Welland & Deepings
Internal Drainage Board

Water Level Management Plan

for

Baston Fen (SAC) & Baston & Thurlby Fens SSSI Reserve

November 2017

SITE DETAILS:-

Name:	Baston Fen Reserve (36.5 Ha.) and Counter Drain
Location:	Baston Fen, Lincolnshire Grid Ref. TF 126 165 to TF 145 176 OS Sheet 1 : 50000 - No. 130 1 : 10000 TF 11 NW
Status:	Baston & Thurlby Fens Site of Special Scientific Interest (SSSI) NE Ref. : 17 WLB Date Notified : 1968 - October 1999 Baston Fen Special Area of Conservation Date Designated : 1st April 2005
Owner: (Baston Fen Reserve)	The Lincolnshire Trust for Nature Conservation Banovallum House Manor House Street Horncastle Lincs LN9 5HF
Operating Authority & Owner of Counter Drain:	Welland & Deepings Internal Drainage Board Deeping House Welland Terrace Spalding Lincs PE11 2TD

DESCRIPTION AND REASONS FOR DESIGNATION

Baston Fen

This is the only permanent grassland in Lincolnshire used as a washland. Flooded borrow pits support a great variety of wetland plants including some which are locally scarce. The site is also important for its breeding birds and wildfowl, its dragonflies, terrestrial and aquatic molluscs and freshwater invertebrates.

Situated between the south bank of the River Glen and the north bank of the Counter Drain, this washland site is used occasionally as a flood storage area. The fen vegetation is dominated by reed sweet-grass Glyceria maxima, reedmace Typha latifolia and greater pond-sedge Carex riparia and there are a variety of marsh plants including yellow iris Iris pseudacorus, horsetails Equisetum spp, greater spearwort Ranunculus lingua and adderstongue fern Ophioglossum vulgatum. The open water of the borrow pits supports a good population of the water violet Hottonia palustris, a variety of pondweeds Potamogeton spp, greater bladderwort Utricularia vulgaris, frogbit Hydrocharis morsus-ranae and lesser bur-reed Sparganium natans.

An area of wet fen carr is also included within the site and a rough grazing meadow dominated by rushes Juncus spp and sedges Carex spp. Over the site as a whole 300 species of vascular plants have been recorded and the lichen list includes one species not known elsewhere in the county. There are 18 species of Odonata including the scarce Sympetrium sanguineum, Coenagrion pulchellum and Brachytron pratense and 70 species of molluscs are recorded including one nationally rare aquatic snail.

The river, drains and borrow pits are rich in freshwater invertebrates and have eight species of fish.

Baston Fen is of regional importance for both its breeding birds community and the over-wintering populations of wildfowl. Frogs, smooth newt, grass snake and slow worm have all been recorded.

Counter Drain

Counter Drain is home to Ribbon-Leaved Water Plantain (Alisma gramineum) which is critically endangered in the UK. Most of the known population is located downstream towards Pode Hole.

The drain also forms an important refuge for a diverse community of aquatic and emergent plants including yellow water lily Nuphar lutea, needle spike-rush Eleocharis acicularis, arrowhead Sagittaria sagittaria, frogbit Hydrocharis morsus-ranae, fan-leaved water-crowfoot Ranunculus circinatus and spiked watermilfoil Myriophyllum spicatum Of particular note is the unusually rich assemblage of pondweeds which includes perfoliate pondweed Potamogeton perfoliatus, flat-stalked pondweed P.friesii and the nationally uncommon hairlike pondweed P. trichoides.

The site is also rich in freshwater invertebrates, including dragonflies, damselflies, aquatic snails and water beetles. Amongst the variety of fish which have been recorded from the site is the spined loach Cobitis taenia, a significant population of which occurs in the Counter Drain.

The site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the spined loach Cobitis taenia listed in Annex II.

BACKGROUND

The Counter Drain is an embanked channel which conveys waters from the Deepings, Baston and Langtoft across Deeping Fen to Pode Hole.

The upstream 2.2km, lying adjacent to the Baston Fen Reserve, is designated a Special Area of Conservation.

The total catchment extends to some 2,125 hectares and comprises urban areas of Market Deeping, Deeping St. James, Baston and Langtoft. The remainder of the catchment is split between gravel workings, either active or restored for farming, recreation or conservation and agricultural land.

Water from the catchment enters the Gravel Drain which discharges by gravity into the upstream end of the Counter Drain at TF 1255 1653. The Counter Drain gravitates to Pode Hole, a distance of some 10.5 km. In normal conditions the Counter Drain gravitates into the Vernatts Drain at Pode Hole, but in flood conditions this is not possible and the Counter Drain is then pumped into the Vernatts Drain by the Pode Hole Pumping Stations. In flood conditions the Board's controls at the Pode Hole end of the system have only a marginal impact on water levels throughout the SAC length.

During the period April to October, depending on the prevailing weather and ground conditions, the Welland & Deepings IDB operates a water level management system to augment flows and to retain water in their channels for irrigation and conservation purposes. The main freshwater feed into the system is from the Environment Agency's Greatford Cut at TF 1210 1103. Water enters the Board's system via Drain No. 18 and is then distributed by slackers and weirs to the areas required, including the Gravel Drain.

COUNTER DRAIN DESIGN DETAILS

Location	Design Bed Level (m ODN)	Maximum Design Water Level (m ODN)	Bed Width (metres)
Pode Hole	-0.30	1.82	4.50
Wards Bridge (Downstream end of SAC)	0	2.13	3.75
(Upstream end of SAC)	1.1	2.69	3

PURPOSE

The purpose of this Plan is to provide a formal basis for the management of the water levels and maintenance operations on Baston Fen Reserve and within the Counter Drain which will maintain and enhance the Special Interests whilst taking into account the interest of drainage and general water level management for agricultural/recreation etc.

CONSULTEES

Welland & Deepings IDB – the Operating Authority and owners of Counter Drain.
Natural England – the SSSI and SAC designators.
The Lincolnshire Wildlife Trust – owners and managers of the Baston Fen Reserve.
Environment Agency – Controllers of the water feed from the River Glen and Greatford Cut.

WATER LEVEL MANAGEMENT

Winter

On the 1st December each year the Baston Fen Reserve site is to be flooded to a level of +1.9 m ODN on the gauge on the upstream heading of the slacker into the Counter Drain (S.2. on the plan). Water for flooding the site is obtained from the River Glen via the Wooleys Mill slacker (S.1.). The outfall slackers (S.2. and S.3.) into the Counter Drain are closed. The initial water abstraction requirement on the 1st December is approximately 50,000 cubic metres over 3 or 4 days. Before water is released from the Wooleys Mill slacker the IDB are to seek confirmation from the Environment Agency (Spalding office) that sufficient resources are available from the River Glen. "Topping up" water from the River Glen is also required throughout the winter period.

Spring

At the end of the winter season, usually the 1st March, the River Glen slacker is closed and the Counter Drain outfall slacker S.3. from the reserve opened by the Lincolnshire Wildlife Trust to allow water to slowly drain off thus emulating the slow drying out that would have occurred in the original Fenland. The aim is to have the site dry enough for cattle to be grazed in May.

Summer & Autumn

No further water management required as reserve levels fluctuate with levels in the Counter Drain and remain stable.

Counter Drain

Water levels in the Counter Drain are managed according to flows. Normal Summer retention level is +1.5 m ODN. Winter and early spring levels can fluctuate between +1.3 m and +2.1 m ODN. There is a gauge board on the downstream bridge over the Counter Drain (G.1).

CONTINGENCIES

Flood

Flood water may overtop the bank between the Counter Drain and the Baston Fen Reserve. River Glen slacker to be closed.

Drought

Ensure no leakage at weirs or penstocks at Pode Hole. Liaise with the Environment Agency to try and keep levels topped up via the Greatford Cut system.

Pollution

Seek immediate assistance from the Environment Agency's pollution/water quality department who will give the site priority. Close all inlet/outlet slackers to contain or exclude pollutant.

FREQUENT MAINTENANCE OPERATIONS

In the Counter Drain vegetation will be cut in July and November each year using a weedcutting basket fitted to an hydraulic excavator, as follows:-

100% cut of waterway area and both banks on the downstream 50 metres (TF 1454 1762 to TF 1450 1760).

75% cut of waterway area and one bank on next 1,800 metres (TF 1450 1760 to TF 1289 1672). (Cuts normally alternate sides but are occasionally changed to reduce rank vegetation growth.)

100% cut of waterway area and banks on upstream 400 metres (TF 1289 1672 to TF 1255 1653).

The Gravel Drain vegetation will be cut as follows:-

75% cut of waterway area and one bank on the following 500 metre lengths:-

TF 1255 1653 to TF 1275 1608
TF 1315 1523 to TF 1335 1477
TF 1390 1315 to TF 1420 1273

The remaining lengths are subject to a 100% cut of waterway area and banks are cut where accessible.

INFREQUENT MAINTENANCE OPERATIONS

Cleansing (Desilting)

Counter Drain

To ensure within the channel there is not a build up of sediment it is necessary to remove material (cleansing) approximately every 10-15 years.

This will involve an hydraulic excavator fitted with a ditching bucket removing the sediment and depositing it on either the Cradge Bank on the Baston Fen Reserve side of the channel or the flood bank on the southern side. To enable the operator to see and to avoid undue water being removed and deposited on the banks or reserve it is proposed temporary earth dams be positioned at either end of the section being cleansed. Water within the section would then be lowered with a portable pump.

To minimise the impact on the channel it is proposed this should be undertaken in approximately 500 metre lengths commencing at the most downstream point near Wards Bridge, the work being programmed over a 4 year period. The exact design of desilting programme, water levels, monitoring surveys etc, will need to be agreed with Natural England well in advance of work starting. Preliminary discussions took place in 2016.

It is expected that this work will need to take place within this period of the Water Level Management Plan.

Gravel Drain

Previous surveys indicated that sediment build up was worst in the most upstream section of the watercourse. Following discussions with Natural England cleansing of this 1000 m length took place in 2011/2012 with the work being undertaken in two 500 m sections, length one in Nov 2011 and the other in March 2012.

It is hoped if the upstream section can be maintained more frequently, say every 5 -10 years then the downstream section may be better protected from siltation and works deferred on this section for say 15 – 20 years.

When the downstream section of Gravel Drain does need to be cleansed again it is proposed this should be in approximately 500 metre sections, commencing at the junction with Counter Drain. The work being spread over a number of years to allow re-establishment.

All works to be agreed with Natural England and a monitoring survey carried out.

It is expected that this work will need to take place during the period of this Water Level Management Plan.

Bank Repairs

Should erosion or other causes threaten the stability of the bank or channel, repairs shall be undertaken immediately or in the following winter/spring using stone, timber stakes/piles and soil. Every effort will be made to ensure the works do not impact outside the immediate vicinity of the problem. Natural England are to be informed of emergency work undertaken and approval sought for planned work.

The Lincolnshire Wildlife Trust will maintain the Baston Fen site in consultation with Natural England.

MONITORING

Since the original surveys some monitoring of the spined loach population has been undertaken.

Natural England continue to undertake spined loach surveys as part of monitoring work.

DRAWINGS

Appendix A	Catchment Plan
Appendix B	Plan of Site

REVIEW PERIOD

The plan should be reviewed at a maximum of 5 year intervals, or any time at the request of the interested parties.

At the end of October 2017, Defra announced that they would be ending Water Abstraction licensing exemptions for significant abstractions in England and Wales.

They do not consider that there is a case to exempt all abstractions by IDBs because of the potential consequences for the environment and abstractions downstream of their abstraction intakes. They do however consider there is a good reason to exempt some.

This could impose extra costs on Welland & Deepings IDB. Therefore, it is prudent to include a clause within the review period that if the exemption is removed and a charge for water imposed all parties should meet to discuss the implications.

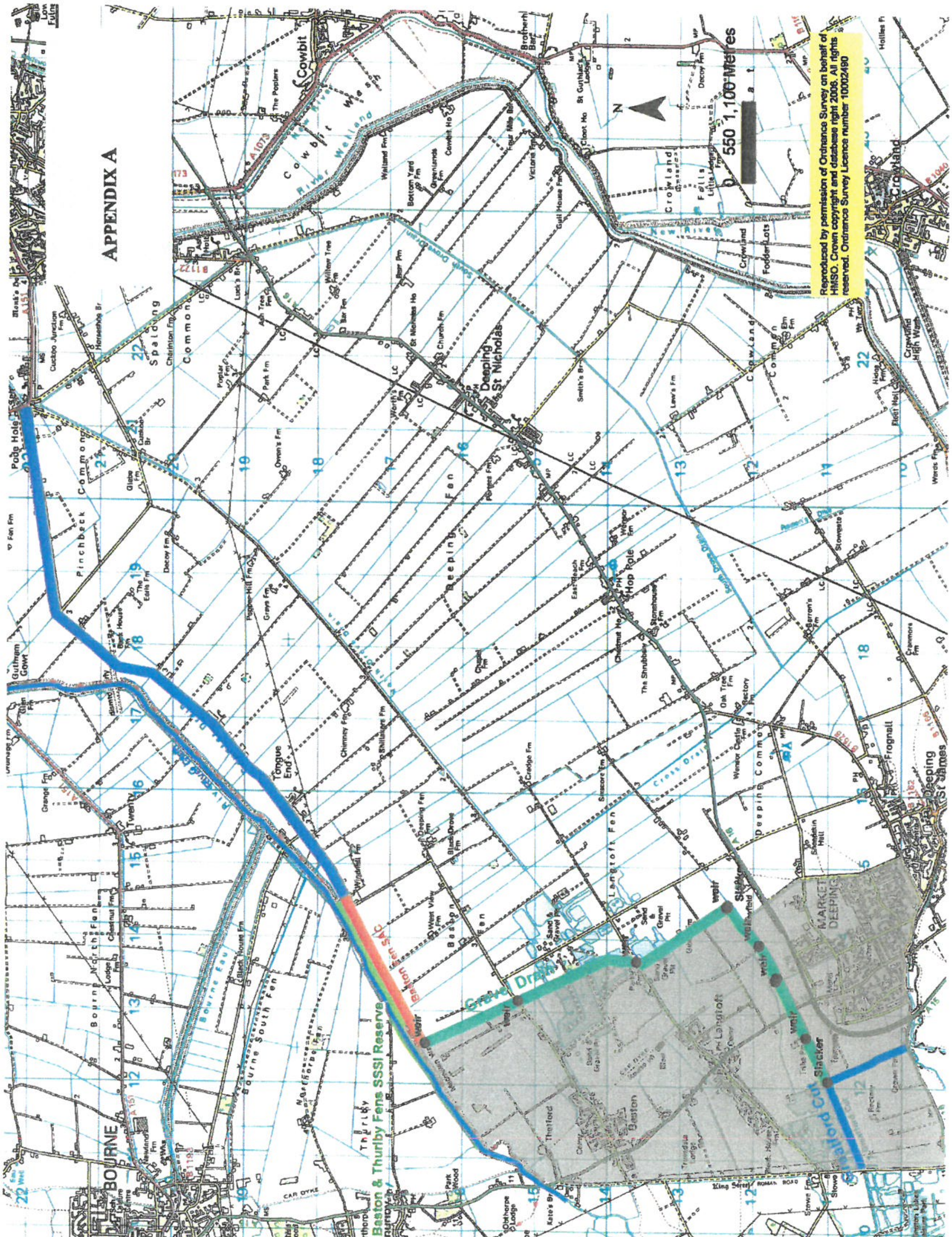
Should the Board incur any costs as a result of changes to Defra Water Licensing abstraction, the Board reserves the right to recover these costs from the Lincolnshire Wildlife Trust.

AGREEMENT

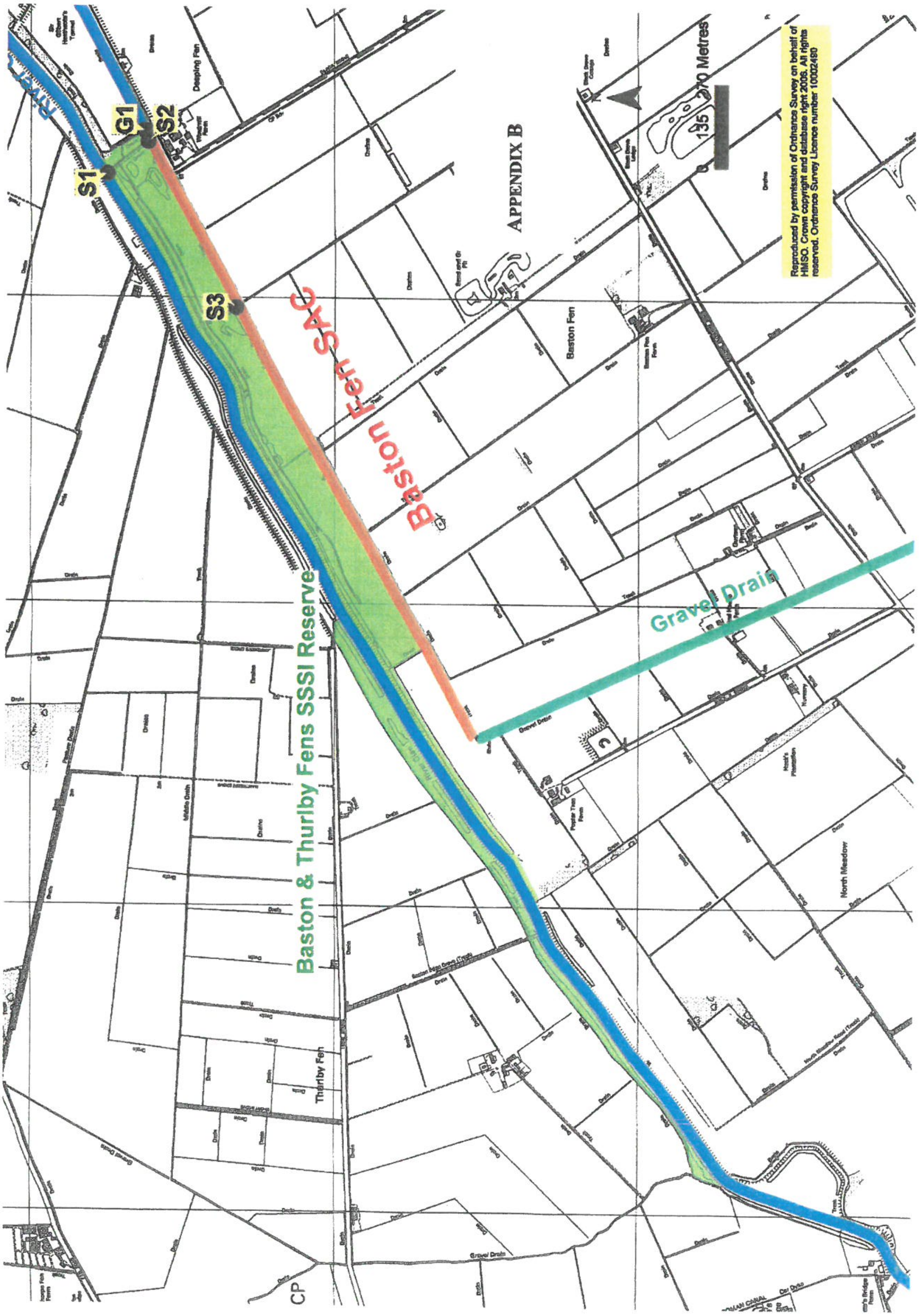
The following have agreed this Plan:-

	Signature	Date
Welland & Deepings IDB		7/12/17
Natural England		1/5/18
The Lincolnshire Wildlife Trust		7-1-17
Environment Agency (Anglian Region)		9-4-18

Appendix A


APPENDIX A
Baston & Thurlby Fens SSSI Reserve
Baston Fen SAC
Gravel Drain
Greatford Cut
Weir
Slacker
MARKET DEEPING
BOURNE
Crowland
Deeping St Nicholas
Cowbit
Tongue End
Pode Hole
River Welland
550 1,100 Metres
N

Appendix B


APPENDIX B
Baston Fen SAC
Baston & Thurlby Fens SSSI Reserve
Gravel Drain
S1
S2
S3
G1
Baston Fen
Thurlby Fen
North Meadow
Deeping Fen
0 135 270 Metres
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