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Ecological Survey & Assessment Limited

MANNED MODEL CENTRE, TIMSBURY LAKE, ROMSEY, HAMPSHIRE

CONSERVATION MANAGEMENT PLAN

Draft Document

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Invertebrate, Bird, Mammal, Reptile, Amphibian and Botanical Surveys
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CONSERVATION MANAGEMENT PLAN

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1.0 INTRODUCTION

1.1 Background

Ecological Survey & Assessment Limited (ECOSA) have been contracted by Southampton Solent University to prepare a conservation management plan for Timsbury Lake, Timsbury, Romsey, Hampshire, located at National Grid Reference (NGR): SU 355 240.

The management prescriptions for the site fall into two sections: the first addresses the construction of the Manned Model Centre and are, perforce, highly invasive and interventionist, involving extensive protected species mitigation works in several parts of the site. The second section addresses the post-construction maintenance management of the site, and ongoing requirements for monitoring.

1.2 Site Setting

The site lies approximately three kilometres (km) to the north of Romsey town centre in a semi-rural setting comprising enclosed arable and pastoral land with associated farm buildings and scattered woodland.

The site comprises a man-made fishing lake with a weir located at the south-western end and five derelict hatchery ponds located in the north-east of the site. The fishing lake is divided into four separate parts by four bunds; these four parts include the Main Lake and Lakes 1, 2 and 3. The majority of the site is surrounded by woodland and enclosed agricultural land. Residential properties set within large grounds are located along Sandy Lane which runs in a north-west to south-east direction approximately 50 metres (m) to the south of the site. Wynford Farm and Industrial Estate are located to the south-east of the site and to the west of the site lies Brook Farm. **Map 1** shows the area references as used throughout this management plan.

1.3 Site Proposals

Southampton Solent University propose alteration works to the existing lake and its surrounding woodland in order to construct a slipway, a series of jetties, canals and waterways for the use of the manned models for teaching and instruction as part of the courses run by Warsash Maritime Academy. It is also proposed to construct shore side facilities to provide classrooms, changing facilities, canteen facilities, workshops and a boathouse. The proposal also includes the construction of a concrete slipway and jetties at various locations around the site and pier structures to enable the manned models to be moored up. The works will also involve the installation of new services and infrastructure as well as alterations to the surrounding woodland area to accommodate the lake based training.

2.0 SITE DESCRIPTION

2.1 Botanical Communities

The habitats of the site are botanically complex ranging from open water through marsh and willow scrub with patches of open grassland, to ancient woodland. The habitat complexity results in similar high species diversity in several areas of the site, notably including 36 ancient woodland vascular plant species.

The site consists of extensive areas of semi-natural broad-leaved woodland on damp to water-logged soils, with small fragments of grassland, tall herb and emergent vegetation. The emergent vegetation is not well developed around the margins of the lakes, as these are either too deep, or are too heavily shaded by trees. The lake also supports some species poor stands of aquatic vegetation.

The woodland on site is largely of historic origin, as is evident from the relatively high number of ancient woodland vascular plant species (AWVP) that occur. Of the list of 100 species used by Hampshire County Council (HCC) for assessing ancient woodlands, a total of 36 species were recorded on the site (see Volume 3, Appendix 6.2 of Timsbury Lake Environmental Statement (ES), December 2009), excluding a few which may have been planted. Most of these species are common and widespread in Hampshire, a county where ancient semi-natural woodland is generally well represented. The only species with a restricted distribution in Hampshire is large bitter-cress *Cardamine amara*. This is described as 'locally frequent' by Brewis *et al.* 1996[1], but is mapped as being absent from a large part of the county. The species is associated with seasonally flooded carr woodland on mineral soils. The wet woodland would be included under the relevant BAP Priority Habitat and is probably of 'Site of Importance for Nature Conservation' (SINC) quality.

The grassland is largely species poor and semi-improved in nature, but several noteworthy species occur, including five meadow 'indicator' species listed on the HCC recording card for neutral to acid grasslands. These are 'species which seldom occur outside unimproved grasslands or are indicative of a long period of uninterrupted grassland management'. These include three species which are also recognised as AWVPs. Of the species recorded, brown sedge *Carex disticha* and water avens *Geum rivale* are uncommon species of base-rich fen meadows and water meadows, occurring along the main river systems in the county. Corky-fruited water-dropwort *Oenanthe pimpinelloides* is a widespread and increasing species of neutral meadows and road verges; bitter-vetch *Lathyrus linifolius* and betony *Stachys officinalis* are fairly widespread in unimproved acid grassland and woodland edge habitats. Given the presence of historic woodland supporting a good range of AWVP species, the

[1] Brewis A, Rose F, Bowman P, 1996 The Flora of Hampshire, Harley Books

presence of large bitter-cress and several meadow indicator species on the site the vegetation is considered to be of significant conservation value.

2.2 Protected Species

Ecological surveys have established the presence of populations of otter *Lutra lutra*, water vole *Arvicola terrestris*, great-crested newt *Triturus cristatus* and a range of breeding birds. In addition, the site is used for foraging by up to eight bat species, and there are two known tree roost sites of soprano pipistrelle *Pipistrellus pygmaeus*. Additionally, a total of 15 Nationally Scarce and three Red Data Book (RDB) invertebrate species have been recorded. Chapter 6 of the Environmental Statement should be referred to for full details of the ecological assessment of the site.

The proposed works will be subject to the requirement to obtain a Natural England Conservation Licence for water vole and European Protected Species Mitigation licences (EPSM) for otter and great-crested newt. For otter, the licence requirement will cover the entire site, as this is a wide-ranging species that can be expected to use all areas of wetland on the site. Water vole is found across much of site and therefore the licence will cover the entire site. The licence for great-crested newt will be required for proposed works in the north-east area of the site.

It is considered that, although the construction and installation stages of the facility will generate significant disturbance, it will be possible to increase and enhance the area of suitable habitat for water vole, otter and great-crested newt once construction is complete, this management plan provides the basis from which to achieve this.

2.3 Site Evaluation

The site is considered to be of ecological value at a County level due to the established populations of multiple protected species and high botanical diversity. There is a wide range of habitats ranging from ancient oak-dominated woodland, through wet streamside alder/willow woodland, to water bodies with a variety of sizes and hydrological regimes.

In landscape terms, the site is part of the Test Valley catchment, and connectivity for aquatic species such as water vole and otter is good. Habitat connectivity for other species would depend on their individual dispersal abilities. Connectivity for bats is good, based on the presence of wooded corridors to the east and south, and the wetland connection to the River Test. Connectivity for great-crested newts is more difficult to assess, although suitable dispersal, if not breeding, habitat, is present to the east and west of the site. The ancient woodland plant species of the site are, by definition, notably poor dispersers, and represent long-term persistence of woodland habitat on the site, rather than effective ecological connectivity.

3.0 PROTECTED SPECIES MITIGATION – CONSTRUCTION PHASE

3.1 Introduction

This section provides an overview of the species specific mitigation works that will be carried out during the construction phase of the development. This work will be carried out by a suitably licenced ecologist. A timetable of 'safe' working periods for each of the protected species present is provided in **Appendix 1**. **Map 2** shows the construction sequence to be adopted. The location of protected species mitigation is shown on **Map 3**. Protected species works specific to each area of the site are provided in Section 4.0.

3.2 Objectives

The objectives for the construction phase mitigation works on site are:

- To facilitate the installation, and subsequent operation of the Manned Model Centre in keeping within the obligations of ecological legislation and with minimum long-term impact on the biodiversity of the site.

3.3 Vegetation

During the construction period much of the proposed work is to be confined to the access road, area of buildings and existing bunds. A primary vehicular access route is to be established along the main path which extends from Jinny Lane in the west to Lake 3 with a secondary access route along the main bund (**Map 1**). The following measures are to be implemented to protect the vegetation at the site within the vicinity of the working areas:

- Due to the presence of protected species across the site, any vegetation clearance required will be carried out by a suitably qualified ecological contractor and not by non-specialist contractors. All scrub and tree management works are to be carried out using hand-tools, including chainsaws and strimmers;

- Tree protection fencing will be erected where significant trees may be impacted upon;

- Root protection matting will be installed along all vehicle access routes across the site; and

- Access to areas of woodland, away from the development areas, by site contractors will be strictly prohibited.

3.4 Badger

Badger activity at the site was generally low during the survey period. However, during the winter of 2009/10 the level of badger activity at the site was moderate, and as a result the following measure will be implemented:

- Any deep excavations will be provided with a slope of 1:2 to allow any badgers that become trapped, an easy escape route.

3.5 Bats

There are no current requirements to obtain an EPSM licence in respect of bats for the proposed development works at the site, as the two tree roosts are to remain in-situ. However, as a precautionary measure the following mitigation will be implemented:

- Any tree to be felled will be inspected in advance for features that may be utilised by bats, this will include inspection of holes, splits and loose bark for roosting bats using an endoscope prior to felling;

- Any tree holes that are too deep to inspect sufficiently well with an endoscope will be subject to a single dusk emergence survey immediately prior to felling;

- If roosting bats are recorded during these inspection works then an EPSM licence will be required for the removal of roosts;

- During the construction phase of the development there will be no illumination of the site at night during the spring, summer and early autumn periods when bats are active and daylight hours extend into the later evenings. In the winter lighting will be required up to 17:30, however, this will not disturb bats since they are not active at this time of year;

- Access to areas of woodland away from the development areas by site contractors will be strictly prohibited;

- A total of 20 bat boxes will be erected within mature trees at the site. These boxes will comprise a mix of Schwegler 1FF, 2F and 2F-DFP boxes which will provide suitable roosting habtiat for a range of bat species; and

- Four bat roosting units will be incorporated into each of the new buildings. These will consist of Schwegler 1 FR roost units installed behind the wood cladding of the buildings. The units will be located on the southern elevations of the buildings facing the lakes.

3.6 Water Vole

Impacts on water vole are largely associated with the construction phase of the development where excavation of bunds and the navigation channel, clearance of vegetation and the operation of heavy machinery will have a negative impact on the species. As a result of the loss of habitat a Natural England conservation licence will be required prior to the commencement of development works. Mitigation measures that are to be implemented under this licence will include:

- All work to be carried out under a Natural England conservation licence;

- A four phased approach to the excavation of the drainage channel and removal of bunds is to be adopted. **Map 2** shows the proposed construction sequence. These phases will involve bund removal coupled with bank creation;

- Creation of a total of 780m of new bankside habitat to replace that lost, together with reinstatement of a further 400m of channel edge. **Map 4** shows the extent of the water vole banks to be created (**Figure 1,** Section 4.4.2, shows the proposed design). These banks will be planted with native species riparian plants of local provenance. Where possible existing vegetation from areas of bankside habitat to be lost will be transplanted to the banks to be created to allow rapid recolonisation of vegetation.

- Where areas are to be removed to create channels and other infrastructure, the vegetation will be cut to ground level so that it is $\leq$10 centimetres (cm), and hence unsuitable for the species. This will encourage animals to move away from the works area. These areas will then be maintained short and monitored for water vole activity for a minimum of four days. Displaced animals would be expected to move to the newly created areas of earth bank. **Map 3** shows the extent of areas where this treatment will be required;

- After four days following vegetation removal a careful destructive search of the areas to be excavated will be carried out. This will involve hand removal of burrows and all features where water vole may be present such as root stocks. Once the ecologist is satisfied that there is no longer a risk of water voles being present then a slow supervised excavation of the banks may proceed;

- The erection of water vole exclusion fencing around areas to be worked followed by the trapping and removal of animals may be used in certain areas where it is deemed that vegetation removal and destructive search works are not possible. This may occur along the channel to be widened in the east of the site, south of

Lake 3 or along the Main Bund between the Main Lake and Lake 1. Trapped animals will be placed as close as possible to the area of trapping so as to avoid placing animals within neighbouring territories. Exclusion fencing will then remain in place until work in that area has been completed;

- Site contractors will not be permitted to access areas of the site away from the construction areas that are operational at any particular time. This will reduce disturbance to the species away from the immediate working area; and

- Vehicle movement across the site will be minimised. For example, when working in the eastern areas of the site all vehicles will be stored within this area rather than being returned to the west of the site at the end of the day.

3.7 Otter

Due to the disturbance of the site during the construction period a EPSM licence will be required prior to the commencement of development works. This licence will cover all activities likely to disturb otter or damage their habitat although the impact of habitat damage on the species is likely to be minimal. The following mitigation measures will be implemented during the construction phase:

- All work to be carried out under a EPSM licence;

- Two artificial otter holts are to be installed at the site, these are to be located between the weir in the west of the site and Jinny Lane and within the woodland to the south-east of Lake 3. Full details are to be provided within the EPSM application, however, the holts will be constructed with a concrete block chamber with two access pipes;

- Site contractors will not be permitted to venture onto areas of the site away from the construction areas that are operational at any particular time; and

- No artificial lighting is to be used in association with the construction works during the spring, summer and early autumn periods. In the winter lighting will be required up to 17:30.

3.8 Reptiles

The main impact on reptiles will be the potential injury of grass snakes during the proposed excavation works. As a result the following measures will be implemented during the construction phase of the development:

- Where areas are to be impacted upon, the vegetation will be cut to ≤10cm so that it is short and hence less suitable for the species. This will encourage animals to move away from the works area. These areas largely coincide with those areas to be destructively searched for water voles as shown on **Map 3**.

- The area will then be left for a minimum of four days and then a destructive search will be carried out of areas to be impacted upon, this will involve a suitably experienced ecologist/s supervising the removal of soil. Any animals found will be relocated to areas of suitable habitat nearby.

3.9 Great-crested Newt

Great-crested newt is present as a breeding population within Ponds 1 and 2 of the Carp Ponds in the north-east of the site. As a result of the protected status of great-crested newt a EPSM licence will be required prior to the commencement of development works. Mitigation to be implemented under this licence will include:

- The erection of great-crested newt exclusion fencing within areas to be significantly disturbed close to the pond. **Map 3** shows the approximate extent of this exclusion fencing;

- Trapping and removal of great-crested newt from this fenced area will be carried out over a minimum of 30 days between mid-March and mid-October. The ideal time for this trapping would be from mid-March for 30 consecutive days, however, planning permission is anticipated in mid-April 2010 and therefore it is anticipated that a EPSM licence would be obtained (Natural England have a statutory 30 working days to process the application) and translocation work would commence in mid-May. Clearance of the area of great-crested newt would be expected to be completed in mid-June; and

- Once this area is free of great-crested newts excavation of the proposed channel within this area can proceed. However, the exclusion fencing must remain in place and undamaged until works have been completed.

3.10 Breeding Birds

During the primary construction phase of the development, potential impacts to birds will be the disturbance and possible destruction of birds nests during the construction phase and the removal of beds of amphibious bistort from the Main Lake which functions as a breeding area for water birds. As a result the following mitigation measures are to be implemented:

- Where vegetation clearance within the breeding season is required an inspection will be carried out by a suitably qualified ecologist, prior to clearance works commencing. If an active nest is found then a suitable exclusion zone will be created where no site activity will be permitted, this will be dependent on bird species and nesting location, but may extend for up to 10m around the nest;

- Site contractors will not be permitted to access areas of the site away from the construction areas that are operational at any particular time. This will reduce disturbance to the species away from the immediate working area;

- An exclusion area in the south-west of the Main Lake will be demarcated with buoys and will extend for 10m from the lake shore and 20m along the lake bank. Within this area a range of native, local provenance aquatic plants will be planted. This area will be a permanent area of the site provided to maintain breeding water bird species; and

- A range of nest boxes will be erected across the site to include 20 blue tit and great tit type hole boxes, 20 open-fronted boxes and five owl boxes.

4.0 POST CONSTRUCTION MANAGEMENT WORKS

4.1 Introduction

This section provides a description of the habitat management requirements of the Timsbury Lake site. Due to the ecological sensitivity of the site, all scrub and tree management works are to be carried out using hand-tools, including chainsaws and strimmers, by ecologically-qualified personnel. **Map 5** shows the location of the management areas as referred to in this section of the management plan.

4.2 Management Objectives

The management operations recommended in this document have the following aims:

- To provide habitat enhancement for the protected species present aimed at maintaining or increasing their population status on the site;
- To promote an increase in the structural diversity in the habitats across the site, and hence increased biodiversity; and
- To facilitate the operation of the Manned Model Centre.

4.3 Rationale

The general approach to the post construction management taken has been to zone the site (**Map 5**), based on the levels of human activity necessary to the operation of the Manned Model Centre, whilst retaining the maximum possible refuge areas of progressively lower management intervention towards the south-eastern, and particularly the north-eastern, areas of the site. Specific mitigation works are necessary for water vole, otter and great-crested newt during the construction phase of development (Section 3.0), whereas maintenance management will consist mainly of management of the vegetation communities.

In several areas no active management is recommended. Such “management by non-intervention” areas are usually late successional stage woodland or wetlands, which are considered to be both structurally diverse and species-rich, and are, therefore, unlikely to be significantly enhanced by active management operations.

4.4 Site Management Prescriptions

4.4.1 Site Management Areas

The site has been divided into five main management areas largely based on the existing plant communities, and the proposed management operations. These areas are shown on **Map 5** and comprise:

Area 1

Area 1 includes the new buildings including boathouse, classroom and vehicular access area.

Area 2

Area 2 includes the bunds, islands, channels, and other boat operation areas of the Main Lake and Lakes 1, 2 and 3.

Area 3

Area 3 includes the woodland but not the bankside vegetation, on all the land to the south of the Main Lake and lakes, and a similar section immediately north of Lake 1. It is subdivided into the following three subsections:

3a: Existing mature woodland and scrub to the east of the proposed buildings;
3b: The predominantly wooded banks to the south and west of the Main Lake; and
3c: The area of oak, hazel, and ash woodland in the extreme east of the site.

Area 4

Area 4 includes the oak and hazel woodland to the north of Lakes 1 and 2.

Area 5

Area 5, in the northeast of the site, varies from relatively dry oak woodland to wet alder woods and stream habitats. It is subdivided into the following three subsections:

5a: Former carp ponds and associated open grassland;
5b: Recently-colonised willow carr; and
5c: Alder woodland bordering the stream with associated temporary pools.

4.4.2 Construction Stage Mitigation Works and Management Prescriptions

Area 1

This area will be subject to a high level of disturbance during the construction of buildings and there will be some permanent loss of habitat. Area 1 shows a high level of evidence of water vole activity and will therefore require translocation and mitigation for this species to be carried out subject to the provisions of a Natural England conservation licence. The proposed mitigation will include reduction of the existing vegetation height to $\leq$10cm followed by a destructive search so as to displace water vole from the area. Displacement of water voles is most effective if carried out between late February and early April and where possible works should be carried out during this period. The works in this area are to follow the schedule provided below:

- Early 2010: Initial clearance of scrub and coppicing of willow and alder, to facilitate access and promote development of herbaceous bankside vegetation. All cordwood is to be stacked as habitat piles in Area 3a, with all cut material to be chipped and dispersed into the woodland. Reduction of bankside vegetation to ≤10cm height by strimmer. All cut material is to be removed using soft plastic rakes;

- Early 2010: Destructive search (or erection of exclusion fencing and translocation) of bund and bankside so as to displace water voles from Area 1 to adjacent Areas 2, 3a and 4. Concurrent with the destructive search turves from the building footprint will be progressively removed and re-laid to locations in Areas 2, 3a, 3b, and 4 to facilitate habitat creation for water voles. Provided this is done with care, the turves should re-establish rapidly and will provide suitable habitat in their first growing season. These turves will be placed within areas of unvegetated bank or within new banks to be created for water voles;

- The inlet which extends beneath the existing derelict boathouse is to be reinstated and the concrete bank sidings are to be removed. This will provide an increased riparian margin suitable for water vole. The banks will be reprofiled to an approximate slope of 35^{o} to 45^{o} from the horizontal following the removal of concrete sidings and natural recolonisation will be allowed;

- Screening planting is to be established to the immediate south of the access road using hawthorn *Crataegus monogyna*, hazel, dogwood *Thelycrania sanguinea*, guelder rose *Viburnum opulus*, and wild privet, *Ligustrum vulgare*. The planting will cover an area of approximately $250m^2$, planted with 5 x 1m whips per m^2. These should be planted with guards, using planting stock of local provenance; and

- The peninsula to the west of the derelict boathouse currently comprises an area of mown grass with a sedge-dominated riparian margin. This represents good water vole habitat and will be protected during the construction works through the installation of appropriate high-visibility fencing. This area will then be increased in extent by ceasing to mow the grassland so that the area of tall sedges expands. It will however, probably be necessary to remove any colonising willow or alder saplings every two to three years.

Area 2

Area 2 will be subject to high levels of disturbance where sections of bund are to be removed to facilitate boat access. In addition, this area will require translocation and mitigation for water vole which will be subject to the provisions of a Natural England conservation licence.

As with Area 1, this will include reduction of vegetation height, with destructive search and displacement to new habitat in parts of Area 2 that are to be retained, and Areas 3a and 3b. The works in this area are to follow the schedule given below:

- Winter 2010/2011: Initial clearance of scrub and coppicing of willow and alder in retained sections of bunds, to facilitate access and promote development of herbaceous bankside vegetation. The extent of bankside clearance will be defined on site during management operations but will consist of approximately 75% removal of woody scrub vegetation along water margins and 50% removal of canopy cover. In the case of woody scrub this will be strimmed and cleared to encourage the development of herbaceous vegetation whilst retaining small areas of scrub. Canopy works will involve a combination of the removal of dead trees where necessary for Health and Safety purposes, crown lifting of single-stemmed trees to be retained (mostly alder), and coppicing of multiple stemmed trees, (mostly willow). All felled timber and brash will be either cut into cords and stacked on site, or chipped to form habitat piles;

- Winter 2010/2011: The removal of willow and alder alongside the new channel in the woodland stream in the east of the site, (in the area immediately east of Lake 3), will involve the clearance of existing vegetation to approximately 2 to 3m from the waters edge. During channel widening and excavation a soil bank is to be created along the north side of the woodland stream, with a slope of approximately 35^{o} to 45^{o} from horizontal. This bank will have clay pipes installed within it, so as to create artificial water vole burrows and will be planted with turves of native species salvaged from the existing banks prior to excavation works commencing; and

- Alongside the retained bunds installation of artificial banks constructed of hazel faggots and infilled with soil and with native species planting to provide additional water vole habitat to mitigate for that lost to the proposed site works is to be installed. The extent of the artificial banks is shown on **Map 4**. **Figure 1** shows a design for these artificial banks. These artificial banks will provide a total of 780m of replacement bankside habitat across the site. These artificial banks will consist of willow stakes placed within the water at 1 to 1.5m intervals with horizontal hazel faggot bundles. The space between these two parallel rows will be filled with soil arising generated from the excavation of banks. The top of these artificial banks will be topped with a combination of vegetation translocated from the banks and bunds to be lost and coir rolls. Clay pipes will be inserted into these banks at various heights above and just below the water level to provide ‘instant’ refuges for water voles.

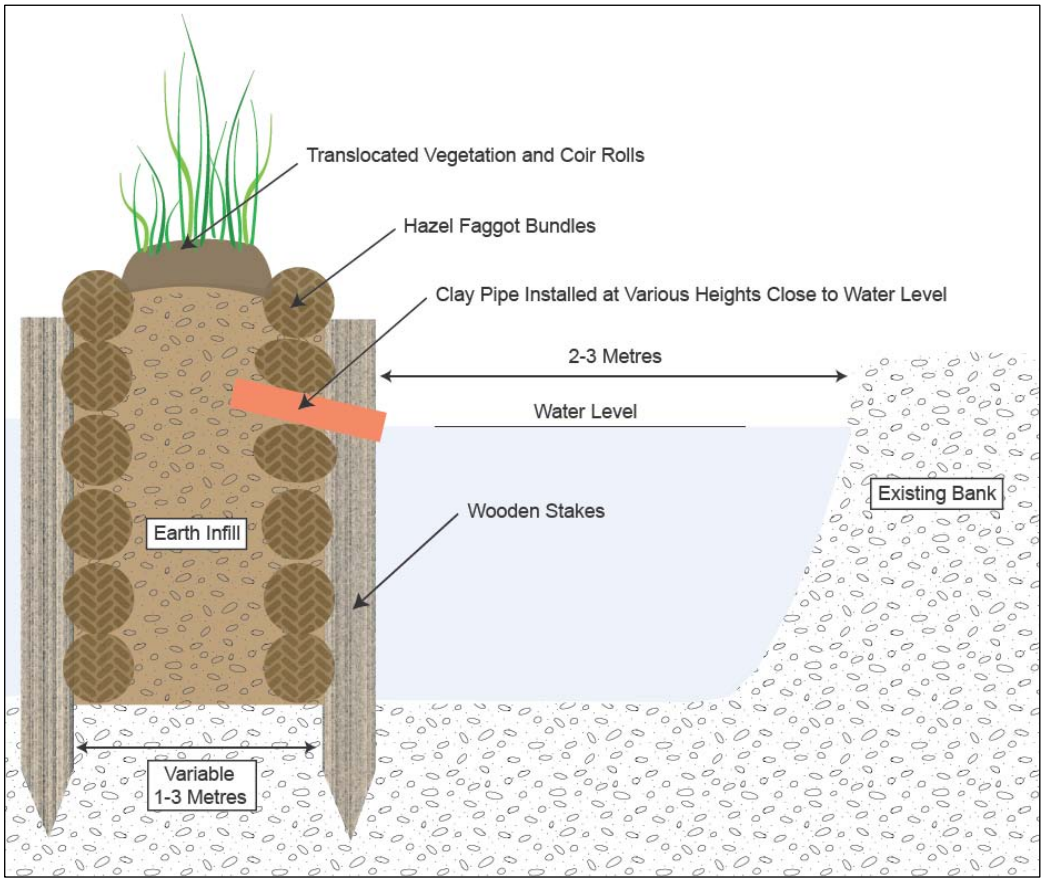


Figure 1: Artificial Bank Design

Area 3a

Area 3a will be subject to the minimum of tree and shrub clearance necessary for the installation of primary access routes to Area 2 and 5b. Any material cut here is to be stacked or chipped as appropriate to provide habitat piles. The remainder of this area is to be left undisturbed during the development stage.

Area 3b

Area 3b is to be subject to extensive scrub removal for two reasons: firstly to facilitate the installation of jetties on the south-eastern and south-western banks of the Main Lake and; secondly to promote the development of more widespread herbaceous bankside vegetation as compensatory water vole habitat for that lost in Areas 1 and 2. The works in this area are to follow the schedule given below:

- Winter 2009/2010: Coppicing of willow and alder at the water's edge on the south-east edge of the Main Lake to facilitate the development of herbaceous vegetation and installation of jetties;

- Spring 2010: Installation of artificial banks along the south-west shore of the Main Lake constructed of hazel faggots and infilled with soil (**Figure 1**). These are to be planted with turves of native species sourced from the northern side of the Main Lake to provide additional water vole habitat to mitigate for that lost to the proposed site works along south side of the Main Lake; and

- Summer 2010: An artificial otter holt is to be installed adjacent to the western discharge from the Main Lake.

Area 3c

Given the relatively high levels of disturbance in and around Lake 3 during the construction phase, this area will be treated as a non-intervention zone and retained as a refuge area from disturbance elsewhere on the site.

Area 4

No active management is to be carried out in Area 4 during the construction phase beyond that necessary for access or tree safety.

Area 5a

Area 5a includes five former carp rearing ponds which are now largely overgrown with aquatic and semi-aquatic vegetation. The lining used for the ponds is not visible, although the remains of overflow standpipes are present in several ponds. Great-crested newts have been recorded breeding in two of the ponds. All the ponds are at a relatively late successional stage, with very limited, or no remaining areas of open water. As the breeding ecology of the great-crested newt is dependent on the presence of areas of open water in otherwise well vegetated ponds partial re-excavation is to be carried out. The three most easterly ponds, designated Ponds 1, 2 and 3 on **Map 1**, are to be partially re-excavated to increase the amount of available aquatic habitat for this species. These ponds have been chosen for re-excavation as two of them, Ponds 1 and 2, retain significant open water where as the other ponds are dry. Pond 2 is overshaded and prone to desiccation, although a single juvenile great-crested newt was recorded here. It will be necessary to establish how these ponds are lined before any excavation takes place. A test excavation should be undertaken by hand at one of the remaining standpipes to establish the depth and material used in the pond lining. Subject to the granting of a Natural England EPSM licence to disturb great-crested newts, the following schedule of works will be carried out.

- October-December 2010: remove silt and plant material from an area 10 x 5m and up to 1m depth, depending on status of the pond liner, at the western end of Pond 1. This part of the pond is heavily overgrown with reedmace *Typha latifolia*, and only provides open-water habitat during spells of wet weather. The excavated area is to be left

unplanted to provide a clear area for plant re-colonisation. For Pond 2 all alder colonisation should be removed, followed by excavation of an area 10m x 5m, and potentially up to 1m depth, depending on the status of the liner. Pond 3 is to be treated similarly, with the excavation of an area of reedmace 10m x 5m, and potentially up to 1m deep, again depending on the lining, in the south-western corner of the pond. The spoil from the excavations is to be placed within the depression to the north-east of the new channel to be created in Area 5b. Any arising vegetation i.e. reedmace will be planted on the artificial water vole banks. The remaining ponds are to be subject to a lower level of management including reduction in scrub encroachment and creation of small (<4m^2) areas of open water using hand tools only; and

- Winter 2010/2011: The north-western boundary of this area is to receive supplementary planting with additional native tree and shrub to an existing hedge bank and also to link to similar habitat in Area 5b. The species to be planted are field maple *Acer campestre*, hazel, hawthorn, guelder rose and common oak *Quercus robur*. The area to be planted is approximately 100m x 10m and will be planted with approximately 100 whips of each of the above five species. These trees and shrubs are to be planted in 1m staked tubes. All planting stock will be of local provenance.

Area 5b

The southern section of Area 5b will be subject to the excavation of a channel between Lakes 2 and 3. This will require scrub and vegetation removal, and mitigation of potential impact on great-crested newt to include exclusion fencing, pitfall trapping and translocation of animals from the working area to the vicinity of the former fish-rearing ponds. During the excavation works clay pipes are to be inserted into the new banks to create artificial burrows for water voles. Banks are to be planted with pre-planted roll coirs during the excavation of the channel. In addition, the new channel is to be profiled to create suitable habitat for the formation of water vole burrows. This is to include a variably profiled bank and a 750mm planting bank that will receive aquatic plants sourced from elsewhere on site and pre-planted roll coirs (**Figure 2**). During the excavation works clay pipes are to be inserted into the new banks to create artificial burrows for water voles. The works in this area are to follow the schedule given below:

- Winter 2009/2010: Clearance of young willow carr to facilitate construction of new channel and wetland area. A small area of carr is to be retained in the north of Area 5b;

- Spring 2010: Great-crested newt exclusion fencing to be installed around working area of channel excavation. Pitfall trapping of great-crested newt is to be carried out

here in spring 2010, with the relocation of all trapped great-crested newt to the vicinity of the Carp Ponds;

- Summer 2010: Excavation of the new channel and planting of shelves. The newly formed banks will receive turfs sourced from elsewhere on site, for example from sections of the Main Bund to be removed. The arising soil is to be placed within the northern area of Area 5b and landscaped;

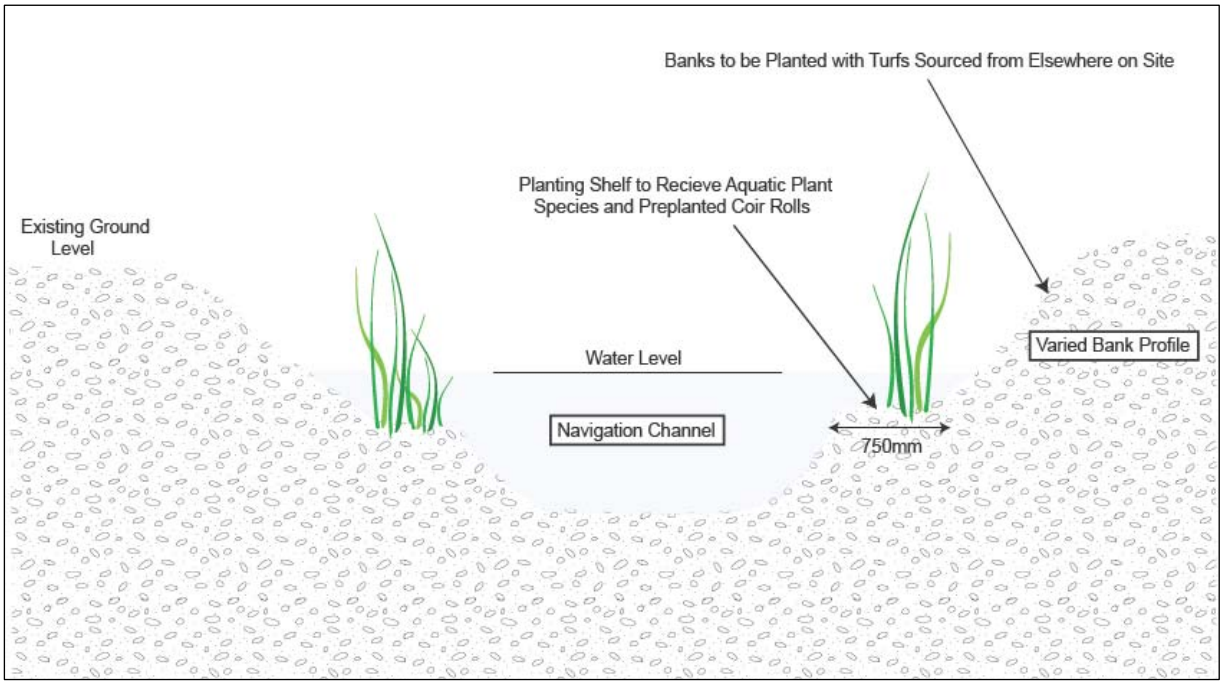


Figure 2: New Channel Design

- Autumn 2010: Native species tree and shrub planting is to be carried out along the north-western boundary of this area to link to the boundary habitat in Area 5a using the same planting prescription as for Area 5a; and

- The area of arising placed in the northern area of Area 5b will be allowed to recolonise naturally and will be monitored. If after five years the vegetation communities that develop are botanically uninteresting (i.e. dominated by coarse weed species) then a suitable planting scheme will be devised.

Area 5c

Area 5c is to remain undisturbed during the construction programme and as such no pre-construction/construction phase management works are proposed within this area. During the

construction phase there will be no access to this area by site contractors. Following construction, the following enhancement measure will be implemented:

- Summer 2010: An artificial otter holt is to be installed within this area within the vicinity of the derelict ponds in the south-east of the area.

4.4.3 Post-Construction Maintenance Management and Monitoring

When construction is completed management effort can be significantly scaled down to the level of habitat management, and the ecological monitoring required by the terms of the protected species licences for the site. Due to the ecological importance of the site all habitat management and ecological monitoring will be carried out by suitably experienced ecological contractors under a long-term management contract so as to ensure continuity of management and after care. All vegetation clearance will be carried out with hand tools such as chainsaws and strimmers.

The following management and monitoring operations are to be instigated:

Area 1

- The native species shrub planting along the entrance road will be maintained by coppicing a block comprising half of all planted shrubs alternately at 8-10 year intervals. This will be carried out in the period December to February;

- The remaining and recreated water vole habitats are to be managed and monitored in accordance with the requirements of NE conservation licence. The management of these areas will include the removal or suppression of any colonising woody vegetation including alder, willow and bramble on an annual basis, so as to favour a water margin dominated by sedges and other herbaceous species. This will be carried out in the period December to February. Any other removal of bankside vegetation will consist of the minimum necessary that is consistent with the operational needs of the facility. However, at all times areas of longer sedge dominated vegetation will be retained to a depth of approximately 75cm along the waters edge; and

- The area of grassland to the west of the new buildings will be subject to a single cut in late September using strimmers. All arisings will be raked into predefined habitat piles.

Area 2

- The maintenance of remaining areas of bund and bankside vegetation will include the removal or suppression of colonising alder, willow and bramble on an annual basis, to

be carried out in the period December to February. Vegetation management here will aim at approximately 75% of the bankside being occupied by herbaceous vegetation, with the remaining 25% consisting of retained specimen alders or coppiced willow, in order to provide habitat for water vole;

- The area of cleared willow to the south of the artificial banks on the southern side of the Main Lake will be managed on a five year management rotation whereby approximately 25% of the length of the bank is cleared of willow regrowth back to the dry woodland banks;

- The maintenance of the banks of the new channel in the east of the area will be required to maintain a minimum of approximately 75% herbaceous plant cover within 2m of the water's edge, to maintain habitat for water vole; and

- Any other removal of bankside vegetation will consist of the minimum necessary that is consistent with the operational needs of the facility. For instance retained alder trees and willows can be maintained either by crown lifting or coppicing if required, to facilitate boat access. This work will be carried out in the period December to February. The waters edge will, at all times be dominated by a fringe of tall, unmanaged herbaceous vegetation of no less than 75cm depth retained in an unmanaged state.

Area 3a

- No active management is recommended in Area 3a, the area will be treated as non-intervention management. However, there may be a requirement for tree safety works in close proximity to the main path and periodic clearance of the main path using strimmers.

Area 3b

- Maintenance of Area 3b should be confined to the removal of encroaching willow scrub to maintain approximately 75% herbaceous bankside plant cover and to allow boat access to jetties. This can be achieved by rotational coppicing of the remaining bankside willows.

Area 3c

- No active management is recommended in Area 3c. Given the distance of this area from the operational parts of the site, there should be no requirement for any tree safety works.

Area 4

- No active management is recommended for Area 4, the area will be treated as non-intervention management. However, there may be a requirement for tree safety works in close proximity to the main path and periodic clearance of the main path using strimmers.

Area 5a

- Management within Ponds 1, 2 and 3 will be aimed at maintaining an adequate area of open water, this will be no less than approximately 25m^2 of open water within each pond. Depending on the rate of plant growth, it will be necessary to clear, by hand, the same or alternative sections of the ponds at intervals of 5-15 years. Any such works will be carried out in the period November to December; and

- Removal of adjacent scrub to prevent excessive shading of the ponds will be carried out at approximately five year intervals, in the period November to February.

Area 5b

- Bankside of new channel will be managed by occasional removal of encroaching woody scrub to maintain approximately 75% herbaceous bankside plant cover along the new channel;

- For new tree and shrub plantings at the north-west boundary, provided >60% of planting is surviving after five years, no further active management is recommended; and

- There may be a need to replant the area of ground to the north of the new channel depending on the type of vegetation that colonises the area. This will be reviewed five years after completion of the scheme.

Area 5c

- No active management is recommended in Area 5c the area will be treated as non-intervention management. However, there may be a requirement for tree safety works in close proximity to the main path and periodic clearance of the main path using strimmers.

4.5 Monitoring and Review

4.5.1 Species Monitoring

The following recommendations are subject to revision based on the requirements of the Conservation Licence to be obtained for water voles, and the EPSM licence to be obtained

for great-crested newts and otter. Outline recommendations for post-construction monitoring of the protected species on the site will be a requirement of the licences obtained and will include the following measures:

- **Water Vole**: The most critical time for this species will be in the first two years following development due to the level of disturbance that will occur during the construction phase. Monitoring for water voles will involve an assessment of the level of vole evidence and activity across the site, this will include monitoring in undisturbed areas and in areas of habitat creation. This will also include an assessment of the colonisation success, or otherwise, of the transplanted vegetation, and development of areas of water's edge herbaceous vegetation following clearance and coppicing of bankside trees. The monitoring of the water vole population will be carried out on an annual basis for five years post construction. The monitoring programme will involve three annual surveys carried out in May, July and September.

- **Bats**: Annual surveys of the use of bat boxes on site will be carried out for five years post-construction. This will involve three annual inspections of all bat boxes carried out in May, July and September.

- **Otter**: The distribution of otter field signs and use of the artificial holts will be monitored for five years post-construction. The monitoring programme will involve four annual surveys carried out in January, April, July and October. In addition, remote monitoring cameras will be erected adjacent to the artificial holts to monitor the use by otter.

- **Great-crested Newt**: A standard Phase 2 survey protocol using torch and bottle trap survey methods, will be used to assess the population trend for this species on an annual basis in March to June, for five years after construction and habitat mitigation works have been completed. The survey will involve six survey visits during the survey period.

An interim report will be prepared, at the end of each year for five years post-construction, which summarises the season's field results. The frequency and distribution of protected species field signs will be compared with the baseline field data already accumulated for this site, and this data can be used as a broad index of the success or failure of the mitigation works undertaken. Should any negative trends in species be recorded then causes will be identified and mitigating works will be implemented.

4.5.2 Fixed Point Photography Stations

The progress of habitat creation and restoration will be recorded through the establishment of fixed-point photography. The precise location will be decided on-site with a record of Global Positioning System (GPS) coordinates taken and then marked with a permanent marker post to allow comparable repeat surveys. Digital photographs will be taken at these points in April and September for the first ten years post construction to record changes in habitat condition. The precise location of these points will be decided on site, although the majority will be concentrated in the areas of habitat creation to provide background data on the success or failure of species mitigation works.

5.0 CONCLUSION

In ecological terms the construction phase of the proposal will be highly invasive requiring significant enhancement and mitigation work to be undertaken. This will include protected species mitigation works for water vole, great-crested newt, otter, reptiles, breeding birds and bats. During the construction phase the site will be zoned to retain undisturbed areas of habitat, the zoning will also reflect the level of management works required during the operational phase of the development. Areas 3c and 5c will be subject to non-intervention management; Areas 3a, 3b, 4, 5a and 5b will be subject to low levels of management and Areas 1 and 2 will be subject to higher levels of management.

The detailed scheduling of mitigation works will need to be devised once planning permission is granted, since timing will be critical and will need to be planned once there is certainty regarding commencement dates. Such scheduling would be presented within the relevant protected species licences but would also need to follow, as closely as possible, the timetable presented in **Appendix 1**.

The operational phase of the development is considered to be relatively ecologically benign and is likely to result in considerable benefits to the site in terms of ecological management. Post-construction management will be limited to habitat maintenance works and monitoring of protected species.

It should be noted that habitat management is not a precise science. There is a significant element of uncertainty in all site management operations which is dependent upon the multiple factors that influence animal populations and the processes of plant succession. The recommendations here are considered to represent “best practice” based on current levels of knowledge of the species and habitats present on the site. However, management work must be carried out by an experienced ecological contractor so that works can be fine tuned in accordance with the way in which species and habitats respond to the management works.

Map 1 Site Boundary and Area References

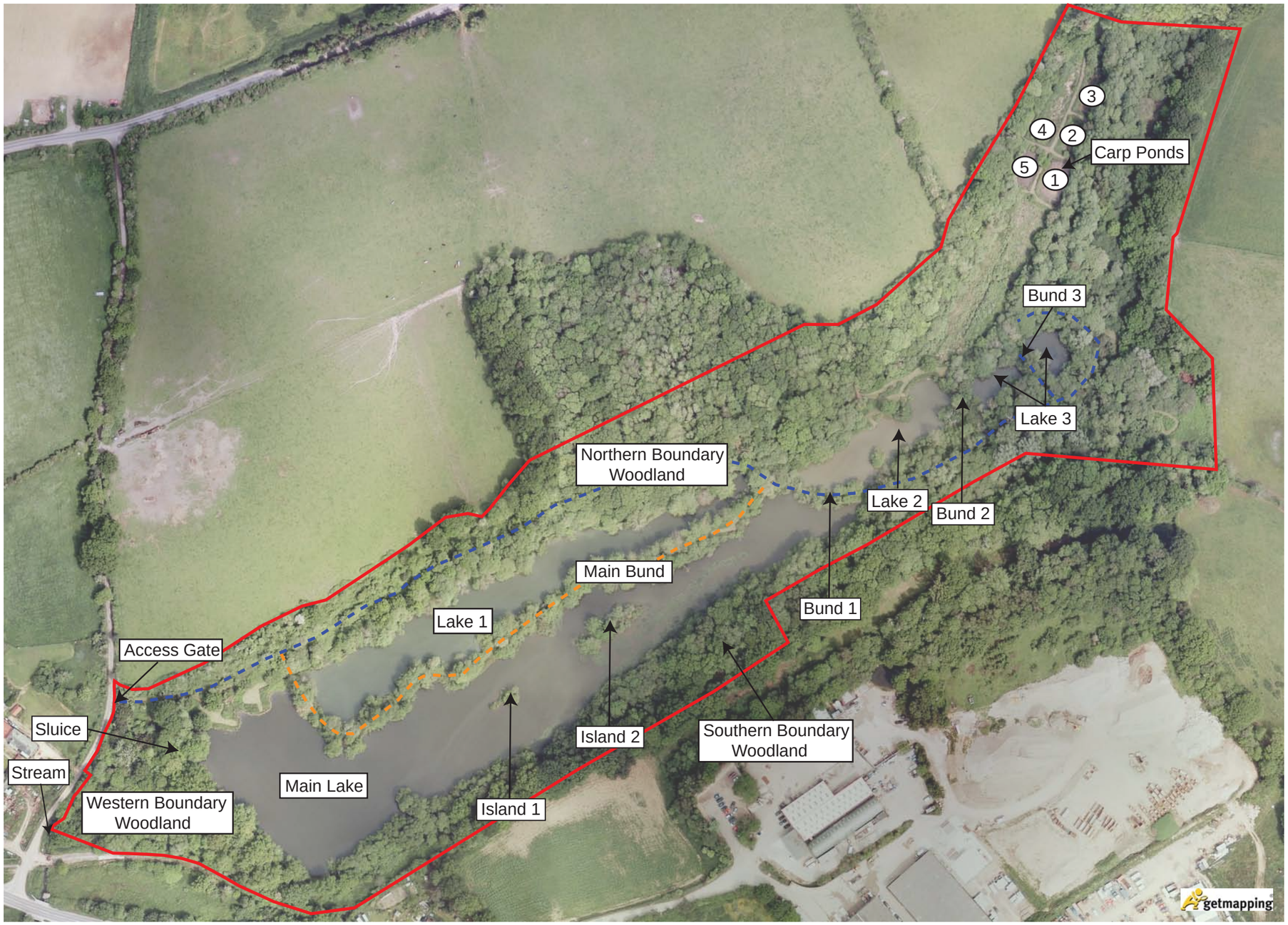
NEW MANNED MODEL CENTRE, TIMSBURY LAKE

CONSERVATION MANAGEMENT PLAN

Map 1 Site Boundary and Area References

Client: Southampton Solent University

Date: February 2010 | Status: Draft



KEY

- Site Boundary
- Primary Site Access
- Secondary Site Access
- (1) Carp Pond References

N

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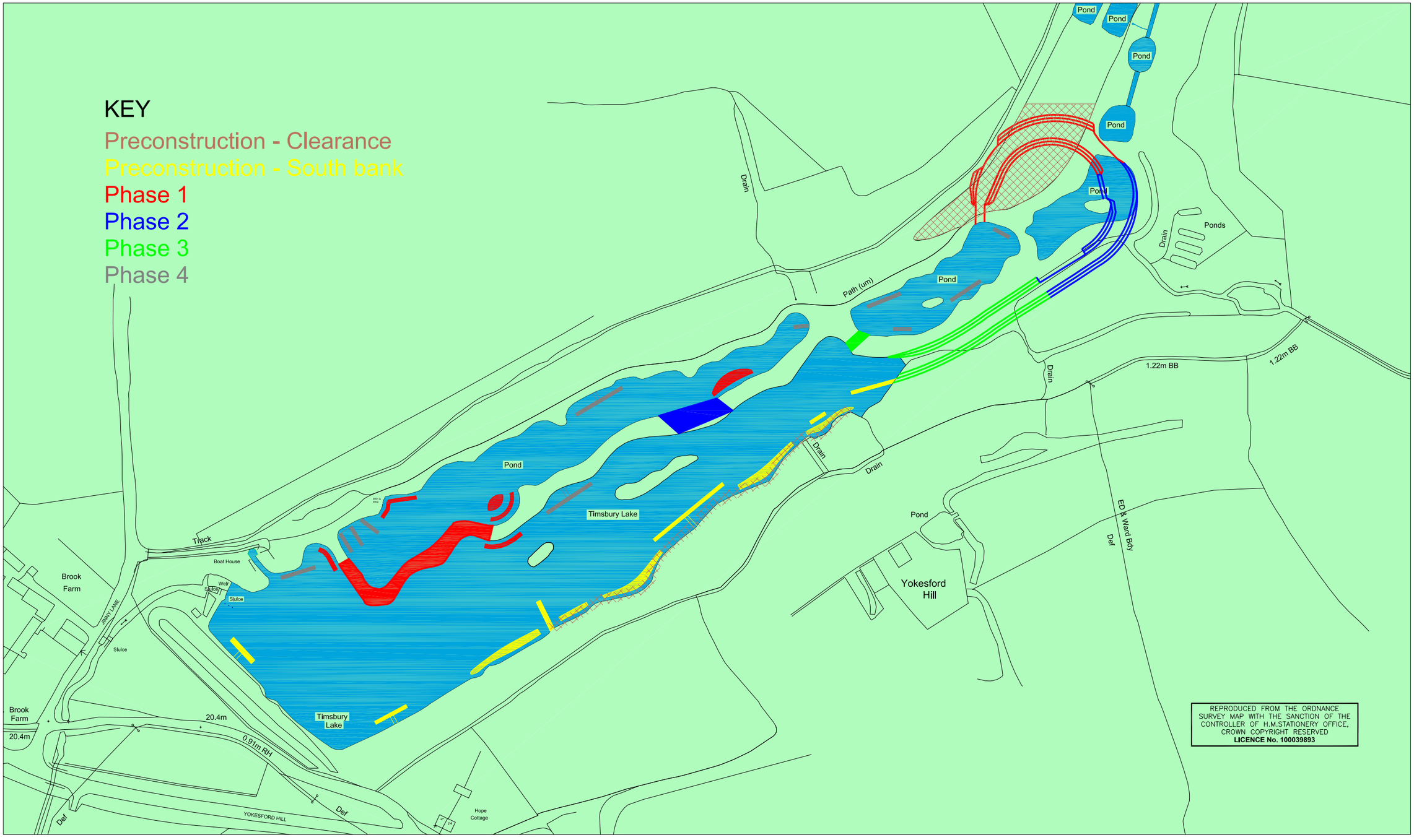
Map 2 Construction Sequence

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



REV	DESCRIPTION	BY	CHK	APP	DATE

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NURSLING STREET
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SO16 0AJ
TEL: +44 (0)870 609 1084
FAX: +44 (0)238 074 3769
e-mail: southampton@wyg.com

RESTRICTED

SOUTHAMPTON SOLENT UNIVERSITY

Project: A054428
TIMSBURY LAKE PROJECT

Drawing Title:
CONSTRUCTION SEQUENCE

Scale @ A1	Drawn	Date	Checked	Date	Approved	Date
1:1000	TJD	AUG 09	TJD	AUG 09	TJD	AUG 09

Project No.	Office	Type	Drawing No.	Revision
A054428	38	C	107	4

Map 3 Protected Species Mitigation

NEW MANNED MODEL CENTRE, TIMSBURY LAKE

CONSERVATION MANAGEMENT PLAN

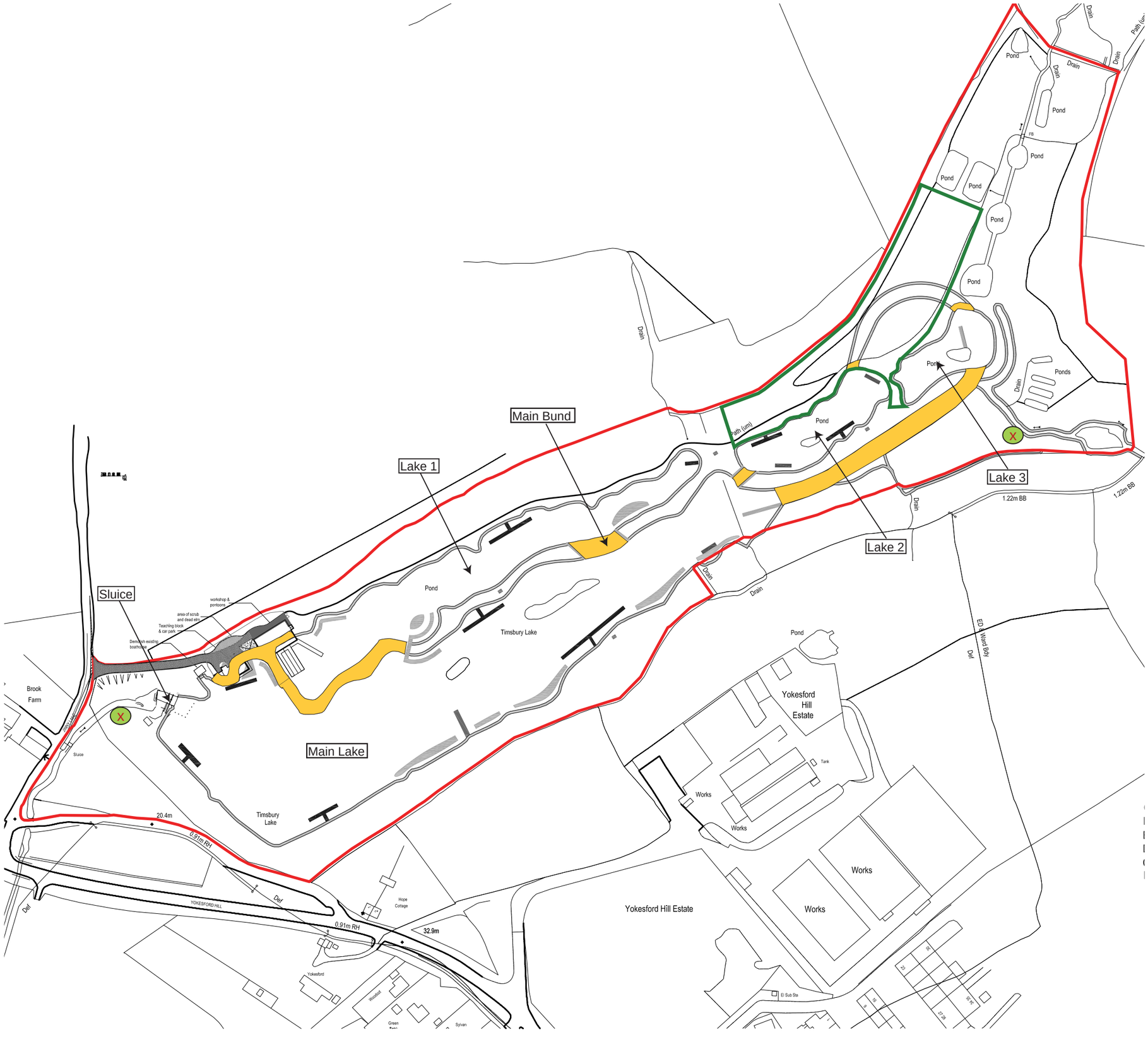
Map 3 Protected Species Mitigation

Client: Southampton Solent University

Date: February 2010 | Status: Draft

KEY

- Site Boundary
- Location of Water Vole Mitigatiion Works
- Proposed Extent of Great-crested Newt Exclusion Fence
- X — Location of Proposed Otter Holts



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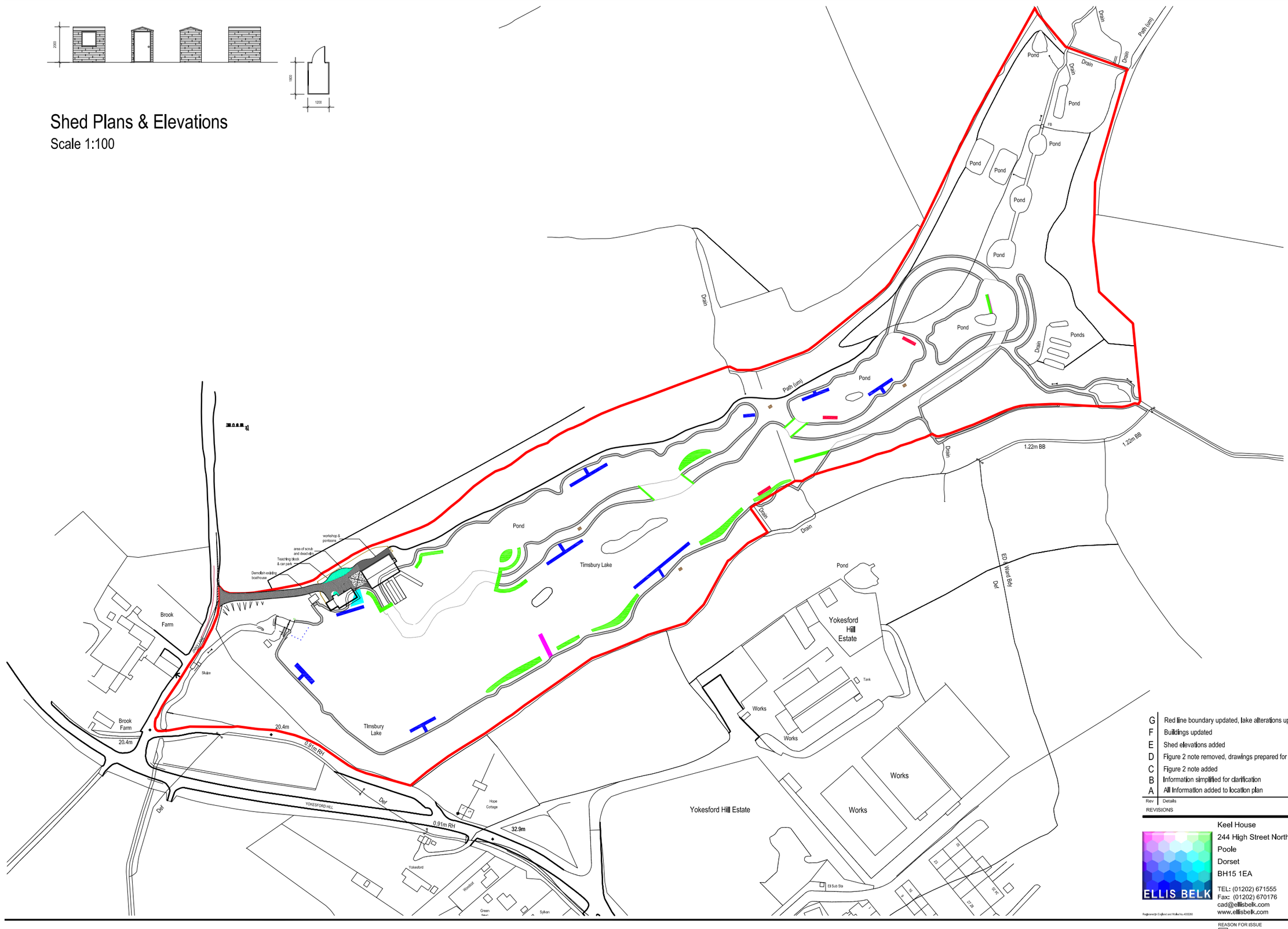
Map 4 Location Plan Showing Proposed Site Works

Shed Plans & Elevations

Scale 1:100



Key:

- blue is pontoon or suspended quay
- green is environmental edging
- magenta is solid face (piling)
- cyan is suspended deck for buildings
- red is for relocated existing pontoons from Warsash
- Brown is for timber sheds

Rev	Details	Date	Rev by	Chkd by
G	Red line boundary updated, lake alterations updated by Wier	25.11.09	ekl	rjm
F	Buildings updated	05.11.09	ekl	rjm
E	Shed elevations added	04.11.09	ekl	rjm
D	Figure 2 note removed, drawings prepared for planning	28.10.09	ekl	agp
C	Figure 2 note added	10.09.09	ekl	agp
B	Information simplified for clarification	21.08.09	ekl	agp
A	All Information added to location plan	19.08.09	ekl	agp

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CLIENT
Southampton Solent University

PROJECT TITLE AND ADDRESS
Timsbury Lake,
Romsey

DRAWING TITLE
Location Plan

TIMSBURY LAKE

REASON FOR ISSUE
- [ ] Sketch Proposal
- [x] Planning Application
- [ ] Building Regulations
- [ ] Tender
- [ ] Construction

SCALE	DRAWN BY	CHECKED BY	DATE
1:1250@A1	ekl	agp	Apr '09

PROJECT NUMBER	DRAWING NUMBER	REVISION
08053	04	G

Certificate Number 3527702

Map 5 Location of Management Areas

NEW MANNED MODEL CENTRE, TIMSBURY LAKE

CONSERVATION MANAGEMENT PLAN

Map 5 Location of Management Areas

Client: Southampton Solent University

Date: February 2010 | Status: Draft

KEY

- Site Boundary
- 3a — Conservation Areas As Referenced in Management Plan
- 1 — Construction and Operational Areas As Referenced in Management Plan
- Location of Artifical Water Vole Banks
- Area of Bunds to be Removed

N

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Appendix 1 'Safe' Working Periods for Protected Species

Species	Status on Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Notes
Great-crested Newt	Small breeding population present in old carp ponds in NE of site													Winter hibernation period should be avoided where possible.
Otter	At least a regular visitor possibly breeding													Winter breeding period should be avoided where possible.
Water Vole	Strong and important breeding population on site													Summer breeding period must be avoided.
Reptiles	Small population of grass snake													Reptiles in hibernation, should be no major vegetation clearance or earth works at this time without supervision.
Breeding Birds	Several notable species breeding including nightingale, marsh tit, great-crested grebe and pochard													Notes no vegetation clearance within this period due to possible presence of active nests.
Bats	Two soprano pipistrelle roosts identified, large numbers of foraging bats													No felling of trees at anytime without detailed inspection when bats maybe breeding or hibernating.

Key

- Best practice working period where disturbance likely
- Medium Priority - Should be avoided where possible
- High Priority - All steps to avoid disturbance must be taken
- Critical - Must avoid disturbance