

ARA NORTH WEST 82

MSP - 001

RAVENGLASS HARBOUR

MICROBIOLOGICAL SURVEY APRIL 1991

Marine and Special Projects
May 1991.

Ravenglass Harbour

Microbiological Survey April 9 1991

1. Introduction

N.W.W. are considering options for the long term treatment and disposal of sewage from Seascale. One of the alternatives being considered is to transfer Seascale flows to the existing works at Drigg, which would be extended and secondary treatment provided.

The existing Drigg works discharges to the tidal River Irt prior to its flowing into the enclosed Ravenglass Harbour. Ravenglass harbour is used extensively by pleasure craft, and contains a commercially worked shell-fishery.

The present survey was carried out to determine the present level of bacterial contamination at Ravenglass. This would give some indication if the continued discharge of sewage (albeit treated) into the Irt is environmentally sound, as well as giving 'base-line' data.

2. Survey details

The Hovercraft was used to take a representative grid of samples within Ravenglass Harbour as well the tidal sections of the three rivers which flow into Ravenglass - the Irt, Mite and Esk.

The system was covered three times; just after high water, mid- tide and approaching low water. Positions were logged using a G.P.S. navigator, and should be accurate to +/- 30m.

The speed of the Hovercraft is such that the samples taken on each run could normally be regarded as synoptic. On the first (high water) run, however, some temporary electrical problems with the hovercraft delayed its completion.

Possible sources of bacterial contamination are:

- the three non-tidal rivers
- septic tank drainage, particularly from Drigg
- the primary sewage treatment works at Drigg and Ravenglass
- local surface water drainage.

Samples were taken from:

- from the two sewage works
- the non-tidal rivers, simultaneously with the mid-tide run
- a surface water drain which outfalls to the Mite just downstream from the



3. Survey results

Samples were taken to NWW Kendal lab for analysis. All samples were analysed for total coliforms and *E.coli*, with faecal streptococci determined on a sub-set. Although this area is not designated under any E.C. regulations, it seemed appropriate to classify the waters against the bathing water directive, which would indicate the suitability for sailing and contact sports.

The classification system is as under:

class	total coliforms /100 ml	<i>E.coli</i>	note
poor	>10,000	>2,000	fails EC limit
good	500-10,000	100-2,000	EC mandatory limit
excellent	< 500	< 100	EC guideline limit

There is a guideline value of 100 faecal streps/100ml. There is no mandatory limit.

The survey showed a low level of bacterial contamination throughout the system. Neither Drigg nor Ravenglass treatment works has a major impact on water quality. The Irt at the tidal limit is relatively more polluted than the Esk or the Mite. This is probably a reflection on the drainage from Drigg village.

4. Conclusions

1. There is a low level of bacterial contamination within Ravenglass harbour.
2. Use of the site at Drigg to build a new works to serve Seascale would seem to be worth investigating in more detail.
3. The surface drain to the Mite shows some evidence of bacterial contamination and should be investigated further.

Ravenqlass Harbour - Field results.

09.April 1991

sample	time	total coliforms *** per100ml***	<i>E.coli</i>	f. streps.
1	08.16	500	30	10
2	08.19	1200	160	
3	08.23	1900	400	
4	08.26	1200	190	
5	08.32	400	190	100
6	10.04	200	70	
7	10.10	400	190	
8	10.15	200	20	
9	10.20	3000	600	
10	10.24	1000	1000	40
11	10.31	2100	900	40
12	10.32	1300	140	
13	10.37	1900	140	
14	10.41	300	110	
15	11.01	1500	110	0
16	11.05	<10	10	
17	11.10	100	<10	
18	11.39	500	110	
19	11.46	700	160	
20	12.00	1600	370	10
21	12.05	1000	270	
22	12.10	1400	300	
23	12.18	1700	700	
24	12.26	700	70	
26	13.52	600	160	0
27	13.57	900	70	
28	14.00	500	140	
29	14.09	1200	150	
30	14.15	4000	500	
31	14.22	1200	180	10
32	14.27	1100	190	
33	14.30	1400	180	
34	14.37	400	40	
35	14.42	500	30	
102	12.35	1000	330 (R.Irt)	
104	12.00	400	30 (R.Mite)	
105	12.10	<100	<10 (R.Esk)	
125	12.30	22000	4000	<100

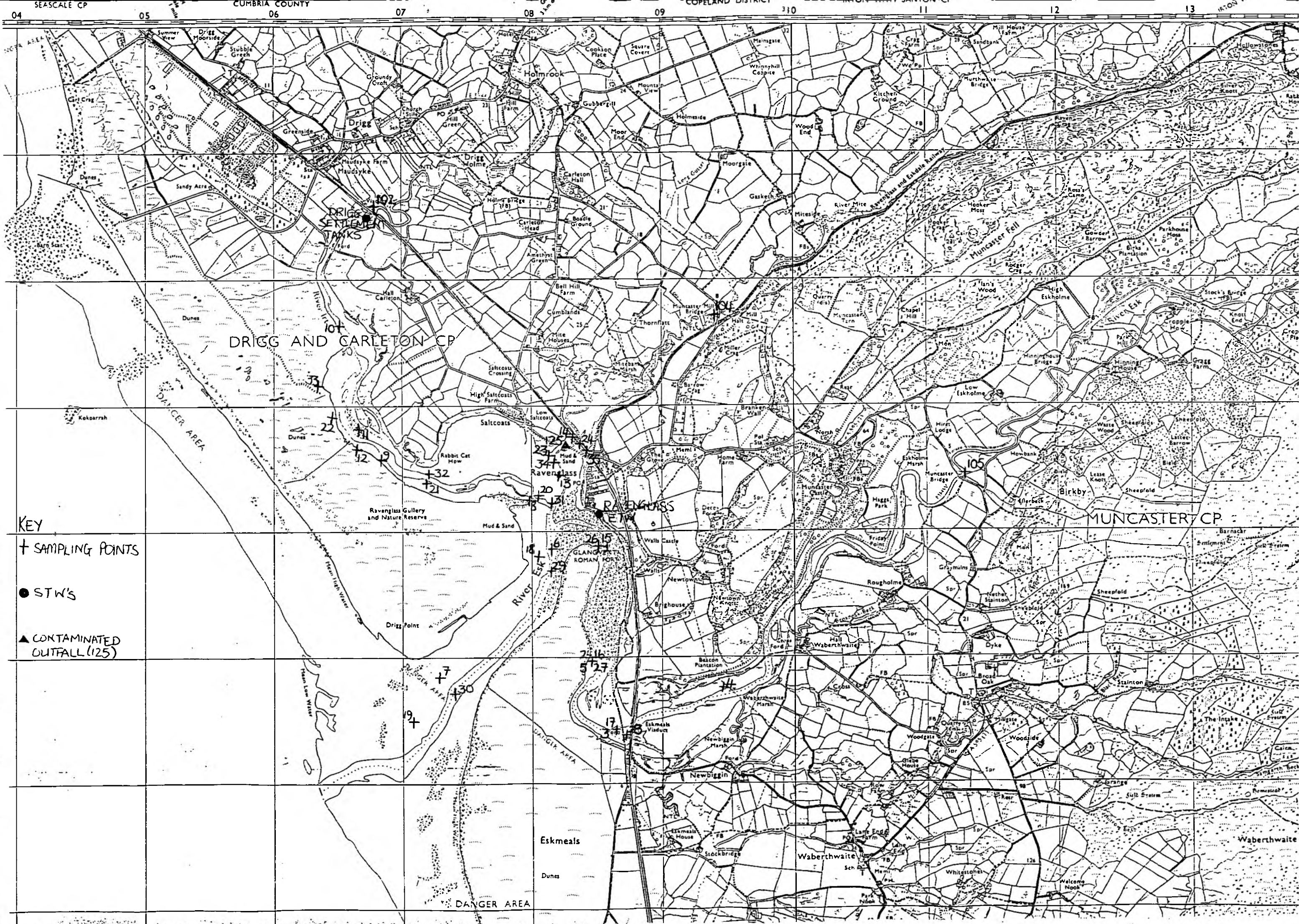
sample	time	total coliforms	<i>E.coli</i>	f. streps.
		*** per100ml***		

Drigg E.T.W.

100	08.30	2.1×10^7	6×10^5	
103	12.35	1.4×10^7	6×10^5	

Ravenglass E.T.W.

101	08.50	2.2×10^6	7.0×10^5	5×10^4
106	12.30	1.0×10^7	2.5×10^6	



KEY

+ SAMPLING POINTS

● STW'S

▲ CONTAMINATED OUTFALL (125)

Eskmeals

Waberthwaite

MUNCASTER CP

DRIGG AND CARLETON CP

RAVENGLASS

DANGER AREA

DANGER AREA

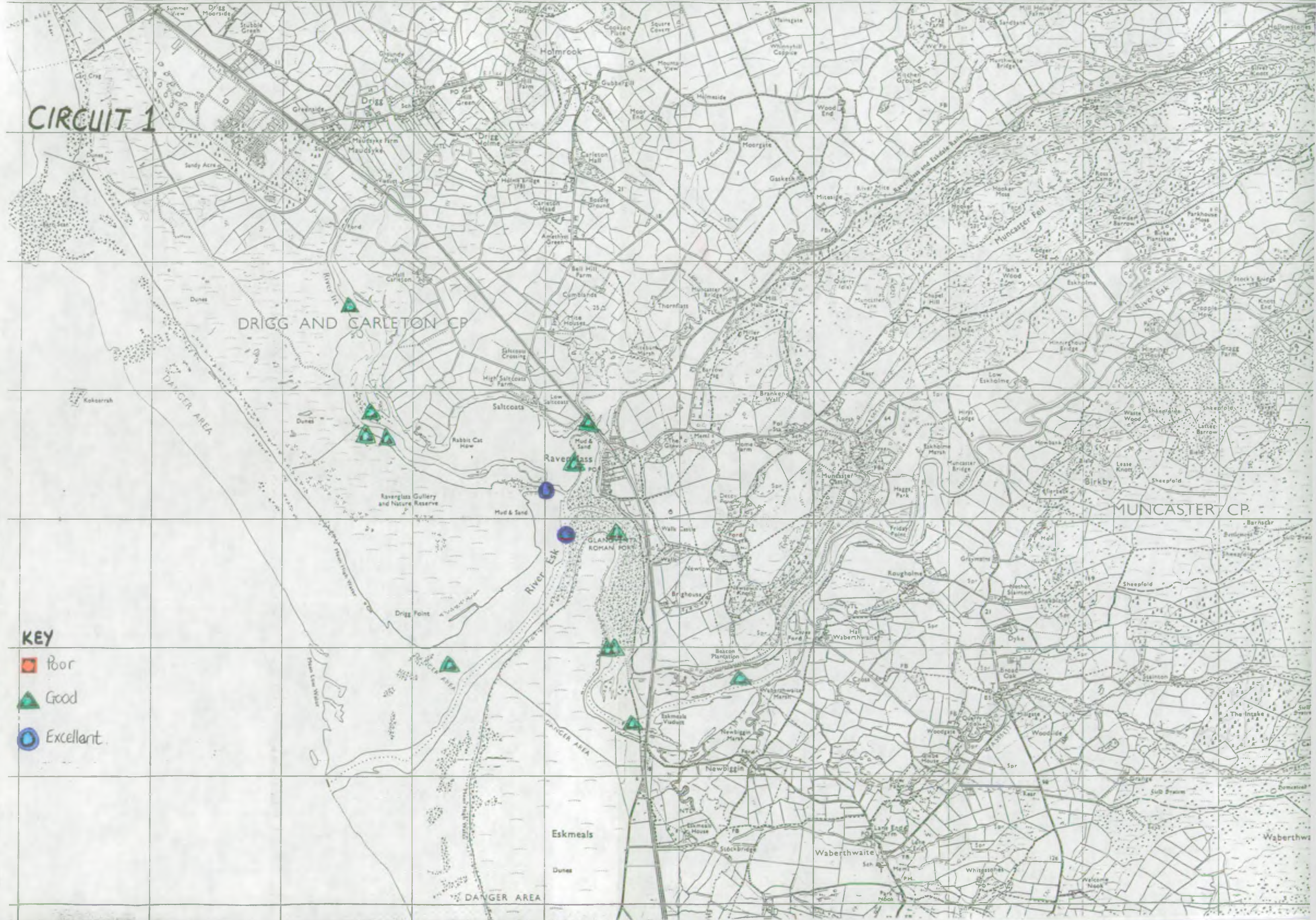
CIRCUIT 1

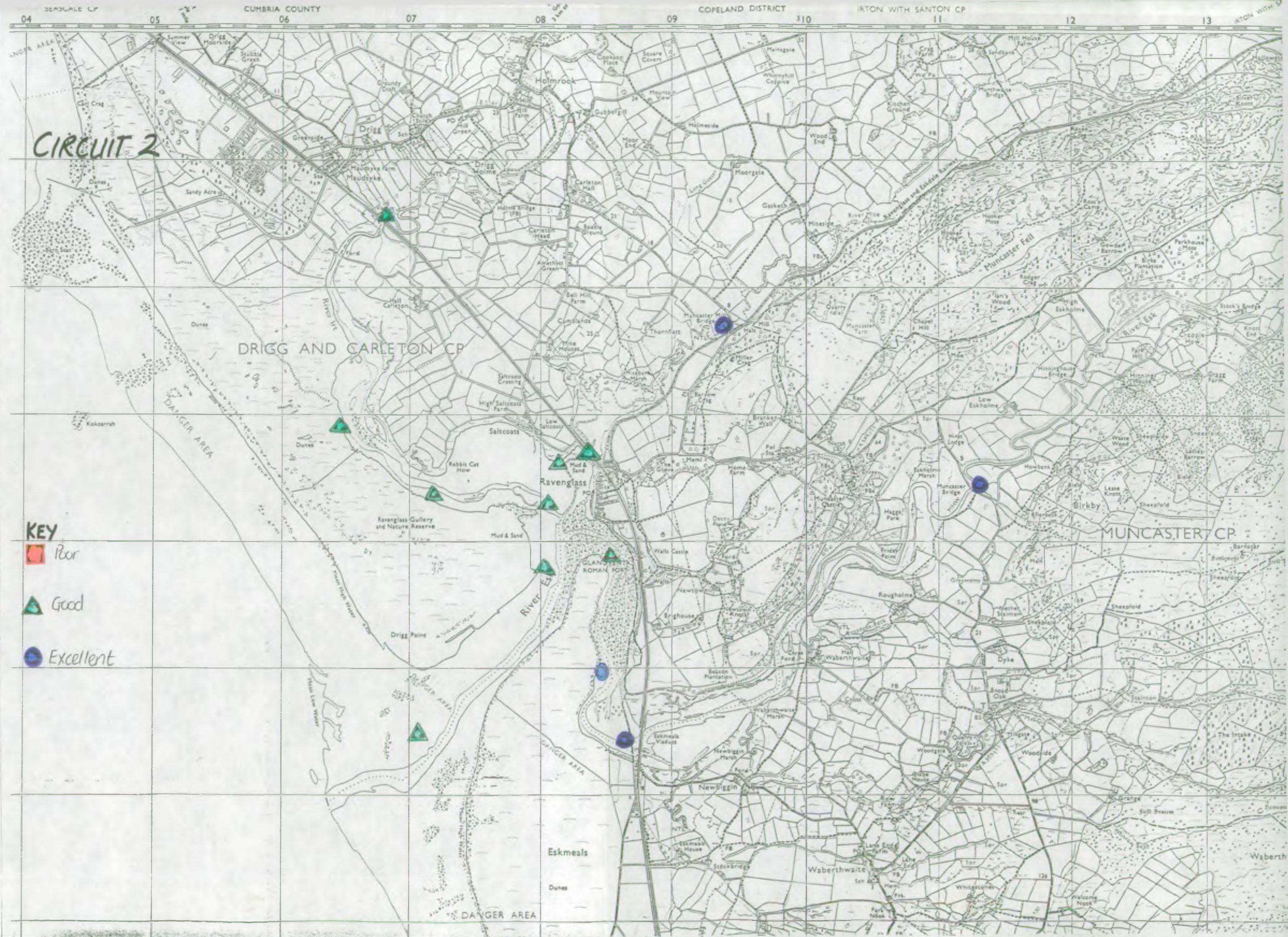
DRIGG AND CARLETON CP

MUNCASTER CP

KEY

- Poor
- ▲ Good
- Excellent








CIRCUIT 2

DRIGG AND CARLETON CP

MUNCASTER CP

KEY

-  Poor
-  Good
-  Excellent

DANGER AREA

CIRCUIT 3

DRIGG AND CARLETON CP

MUNCASTER CP

KEY

Red square symbol: Poor

Green triangle symbol: Good

Blue circle symbol: Excellent

DANGER AREA