

Broadland Environmental Services Ltd
Broadland Flood Alleviation Project
Environmental Monitoring Report 2001 - 2003

Halcrow Group Ltd

Halcrow Group Limited

1st Floor, Wensum House, 103 Prince of Wales Road, Norwich, NR1 1DW
Tel +44 (0)1603 226161 Fax +44 (0)1603 631505
www.halcrow.com

Halcrow has prepared this report in accordance with the instructions of their client for their sole and specific use. Any other persons who use any information contained herein do so at their own risk.

© Halcrow Group Limited 2005

Broadland Environmental Services Ltd
Broadland Flood Alleviation Project
Environmental Monitoring Report 2001 - 2003

WNBMON/EMR/001

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed
1	-	Final	June 2004	

Contents

1	Introduction	1
1.1	Background	1
1.2	Reporting	1
1.3	Data exchange	2
1.4	Purpose of this report	2
2	Environmental Monitoring 2001-2003	3
2.1	Strategic	3
2.2	Local	3
2.3	Site-specific	4
2.4	Winter bird counts	5
2.5	Maintenance	7
2.6	Cut and Clear	7
3	Future approach	8
3.1	SE8 schemes	8
3.2	SE1 (Maintenance) and SE1 (Cut & Clear)	8
3.3	Strategic monitoring	8

1 Introduction

1.1 Background

The Broadland Flood Alleviation Project (BFAP) incorporates a range of environmental survey and monitoring activities. These are required to:

- record relevant environmental conditions prior to flood defence works starting (baseline);
- assess the impact of works and incorporate any necessary mitigation measures;
- evaluate the effectiveness of environmental mitigation measures including the need for any remedial actions; and
- inform the development and update of the Strategy, in particular the Environmental Objectives within the Strategic Environmental Assessment (SEA).

Most monitoring is associated with evaluating the impacts of major improvement works (SE8) but a sample of maintenance schemes (SE1) and cut and clear (SE2) are also covered.

Further details on the approach to monitoring are described in the Environmental Monitoring section of the SEA Environmental Report.

1.2 Reporting

The results and interpretation of environmental monitoring are reported in several formats according to the nature of the activity (Table 1). Relevant data are stored in databases compatible with use on the Broadland GIS.

Table 1. Reporting of Environmental Monitoring

Monitoring	Reporting format
Strategic	Annual report
Baseline: Ecology	Individual reports; Environmental Statement
Landscape	River Corridor; Environmental Statement
Environmental Action Plan	EAP pro-forma for each visit; summary report produced on completion of EAP monitoring
Maintenance / Cut & Clear	Site visit pro-forma

1.3

Data exchange

The Project will generate a large amount of data, some of which will be of interest to other organisations. Data is made available to others in a format suitable for their needs. BESL has already exchanged data with other organisations and sees this as an important Project benefit in its own right.

1.4

Purpose of this report

This report summarises the survey and monitoring work that has been undertaken since the beginning of the Project in May 2001 through to the end of March 2003. In future years the Environmental Monitoring Report will cover a 12-month period from April to March. The extended period for this report is due to the fact that relatively little survey work was required during the first twelve months and that no SE8 works started on site until April 2003.

The report provides an overview of the type and extent of monitoring activity as well as details of relevant reports that have been produced. This includes the strategic monitoring that was undertaken by Scott Wilson under contract to the Environment Agency.

2

Environmental Monitoring 2001-2003

2.1

Strategic

Scott Wilson undertook a range of environmental monitoring between 1998 and 2002 inclusive. Table 2 summarises the surveys undertaken in 2001 and 2002. These surveys, apart from the Phase 1 habitat, were developed to monitor any changes in the extent of saline intrusion in the rivers.

BESL have reviewed the annual reports produced by Scott Wilson and submitted proposals to the Environment Agency to continue certain elements i.e. phase 1 habitat; rond vegetation; salt seepage points on the foldings; and salinity in the rivers (diatoms).

Table 2. Strategic monitoring in 2001-2002

Survey	2001	2002
Phase 1 habitat		•
Diatoms	•	•
Rond interface	•	
Salt seepage on foldings	•	

The results of the strategic monitoring are reported in:

BFAS Environmental Monitoring - Strategic Vegetation Surveys 2001 (Scott Wilson, March 2002); and

BFAS Environmental Monitoring – Strategic Vegetation Surveys 2002 (Scott Wilson, 2003).

2.2

Local

Local monitoring covers the whole of an individual flood compartment with the baseline survey undertaken up to two years in advance of the proposed start of improvement schemes. The exception is for large compartments covering more than one river and where the works will be undertaken over several phases. In these instances baseline survey will usually only cover those sections of the compartment that are going to be undertaken during phase 1.

Elements covered by local monitoring are:

- Scarce plants;
- 'Biodiversity' species (typically water vole and otter but can include other species where there is likely to be a significant effect on a known population);
- marsh salinity (grazing marsh dyke survey);
- vegetation on rond, floodbank and folding (photographs); and
- Landscape

The results from local baseline surveys are included in the Environmental Statement with relevant data incorporated into the BFAP GIS. Additional details from the ecology surveys, including raw data, are described in separate reports.

No local baseline surveys were undertaken in 2001/2002 due to the size of compartments being covered and the fact that the proposed phase 1 works only relate to specific sections of floodbank.

2.3

Site-specific

Site or scheme specific monitoring relates to individual phases of improvement works. The results of the baseline surveys are reported in the Environmental Statement with proposals for subsequent monitoring incorporated into the Environmental Action Plan (EAP).

A draft EAP is included in the Environmental Statement with a final version, incorporating any additional requirements, produced following receipt of planning permission. Monitoring is a fundamental part of the successful delivery of the EAP.

Elements covered by site-specific monitoring are:

- Ecology (water vole and otter; scarce plants; grazing marsh dyke vegetation; rond creation); and
- Landscape (vegetation re-establishment; replacement/reconstruction of gates, stiles etc.); and
- Rond erosion (where piles are removed).

In addition, other surveys may be undertaken where there is an identified need (e.g. reptiles in an area of known or potential importance) or opportunity to provide additional information (e.g. diatoms and invertebrates in soke dykes).

Site-specific baseline surveys undertaken in 2001/2002 are summarised in table 3 below. Appendix 1 provides details of where the survey information is reported and the data stored.

Table 3 Baseline environmental surveys for SE8 schemes 2001/2002

Comp.	Survey	2001	2002
11Yare	Water vole	•	•
11Yare	Otter		•
11Yare	Scarce plants	•	
11Yare	Landscape		•
11Yare	Grazing marsh dykes		•
11Yare	Diatoms & invertebrates		•
11Yare	Photographs		•
22Yare	Water vole		•
22Yare	Otter		•
22Yare	Scarce plants		•
22Yare	Landscape		•
22Yare	Grazing marsh dykes		•
22Yare	Photographs		•
22Wav	Water vole		•
22Wav	Otter		•
22Wav	Scarce plants		•
22Wav	Landscape		•
22Wav	Grazing marsh dykes		•
22Wav	Photographs		•
22Chet	Landscape		•
22Chet	Grazing marsh dykes		•
22/35Cu	Scarce plants		•
22/35Cu	Landscape		•
22/35Cu	Grazing marsh dykes		•
22/35Cu	Photographs		•
22/35Cu	Water vole		•
22/35Cu	Otter		•
35Yare	Diatoms & invertebrates		•
35Yare	Scarce plants	•	
35Yare	Water vole	•	
35Wav	Scarce plants		•
35Wav	Water vole		•
35Wav	Otter		•
35ALL	Landscape		•

No EAP monitoring was undertaken in 2001-2003 as no SE8 schemes were started during this period.

2.4

Winter bird counts

As part of the commitment to evaluate the potential effects of improvement works on Special Protection Area (SPA) bird populations, BESL has proposed to undertake counts at key sites within Broadland.

For compartments 11 and 35 there is also a planning condition that counts be undertaken for 5 years following scheme implementation.

The purpose of the monitoring is to provide data on the numbers and distribution of wintering birds within:

- component sites of the Broadland and Breydon SPAs that will be affected by BFAP;
- other important non-designated sites (e.g. Haddiscoe Island); and
- areas of compensatory habitat or voluntary habitat creation areas.

The data will be used to supplement existing information, where available, to determine the relative importance of individual sites. Where BFAP works are likely to result in a change in habitats within an individual site, the baseline data and subsequent monitoring will be used to identify the significance of impacts and whether compensatory measures have been successful.

The sites included in the winter bird monitoring are shown in table 4.

The counts were undertaken once per month over the period October 2002 to March 2003. A proforma is completed for each monthly visit with the location of birds also marked on site plans. The results are incorporated into an annual report with copies sent to English Nature, the Broads Authority and the RSPB. Notable counts or sightings of scarce species are forwarded to the Norfolk Bird Recorder.

Table 4. BFAP Winter Bird Count sites 2002-2003

SSSI	Flood Comp.	Sites Covered by WeBS
Barnby Broad & Marshes	27	No
Geldeston Meadows	25A	No
Ludham - Potter Heigham Marshes	6	No
Shallam Dyke Marshes	7	No
Sprats Water & Marshes	28	No
Ant Broads & Marshes	4	How Hill
Halvergate Marshes	11	Berney Marshes
Cantley Marshes	14	Cantley
Yare Broads & Marshes	15	Buckenham
Yare Broads & Marshes	16	Strumpshaw Fen
Non-SSSI		
Haddiscoe Island	35	No
St.Benets	5	St.Benets

2.5

Maintenance

Apart from minor and emergency works, all maintenance schemes involve a site visit to identify potential environmental impacts. These include surveys for nesting birds, water vole, otter, rare plants and bats as appropriate. Any mitigation measures are detailed on an environmental pro-forma that is issued as part of the site package that goes to the contractors. The pro-forma also identifies any potential landscape/recreational impacts and any consents that are required. Post construction visits are undertaken to a sample of schemes to evaluate the success of both the solution and environmental mitigation e.g. re-establishment of vegetation. These have been in the form of accompanied site visits with the Design Engineer and Environment Agency with photographs (see appendix 2 for an example).

The number of maintenance sites visited for environmental survey was 31 in 2001 and 42 in 2002-2003. There is no information available on the number of post-construction visits.

2.6

Cut and Clear

Cut and clear is undertaken on minor watercourses during the winter period. In most cases the work involves removal of in-channel vegetation and material on the banks that could restrict water flow. BESL uses the Environment Agency's Minimum Environmental Standards when undertaking Cut and Clear. Nine of the watercourses pass through or adjoin SSSIs so consent is required before works can proceed.

There are no specific environmental monitoring requirements for cut and clear works but the aim is to visit all of the sites that may impact on SSSIs.

3 Future approach

3.1 SE8 schemes

The results of SE8 baseline surveys will continue to be reported in Environmental Statements and, where appropriate, separate reports. Data will be incorporated into the Broadland GIS.

Environmental Action Plan monitoring will be recorded by the use of EAP pro-formas. These will be incorporated into an EAP monitoring report on completion of each scheme and made available via the monthly reporting procedures if required.

3.2 SE1 (Maintenance) and SE1 (Cut & Clear)

An Environmental Site Visit proforma is now being used to document all site visits including the results of any surveys, comments on remedial actions required and details of any photographs taken. A register has been created which lists all environmental visits for both SE1 and SE2 schemes.

There are no specific environmental monitoring requirements for cut and clear works but the aim is to visit all of the sites that may impact on SSSIs and other sensitive sites (e.g. important fishery areas) that are subject to de-silting.

The overall target will be to visit 50% of all schemes.

3.3 Strategic monitoring

The results will be incorporated into a standalone report.