to certain seasons of the year. For example, where planning permission is being granted for a caravan site, the local planning authority may think it necessary to impose a condition to ensure that during the winter months the caravans are not occupied and are removed for storage to a particular part of the site or away from the site altogether; a suitable form of condition to secure seasonal use is given in Model 30. Where such a condition is imposed, particular care should be taken to see that the condition allows a reasonable period of use of the caravans in each year. A similar approach may be taken where it is necessary to prevent the permanent residential use of holiday chalets which by the character of their construction or design are unsuitable for continuous occupation.

DEVELOPMENT PLAN POLICIES

Policies about conditions in structure and local plans

88. The Secretaries of State recognise that some local authorities may have adopted development plan policies which may conflict with policies set out in this Circular (notably, for some authorities in England, with the policies set out in paragraphs 74–75 of this Annex). Those authorities are invited to examine any such policies with a view to resolving any inconsistencies with the policy here stated.

SUGGESTED MODELS OF ACCEPTABLE CONDITIONS FOR USE IN APPROPRIATE CIRCUMSTANCES

Notes

1. No condition should be imposed unless, having regard to the circumstances of each case, it meets the tests set out in the Annex to this Circular. The conditions set out below are only models, and may need adaptation to the circumstances of particular cases.

2. This list is not exhaustive, and it will be possible to word many acceptable conditions to meet planning problems which are not mentioned here.

3. Model reasons for the imposition of the conditions shown below cannot be given, as the reasons for imposing conditions will vary in each case, depending on its circumstances.

4. Entries [thus] are words in the models which will commonly need variation, or alternative wordings; entries [*thus*] are descriptions of what is to be inserted in a model; entries *thus* are explanatory notes. A reference to (*paragraph 11*) refers to paragraph 11 of the Annex to this Circular.

Outline Permissions

1. Approval of the details of the siting, design and external appearance of the building[s], the means of access thereto and the landscaping of the site (hereinafter called "the reserved matters") shall be obtained from the local planning authority *(paragraph 36).*

Appropriate in its entirety only where the outline application contained details of none of the items described as "reserved matters" in Article 2 of the Town and Country Planning General Development Order 1977.

Time Limits

2. Application for approval of the reserved matters shall be made to the local planning authority before the expiration of [three] years from the date of this permission *(paragraphs 44–45 and 49).*

3. The development hereby permitted shall be begun before the expiration of [five] years from the date of this permission.

In the case of full permissions—see paragraphs 43 and 45.

4. The development hereby permitted shall be begun either before the expiration of [five] years from the date of this permission, or before the expiration of [two] years from the date of approval of the last of the reserved matters to be approved, whichever is the later.

In the case of outline permissions—see paragraphs 44 and 45.

Noise

5. . . . . [*activities*] shall not take place anywhere on the site except within . . . . . building[s].

The condition should describe precisely the activities to be controlled as well as the particular building(s) in which they are to take place.

6. The building shall be so [constructed/adapted] as to provide sound attenuation against internally generated noise of not less than . . . . . dB averaged over the frequency range 100 to 3150 Hz.

7. Noise emitted from the site shall not exceed [A]dB expressed as a [B] minute/hour L_{Aeq} between [C] and [C] hours Monday to Friday and [A]dB expressed as a [B] minute/hour L_{Aeq} at any other time, as measured on the [D] boundary [boundaries] of the site/at point[s] [E].

Specify: A – noise level
B – period
C – times
D – boundary (boundaries)
E – points.

8. [No [*specified machinery*] shall be operated on the premises] before . . . . . am on weekdays and. . . . . am on Saturdays nor after. . . . . pm on weekdays and. . . . . pm on Saturdays [nor at any time on Sundays or bank holidays].

9. Before [any] [*specified*] plant and machinery is used on the premises, it shall be enclosed with sound-insulating material in accordance with a scheme to be agreed with the local planning authority.

This condition might be varied where the need was to secure the satisfactory mounting of the machinery to prevent conducted noise and vibration. Advice should be appended to the permission, indicating the attenuation aimed at.

10. Development shall not begin until a scheme for protecting the proposed dwellings from noise from the . . . . . road has been submitted to and approved by the local planning authority; and all works which form part of the scheme shall be completed before any of the permitted dwellings is occupied.

Authorities should give applicants guidance on the extent of noise attenuation to be aimed at within or around the dwellings, so as to provide precise guidelines for the scheme to be submitted.

11. Aircraft shall not take off or land except between the hours of. . . . . and . . . . . .

Accesses

12. Means of vehicular access to the permitted building shall be from . . . . . .Road only.

13. The building shall not be occupied until a means of vehicular access has been constructed in accordance with the approved plans.

14. Development shall not begin until details of the junction between the proposed service road and the highway have been approved by the local planning authority; and the building shall not be occupied until that junction has been constructed in accordance with the approved details.

15. No structure or erection exceeding . . . . . metres in height shall be placed to the [east] of a line from . . . . . to . . . . . [as shown on the plan attached hereto].

To preserve sight lines at a junction.

Service Roads

16. No [dwelling] shall be occupied until that part of the service road which provides access to it has been constructed in accordance with the approved plans *(paragraph 56).*

17. No [dwelling] shall be occupied until space has been laid out within the site [in accordance with the plan attached] for [*number*] cars to be parked [and for the loading and unloading of [*number*] vehicles] [and for vehicles to turn so that they may enter and leave the site in forward gear]. **Parking**

18. The building shall not be occupied until the area shown . . . . . on the plan attached hereto has been drained and surfaced [*or other steps as may be specified*], and that area shall not thereafter be used for any purpose other than the parking of vehicles.

19. The building shall not be occupied until the area shown . . . . . on the plan attached hereto has been laid out in accordance with [*specify relevant plan or drawing*], and that area shall not thereafter be used for any purpose other than as a play area. **Play areas**

20. No development shall take place until there has been submitted to and approved by the local planning authority a scheme of landscaping, which shall include indications of all existing trees and hedgerows on the land, and details of any to be retained, together with measures for their protection in the course of development *(paragraphs 40 and 41)*. **Landscaping**

21. All planting, seeding or turfing comprised in the approved details of landscaping shall be carried out in the first planting and seeding seasons following the occupation of the buildings or the completion of the development, whichever is the sooner; and any trees or plants which within a period of 5 years from the completion of the development die, are removed or become seriously damaged or diseased shall be replaced in the next planting season with others of similar size and species, unless the local planning authority gives written consent to any variation *(paragraphs 40 and 41)*.

22. [Scrap] material shall not be stacked or deposited to a height exceeding . . . . . metres. **Storage**

Where open air storage is permitted.

23. No [timber] [propane or butane gas] shall be stored within . . . . metres of the [*specified*] boundary of the site.

Where necessary to avoid a fire hazard.

24. The use hereby permitted shall be carried on only by. . . . . (*paragraph 73*). **Personal Permissions**

25. None of the dwellings shall be occupied until the [sewage disposal] [drainage] works have been completed in accordance with the submitted plans. **Drainage**

26. None of the dwellings shall be occupied until works for the disposal of sewage have been provided on the site to serve the development hereby permitted, in accordance with details to be submitted to and approved by the local planning authority.

It may be necessary for the local planning authority to consult the water authority about the sewage disposal arrangements but this should not form part of any condition.

27. Development shall not begin until drainage works have been carried out in accordance with details to be submitted to and approved by the local planning authority.

Temporary Permission: Reinstatement

28. [The building hereby permitted shall be removed] [The use hereby permitted shall be discontinued] and the land restored to its former condition on or before . . . . . [*date*] *(paragraph 86).*

An agreed note showing the condition of the site before works begin should be attached to a permission granted subject to this condition.

Staging of Development

29. The works comprised in [*specified part*] of the development hereby permitted shall not be commenced before the works comprised in [*specified part*] are completed.

Where a proposal involves a number of separate parts, eg 100 houses on site A, 10 shops and a car park on site B, and 100 houses on site C, it may be desirable to prescribe by condition the order in which—but not the time when—the parts shall be carried out (paragraph 52).

Caravans: Seasonal Sites

30. [No caravan on the site shall be occupied] [No caravan shall remain on the site] between [31st October] in any one year and [1st March] in the succeeding year *(paragraph 87).*

Commercial or Industrial Building: Limitation on Occupancy

31. Until . . . . . [*normally not more than 10 years ahead*] the premises shall be occupied only by a person, firm, company or other organisation which was, immediately prior to occupying the accommodation to which this permission relates, in occupation for at least [two] years of premises within the County of . . . . . used as a [general or light industrial building] [warehouse] [office] *(paragraphs 74–75).*

This condition needs to be supported by restraint policies in the development plan.

Agricultural Workers' Condition

32. The occupation of the dwelling shall be limited to a person solely or mainly employed, or last employed, in the locality in agriculture as defined in section 290 of the Town and Country Planning Act 1971, or in forestry, or a dependant of such a person residing with him or her, or a widow or widower of such a person *(paragraphs 80 and 81).*

Restriction on Use

33. The premises shall be used for . . . . . and for no other purpose (including any other purpose in Class . . . . . of the Schedule to the Town and Country Planning (Use Classes) Order 1972, or in any provision equivalent to that Class in any statutory instrument revoking and re-enacting that Order) *(paragraphs 66–70).*

34. The premises shall not be used for the sale of food other than confectionery *(paragraphs 66–70).*

To prevent eg a retail DIY warehouse from being used as a food supermarket.

Restrictions on Permitted Development

35. Notwithstanding the provisions of the Town and Country Planning General Development Order 1977 (or any order revoking and re-enacting that Order), no garages shall be erected [other than those expressly authorised by this permission] *(paragraphs 66–69).*

36. Notwithstanding the provisions of the Town and Country Planning General Development Order 1977 (or any order revoking and re-enacting that Order), no fences, gates or walls shall be erected within the curtilage of any dwellinghouse forward of any wall of that dwellinghouse which fronts onto a road *(paragraphs 66–69).*

Where there is sufficient merit in an open plan housing layout to justify control of front fencing.

Sites of archaeological interest (not scheduled or designated under 1979 Act)

37. No development shall take place until fencing has been erected, in a manner to be agreed with the local planning authority, about [*insert name of monument*]; and no works shall take place within the area inside that fencing without the consent of the local planning authority *(paragraphs 60–61).*

38. The developer shall afford access at all reasonable times to any archaeologist nominated by the local planning authority, and shall allow him to observe the excavations and record items of interest and finds (*paragraphs 60–61).*

Conditions should not require work to be held up while archaeological investigation takes place, though some developers may be willing to give such facilities.

CONDITIONS WHICH ARE UNACCEPTABLE

Conditions of the following kinds are NOT acceptable (guidance on the reasons for this is given in the Annex above; references to the relevant paragraphs of the Annex are given in these examples):

1. to require that a development shall be *completed* within a time limit (paragraph 50 of the Annex above).

2. to require that means of access shall be set back and splayed in agreement with the local highway authority, when the latter are a third party (paragraph 33).

3. to require that development shall not be carried out until, for example, five years from the date of permission; if any part of the development is premature, the proper course is to refuse permission for it. It is not acceptable to grant permission on condition that the right to carry out the development is deferred until some future date (paragraph 53).

4. to require that no advertisements shall be displayed on the site. It is preferable for control of outdoor advertising to be exercised by means of the relevant provision in the Town and Country Planning (Control of Advertisements) Regulations 1984. Planning conditions should not normally be used to control advertisements (paragraph 17).

5. to require that the land in front of the buildings shall be made available for future road widening. This condition improperly requires land to be made available as part of the highway (paragraph 58).

6. to require that a lay-by shall be constructed and thereafter assigned to the highway authority (paragraph 58).

7. to require that flats, for example, should not be occupied by more than ..... persons. This condition is unsatisfactory in enforcement terms since it would be difficult to monitor and require an intolerable degree of supervision (paragraphs 23 and 24).

8. to require that loading and unloading, and the parking of vehicles, shall not take place on the highway at the front of the premises.This condition purports to exercise control in respect of a public highway, which is not under the control of the applicant (paragraph 33).

9. to require that the site shall be kept tidy at all times. This is vague and likely to be incapable of enforcement (paragraph 26).

10. to require that the applicants shall construct an ancillary road *as and when required by the local planning authority* (paragraph 26).

11. to require that the developer shall comply with the bylaws and general statutory provisions in force in the district. This condition is unrelated to planning control (paragraph 16)..

12. to require that furnishings, eg the curtaining of a stage, shall be of a fireproof material. Fireproofing of furnishings of buildings is not a planning matter (paragraph 16).

13. to require that aircraft should only arrive or depart at an aerodrome on specified air traffic routes. This condition deals with an activity which is regulated by quite different statutory provisions and may well be unenforceable if the aerodrome developer is not responsible for air traffic control (paragraphs 18 and 33).

14. to require that a shop window display be *maintained in an attractive condition*. Such a condition provides no certain and objective criterion by which it could be enforced (paragraphs 26 and 62).

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A26. FLOOD ENQUIRIES

LDCON5
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall M)

Macro Author : C Croot 28/3/94

Our ref:
Your ref:

Date:

Name and Address

Dear ***Sir(s)/Madam***

FLOOD RISK AREAS

Thank you for your letter of (1)

The Authority holds a significant amount of data and information relating to flooding. Although some of this is in a form which can be readily copied, this is not generally the case. Furthermore, in many instances it would require some interpretation to be of value to you. For some areas there is data synthesised from models which in particular requires careful consideration.

In general, the only comprehensive survey of those areas which may be susceptible to flooding was complied in the late 1970's under the (then) Water Act 1973 and now superseded by Section 105(2) of the Water Resources Act 1991. The survey identified land in the flood plain, which is defined as those areas which have been known to have been subject to inundation by flooding from rivers or the sea or by overtopping or breaching of river flood banks and sea defences.

It is emphasised the survey was not definitive of the land or area which might be flooded. Moreover, it was not always practicable to show flood plains within a 50 metre margin of either side of a river or stream. It must be assumed, therefore, in referring to the maps in the survey report that a flood plain can exist within these limits even though it is not shown. Comprehensive updating of the survey has not generally been carried out.

Copies of this and the other information referred to are available for reference at Regional Headquarters and all Area Offices (list attached). If you wish to make reference to this information, please telephone to make an appointment.

Cont/d...

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Optional Paragraph:
I can, however, confirm that the particular site in question is on the flood plain and flooding may occur
1 = but details are not available.
2 = at an estimated average frequency of 1 in (2) years.
3 = and the site may have been flooded in the last major flood in (2) years.

Yours faithfully

Regional Flood Defence Manager

Please ask for:

Enc

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A27. STANDARD LETTERS

LDCON1
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall A {Option: Letter or Memo})

Macro Author : C Croot 25/3/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

Option: Heading

Thank you for your application for Consent dated (1) in connection with the above.

I am pleased to confirm that your proposals, as shown on Drawing numbers (2) are acceptable to the Authority from the land drainage aspect.

I enclose Consent Number (3) issued under Section (4) of the

Option:
1 = Water Resources Act 1991
2 = Land Drainage Act 1976
3 = Land Drainage Act 1991

for the works.

Optional Paragraph:
Would you please contact my !!Job Title!! !!Mr, Mrs, Miss or Ms!! !!Contact!! on !!Area and Telephone Number!! Ext !!Extension Number!! when work commences on site.

Please note that this Consent does not absolve you from the need to obtain any other consents, licences or permissions required prior to commencing the work.

Yours faithfully

Regional Flood Defence Manager

Please ask for:

Enc

EXAMPLE

LDCON2
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall B {Option: Letter or Memo})

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

APPLICATION FOR LAND DRAINAGE CONSENT
FOR
AT

Thank you for your application for Land Drainage Consent dated (1)
received on (2)

I regret to inform you that the details supplied with the application are insufficient in the following respects to determine the consent:-

Option: Type Additional Information if required

Until the above deficiencies are rectified your application is incomplete and consent is hereby REFUSED at this stage. Please note that the two month determination period for consents under the Land Drainage Legislation will not commence until the above requirements are received at this office.

Yours faithfully

for Area Flood Defence Manager

Please ask for:

Enc

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LDCON3 ***(Option: Planning Application Letter)***
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall C)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

Option: Heading

I have recently been consulted by the Planning Authority in connection with your Planning Application at the above site.

Your proposal to: (1) requires the formal Consent of the National Rivers Authority under Section (2) of the

Option:
1 = Water Resources Act 1991
2 = Land Drainage Act 1976
3 = Land Drainage Act 1991

and I enclose an application form and guidance notes.

Yours faithfully

for Area Flood Defence Manager

Please ask for:

Enc

EXAMPLE

LDCON3 *(Option: Application Consideration Letter)*
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall D)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear ***Sir(s)/Madam***

Option:
1 = WATER RESOURCES ACT 1991
2 = LAND DRAINAGE ACT 1991

I acknowledge receipt of your letter dated (1) applying for Land Drainage Consent.

Your application is being considered and I will write to you further in due course.

Yours faithfully

for Area Flood Defence Manager

Please ask for:

LDCON3 ***(Option: Tipping Letter)***
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall F)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

Option: Heading

During a recent site visit my River Inspector noticed that some material had been tipped

Option:
1 = next to
2 = into

the (1) on your land.

The watercourse is a statutory Main River and this Authority has powers to control any work which may affect the bed, banks, flood plain or flow to the watercourse.

The tipping which has been carried out is considered to be detrimental to the watercourse and must be removed immediately. No further tipping is to take place.

Optional Paragraph
You are also advised that the disposal of waste material could constitute an offence under the Water Act 1989 and that such pollution could lead to prosecution.

I enclose a copy of the Land Drainage Byelaws and draw your attention to Byelaws No. 11 and 21 in particular and to the Penalty Note inside the back cover.

A further inspection will take place on or after 14 days from the date of this letter.

LDCON3 *(Option: Tipping Letter continued)*
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall F)

Macro Author : C Croot 7/4/94

Should you wish to discuss this matter, or require further details please contact
(2)

Yours faithfully

for Area Flood Defence Manager

Please ask for:

Enc

EXAMPLE

LDCON3 *(Option: Application-Receipt Letter)*
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall E)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

Option: Heading

I acknowledge receipt of your letter dated (1) concerning the above,

Option:
1 = which is receiving attention.
2 = the contents of which have been noted.

Yours faithfully

for Area Flood Defence Manager

Please ask for:

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EXAMPLE

LDCON3 ***(Option: Forwarded Letter)***
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall H)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear ***Sir(s)/Madam***

Option: Heading

I acknowledge receipt of your letter dated (1) concerning the above, addressed to the (2) Area Office at (3)

The site is within the area administered from our (4) Area Office and, therefore, your letter has been forwarded to that office.

The address is as follows:

Yours faithfully

for Area Flood Defence Manager

Please ask for:

Enc

EXAMPLE

LDCON4 ***(Option: Application for Works Area Letter)***
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall I)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

APPLICATION FOR WORKS IN RIVERS

Please find enclosed an application form for consent to carry out works in rivers. When completed please return the form together with details of your application to your local Area Office at the address given below.

Notes are included for your guidance. Please note that a fee is not required for this particular application and that all references to charges on the form and notes should be ignored.

If you require any further information please contact the Area Office.

Yours faithfully

Area Flood Defence Manager

Please ask for:

Enc

LDCON4 *(Option: Application for Works Solihull Letter)*
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall J)
Macro Author : C Croot 1/8/94

Our ref:
Your ref:

Date:

Dear Sir

APPLICATION FOR WORKS IN RIVERS

Please find enclosed an application form for consent to carry out works in rivers. When completed please return the form together with details of your application and the appropriate fee to the following address:-

Optional Address:

1 =	*National Rivers Authority, PO Box 299, Shrewsbury, SY3 8WD*
2 =	*National Rivers Authority, PO Box 36, Riversmeet House, Newtown Industrial Estate, Northway Lane, Tewkesbury, Gloucestershire, GL20 8JG*
3 =	*National Rivers Authority, PO Box 4, Lichfield, Staffordshire, WS13 8YU*
4 =	*National Rivers Authority, PO Box 99, South PDO, Nottingham, NG2 5FD*

Notes are included for your guidance. Cheques should be made payable to "National Rivers Authority".

Any technical enquiries should be addressed to your local Area Office at the address given below.

Yours faithfully

Area Flood Defence Manager

Please ask for:

Enc

EXAMPLE

LDCON4 *(Option: Application for Consent Area Letter)*
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall L)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

Option: Heading Line 1
APPLICATION FOR CONSENT UNDER THE

Option:
1 = WATER RESOURCES ACT 1991
2 = LAND DRAINAGE ACT 1976
3 = LAND DRAINAGE ACT 1991

I refer to your

Option:
1 = letter
2 = fax
3 = telephone call

of (1) in connection with the above.

I confirm that your proposals require the prior Consent of this Authority under the above Act and enclose an Application form, together with guidance notes.

Please return the completed form to the following address:-

National Rivers Authority
PO Box 1461
550 Streetsbrook Road
Solihull
B91 1QT

All cheques should be made payable to "National Rivers Authority".

LDCON4 *(Option: Application for Consent Area Letter continued)*
(S Russell - Flood Defence)
(Previously Reglos 1 - Recall L)

Macro Author : C Croot 7/4/94

If you require any further information please contact my (2) , (3)
an the telephone number quoted below.

Yours faithfully

Area Flood Defence Manager

Please ask for:
Enc

EXAMPLE

LDCON4 *(Option: Application for Consent Area Letter)*
(S Russell - Flood Defence)
(Previously Regios 1 - Recall K)

Macro Author : C Croot 7/4/94

Our ref:
Your ref:

Date:

Name and Address

Dear *Sir(s)/Madam*

Option: Heading Line 1
APPLICATION FOR CONSENT UNDER THE

Option:
1 = WATER RESOURCES ACT 1991
2 = LAND DRAINAGE ACT 1976
3 = LAND DRAINAGE ACT 1991

I refer to your

Option:
1 = letter
2 = fax
3 = telephone call

of (1) in connection with the above.

I confirm that your proposals require the prior Consent of this Authority under the above Act and enclose an Application form, together with guidance notes, for you to complete and submit to this office.

In this case a fee is not required, therefore, all references to charges on the form and notes can be ignored.

If you require any further information please contact my (2) (3) at the address quoted below.

Yours faithfully

Area Flood Defence Manager

Please ask for:

Enc

A28. NATIVE TREES & SHRUBBS

TREES NATIVE IN THE BRITISH ISLES

Yew	Taxus baccata	
Juniper	Juniperus communis	Native in chalk & limestone
Scots Pine	Pinus sylvestris	Native in Scotland
Black Poplar	Populus nigra var betulifolia	
Aspen	Populus tremula	
Bay Willow	Salix pentandra	Native in N Wales
White Willow	Salix alba	Numerous non native willow
Crack Willow	Salix fragilis	species occur in Britain.
Goat Willow	Salix caprea	Establishment should be by
Grey Willow	Salix cinerea	cuttings from local sources.
		See also shrubs.
Silver Birch	Betula pendula	
Downy Birch	Betula pubescens	
Common Alder	Alnus glutinosa	
Hornbeam	Carpinus betulas	Native S E England
Hazel	Corylus avellana	
Beech	Fagus sylvatica	
English Oak	Quercus robur	
Sessile Oak	Quercus petraea	
Wych Elm	Ulmus glabra	
English Elm	Ulmus procera	
Hawthorn	Crataegus monogyna	
Midland Hawthorn	Crataegus laevigata	
Rowan	Sorbus aucuparia	15 other spp of Sorbus are native
Wild Service Tree	Sorbus torminalis	to Britain They are very rare and
Whitebeam	Sorbus aria	localised and should not be
		planted.
Wild Pear	Pyrus pyraster	Doubtfully native
Crab Apple	Malus sylvestris	
Wild Cherry	Prunus avium	
Bird Cherry	Prunus padus	
Box	Buxus sempervirens	Native on chalk in S E England
Holly	Ilex aquifolium	
Field-Maple	Acer campestre	
Large Leaved Lime	Tilia platyphyllos	Native on limestone
Small Leaved Lime	Tilia cordata	
Strawberry Tree	Arbutus unedo	Native in Ireland only
Ash	Fraxinus excelsior	

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SHRUBS NATIVE IN THE BRITISH ISLES

Travellers Joy	Clematis vitalba	Climber
Barberry	Berberis vulgaris	Should not be planted because of wheat-rust
Spindle	Euonymus europaeus	
Buckthorn	Rhamnus catharticus	Calcareous soils only
Alder Buckthorn	Frangula alnus	
Broom	Cytisus scoparius	
Petty Whin	Genista anglica	Rare
Gorse	Ulex europaeus	
Western Gorse	Ulex gallii	
Bramble	Rubus fruticosus spp	Other - rare - Rubus spp omitted
Raspberry	Rubus idaeus	
Field Rose	Rosa arvensis	
Dog Rose	Rosa canina spp	Other Dog Rose spp omitted
Blackthorn	Prunus spinosa	
Red Currant	Ribes rubrum	Other - rare - Ribes spp omitted
Black Currant	Ribes nigrum	
Gooseberry	Ribes uva-crispa	
Mezereon	Daphne mezereum	Rare
Spurge Laurel	Daphne laureola	
Sea Buckthorn	Hippophae rhamnoides	Sea coast - should not generally be planted
Dogwood	Cornus sanguinea	
Ivy	Hedera helix	Climber - should not generally be planted
Bog Myrtle	Myrica gale	Wet peat soils only
Willows	Salix spp	Several spp of shrub willows occur in Britain. Establishment should be by cuttings from local sources.
Bilberry	Vaccinium myrtillus	Acid soils only
Heather	Calluna vulgaris	
Cross Leaved Heath	Erica tetralix	Wet Heaths
Bell Heather	Erica cinerea	Dry Heaths
Wild Privet	Ligustrum vulgare	
Elder	Sambucus nigra	
Wayfaring Tree	Viburnum lantana	Southern Britain only
Guelder Rose	Viburnum opulus	
Honeysuckle	Lonicera periclymenum	

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A29. HYDROPOWER

HYDROPOWER DEVELOPMENTS AND THE NATIONAL RIVERS AUTHORITY

NRA

National Rivers Authority

INTRODUCTION

Hydropower is a proven renewable source of energy offering a diverse and secure energy supply which should reduce emissions to the environment.

Additionally, hydropower developments can give direct benefit to the water environment. The Government's policy is to stimulate the exploitation and development of renewable energy sources wherever they have prospects of being economically attractive and environmentally acceptable. The NRA is keen to support this policy through the application of its powers and duties.

Hydropower schemes offer a clean source of electrical energy with no production of pollutant emissions. A scheme with a capacity of 100kW would typically supply enough electricity for about 50 homes. If this displaced electricity generated by currently operating fossil-fired power stations, it would save the emission of around 350 tonnes of carbon dioxide, 5 tonnes of sulphur dioxide and 1½ tonnes of nitrogen oxides per year.

In England and Wales local planning authorities and the NRA have responsibilities associated with hydropower developments.

Information about planning aspects of renewable energy is available in the form of a Planning Policy Guidance Note on Renewable Energy (PPG 22 issued by the Department of the Environment and the Welsh Office, available from HMSO). The role of the NRA for non-tidal schemes is outlined here.

Hydropower is a legitimate use of water resources and consequently the NRA will take such use into account in its management of water resources. It is not the only use and therefore hydropower requirements need to be considered alongside other uses of water. They can have significant local impacts on the water environment, both positive and negative. This leaflet should help those with an interest in developing potential hydropower sites to understand the responsibilities of the NRA and the particular issues which need to be taken into account so that an acceptable scheme is developed.

THE NRA'S RESPONSIBILITIES

The NRA is responsible for the management and protection of the water environment. In respect of hydropower developments these responsibilities include the provision of advice to local planning authorities and issuing licences and consents under its statutory powers. The NRA and local planning authority should be approached at an early stage with any proposal for a hydropower scheme so that advice may be given on aspects of the proposal.

The NRA will take the following factors into account when considering a potential hydropower development.

WATER RESOURCES

The NRA issues licences as a means of managing uses of water resources. It has duties laid down by law in dealing with applications for such licences and there are rights of appeal.

Although the NRA is supportive of initiatives to develop renewable energy sources there will be occasions when the NRA will find it necessary to oppose specific proposals due to unacceptable impacts upon the aquatic environment or on the rights of existing users of the inland water.

IMPOUNDING LICENCES

An impounding licence will be required for schemes involving the construction or alteration of impounding works such as dams and weirs. An impounding licence allows the level and location of any weir to be regulated in order to ensure, for example, that there is adequate water available for downstream uses.

ABSTRACTION LICENCES

Hydropower schemes which include a physical abstraction from the river by pipe or leat require an abstraction licence. Exceptions include cases where the installation is built into a weir or is directly in line with a river flow, where there is no diversion of flow. Even where an abstraction licence is not required, the use of water for hydropower is recognised and, once established, the NRA must have regard to its existence in granting further licences. All holders of existing rights on a river have to be considered before licences are issued to any new applicants. Arrangements for ensuring that flows downstream are not disrupted to the detriment of existing downstream users and river needs will be of particular interest when a new hydropower scheme is being considered.

The water requirement of a hydropower scheme may be large; sometimes several times the dry weather flow of the river. Although water used for hydropower generation is non consumptive and can be used again downstream, the

granting of a licence has implications for upstream development. Normally, once a licence is granted, the holder is entitled to expect that subsequent licences will not reduce the available volume of water. Due to the large volumes of water normally reserved for hydropower, this would often mean that no further upstream abstractions could be authorised. In such cases, rather than decline a hydropower abstraction, it is the policy of the NRA to include provisions to permit further upstream abstractions up to a fixed maximum value. This value would normally be a small proportion of the turbine flow capacity. The average loss of energy production would be small, giving no loss of energy production when flow exceeds turbine capacity.

Infrequently, it may be necessary to make provision to amend how much upstream water can be licensed to other abstractors. Normally this would be achieved by granting a time limited licence and the duration of the licence (perhaps 10 or 20 years) would take account of circumstances associated with the installation, including the investment in the scheme.

ABSTRACTION CHARGES

Abstraction charges comprise a one-off application charge, plus an annually recurring charge. Charges are made in accordance with the annually updated "National Rivers Authority Scheme of Abstraction Charges". For 1993/94 the Application Charge is £100 excluding VAT, whereas the annually recurring charge varies according to NRA region as indicated in the published scheme. In accordance with the legislation, no annual charges are payable for abstractions for hydropower generation where the capacity is not more than 5 megawatts.

RIVER FLOW GAUGING STATIONS

The NRA owns and operates many stations which measure the flow rate or level in rivers. They are used for river management purposes and the NRA will need to satisfy itself that a hydropower scheme will not adversely effect this important NRA activity.

LAND DRAINAGE AND FLOOD DEFENCE

In some cases, a hydropower scheme may affect land drainage and possibly flood defence. The construction, operation or alteration of impoundments may raise upstream or downstream water levels. Even if the changes in level are relatively small they can impair field drainage and increase flood risk. If the river profile is altered, changing channel velocities may affect bank stability. In many cases, land drainage concerns can be overcome by appropriate design.

Once the NRA is satisfied that the design of the impoundment or other channel works will not create or exacerbate land drainage or flood defence problems, a consent will be issued by the NRA under the Land Drainage Act (1991) or Water Resources Act (1991).

WATER QUALITY

Hydropower schemes can be of benefit to water quality in that some types of turbine lead to increased oxygenation of the river which is of benefit to fish. Also, trash screens installed to protect turbines can assist in removing water borne debris.

A potential effect might be where a hydropower scheme prevents adequate dilution in parts of the river system when water is not returned to the channel immediately adjacent to the point of abstraction, or when there are multiple channels and the effect of the hydropower scheme would be to transfer water from one channel to another. In situations where the maintenance of water quality objectives depends on an adequate minimum flow being achieved at all times, specific requirements stipulating minimum discharges will be written into the licence issued by the NRA.

In a few special cases, where there is significant water storage, impounding water will result in increased residence times in the affected reach and this may cause increased plant and algal growth and could result in siltation upstream of the weir. Silting can cause problems if it is cleared by flushing downstream, but physical removal by dredging may be beneficial.

The use of anti-fouling agents or chemicals will be subject to strict control by the NRA.

Statutory Water Quality Objectives (SWQOs) are expected to be introduced progressively from 1994. Part of the process of setting SWQOs is to consider the potential uses of rivers and therefore it will be necessary to take account of the use of hydropower in the setting of these objectives.

PROTECTION OF FISHERIES

The NRA has a duty to maintain and improve fisheries and the prime issue relating to these responsibilities will be to ensure fish a safe passage past the installation. If the hydropower installation is to be at the site of an existing weir which already provides a barrier to migratory fish, the NRA may require the incorporation of an appropriate fish pass.

Where a new impoundment is needed the NRA will consider whether a facility for fish migration is necessary. Where a fish pass is required, priority will need to be given to flow through the pass during the migration season. This is unlikely to have significant impact upon the available flow through the turbine during high flow periods.

Power generators must incorporate appropriate screening to prevent fish being drawn into the turbine system. The NRA will be able to give advice on appropriate screening.

CONSERVATION

The NRA seeks to ensure that the design, construction and operation of works are not harmful to the water environment and that, wherever possible, conservation enhancement features are incorporated. Typical aspects which might attract conservation scrutiny during the environmental impact assessment process are loss of habitat caused by impoundment; downstream river level variation caused by the use of hydropower generators; bank regrading and stabilisation; channel lowering; channel realignment; and the design of in-channel equipment. Visual and landscape aspects need to be given very careful consideration and any archaeological or cultural heritage implications must be taken into account.

These can be particularly important in relation to historic mill sites. Relevant operational issues are the timing of channel works, arrangements for spoil disposal and the opportunities for the incorporation of other conservation features appropriate to the site.

RECREATION

The NRA has a general duty to promote recreational use of all inland and coastal waters. It is necessary to ensure that existing recreational uses or future uses are not compromised. For instance, impoundments may impact on canoeing and bankworks could impact on riverside access for fishing and walking. This aspect should be considered in respect of any proposals and the views of the NRA recreation staff and relevant outside organisations should be sought. Where possible, opportunities to improve or provide for recreation should be sought.

NAVIGATION

The principal inland waters for which the NRA is the navigation authority are the non-tidal Thames and Medway, plus the East Anglian rivers comprising the Great Ouse and Nene systems, Ancholme, Glen, Welland and Stour.

Any proposal to construct hydropower schemes on a navigable waterway must take navigation interests into account, not only in respect of the scheme's impact on river levels but also its effect on general water safety.

LEGISLATIVE BACKGROUND TO THE NRA'S RESPONSIBILITIES

GENERAL

The NRA's responsibilities cover water resources, water quality, pollution control, fisheries, flood defence, land drainage and navigation together with conservation and recreation on water and associated land.

The relevant powers of the NRA are the Water Resources Act 1991 which regulates abstraction from and impounding of rivers and the Land Drainage Act 1976 (as amended by the Consolidation acts of 1991) which also relates to work in river channels, particularly in providing drainage and avoiding flooding. The Water Resources Act 1991 requires the Authority to maintain, improve and develop fisheries, and the Salmon and Freshwater Fisheries Act 1975 contains a number of provisions relating to fish passes.

In carrying out all these duties the Authority is subject to the requirements of Section 16 of the Water Resources Act 1991 which require that it takes due account in all its statutory and operational activities of the need to further the conservation of the aquatic environment and section 2(2) relating to the promotion of recreation and conservation.

The NRA is also required to implement the Code of Practice on Conservation and Recreation approved by the Minister under Section 18 of the Act.

APPEALS

An applicant may appeal against a decision or the lack of a decision on statutory authorisation. The Water Resources Act 1991 makes provision for appeals to the Secretary of State for the Environment.

SUMMARY

Hydropower constitutes a non-polluting source of renewable energy and its further development will assist in reducing harmful gaseous emissions. In support of the Government's policy to enhance the use of renewable energy sources, the NRA encourages the use of hydropower and aims to co-operate with developers in accordance with its duties, powers and available resources. One of the NRA's aims is to manage water resources to achieve the right balance between the need of the environment and those of the abstractors. Therefore it is necessary that the NRA considers the range of potential impacts that may arise from hydropower development, some of which may be significant. These will be considered by the NRA when it is approached about a scheme.

In order to fulfil its duties it is necessary for a promoter to provide the NRA with adequate technical information so that the impact of a proposed scheme may be assessed in terms of water resources, water quality, flood defence, land drainage and the general water environment. Although a wide range of issues need to be taken into account in the promotion of a hydropower development, the NRA will do its utmost to match the level of effort required to the significance of the proposed installation upon the water environment.

The NRA should be contacted at an early stage to discuss whether a proposal is likely to be acceptable and how the necessary information should be prepared so that adequate account can be taken of all relevant factors.

Thanks are due to the DTI, ETSU and the hydropower industry who provided assistance in the preparation of this leaflet.

AUTHORISATION	STATUTORY PROVISION	COMMENT
Abstraction Licence	Water Resources Act 1991 Section 24	Not required for "in river" installations where there is no diversion of flow between channels.
Impounding Licence	Water Resources Act 1991 Section 25	Not required if use is made of existing impounding works without significant alterations.
Land Drainage Consent	Water Resources Act 1991 Section 109 Land Drainage Act 1991 Section 23	Applies to any works affecting main river and to the construction of weirs, dams etc. in non-main river.
Requirement for Fish Pass	Salmon and Freshwater Fisheries Act 1975 Section 9	Required at instigation of NRA if waters are frequented by migratory fish.

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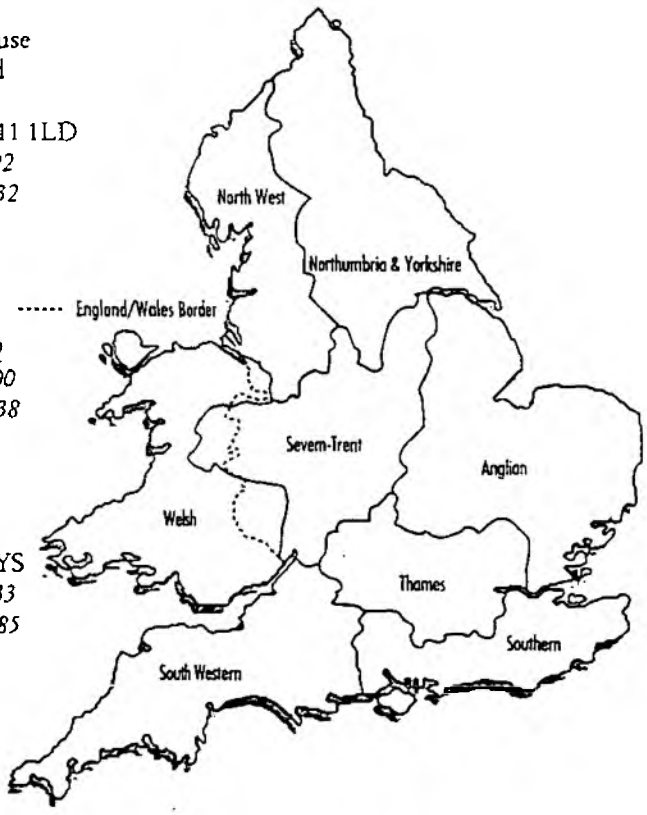

NRA

NATIONAL RIVERS AUTHORITY

HYDROPOWER DEVELOPMENTS

GUIDANCE ON ENVIRONMENTAL INFORMATION REQUIRED

The NRA is responsible for the management and protection of all aspects of the water environment and has a duty to give full consideration to the range of potential impacts that may arise from hydropower development, some of which may be significant.

Adequate technical information will be required in order to assess a hydropower proposal in terms of its effects on water resources, fisheries, conservation, recreation, water quality, flood defence and navigation. In most cases an environmental report in support of any application for statutory authorizations will be required.

This guidance note gives a check list of topics which it may be necessary to cover in such a report and is intended to assist developers in providing the environmental information required by the NRA. The scope of the report required in each case will need to be agreed with the NRA beforehand and developers should contact the appropriate NRA Regional/Area office at an early stage in order to discuss proposals and to receive guidance regarding our requirements. Lack of information may result in delays or refusal of applications. The NRA will wish to seek the minimum amount of information necessary to determine the application and in some cases a brief report may be adequate.

We may be able to assist by providing environmental information which is held by the NRA, e.g. river flow data, for which a charge may be payable.

Developers are also advised to contact the appropriate Planning Authorities in order to discuss requirements for environmental assessments. These may include aspects of the proposals which are not of direct concern to the NRA.

The NRA has published a leaflet entitled " Hydropower Developments and The National Rivers Authority " which gives further general guidance, including a summary of statutory requirements and contact addresses for further information.

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Format of Environmental Information

The NRA will advise the developer regarding the format of the information required, which may vary according to the size of the scheme and location of the site. We recommend that environmental reports are prepared in accordance with good practice for environmental assessment methodology. In particular, we suggest that the following aspects of the proposal are covered:-

-description of the project
-description of the site and it's environment
-hydrological information
-assessment of the effects of structures, abstractions and discharges
-proposed mitigating measures
-risks of accidents and hazardous development
-environmental action programme

Scope of Environmental Information

The following list gives guidance regarding the potential scope of the information which may be required and the assessments of the impact of the proposals which will need to be taken into account in all cases.

Developments will be assessed on a case-by-case basis and the scope of the information required for particular sites should be agreed beforehand with the NRA.

Hydrological Information

The most significant impacts of hydropower schemes arise from the change of flow regime which results from abstraction and/or impounding of water. In order to assess potential effects on the water environment, adequate flow information may be required, including:-

-catchment hydrology: average rainfall,losses,run-off
-hydrometric data, where available
-flow duration curve,mean flows,dry weather flows
-seasonal variation in flows
-assessment of monthly overspills
-reduction in downstream levels
-residual flows downstream of intake needed to safeguard river interests

In considering applications, the NRA will need to ensure that river interests are safeguarded during periods of low flow and that any changes in the higher flow regime are within acceptable limits. Accordingly, licences may include

Cont/d...

conditions which restrict or prohibit operations under certain flow conditions.

Structural details

-design of intake and discharge structures
-impoundment details
-proposed measurement, recording and control arrangements

Water Resources

-survey of existing uses of resources:
within the upstream catchment
between the abstraction and discharge points
-assessment of the effect of the proposal on abstraction rights
-assessment of the effect on gauging sites and flow measuring structures

Fisheries

-impact on movement of fish
-impact on migration of fish
-provision of satisfactory fish passes where fish movement/migration is likely to be impeded
-quantitative assessment of the loss of fish habitat, including spawning/nursery habitat and predicted impact on fish population
-impact of flow changes, including spate reductions, on fish populations between abstraction and discharge points
-impact of changes in flow regime and water quality on fish populations downstream of discharge points
-adequacy of screening of intakes and outfall and provision of bypass channels to minimise ingress of fish and the likelihood of fish passage through turbines
-timing of construction works with regard to spawning/migrating fish

Conservation

Surveys of flora and fauna:-

-river corridor surveys: flora, species of note, habitat, statutory sites, etc.
-tree surveys, including life expectancy of trees
-invertebrate survey : aquatic and riparian
-waterway bird survey
-survey of mammal habitats and data from County Mammal Recorder
-amphibian survey:breeding

Cont/d...

Surveys should be carried during the appropriate season.

Landscape survey:-

-landscape assessment and character
-geomorphological survey
-survey covering geological, palaeontological and physiographic features

Survey of historical features:-

-listed buildings and structures
-planning conservation areas
-scheduled ancient monuments and Sites and Monuments Register

Recreation

Survey of recreation and public access:-

-water rights: access, fishing, mooring
-common rights
-footpaths, fishing pegs, slipways, canoeing
-public safety

Based on the findings of the above surveys, the report should include:-

-an assessment of the impact of the proposals on the features and interests identified
-a description of proposed mitigation measures, for example:-
    preservation of habitats or creation of alternative habitats
    landscaping, screen tree planting
    recording of archaeological sites and finds

Navigation

-survey of navigation rights
-measures proposed to safeguard navigation

Cont/d...

Water Quality

-assessment of the effect on existing effluent discharges into any affected reach
-effects on river classification, statutory water quality objectives, river classification and Environmental Quality Standard compliance
-implications for proposed developments
-implications for quality of water supply
-sediment/suspended solid changes
-inter-river transfers: crop or fish disease transfer, species transfer, pollution transfer
-control measures for use of biocides and anti-fouling preparations
-effect of changes in flow regime on algal growth
-effect of changes in flow regime on siltation
-temperature changes

Flood Defence

-effect of structures on channel capacity, flood plain and flooding problems
-affect of variation in water levels on land drainage
-channel alterations, bank stability, scour and deposition
-impact on existing structures adjacent to the river channel
-impact of changes in flow due to operation
-provisions for " *fail safe* " operations to protect minimum upstream water level
-formal agreements regarding method of operation/water level management
-compliance with local Land Drainage Byelaws

Environmental Monitoring

Where uncertainties exist regarding impact upon the water environment, the proposals should include provision for the developer to undertake a continuing environmental monitoring programme.

A30. DRAINAGE FROM

NRA PROCEDURAL MANUAL

DRAINAGE FROM MOTORWAYS, HIGHWAYS AND ALL OTHER ROADS

SC/CC/014

1. Introduction

These guidance notes apply to motorways, trunk roads and all other roads. For the purpose of the note they are referred to as highways.

This document sets out the NRA's policy for dealing with proposals for new or improved highways. The information requirements for preliminary and detailed consultations and the legislative background are explained. Its principle purpose is to prevent flooding and pollution of controlled waters by specifying appropriate aspects of the design and operation of highways.

2. Pollution Prevention

In the past three decades the disposal of drainage from roads has placed an increasing burden on the aquatic environment, affecting the risks of both flooding and pollution. This is due to the increase in traffic flow and the associated major trunk road construction programme. Roads provide large areas of impermeable surface draining to a single point, discharging either into a watercourse or to soakaways and pose both an increased flood risk and problems related to pollution control.

There is a significant risk of pollution, either as a result of accidental spillage or a result of the enhancement of background levels of contaminants due to the cumulative effects of tyre and brake wear, vehicular emissions, applications of herbicides and the use of de-icing materials. It falls to the NRA to control and minimise, as far as is possible, the polluting effects of these discharges, but they can not be treated in the same fashion as other point discharges. It has to be recognised that there are other, perhaps more important factors involved in the provision of drainage facilities.

The principal concern of the Highway Authority is the safety of road users. To achieve this it is essential to drain the road surface quickly and to prevent the formation of ice. Furthermore, when accidents do occur, the emergency services will have regard to the preservation of life and property at the accident site as a first priority. Therefore, all drainage protection arrangements have to be reasonably fail-safe and straightforward to operate and maintain.

The NRA needs a consistent policy towards Highway Authorities and the Department of Transport in dealing with drainage from highways. However, circumstances will be different for each site and therefore a flexible approach should be adopted to find

the most appropriate method of surface water control which satisfies NRA requirements.

3. Current Legislation

Formal consents may be required under the provisions of the Water Resources Act 1991. Environmental Assessments also may be required under SI 1199 and for SI 1217. Consent for any structures in or adjacent to watercourses which are necessary for the disposal of drainage may be required under the Water Resources Act 1991, Land Drainage Act 1991 and NRA Flood Defence Byelaws.

Section 89(5) of the Water Resources Act 1991 deals specifically with highway drainage:

"A highway authority or other person entitled to keep open a drain by virtue of section 100 of the Highways Act 1980 shall not be guilty of an offence under section 95 by reason of his causing or permitting any discharge to be made from a drain kept open by virtue of that section unless the discharge is made in contravention of a prohibition imposed under Section 86."

Therefore, it is not a pollution offence to discharge highways drainage to controlled waters, unless the discharge is made in contravention of a prohibition notice served under Section 86. It follows that the highways authority does not require the statutory defence of a consent (s88(1)a). Under normal circumstances the consent mechanism laid down in Schedule 10 will not be used to control highways discharges and any existing consents should be revoked unless special circumstances apply. It is expected that the measures required to prevent or alleviate pollution will be negotiated directly with the Highways Authority or its agents prior to construction. In extreme circumstances it may be necessary to use the provisions of s86 to serve a prohibition notice which may either require that a consent be obtained or specify the conditions to be observed prior to the making of the discharge.

Guidance to Planning Authorities on the impact of flooding on developments and the consequence for flooding from developments is contained in a Government Circular "Development and Flood Risk".

4. Policy

The NRA policy is that no increase in susceptibility to flooding should result from highway construction; for flood events up to a standard appropriate for the area likely to be affected: neither should such works limit or prejudice the possibility of future flood alleviation schemes which NRA may require.

It is also the policy of the NRA to maintain and where possible improve the quality of controlled waters. In order to achieve this, the NRA may seek to influence the choice of route and location of discharges, to avoid high risk areas (such as Zone 1 groundwater protection areas) and may require measures to be taken to reduce the polluting effect of highway run-off.

The NRA has a duty under the Water Resources Act 1991 to conserve and wherever possible enhance the environment of watercourses, river corridors and floodplains. To this end the Highway Authority may be required to carry out river corridor surveys where watercourses are affected by the arrangements to dispose of highway drainage. It should be noted that some of these surveys can only be carried out at specific times of the year.

In order to ensure that any measures taken to prevent flooding and pollution or bring about environmental enhancements as a consequence of the above policies have a lasting benefit, it is vital that a binding and enforceable agreement be made to cover the monitoring, operation and maintenance of the highway together with the associated surface water disposal arrangements and flood alleviation measures once the works are completed.

5. Implementation

Under normal circumstances the NRA Regional Planning Sections will co-ordinate responses on highway proposals. Highways Authorities and their agents will be responsible for providing all the necessary information for the assessment of the options under consideration and for carrying out and providing the results of any environmental or other studies which may be required by the NRA. The Highway Authority would be expected to provide at least route plans at a scale of 1:10,000 and schedules of all watercourse crossings, discharge points and contaminated land affected. (Appendix A lists details to be contained in the schedules).

5.1 Flood Prevention and Alleviation Measures

In order to ensure that there will be no increase in flooding as a result of the drainage from highway development, flood alleviation measures will normally be required. The solution chosen will depend on the circumstances and detailed modelling may well be required. The approach adopted should include:

5.1.1 Hydrological Assessment

An assessment of the drainage resulting from the highway will be required for a series of return periods. The impact of the surface water discharge and of any attenuation measures (such as balancing ponds or wetlands) on the receiving watercourse will also be necessary. The flood event chosen for the design standard will depend on the nature of the area likely to be affected.

5.1.2 Flow Attenuation

Surface water balancing ponds or other measures may be required. This will depend on the magnitude of the discharge, its location within the catchment and the capacity of the receiving watercourse.

5.2 Pollution Prevention and Alleviation Measures

In order to maintain water quality or to conserve and enhance flora and fauna associated with the drainage system to which it discharges, surface water draining from the highway may require treatment or pollution prevention measures. The choice of treatment type should take into account the risk of an accident occurring and the vulnerability of the receiving medium. The options include:

5.2.1 Open Ditches

Containment of spillages can often be achieved within open ditches using simple structures. These may be permanent, such as concrete dams and hanging walls, or temporary measures installed in an emergency, using wooden boards or sandbags. The provision of preformed slots for boards and anchorages for booms may also be useful. Where such intercepting arrangements are provided it is most important that adequate access is available for vacuum tankers or other equipment needed to remove accumulated pollutants. Most recovery vehicles would be unable to lift fluids and contaminated silt beyond maximum suction heads of 7.6 metres and 4.6 metres respectively.

5.2.2 Wet Balancing Ponds

Wet balancing ponds may be used in a similar way. If this is the case, it is necessary for any oil or grit trapping facility to be sited upstream of the balancing pond and regularly maintained. The outlet end of any balancing lagoon should be suitably constructed so that any accumulated pollutant (eg. oil) can be contained and removed. Scum boards must be included on all balancing ponds and provision made for access for maintenance purposes. This may require the provision of special access roads. These matters are covered in the CIRIA book B14 "The Design of Flood Storage Reservoirs". Maintenance and monitoring should form part of the operating agreement.

If wet balancing ponds are to be constructed, consideration must be given at the planning stage to its purpose and its desired uses. Historically, balancing ponds have not been designed to cater for pollution control but the guidance in CIRIA book B14 (formerly TN100) now incorporates water quality interests. Balancing ponds should not be considered where they may cause or exacerbate flooding

It is important that Biology, Fisheries, Conservation and Recreation sections of the NRA are consulted at the design stage, particularly if the pond is to form any sort of environmental feature.

5.2.3 Dry Balancing Ponds

If dry balancing ponds are to be used as emergency storage provisions, some form of interceptor device with a cut off valve must be present on the outlet from the pond.

Attenuation in balancing ponds and long ditches may afford some degree of improvement in the quality of the discharge to controlled waters. Improvement in the 'first flush' quality of the run-off may also be achieved if designed in accordance

with the CIRIA guidance. Reed bed technology may be applicable in both cases. Balancing ponds should not be considered where they may cause or exacerbate flooding

5.2.4 Oil Separators (with cut off valves)

Wherever practical it should be standard practice for 'pollution traps' of approximately 20 cubic metre capacity to be incorporated on outfalls to surface waters. These should have isolation valves fitted at both inlet and outlet. This will enable oily materials to be retained and will also trap water soluble chemicals in the event of a spillage from the largest road tanker vehicle. Installation should be considered at roundabouts and interchange junction areas and on sections of carriageway where the receiving watercourse would be particularly susceptible, for example where a water intake might be affected. In many cases a standard oil separator of an NRA approved design will be suitable. (Appendix B contains guidance on separator design).

5.2.5 Impact On Contaminated Land

If the route crosses any contaminated land, full details of the impact of construction must be provided and a scheme or working agreed to prevent pollution of controlled waters.

5.2.6 Discharges Into or Onto Land

In all instances where drainage to soakaway is proposed, due regard must be paid to the NRA Policy and Practice for the Protection of Groundwater. The technical difficulties of dealing with contaminated groundwater makes the prevention of accidental and chronic pollution vital. Therefore the following additional precautions will be required:

a) A hydrogeological assessment of the impact on groundwater flow, groundwater quality and abstraction in the vicinity.

b) Soakaway depth must be restricted to provide the greatest distance possible between the base of the soakaway and the water table.

c) Separators and cut-off valves should be provided so that contaminated water can be retained for subsequent removal.

d) Balancing ponds/sediment lagoons should be provided prior to drainage into the soakaway.

e) Special care should be taken in areas having Karstic features. Soakaways should be well removed from swallowholes. Swallowholes or watercourses discharging to them should never be used in supply catchment areas (Zone 1).

5.3 Conservation and Enhancement of the Environment

In order to satisfy the Authority's duties to conserve and enhance the aquatic environment, the following may be necessary:

a) Detailed supplementary environmental surveys to identify habitats and potential impacts on fisheries and amenity uses.

b) Subsequent design of structures, embankments, etc, including temporary works, to minimise environmental damage and to enhance the local watercourse environment.

5.4 General

5.4.1 Operational Agreement

The provision of an agreed schedule of emergency procedures, monitoring and maintenance will be required by the NRA. This will include measures to be carried out by the Highway Authority, such as separator and gully maintenance, desilting and reed cutting, herbicide spraying and the use of de-icing materials and appropriate actions for the emergency services. These may take the form of an operational agreement or memorandum of understanding between the NRA, Highway Authority and Fire Service.

5.4.2 Standard Designs

It is recommended that a standard form of separator and valve arrangement is adopted, at least at a County level, to minimise the risk of staff from the NRA, Highway Authority or emergency services being unfamiliar with their operation.

5.4.3 The Use of Notices

The use of notices, preferably of a standard format, to identify the sensitive nature of an area in terms of water pollution control can be useful to the emergency services when dealing with spillages from motorway incidents. The following points are worth noting:

a) All pollution control devices should be identified as such, both on and off the highway, eg location of separator cut-off valves, etc.

b) Emergency contact numbers/details must be given on the notice.

5.4.4 Vehicle Access

In all of the above instances it is important that good access is available for clean-up vehicles in the event of spillage and for maintenance purposes. In the past some separators have been built with little thought to access.

5.4.5 Highway Construction

Pollution incidents often occur during highway construction from scouring of exposed spoil heaps and soil and from oil spillages. Working practices which minimise or prevent such occurrences should be adopted. Appendix C contains Pollution Prevention Guidelines for construction sites, working in or near rivers and oil storage.

6. References:

- SI 1199;
  - Town & Country Planning (Assessment of Environmental Effects) Regulations 1988.
- SI 1217;
  - The Land Drainage Improvement Works (Assessment of Environmental Effects) Regulations 1988.
- CIRIA B 14;
  - Design of Flood Storage Reservoirs - ISBN 0 7501 057 3 (£45)
- DoE Circular 30/92. MAFF Circular FD 1/92, WO Circular 68/92
  - Development and Flood Risk

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APPENDIX A - DETAILS REQUIRED FOR PRELIMINARY ASSESSMENTS OF HIGHWAY PROPOSALS

A1.

The Highway Authority should normally provide route plans at a scale of 1:10,000 and schedules of all watercourse crossings, discharge points and contaminated land. The schedule should include the following:

For all watercourse crossings (ie main river and ordinary watercourses (non-main rivers), culverts and minor open-field drainage systems).

a) Watercourse name, crossing reference number, 'main' or 'ordinary' watercourse (non-main river) classification.

b) OS grid reference of crossing; distance along highway section where possible.

c) Brief description of watercourse characteristics (eg major/minor drainage channel; approx width and depth; type of construction).

d) Preliminary baseline surveys and assessment (eg river corridor habitat survey, landscape character, recreation, archaeology). It should be noted that there are strong seasonal influences on such surveys.

e) Approximate areas drained by the watercourse at the highway crossing.

f) Existing culvert size and construction.

For all discharge points (either existing highway discharges affected or proposed discharges.):

g) Outfall reference number; name of receiving watercourse or underground strata.

h) Grid reference of outfall; distance along highway section.

i) Details of any existing pollution control devices and discharge attenuation measures affected.

j) Details of any soakaway systems; construction, depth.

k) Existing and proposed (preliminary) discharge rates at the outfalls; contributing areas; times of concentration.

For all routes:

- An assessment of any contaminated land which might be affected, including the areas and type of contamination.

These details should be sufficient for an assessment of the various options to be made and for the selection of the NRA's preferred routes. However, further information may be required in some cases.

APPENDIX B - OIL SEPARATOR DESIGN

B1.

a) The maximum flow received by the separator should be given at least six minutes retention. The maximum flow should be calculated in accordance with the design criteria used for the drainage system. In many cases this will be based on a rainfall rate of 50 mm per hour.

b) Conventional separators (ie those without integral by-passes or separate oil storage compartments) should be of single chamber construction.

c) If multi-chamber units are used, six minutes retention should apply to each chamber or to the largest chamber only. The total capacity should not be used for calculating retention times.

d) Flows generated by rainfall rates in excess of 5 mm per hour may be allowed to by-pass the separator provided that the overflow device is of an NRA approved design which ensures that any retained oil is held within the separator.

e) The inlet to the main separating chamber should not be directed to the water surface and multiple inlets should be avoided.

f) Adequate facilities must be provided for inspection and maintenance of oil separators and tanker access must be available for cleaning purposes.

g) Where an interceptor is provided in a drainage system, trapped gullies are not necessary unless required to satisfy other regulations.

h) Adequate venting arrangement should be incorporated in the structure. Ventilated covers may be sufficient provided that installation is not located on a flood plain.

i) Where it is anticipated that large quantities of silt may jeopardise the efficient operation of a separator, an upstream silt trap should be incorporated in the system.

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APPENDIX C - REFERENCES

C1.

Pollution Prevention Guidelines:

- PPG2
  - Above Ground Oil Storage Tanks.
- PPG5
  - Works In, Near Or Liable To Effect Water Courses.
- PPG6
  - Working At Demolition And Construction Sites.

These are NRA documents and are available from NRA Offices.

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