

**BRIEFING NOTE 7****An assessment of the potential impacts of lowering the final water level at  
Beeby's West Lake, Great Haddon, Peterborough  
October 2012**

---

**1.0 Introduction**

- 1.1. This Technical Note provides an assessment of the likely impacts of the proposal to lower the permanent water level within Beeby's West Lake by 500mm. It supplements information previously submitted with the Great Haddon Environment Statement (ES) and ES Addendum and is based on survey information gathered from the lake over the past 5 years and the experience of how the lake responded to the significant lowering of water levels as part of the lake restoration works now substantially complete. It is also based on a site visit undertaken by Dr Peter Shepherd on 20th September 2012.

**2.0 Background**

- 2.1. Beeby's West Lake is a former clay quarry, which has been restored as part of a future country park within the Hampton Leys development brief area. As part of the restoration the northern, eastern and western banks of the lake were re-profiled to create safe bank profiles, a greater variety of marginal depths of water and a more varied outline to the shores of the lake. To implement the re-profiling of the lake banks the water level within the lake was lowered by at 2 to 3 metres to allow earthworks to be undertaken safely. This work was completed in 2007.

**3.0 Previous Assessment**

- 3.1. It is proposed to lower the final water level of Beeby's West Lake by 500 mm to provide additional water storage capacity for surface water attenuation from the proposed development at Great Haddon located to the west of the A15 south of Peterborough.
- 3.2. The proposed draw down of the water level in Beeby's West from a level of 6.0m AOD to 5.5m AOD is specifically referred to in Chapter 5 of the Great Haddon Environmental Statement (Flood Risk, Water and Drainage) and informed the Ecological Assessment included within the ES which was based upon the drainage proposals as set out by Peter

Brett Associates at that time and which remain unchanged in relation to draw down in the lake level.

- 3.3. The impact of the Great Haddon development on the aquatic plant assemblage of Beeby's West was also assessed following re survey of the lake in September 2010. The conclusions of this survey have been previously submitted to Peterborough City Council as Appendix 6.8 of the ES Addendum (February 2011) and confirm that the status of the lake remains unchanged from the baseline considered within the original ES and that no significant impacts on water quality and thus aquatic plant communities would result.

#### **4.0 Impacts on submerged aquatic plant communities**

- 4.1. The principal ecological interest of the lake relates to the stonewort and vascular aquatic plant community the lake supports. An assessment of the potential impacts of lowering the water levels temporarily to enable restoration was undertaken in advance of works proceeding and the outcomes of which were agreed with Natural England and Peterborough City Council. The assessment at the time was undertaken with support and advice from Mr Nick Stewart, the leading UK expert on stoneworts, who has undertaken numerous surveys of aquatic plants throughout the Hampton area over the last 10 years.
- 4.2. The stonewort and vascular aquatic plant community within the lake occurs around the margins of the lake with stoneworts growing in depths of water from over 2 metres to along the shallows of the shoreline. It was considered that the restoration of the lake and in particular the lowering of the water table to facilitate earthworks would not be detrimental to submerged plant communities as they would adapt to changing water levels, recolonising areas exposed by the lowering of the water level as the pit was allowed to refill. This assessment has proven to be the correct and the lake at its current water level continues to support a rich aquatic plant community ranging between shallow shores to depths of over 2 metres. The nature of the plant community and the dominant species changes with depth, disturbance from wave action and substrate type.
- 4.3. Given the past experience of adaptation exhibited by submerged plants within the Lake and considering the more varied and gradual bank profile below the current water line now that the lake margins have been re-profiled, it is considered that lowering the water level by 500mm will have no effect on the overall diversity of aquatic submerged plants which will move down the submerged banks of the lake readjusting to the new water level.

## 5.0 Impacts on emergent marginal vegetation

- 5.1. The margins of the lake have not been extensively colonised by new emergent vegetation since the bank re-profiling work was completed in 2007. The northern, eastern and western banks support little emergent fringing vegetation. The eastern bank is being eroded by wave action which will also make vegetation establishment by marginal plants difficult. The northern and western banks support gradually sloping shallow banks that are used by gulls and wading birds for loafing and feeding. The southern margins which were not re-profiled support fringing stands of common reed (*Phragmites australis*) with bulrush (*Schoenoplectus lacustris*) punctuated by sections of bare bank that are being eroded by wave action.
- 5.2. Emergent marginal vegetation of the types around Beeby's West Lake regularly colonise naturally fluctuating water bodies. In particular common reed is a common species of tidal creeks and rivers where the water table rise and falls on a daily basis. Most tall emergent plant communities can readily cope with fluctuations in water level of 400mm or more. In this case the final water level will be permanently lowered by 500 mm from the original proposed level which will enable marginal emergent vegetation to colonise further into the lake creating the potential for a wider emergent vegetation fringe increasing this habitat type. The wider belt of emergent vegetation will also provide greater opportunities for succession to take place with the drier upper sections of emergent vegetation being colonised by grasses and scrub as the water level rises and falls with seasonal variation. This will diversify the overall marginal habitats of the lakes creating a positive impact on biodiversity.

## 6.0 Impacts on Open water

- 6.1. Lowering the water level will inevitably reduce the overall area of open water, with the most obvious change occurring along the northern bank which has the shallowest slopes. The lake attracts a wide range of waterfowl throughout the year for breeding and overwintering purposes. However, the reduction in the area of open water area will be minimal and will not adversely affect the value of the lake as a large open expanse of water attractive to overwintering and loafing waterfowl which will remain.

## 7.0 Summary and Conclusion

- 7.1. In summary the lowering of the final water level within Beeby's West Lake by 500mm is considered likely to result in a positive impact on the biodiversity of the lake through an increase in the width of the fringing emergent vegetation, which in turn, depending on the extent of expansion will create greater a diversity of marginal habitat for a wide range of

animal and plant species. The lowering of water level will have no adverse impact on the stonewort community of the lake as these species can readily adapt to changes in water levels as is evident by the rich aquatic plant community which exists following significant lowering of the water level during the recent bank re-profiling work.