ENVIRONMENT AGENCY

North West Region

ROSTHERNE MERE

WATER LEVEL MANAGEMENT PLAN

DRAFT
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1. **Site Details**

Location: In the parish of Rostherne.

National Grid Reference: SJ 744 842.

OS Sheets: 1:50,000: 109

1:10,000: SJ 78 SE

Status: An area of 152.9 hectares (378.2 acres) bounded by Chester Road in the west, Dirty Lane to the north and east with various fields and footpaths to the south was notified as a SSSI under Section 28 of the Wildlife and Countryside Act 1981 in 1984.

The site is a National Nature Reserve (designated by English Nature) and is of international importance and has been designated under the terms of the European Community Directive 79/409/EEC on the Conservation of Wild Birds for inclusion on the list of Wetlands of International Importance under the Ramsar convention.

Operating Authority: The Environment Agency, North West Region, PO Box 12, Richard Fairclough House, Knutsford Road, Warrington. WA4 1HG.

2. **Purpose**

2.1 The purpose of the Water Level Management Plan is to provide a formal basis for managing the land drainage system and water supply system of the area in order to provide a sustainable balance between the conservation and agricultural interests in the area.

2.2 No changes are proposed to present water level management or maintenance practices unless and until such changes are agreed by all parties.

3. **Description of Site**

3.1 **General Description**

3.1.1 The Meres & Mosses of the north west Midlands form a nationally important series of open water and peatland sites. These have developed in natural depressions in the glacial drift left by the ice sheets which covered the Cheshire-Shropshire plain some 15,000 years ago. The majority lie in Cheshire and north Shropshire, with a small number of outlying sites in adjacent parts of Staffordshire and Clwyd.

3.1.2 The origin of most of the hollows can be accounted for by glaciation but a small number have been formed, at least in part, by more recent subsidence resulting from the removal in solution of underlying salt deposits. There are more than 60 open water bodies known as 'meres' or 'pools' and a smaller number of peatland sites or mires known as 'mosses'. They range in depth from about 1 metre to 27 metres and have areas varying between less than a hectare to 70 hectares.
3.1.3 Rostherne Mere is the deepest and one of the largest meres and lies in a deep hollow in glacial drift. The site has an area of 152.9 hectares (378.2 acres) and is situated to the south-west of Altrincham. A plan of the site is shown in figure 1.

3.1.4 The lake is of naturally high fertility which over the years has increased by the accumulation of nutrients received from the inflow streams and surrounding farmland. The droppings of roosting birds also add to the nutrient inputs.

3.1.5 Long-term study and analysis of the mere's water chemistry and limnology, together with comparisons with other meres, are very important aspects of monitoring to ensure that the site's conservation value is sustained. The mere has little submerged vegetation but is fringed by a narrow band of Phragmites reedswamp for over half its circumference.

3.1.6 Around the mere, the catchment slopes are primarily large blocks of woodland and moderately intensively farmed grassland. At the north-west end there is a small peat bog now overgrown with birch. However, a number of plant species associated with the peat bog remain including broad buckler-fern, purple moor-grass and bog mosses as well as purple smallreed an uncommon species in this part of the country. At the south-eastern end alongside the outflow stream is an area of willow carr which is noted for its willows including bay willow and a number of rare hybrids.

3.1.7 The mere is nationally important for its birds and acts as a winter roost for large numbers of ducks and holds nationally significant numbers of pochard and pintail, as well as good numbers of all other common species associated with freshwater. Over 10,000 gulls and up to 90 cormorants roost in the trees along the edge. Because of its size and depth it is the last freshwater body in the area to freeze in winter and is consequently an important refuge in severe weather.

3.1.8 The geomorphology of the basin is of national importance. Rostherne Mere occupies a large oval hollow formed by subsidence resulting from the removal in solution of underlying salt deposits. The salt has been dissolved away by water flowing underground and the overlying glacial deposits subsided to form the hollow. Salt subsidence hollows are a characteristic feature of the Cheshire Plain and are unmatched elsewhere in Britain. The Rostherne depression is one of the finest known examples of these unusual landforms.

3.1.9 This is one of the most extensively researched freshwater sites in the country having a history of investigation covering more than 70 years. The subjects researched include the birds, fish and algae as well as the sediments, bottom fauna and water chemistry. The mere has one of the longest documented records of freshwater algae outside the Lake District, samples having been collected as early as 1912. Like many other meres it is subject to dense algal 'blooms'.

3.2 Drainage System

3.2.1 Rostherne Mere receives water from a stream that originates from Mere Mere and Little Mere via Rostherne Brook. It also receives inflows direct from non-main streams and groundwater, and has an outflow into Blackburn's Brook and thence to the River Bollin.

3.2.2 The designated main rivers in the area are Rostherne Brook (ROST 001) to the south which flows towards the mere, Blackburn's Brook (BLAB 001) and Shawgreen Farm Brook (SHA1 001) to the east. Main rivers are marked in red on figure 1.
3.2.3 There are also a number of other non-main watercourses in the area, including several drainage ditches.

3.3 Land Ownership

3.3.1 The land is owned by Tabley Estates. (Is this true? - wait for EN response)

3.3.2 The Mere itself, short lengths of the outlet and inlet streams and a two yard strip of the surrounding farmland, together with eight pieces of woodland and willow bed, were presented to the Nature Conservancy by the executors of the late Lord Egerton of Tatton, in accordance with his wish that the Mere and sufficient adjoining land to constitute a Nature Reserve should be permanently preserved for the benefit of the Nation. (P Nolan, EA)

3.3.3 Included in the gift were two boat-houses on the shore at the most southerly point of the Mere, below the church and a further derelict one below Wood Bongs, very little of which now remains. The remainder of the reserve, now comprising 73.44 hectares, is the property of Mr Randle Brooks of Peover Hall. The agents are Mellor Braggins and Co, Estate Office, Rostherne. This land forms part of five farms and is a portion of what is known as Tatton Estate. Mr Brooks took over the estate from his late father, Mr Harry Brooks, whose ownership was in association with the Midland Bank Executor and Trustee Company Ltd. (P Nolan, EA)

3.3.4 The Nature Conservancy concluded a Nature Reserve Agreement with the owner and his tenants over 53.46 hectares of his land on 28th September 1961. A further agreement over 20.63 more hectares (most of the north western corner of the reserve) was concluded in 1969. (P Nolan, EA)

3.3.5 The owner of the land covered by the Environment Agency (previously National Rivers Authority) granted to the Nature Conservancy exclusive rights of shooting and sporting, including fishing and hunting. He also agreed to stop and prevent shooting, as from the 1st February 1961, of all species of birds and animals over land in his ownership lying to the east and south-east of the reserve. In practice, however, this no-shooting zone is openly shot over by the owner on a regular basis. (P Nolan, EA)

3.3.6 The site manager’s house, Rowans, which is adjacent to the reserve in Rostherne Village, was built by English Nature in 1962 on land leased from the estate on a 99 year term. (P Nolan, EA)

3.3.7 The parts of the reserve under the Nature Reserve Agreement are currently being farmed by three tenant farmers with the remainder now managed by the estate, being let on annual grazing licences. (P Nolan, EA)

4. Water Level Management

4.1 Overall

4.1.1 Stable water levels in the Mere are essential to maintain both the emergent vegetation fringe and to continue the beneficial changes taking place in a wet field following the disfunction of the field drain system (NGR 7465 8375), marked as A in figure 1. (C Hayes, EN)
4.1.2 Water levels in 'Dolls Meadow' are held high by damming spring flows (NGR 7417 8384), marked as B in figure 1. (C Hayes, EN)

4.1.3 There is a sluice control to feed a pump house (NGR 7405 8383), marked as C in figure 1. This is not in operation. (C Hayes, EN)

4.1.4 There is no control structure present at the outfall of the mere. (C Hayes, EN)

4.1.4 Recent agricultural drainage of arable fields feeding a drain (NGR 7531 8390) have caused it to flood onto adjacent fields at times of flash flows. Added benefits are that water levels are held higher in Shaw Green Willows. Landowners and tenant appear willing to consider maintaining the status quo, ie. no improvements to the drain. (C Hayes, EN)

4.1.5 Blackburn's Brook outfall periodically back flows under flood conditions in Birkin Brook. Until the early 1940's a one-way sluice was in operation to prevent this. (C Hayes, EN)

4.1.6 There are no control structures present on main river within this site. The only structures recorded in the EA Asset Survey are farm access bridges, footbridges and road bridges. These are marked on figure ??

4.1.7 As there are no water management structures present, any water level control is merely through indirect maintenance activities.

4.2 Target Water Levels

4.2.1 We are unaware that EA maintenance works (detailed below) have had any detrimental effect on water levels in Rostherne Mere.

5. Maintenance

5.1 EA Maintenance

5.1.1 The Environment Agency's maintenance work includes the removal of blockages and hand works as required in conjunction with the landowners. (G Whitney, EA)

5.1.2 Hand maintenance involves the removal of blockages/debris, trees (if causing a blockage or restriction to flows) and on a more routine basis removal of bedweed and bank growth. This would only be done with the agreement of English Nature and/or our own conservation/ecology section, where the work is in, or may affect, the site in some way. (G Whitney, EA)

5.1.3 The frequency of work is generally dictated by site conditions together with inspections or complaints from landowners/tenants. General hand maintenance will be carried out from either bank and/or the bed as required, tree and blockage removal could be carried out from either bank, depending which provides the best access for the resolution of the problem. (G Whitney, EA)

5.2 Maintenance carried out by other bodies
5.2.1 None that the EA is aware of.

6. Nature Conservation

6.1 The Mere acts as a winter roost for a large number of ducks and holds nationally significant numbers of pochard and pintail as well as good numbers of all other common species associated with freshwater.

6.2 The Mere has one of the longest documented records of freshwater algae outside the Lake District with samples having been collected as early as 1912.

6.3 Rostherne Mere is a National Nature Reserve (as designated by English Nature).

6.4 The site is of international importance and has been designated under the terms of the European Community directive 79/409/EEC on the Conservation of Wild Birds for inclusion on the list of Wetlands of International Importance under the RAMSAR Convention.

7. Agriculture

7.1 The local catchment of Rostherne Mere comprises Mere and Rostherne parishes. Between 1931 - 1987 stockholding has doubled but field usage has remained relatively stable with some loss of land to non-agricultural purposes.

8. Fisheries

8.1 The Mere was surveyed in 1995 and was found to support a good population of perch and pike.

8.2 No fishing allowed at this site. In 1970 the largest perch population ever recorded was recorded. In 1975 Perch disease decreased abundance of this species, now numbers have recovered but mean size is reduced. In 1983 subjective estimate of fish density was 50 kg ha. (P Nolan, EA)

9. Archaeology

10. Water Quality

10.1 Rostherne Mere is a steeply banked basin, which at 30 metres is by far the deepest of the Cheshire Meres. Stratification of the mere has been found to extend at least from late May to mid November. Hypolimnion is deoxygenated. Cheshire meres are naturally nutrient rich bodies of water. (A Hartland, EA)

10.2 Events of low Dissolved Oxygen (DO) have been seen in outlet. (A Hartland, EA)

10.3 Decreased inflow / outflow of the mere would reduce flushing rate (which is already low)
and would only worsen algal blooms and Hypolimnion deoxygen. (A Hartland, EA)

10.4 Rostherne Mere has mineral rich sediments, particularly phosphate and is naturally eutrophic with high conductivity, moderate inorganic nitrogen, alkalinity and low chloride concentrations. Rostherne is a deep mere that stratifies during the summer months and a recent study indicates that nitrogen (locked within the hypolimnion until the autumn turnover) is a limiting factor on algal primary production during the summer, unlike lakes in other areas where algal primary production tends to be limited by phosphorus or zooplankton grazing. (P Nolan, EA)

10.5 Sewage works on the main inflow (Little Mere) closed in 1989 but the expected decrease in phosphorus concentrations has not, as yet, occurred and it may be in a state of transformation. (P Nolan, EA)

10.6 One issue currently under investigation by the Pollution Control and Ecology Sections is the potential effect of a recent discharge consent issued to Tatton Park, which consents treated discharges from Tatton Park and Farm into Rostherne Brook via a reed bed at Cicely Mill Farm. The issue is not one of water level management directly, but it could be as the reed bed may be under threat - the landowners may in the future decide to restore it to a Mill Pool. (P Nolan, EA)

10.7 Ecology have not carried out any River Corridor Surveys on any of the 3 main river watercourses. Blackburn's Brook is sampled biologically. (P Nolan, EA)

11. Water Resources

11.1 Given the intention of the WLMP for Rostherne Mere not to affect the flow regime there is no comment from Water Resources. (Dr J Adams, EA)

11.2 The mean hydraulic retention time of the lake has been calculated at around 2 years.

12. Development Adjacent to Watercourses

Any work proposed in, over or adjacent to main river requires the consent of the EA, whose Land Drainage Byelaws require third parties to apply for consent for any alterations or new works within an 8m strip on either side of main rivers, or 8 m from the inland toe of a flood embankment, or within a washland. Where consent is applied for on land which forms part of an SSSI, the applicant is obliged to consult English Nature, and the Agency will only consider consent on the condition that that is done. This condition will also apply to proposed developments which might affect the SSSI, even though they lie outside the boundaries of the site. (In other cases the EA's Conservation Officer will comment on the conservation implications of applications where necessary.)

12.1 Abstraction Licences

12.1.1 An abstraction licence is generally required, from the Environment Agency under the Water Resources Act 1991, by anyone who wishes to take water from a surface or underground source. There are a number of exceptions, the more common ones being:
one-off abstractions of up to 20 cubic metres (subject to Environment Agency consent if greater than 5 cubic metres);

- abstraction of 20 cubic metres or less per day from a surface water source running through or bordering the abstractor's land, for domestic or agricultural purposes other than spray irrigation;

- abstraction of 20 metres or less per day from an underground source for the domestic purposes of one household;

- land drainage;

- abstraction to test for the presence, quantity or quality of water (with Environment Agency consent) in underground strata;

- water used in fire fighting.

Notes:

1. 20 cubic metres is equivalent to 20,000 litres or approximately 4,400 gallons.

2. The above list is not exhaustive; please contact the Environment Agency for full details.

12.1.2 The Environment Agency consults with English Nature, and others, in its consideration of any application for an abstraction licence. Applications for abstraction licences (especially within the SSSI) within the plan area will be examined particularly critically.

12.2 Discharges

It is illegal to discharge sewage or trade effluent to any controlled watercourse without a consent to discharge. Such consent must by sought from the Environment Agency.

13. Contingencies

13.1 Floods

13.2 Droughts

13.3 Pollution

Seek immediate assistance from the Environment Agency Pollution Control Officer.

14. Water Level Management Objectives

14.1 Nature Conservation Objectives

- Maintain, and where relevant, improve water quality of all surface inflows (EN)
- Maintain the diversity and balance of emergent plant communities (EN)
- Maintain water levels within current range of climatic and seasonal fluctuations (EN)
- Restore quality of mere waters to that which existed when the site was first notified (EN)
- Ensure continued study and monitoring of the water environment (EN)

14.2 Agricultural Objectives
14.3 Fisheries Objectives
Maintain the diversity and abundance of the fish populations present.

14.4 Archaeological Objectives

14.5 Water Quality Objectives
- Maintain (or improve) current inflow/outflow rates of the mere to preserve (or increase) the already low flushing rate. (Hartland, EA)

14.6 Water Resources Objectives

14.7 Matters on which there is general agreement

14.8 Matters which require further discussion

14.9 Mechanism for continuing discussion

15. Monitoring

15.1 There are at present no plans to actively monitor and record water levels in Rostherne Mere.

16. Review

16.1 Any interested party signed up to this Water Level Management Plan is at liberty to call a review meeting. It is imperative that a meeting is called if there are any proposed changes to management practices within the WLMP boundary. If any party is in doubt, they should send details to the operating authority (Environment Agency) who will determine whether a meeting is necessary.
Appendix A - List of Consultees

The Environment Agency
North West Region
Richard Fairclough House
Knutsford Road
Warrington
WA4 1HG

Contact: Graham Blogg (Sr Flood Defence Officer)
Tel: 01925 653999 (ext 2343)
Fax: 01925 415961

English Nature
West Midlands Team
Attingham Park
Shrewsbury
Shropshire
SY4 4TW

Contact: Colin Hayes (Conservation Officer)
Tel: 01743 709611
Fax: 01743 709303
Appendix B - Copy of SSSI Notification
Rostherne Mere WLMP - Figure 1: Area covered by plan (SSSI boundary)