



Shirley Pool SSSI Water Level Management Plan

Final Report

August 2010

**Dun Drainage Commissioners
Denison House
Hexthorpe Road
Doncaster
DN4 0BF**


Authorised Signatures

The under mentioned, being representatives of the appropriate organisations and duly authorised, have ratified this Water Level Management Plan as prepared by JBA Consulting for the Dun Drainage Commissioners.


The signatories confirm by their signature below that they agree with the findings and recommendations of this Water Level Management Plan. The actions set out in this Plan would achieve the water level management appropriate for securing the target condition of the SSSI.

The Dun Drainage Commissioners are committed to enacting this plan immediately following ratification by the signatories below and receipt of grant aid from Defra.


DUN DRAINAGE COMMISSIONERS


.....
Name: Mr R Walker Position: Chairman Date: 24.4.10

NATURAL ENGLAND


.....
Name: Mr T Kohler Position: Conservation Officer Date: 4/5/10

CARSTAIRS COUNTRYSIDE TRUST


.....
Name: Mr N Turton Position: Agent for and on behalf of Date: 21/6/10

LANDOWNER

.....
Name: Mr J Steadman Position: Landowner Date:

LANDOWNER


.....
Name: Mrs P Sutherland Position: Landowner Date: 1.7.10.

Authorised Signatures (cont.)

No signature of approval has been provided by Mr J Steadman on the preceding sheet. Requests for comment were made to Mr J Steadman, with associated deadlines. No response to these requests was received and therefore tacit agreement to the contents of this report has been assumed. This approach has the support of Natural England.

Shirley Pool Site of Special Scientific Interest Water Level Management Plan

A. Introduction

Shirley Pool is an area of open water, woodlands and wetland that lies 1km to the Southeast of the village of Askern in Doncaster District. The site was designated as a Site of Special Scientific Interest (SSSI) in 1955 on account of its floral diversity and invertebrate assemblages (Natural England, no date).

Natural England has issued conservation objectives for all SSSIs in England. These prescribe extent and composition targets for each of the features of interest on the SSSI. Their principal use is to determine if a site is achieving favourable condition. In February 2009 a series of Conservation Objectives for Shirley Pool were set out by Natural England (Williams, 2009). In essence these divided the site up into a series of Broad habitat Types (as defined in the UK Biodiversity Action Plan [BAP]) within which a number of ecological (National Vegetation Classification [NVC]) communities were identified. The Broad Habitat types specified were Fen, Marsh and Swamp and Broadleaved Mixed and Yew Woodland. Within these broad classifications the specific features to which the designation applies are:

- fen, reedswamp and wet grassland (Classes S2a, S4, S4a, M22 of the NVC);
- wet woodlands.(W1, W6 of the NVC).

The conservation objectives provide required coverage for each of the vegetation features of interest necessary for the designation to achieve favourable condition.

This Water Level Management Plan (WLMP) is intended as an addendum to the current WLMP for Shirley Pool SSSI (JBA Consulting, 2007). It therefore supersedes the previous WLMP (JBA Consulting, 2007).

This document summarises the contributing Preliminary Studies (JBA Consulting, 2010) and outlines the works that will be undertaken to achieve water levels that maximise the potential for achieving target ecological condition in line with DEFRA Outcome Measure 4 (the government target to have 95% of SSSIs in favourable condition by 2010 (Defra, 2007)).

B. Method

The following methodology was used to carry out the Preliminary Studies, which inform this revision to the existing WLMP:

- A steering group consisting of Natural England and landowners within and immediately adjacent to the site, was established to guide the project.
- Ecologically optimal water levels were determined for the habitat and vegetation features of interest for the site.
- Hydrological and ecological studies were undertaken to determine whether the optimal water levels are currently being achieved, and if not, what were the principal factors limiting their achievement.
- Options for water level management were drafted and appraised based on their ability to deliver optimal water levels within the boundaries of the site.

A series of recommendations were proposed, assuming that if water levels are favourable for the habitat features of interest then other features of interest for which the site is designated a SSSI and which cannot be directly influenced by water level manipulation are more likely to occur in an abundance seen as appropriate by Natural England. These recommendations, as approved by the relevant signatories to the Preliminary Studies and WLMP, form the basis of the programme of works recommended within this WLMP.

C. Summary of Results of Preliminary Studies

The Preliminary Studies report (JBA Consulting, 2010) is based upon Natural England condition assessments undertaken in August 2000 and July 2003. These assessments found the three site units to be Unfavourable – Declining, Unfavourable – No Change and Unfavourable – Recovering. Natural England have since reviewed the condition assessment of Shirley Pool, leading to a revision of the conditions of the units. This does not, however, affect the analyses undertaken and conclusions drawn in the Preliminary Studies or presented in this WLMP revision.

The Preliminary Studies identified a number of features of vegetation interest within the SSSI whose presence can be controlled by the manipulation of water levels. A target water level was assigned for each of these vegetation features. .

In 2008 a full National Vegetation Classification (NVC) survey was carried out on the site and vegetation communities found allocated to the appropriate NVC classes. These did not match with those previously recorded on the site (King and Mastel, 2001), however, a number of the key species present in the 2001 survey were still present on-site.

The Target Water levels for each of the vegetation communities on the site were set on the basis of the requirements of the 'Key Species' within each community based on the work of Newbold and Mountfield (1997).

In order to achieve these Target Water Levels and achieve Favourable Conservation Status a series of options were considered; a summary of these options is presented in Section D.

D. Summary of Options Considered

Before determining an appropriate solution for water level management, an appraisal of options for achieving target water levels was undertaken. The options considered during the appraisal process were derived from discussions with Dun Drainage and Natural England. The options are set out below:

- **Option A:** Installing a wind pump on Stream Dike, piping water to the designation and reinstating internal drains and new control structures
- **Option B:** Sheet-piling to the north and south of the designation and installation of new control structures
- **Option C:** Reinstating drains on-site and installing new control structures
- **Additional Option 1:** Reinstating Rushy Moor Boundary Drain and underdrain fields
- **Additional Option 2:** Install a level control structure in the centre of the site

E. Summary of Recommendations

The most appropriate option from those available to achieve favourable status was decided to be Option C, reinstating drains on-site and installing new control structures, with the inclusion of the Additional Options 1 and 2. An additional level control structure in the centre of the site and field drainage works may be deemed necessary following the implementation of the monitoring programme on the site (see Figure 1).

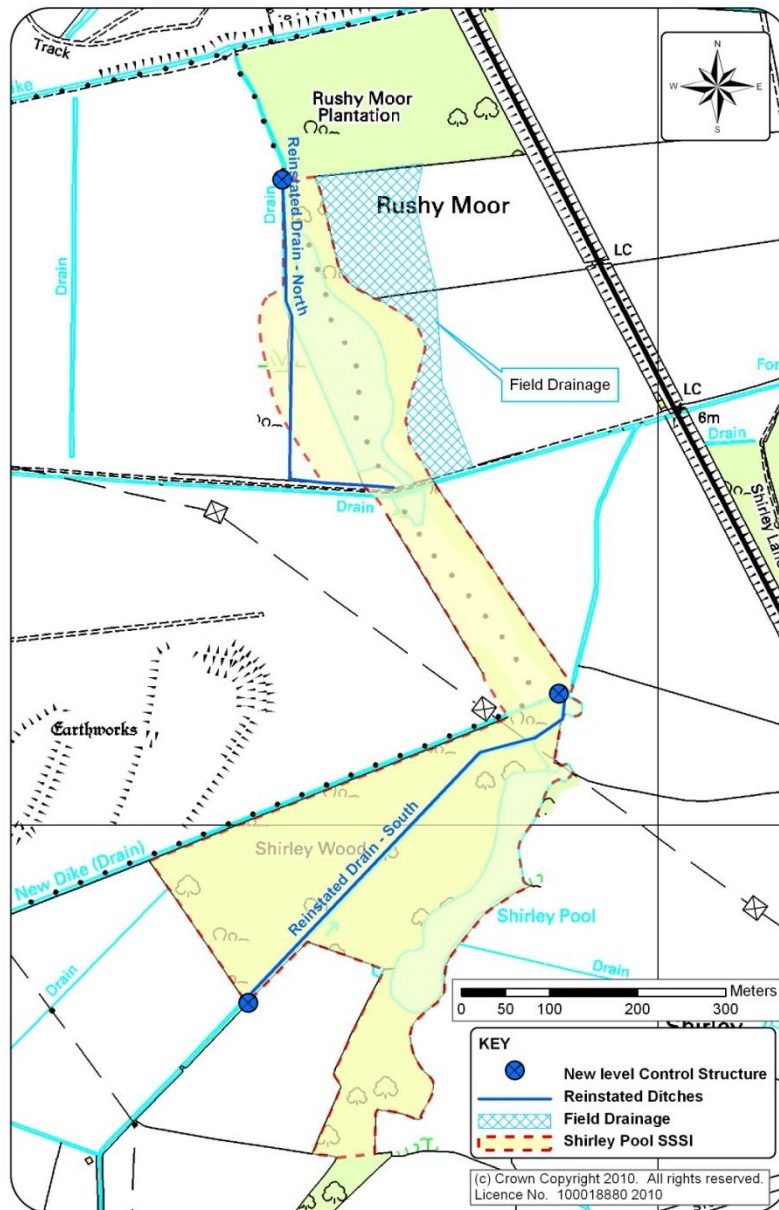


Figure 1: Recommended Water Level Management Options

It is anticipated that the adoption of this combination of measures will result in the attainment of optimum water levels, especially for the *Cladium mariscus* (Great Fen Sedge) beds in the north of the site, which is the feature of greatest vegetation interest on the designation.

The main benefits of this combination of options are:

- It provides an effective solution at a low capital cost;
- It has low revenue and maintenance costs;
- Allows for easy adaption of the scheme to make it future-proof in the light of climate change;
- Will provide a source of base-rich water in the right location for the *Cladium mariscus* beds;
- Is easily reversible if, following monitoring, this becomes necessary;
- It will maintain hydrological connectivity with the Scheduled Ancient Monument Site nearby potentially contributing towards preserving the organic remains

The principal disbenefits of the proposed scheme are:

- damage to the ecology of the site during the installation of the control structures and the excavation of the drains.

F. Water Level Management

The structures recommended to be installed under this WLMP are to be set at the levels given in Table 1.

Table 1 - Proposed managed water levels at critical structures

Structure	Managed water level (mAOD)
Reinstated drain - north	2.54
Reinstated drain - south	3.91
Central causeway	3.30

The above water levels were recorded during a topographical survey undertaken in March 2010 and are therefore representative of spring, bank-full levels. This is deemed appropriate given the intended purpose of the structures.

G. Unresolved Issues

The Preliminary Studies process was unable to resolve the issues relating to Mr Peter Butler's land to the north-east of the designation. Mr Butler contends that his land is suffering from continuing and unremedied elevation of water levels and resultant waterlogging, as a result of previous works undertaken by and on behalf of Dun Drainage and the Carstairs Trust.

H. WLMP Works Programme

The following programme of works has been developed using the results of the Preliminary Studies, the associated options appraisal, and the subsequent recommendations:

Year 1 - Quarter 2

Tree felling and vegetation clearance Value: £8,500

Year 1 - Quarter 3

Reinstate ditches on-site and install water control structures Value: £27,000

Year 1 - Quarter 4

Reinstate boundary drain and capture underdrainage to NE of site Value: £20,000

References

Defra, 2007. Outcome Measures - Development of Outcome Measures. Defra website: <http://www.defra.gov.uk/environment/flooding/policy/strategy/outcomemeasures.htm> [last accessed 13th October 2009]

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