

Ecological Mitigation, Enhancement and Management Plan

Survey site:

Northwood Cricket Club Duckhill Road HA6 2NP

Client:

Northwood Cricket Club

Survey date:

4th November 2024

Project:

This report is prepared to inform a planning application with the London Borough of Hillingdon. The proposal is described as:

'The creation of a junior cricket pitch'

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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.

(BS 42020, 2013)

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1.0 Introduction

Arbtech Consulting Limited was instructed by Northwood Cricket Club to produce an Ecological Mitigation, Enhancement and Management Plan for Northwood Cricket Club, Duckshell Road, HA6 2NP (hereafter referred to as “the site”).

The plan was required to inform a planning application for the creation of a junior cricket pitch (hereafter referred to as “the proposed development”).

A plan showing the proposed development is provided in Appendix 1.

The aim of this plan is to outline mitigation measures required to minimise impacts on biodiversity as well as to outline habitat creation and enhancement opportunities and long-term management which will ensure that a net gain in biodiversity is achieved and maintained on the site, in accordance with the National Planning Policy Framework (NPPF).

This plan has been informed by a Preliminary Ecological Appraisal which was completed by Arbtech Consulting Ltd. on 11th October 2023 (Arbtech, 2023).

2.0 Site Context and Survey Information

2.1 Site Location and Landscape Context

The site is located at National Grid Reference TQ 0791 9486 and has an area of approximately 0.8ha comprising hardstanding ground, modified grassland, hedgerow with trees, introduced scrub and an artificial pond. It is surrounded by Vernon village to the northwest and arable fields with Northwood Golf club to the southeast. The wider landscape comprises of scattered pockets of woodlands and arable field separated by hedgerows around boundaries. A site location plan is provided in Appendix 2.

2.2 Ecological Information

Table 1 summarises the survey findings for the site and outlines any potential impacts as a result of the proposed development along with recommendations and biodiversity enhancement opportunities, as detailed in Preliminary Ecological Appraisal (Arbtech, 2023).

Table 1: Summary of baseline survey information, potential impacts, recommendations and biodiversity enhancement opportunities for the site (Preliminary Ecological Appraisal (Arbtech, 2023)

Feature	Survey Results Summary	Impact Assessment	Recommendations
Habitats and flora	There are no notable habitats within the site, but five habitats are present within 2km of the site, the closest being deciduous woodland ~435m north. Habitats onsite comprise of modified grassland, dense scrub, treelined boundary and pond.	No impacts to any notable habitats are anticipated due to the small scale and distance of the proposed development from such habitats as well as the urban location of the site with surrounding physical barriers.	Retained trees should be protected in line with the measures outlined in the British Standard "Trees in Relation to Design, Demolition and Construction to Construction - Recommendations" (BS 5837) (2012).
Reptiles	Habitats recorded on site are assessed to provide foraging and commuting opportunities for reptiles in the form of grassland and scrub. The tree-lined boundaries could provide suitable places for reptiles to seek shelter but there aren't any habitats which reptiles could bask within. Reptiles are highly unlikely to be present within the development areas but the presence of reptiles within peripheral habitats cannot be discounted.	The loss of such habitats is likely to be inconsequential to local reptile populations owing to their low value and the presence of more extensive habitat locally. However, site clearance could result in the death or injury of reptiles, if present.	A precautionary working method will be implemented during construction.

Badger	Although no evidence indicating the presence of badgers was recorded during the site survey, the site does have connectivity to the wider landscape for badgers. As such, the future presence of badgers foraging and commuting for transient periods cannot be discounted.	The loss of such habitats is likely to be inconsequential to local badger populations owing to their low value and the presence of more extensive habitat locally. However, construction activities could result in the death or injury of badgers, if present.	A precautionary working method will be implemented during construction,
Hedgehog	Although there was no evidence of hedgehogs on the site. The site has suitable connectivity for the wider landscape. Therefore, the future presence of foraging and commuting hedgehogs for transient periods cannot be discounted.	The loss of such habitats is likely to be inconsequential to local hedgehog populations owing to their low value and the presence of more extensive habitat locally.	A precautionary working method will be implemented during construction.

3.0 Construction Ecological Management Plan (CEMP)

Table 2: Mitigation Measures

Works	Specification
Persons Responsible and Lines of Communication	<p>It is recommended that a Development Biodiversity Champion is selected for the construction phase of the development. The Biodiversity Champion should be someone with significant influence during construction, such as the contract or project manager. The Development Biodiversity Champion is responsible for ensuring all actions outlined in this CEMP are implemented including the provision of a toolbox talk prior to works commencing. Any queries with regards to the mitigation prescriptions should be addressed to the project ecologist and communication should be retained between the Development Biodiversity Champion and project ecologist or a suitably qualified Ecological Clerk of Works (ECoW) throughout the construction phase of the development where necessary to ensure the mitigation is applied and impacts to adjacent ecological receptors are effectively minimised. The project ecologist's contact details are located on the title page of this report. It is recommended that the Biodiversity Champion informs the project ecologist or ECoW of the commencement of construction works and provides updates where necessary.</p>
Timing of Works	<p>Construction activities will be restricted to the normal working day (7am-7pm).</p>
General Construction Activities	<p>Heras fencing (or similar) will be installed around the perimeter of the construction zone to prevent any vehicle or construction encroachment onto habitats / species of ecological value.</p> <p>Any machinery used should be made safe or temporarily fenced off when not in use.</p> <p>Storage of construction materials will be kept to a minimum. Where materials must be stored, they will be restricted to inert objects and located on hardstanding away from hedgerows, ponds, badger sett. Materials will be stored on pallets to discourage animals from using them as shelter. Skip or similar containers may also be used in place of piles on the ground.</p> <p>Trenches or open excavations will be covered at the end of each working day, or include a means of escape such as a sloping ramp for any animals that may fall in. Any temporarily exposed open pipe systems or ducts will be capped at the end of each working day in such a way as to prevent animals from gaining access.</p>

Pollution Prevention	<p>To limit impacts of pollution resulting from the construction phase of the development, construction works must be completed in accordance with current statutory guidelines relating to pollution prevention (Environmental Agency 2016). Furthermore, although withdrawn in 2015, pollution prevention guidelines detailed within guidance document: <i>PPG6: Working at Construction and Demolition Sites</i> (Environment Agency 2010) remain applicable to the site. Considering both the relevant statutory requirements and best practice measures detailed within guidance document PPG6, the below mitigation prescriptions are considered suitable to mitigate impacts of pollution during the construction phase of the development. The allocated Biodiversity Champion will be responsible for ensuring the below mitigation recommendations are undertaken successfully during the works.</p> <p>Site drainage:</p> <p>It is recommended that the Biodiversity Champion ensures that:</p> <ul style="list-style-type: none"> • Pollution risks are identified pre-construction. • Pollutants are prevented from entering drains where possible. • If any pollutant enters a drain, immediately stop the pollution with a physical block, stop the activity causing the pollution, then notify the Environment Agency for surface water drains or the local sewerage provider for foul water drains. If there's a spill, accident, or emergency, try and prevent pollutants entering the drains. • Report all pollution incidents to site management and the Environment Agency. • Inspect drains and protection measures frequently and maintain them during the construction activity. Well maintained drains will also reduce risks of flooding and subsequent surface water run-off. • As a last resort, should any pollutants be required to enter the drainage system on site, permission from Environment Agency or the local sewerage provider must be sought before discharging anything other than clean uncontaminated surface water to a drain and other surface waters or groundwater. Apply for permission early, as authorisation can take up to four months. <p>Airborne particle suppression:</p> <p>It is recommended that the Biodiversity Champion ensures that:</p> <ul style="list-style-type: none"> • Effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
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- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.
- Carry out regular site inspections to monitor compliance.
- Ensure all vehicles switch off engines when stationary.
- Avoid the use of petrol- or diesel-powered generators and use mains electricity or battery power where possible.
- Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.
- Use enclosed shuts and conveyors and covered skips.

Materials storage and water run-off:

It is recommended that the Biodiversity Champion ensures that:

- No stockpiles are created on exposed ground areas and ensure that all materials and chemicals are stored securely and safely on site in accordance with current Control of Substances Hazardous to Health (COSHH) regulations (HSE 2002).
- Contaminated materials, chemicals, and other hazardous substances must be stored on an impermeable surface, in a bunded area, within any area of the site.
- All chemicals and hazardous substances are stored away from areas where there is heightened risk of damage from impact or collision such as site traffic.
- All chemicals and hazardous substances are labelled, containers are sealed when not in use and inspected regularly and fit for purpose.
- Any damaged or old containers are replaced in line with the duty of care requirements. Note such containers may be considered hazardous waste.
- Staff are trained in use of spill kits and emergency procedures.
- Ensure there is a designated 'responsible person' on site at all times.
- Lock storage facilities when not in use.

Implementation of the Waste Hierarchy:

The Biodiversity Champion must ensure that all construction activity is completed in accordance with the Waste Hierarchy (Defra 2011) in an attempt to reduce the amount of waste produced during the construction phase of the development. As such, the construction phase must be completed in accordance with the below core principles:

In the first instance:

- Re-use products and materials where possible.
- Recycle and compost material resources where possible.
- Attempt to recover energy from waste.

Where none of the above options offer an appropriate solution, waste disposal is the final option:

- Only transfer controlled waste to an “authorised person” (Waste Collection Authority, the holder of an Environmental Permit, Registered Water Carrier or Waste Disposal Authority).
- Ensure that non-hazardous waste is transferred under a Waste Transfer Note which must be retained for two years.
- Hazardous waste is moved under a waste consignment note that provides a clear description of the waste material. The consignment note must be retained for three years.
- The waste is the responsibility of the company until it has been fully recovered or finally disposed of.

Noise:

The Biodiversity Champion must ensure that noise levels are kept to a minimum in accordance with best practice as defined in the Control of Pollution Act 1974 to avoid unacceptable levels of noise and vibrations. Further guidance can be found in British Standard 5228-1:2009. Such measures applicable to the proposed development primarily include agreed working hours limiting night work, using the quietest equipment and plant available, shutting down equipment when not in use, and completing deliveries during working hours only. Most notably, prescriptions as to limit noise of plant machinery as detailed within **Table B.1** within the code of practice for noise control (British Standards Institution, 2014) is likely to have the most significant impact during construction activity. Table B.1 is shown below.

Table B.1 Methods of reducing noise levels from construction plant

Plant	Noise reduction of plant			Alternative plant
	Source of noise	Possible remedies (to be discussed with machine manufacturers)	A-weighted sound reduction dB	
Hammer drive piling equipment	Pneumatic/diesel hammer or steam winch vibrator driver	Enclose hammer head and top of pile in acoustic screen	5 to 10	Bored piling Vibratory system
	Sheet pile	Acoustically dampen sheet steel piles to reduce levels of resonant vibration		Drop hammer completely enclosed in box with opening at top for crane access
	Impact on pile	Use resilient pad (dolly) between pile and hammer head. Packing needs to be kept in good condition		Steel jacket completely enclosing drop hammer with dolly and polystyrene chips fed to impact surface to dissipate energy
	Cranes cables, pile guides and attachments	Careful alignment of pile and rig		Pressed-in piling which generates its driving force from the frictional restraint of other piles
	Power units or base machine	Fix more efficient sound reduction equipment or exhaust. Acoustically dampen panels and covers. When intended by the manufacturer, engine panels need to be kept closed. Use acoustic screens when possible		
Earth-moving plant: • bulldozer • compactor • crane • dump truck • dumper • excavator • grader • loader • scraper	Engine	Fit more efficient exhaust sound reduction equipment Manufacturers' enclosure panels need to be kept closed	5 to 10	Alternative super silenced plant might be available. Consult manufacturers for details

Table B.1 Methods of reducing noise levels from construction plant (continued)				
Plant	Noise reduction of plant			Alternative plant
	Source of noise	Possible remedies (to be discussed with machine manufacturers)	A-weighted sound reduction dB	
Compressors and generators	Engine	Fit more efficient sound reduction equipment	Up to 10	Super silenced plant is available. Consult manufacturers for details Electric-powered compressors are available as opposed to diesel or petrol Sound-reduced compressor or generator can be used to supply several pieces of plant. Use centralized generator system
	Compressor or generator body shell	Acoustically dampen metal casing Manufacturers' enclosure panels need to be kept closed		
	Total machine	Erect acoustic screen between compressor or generator and noise-sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured	Up to 10	
		Enclose compressor or generator in ventilated acoustic enclosure	Up to 20	
Pneumatic concrete breaker, rock drills and tools	Tool	Fit suitably designed muffler or sound reduction equipment to reduce noise without impairing machine efficiency	Up to 15	Hydraulic and electric tools are available For large areas of concrete, machine designed to break concrete in bending can be used Thermic lance
		Ensure all leaks in air line are sealed		
	Bit	Use damped bit to eliminate ringing		
	Total machine	Erect acoustic screen between compressor or generator and noise-sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured	Up to 10	
		Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation	Up to 20	
Rotary drills, diamond drilling and boring	Drive motor and bit	Use machine inside acoustic shed with adequate ventilation	Up to 15	Thermic lance

Table B.1 Methods of reducing noise levels from construction plant					
Plant	Noise reduction of plant			Alternative plant	
	Source of noise	Possible remedies (to be discussed with machine manufacturers)	A-weighted sound reduction dB		
Hammer drive piling equipment	Pneumatic/diesel hammer or steam winch vibrator driver	Enclose hammer head and top of pile in acoustic screen	5 to 10	Bored piling Vibratory system Drop hammer completely enclosed in box with opening at top for crane access Steel jacket completely enclosing drop hammer with dolly and polystyrene chips fed to impact surface to dissipate energy Pressed-in piling which generates its driving force from the frictional restraint of other piles	
	Sheet pile	Acoustically dampen sheet steel piles to reduce levels of resonant vibration			
	Impact on pile	Use resilient pad (dolly) between pile and hammer head. Packing needs to be kept in good condition			
	Cranes cables, pile guides and attachments	Careful alignment of pile and rig			
	Power units or base machine	Fix more efficient sound reduction equipment or exhaust. Acoustically dampen panels and covers. When intended by the manufacturer, engine panels need to be kept closed. Use acoustic screens when possible			
Earth-moving plant: <ul style="list-style-type: none">bulldozercompactorcranedump truckdumperexcavatorgraderloaderscraper	Engine	Fit more efficient exhaust sound reduction equipment	5 to 10	Alternative super silenced plant might be available. Consult manufacturers for details	
		Manufacturers' enclosure panels need to be kept closed			
Lighting	A low impact lighting strategy will be adopted for the site during and post-development, which will include the following measures:				
	<ul style="list-style-type: none"> Use narrow spectrum light sources to lower the range of species affected by lighting. Use light sources that emit minimal ultra-violet light. Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <4,200 kelvin. Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. 				

	<ul style="list-style-type: none"> External lighting will be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats) and will be set to the shortest time duration to reduce the amount of time the lights are on. Wall lights and security lights will be 'dimmable' and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available.
Herpetofauna	<p>Vegetation clearance works are best undertaken between April and June. During this timeframe, amphibians and reptiles are active and able to escape to adjacent areas when disturbed. If this timeframe cannot be achieved, vegetation clearance works can be undertaken between June and September. During this timeframe, all refugia present will need to be subject to detailed finger-tip searches prior to removal. Clearance works must not take place between October and March when reptiles are mostly torpid and thus highly vulnerable to injury or death.</p> <p>Vegetation removal will comprise a phased cutting method in addition to cutting in systematic patterns. The phased cutting method will be undertaken in two stages; the first cut will remove all vegetation to approximately 150mm from ground level and the second cut will be to ground level/ bare ground. Amphibians and reptiles are most likely to be present at or just below ground level; the phased technique allows any individuals present to disperse prior to reducing vegetation to ground level. The systematic vegetation cutting must be applied to both cutting phases and comprises cutting systematically towards areas of retained habitat to the south in an attempt to encourage any individual amphibians or reptiles to retreat to retained habitat unharmed. This method also prevents the creation of habitat islands during the second cutting phase which has potential to trap amphibians and reptiles in isolated pockets of habitat and thus increase the potential for injury or death during works. Two suitable systematic cutting techniques are schematically represented on Figure 1. Once the sensitive vegetation clearance has been completed, these areas will then be maintained at a short sward (sward length<50mm) which is unsuitable to support amphibians and reptiles and is likely to prevent individuals from recolonising these areas of the site prior to construction works.</p>

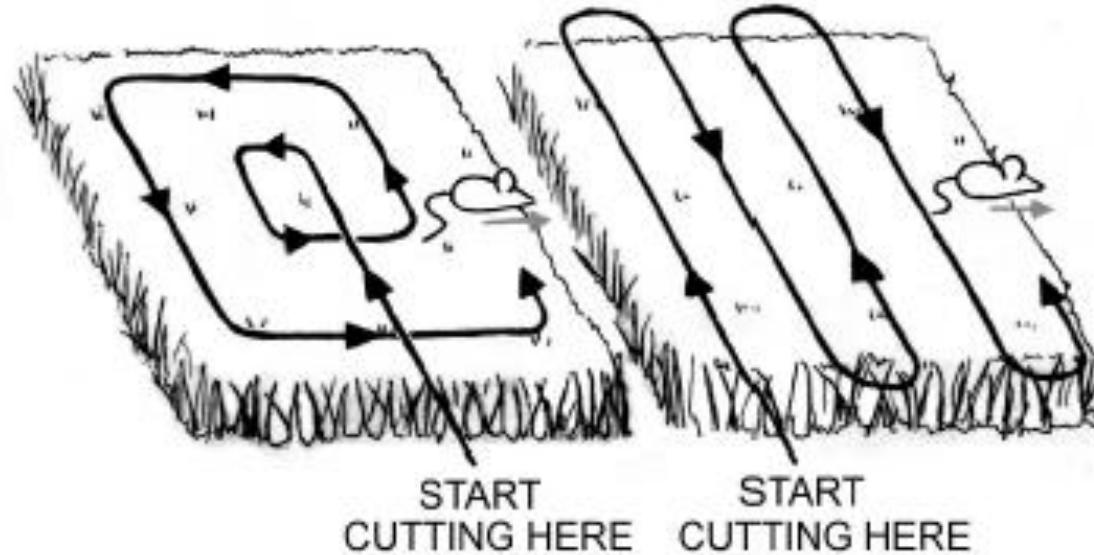


Figure 1: A schematic representation of vegetation cutting patterns as best to eliminate terrestrial opportunities for reptiles and amphibians within the construction zone.

If a common amphibian or reptile is found then this should be allowed to move away into adjacent habitats unharmed, of their own accord or, if at immediate risk, moved by gloved hand to an undisturbed and sheltered area of the site or adjacent land.

In the unlikely event that a great crested newt is identified, works must cease and advise must be sought from a suitably qualified ecologist.

4.0 Provision of New Landscaping and Species-Specific Enhancements

Table 3: Provision of New Landscaping and Species-Specific Enhancements

Works	Specification
Persons Responsible	The Biodiversity Champion will be responsible for the provision of the new landscaping and species-specific enhancements. The occupier of the proposed development (i.e. the landowner or managing agent) will be responsible for the management of these features post development.
Management Term	The management prescriptions outlined within this table must be implemented over a period of at least 30 years.
Site Visit and Reporting	The ECoW will make a final site check and sign off once the landscaping and installation of species-specific enhancements are complete.
Pond enhancement	<p>Overview:</p> <p>A pond measuring 0.0116792313ha will be enhanced on site, as shown in Appendix 3.</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To develop habitat suitable to support a range of protected and/ or notable species including; aquatic and terrestrial invertebrates; amphibians; and reptiles. • To enhance a pond in accordance with current guidance provided by the Freshwater Habitat Trust as detailed within the following documents: <i>Pond Creation Tool Kit Sheet 4: Pond Design</i>¹ and <i>Creating Ponds for Amphibian and Reptiles</i>². To achieve this, the following core structural principals will be adhered to for pond creation. Figures 2, 3 and 4 below exemplify the benefits of these key structural principles. <ul style="list-style-type: none"> a. Ensure that almost all pond slopes are shallow, less than 1:5 (12°) and preferably less than 1:20 (3°); b. Create underwater bars and shoals to benefit aquatic plants; c. Ensure a clean water supply; d. Create variable pond depths; e. Plant submerged and emergent vegetation;

¹ <https://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/pond-design.pdf>

² <https://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/Amphibians- Common-Toad-Great-Crested-Newt-and-Grass-Snake -new-logo.pdf>

- f. Ensure an absence of fish; and
- g. Attempt to deter water fowl from utilising ponds.

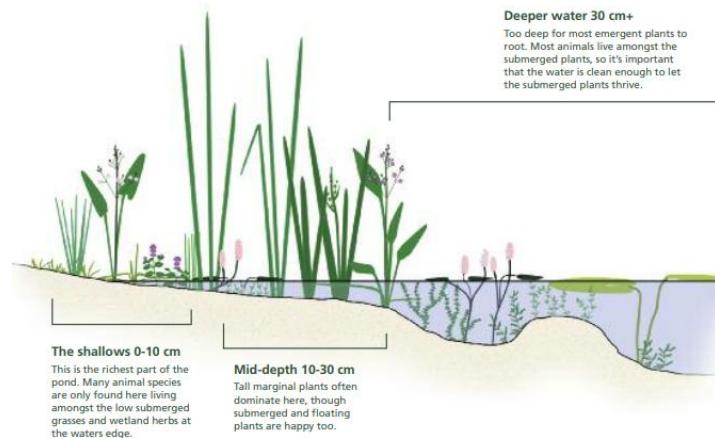


Figure 2: A schematic representation of pond characteristics that provide the best opportunities for biodiversity. Reproduced from the Pond Creation Tool Kit Sheet 4: Pond Design guidance document.

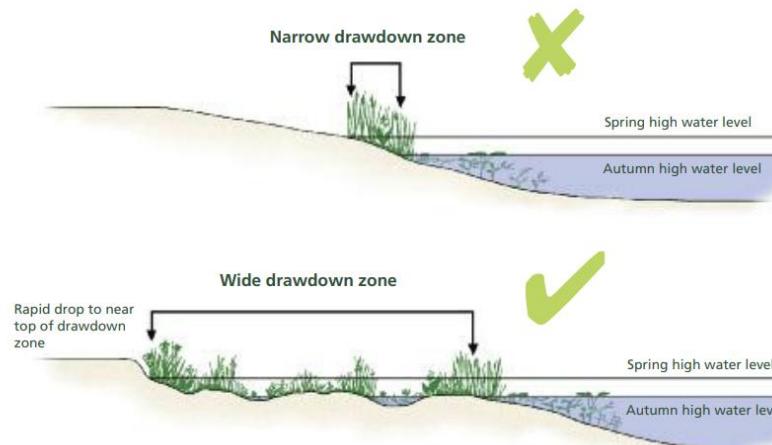


Figure 3: A schematic representation of an optimal pond drawdown zone. Reproduced from the Pond Creation Tool Kit Sheet 4: Pond Design guidance document.

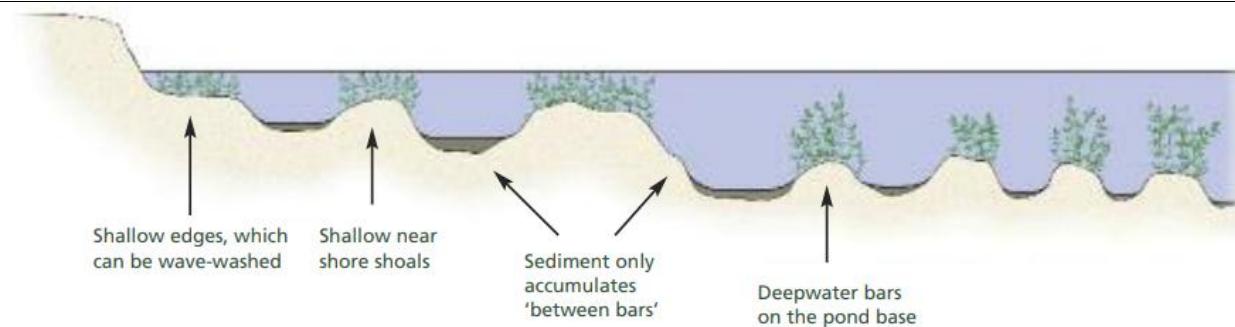


Figure 4: A schematic representation of the value of internal shoals/ islands that prevent domination of sediment accumulation. Reproduced from the Pond Creation Tool Kit Sheet 4: Pond Design guidance document.

Management Prescriptions:

Table 3.1: Pond management prescriptions

Management	Detail	Rationale
Weed growth should be cut back regularly upon the banks and amongst emergence vegetation.	Twice annually in early March/ and in Autumn	Encourages establishment of good perennial ground cover and prevents colonisation of non-native species.
When removing vegetation, do not focus on one plant community but evenly remove from all to maintain a suitable habitat and species diversity.	Twice annually in early March/ and in Autumn	Ensure not just one habitat within the pond is removed at the same time
Keep approximately 90% of the water surface free of dense macrophyte coverage.	Check annually in Autumn	To prevent significant duckweed and other filamentous algae coverage; amphibians use open water for breeding display.
Remove plant detritus and litter.	Check annually in Autumn	Prevents organic matter and litter building up and preventing exposure to sunlight.
Remove non-native or other unwanted plants and dispose.	Check annually in Autumn	Prevents organic matter building up

	<p>Where possible rinse the removed plants and replace water in the pond.</p> <p>Should the pond freeze over a hole in the ice should be created.</p> <p>Never artificially stock with fish.</p>	<p>Puts back wildlife in pond living within the removed plants</p> <p>Check annually in Winter</p> <p>Allows air breathing wildlife to gain oxygen</p> <p>At all times</p> <p>Fish predate amphibians and their young.</p>
Gabion wall creation	<p>Overview:</p> <p>A gabion wall will be created along a section of the eastern boundary, adjacent to the pond, as shown in Appendix 1 & 3.</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To develop habitat suitable to support a range of protected and/ or notable species including; aquatic and terrestrial invertebrates; amphibians; and reptiles. • Creates basking areas (filled with rubble) – which results in greater heat exchange and thermoregulation, which is important to reptiles and various invertebrates. <p>Creation Method:</p> <ul style="list-style-type: none"> • Ground level beneath gabions generally excavated to not less than 300mm below intended ground level (with straight, tight sides) and with all base areas consolidated. • Up to 2000mm x 2000mm gabions (of 5mm galfan coated wire) positioned on consolidated base and helical wired together both horizontally and vertically. • Gabions filled with appropriate interlocking stones measuring 75mm - 150mm, preferably laid in horizontal courses. • Where multiple gabion height is required gabions to be helical wired tied together both horizontally and vertically. • The use of local rock and soils for backfill is encouraged, with the subsequent growth of vegetative cover. Vegetation can be incorporated within or over the gabion structures to blend in with the local environment (figure 5). 	

	<p>The gabion wall can be filled with demolition waste and planted with native plants to generate biodiversity. Additionally, bee boxes, small mammal holes and insect hotels can be incorporated into the structure to increase the habitat value for wildlife, therefore, increasing the biodiversity of the site.</p>  <p><i>Figure 5: an example of a gabion wall with gaps for reptiles and planting on top</i></p>
Native Hedgerow Planting	<p>Overview: It is proposed to create 0.052km of native hedgerow, as shown in Appendix 1 & 3.</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To create dense hedgerows that will provide foraging, commuting, and refugia opportunities for notable species groups including bats, birds, badgers, and hedgehogs. • To ensure native species only are planted. • Ensure cultural techniques are employed which use a variety of mulches and organic fertilisers and which minimise the use of chemicals and peat wherever possible. <p>Creation Method:</p> <ul style="list-style-type: none"> • Ground preparation

Prepare the ground by digging over a strip approximately 60-90cm (2-3ft) wide and one spit (or spade blade) deep. Soils that become waterlogged in winter may require a permanent drainage system. Alternatively, form the soil into a ridge about 15-20cm (6-8in) high and 50-70cm (20-28in) across to plant into.

- **Planting**

Plants should be positioned set back from hardscaped boundaries to allow space for the hedgerow to develop and mature prior to requiring any significant management/ cutting back. Plant density should focus on achieving a hedgerow width >1m; as such, plants should be planted in a staggered double row approximately 45-60cm apart, where individual plants are planted 90cm apart within each row.

- **Timing**

It is best to prepare the land during the summer ready for planting between November and March. Planting before the new year helps ensure better rooting and subsequent establishment including faster growth.

Management Prescriptions:

Table 3.4: New hedgerow planting hedgerow.

Management	When	Rationale
At the end of each growing season all plant failures are to be 100% replaced	When required; checked annually in Autumn.	To maintain amenity and wildlife value.
If required, provision of stakes and guards. Guards to be left on for a minimum of 5 years	N/A	Protect from damage
Stakes should be checked and any broken or damaged stakes during this time would be removed (as above) and replaced with ties re-fixed	When required; checked annually in Autumn.	Maintain protection
Remove weeds	When required; checked twice annually in early spring and in Autumn.	Reduce competition for resources nutrients etc. by weeds

	<p>Application of bark mulch at a depth of 50 mm</p> <p>Apply a light dressing of well-rotted manure</p> <p>Watering should be undertaken before and after planting out and as necessary for the continued thriving of all planting.</p> <p>Check and replace any plant failures once a year</p> <p>Once the hedgerow reaches an average height of 1.5m or above along the hedgerow length, this height or above must be retained.</p> <p>Once the hedgerow reaches an average width of 1.5m or above along the hedgerow length, this width or above must be retained.</p>	<p>Immediately after planting and then when required; checked annually in Autumn.</p> <p>Annually in the winter</p> <p>When required; provide more water during periods of draught and less water during times of prolonged rain.</p> <p>For the first 5 years</p> <p>To be checked annually once hedgerow reaches 1.5m in height.</p> <p>To be checked annually once hedgerow reaches 1.5m in width.</p>	<p>Reduce competition for resources nutrients etc. by weeds</p> <p>Note the overuse of manure fertilisers will encourage vigorous grasses and weeds to grow.</p> <p>Ensures plants do not dry out and subsequently fail.</p> <p>To ensure no gaps form.</p> <p>To ensure the hedgerow is not maintained at a low level of worse value to biodiversity.</p> <p>To ensure the hedgerow is not maintained at a thin density of worse value to biodiversity.</p>
Hibernacula	Two hibernacula will be constructed using natural materials such as logs, stone and earth (refer to Figure 6). The hibernacula are to be installed adjacent to the pond.		

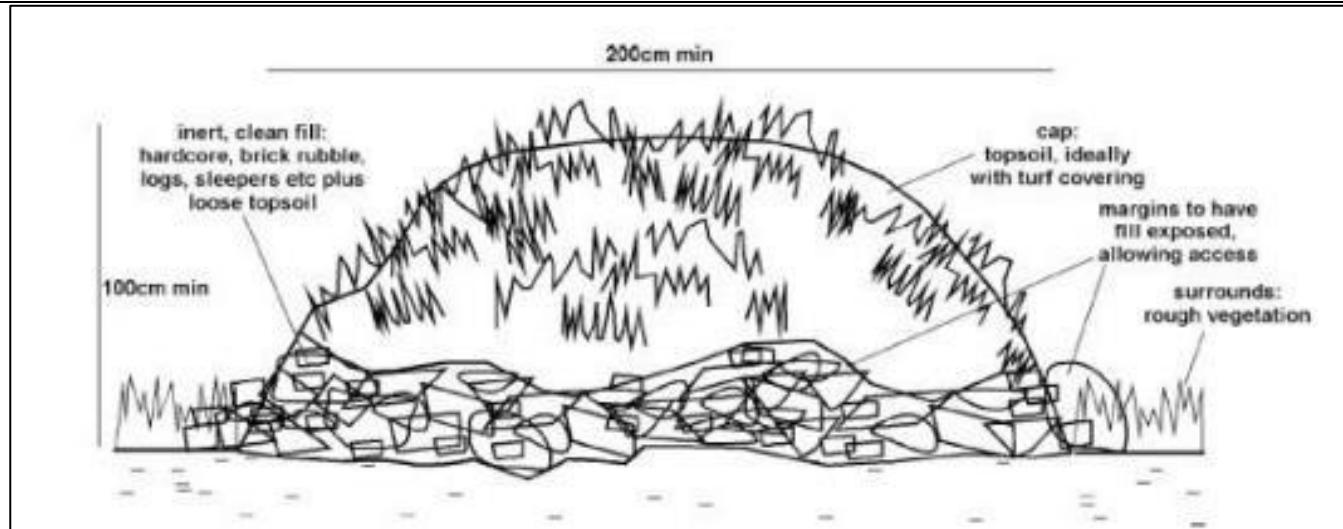
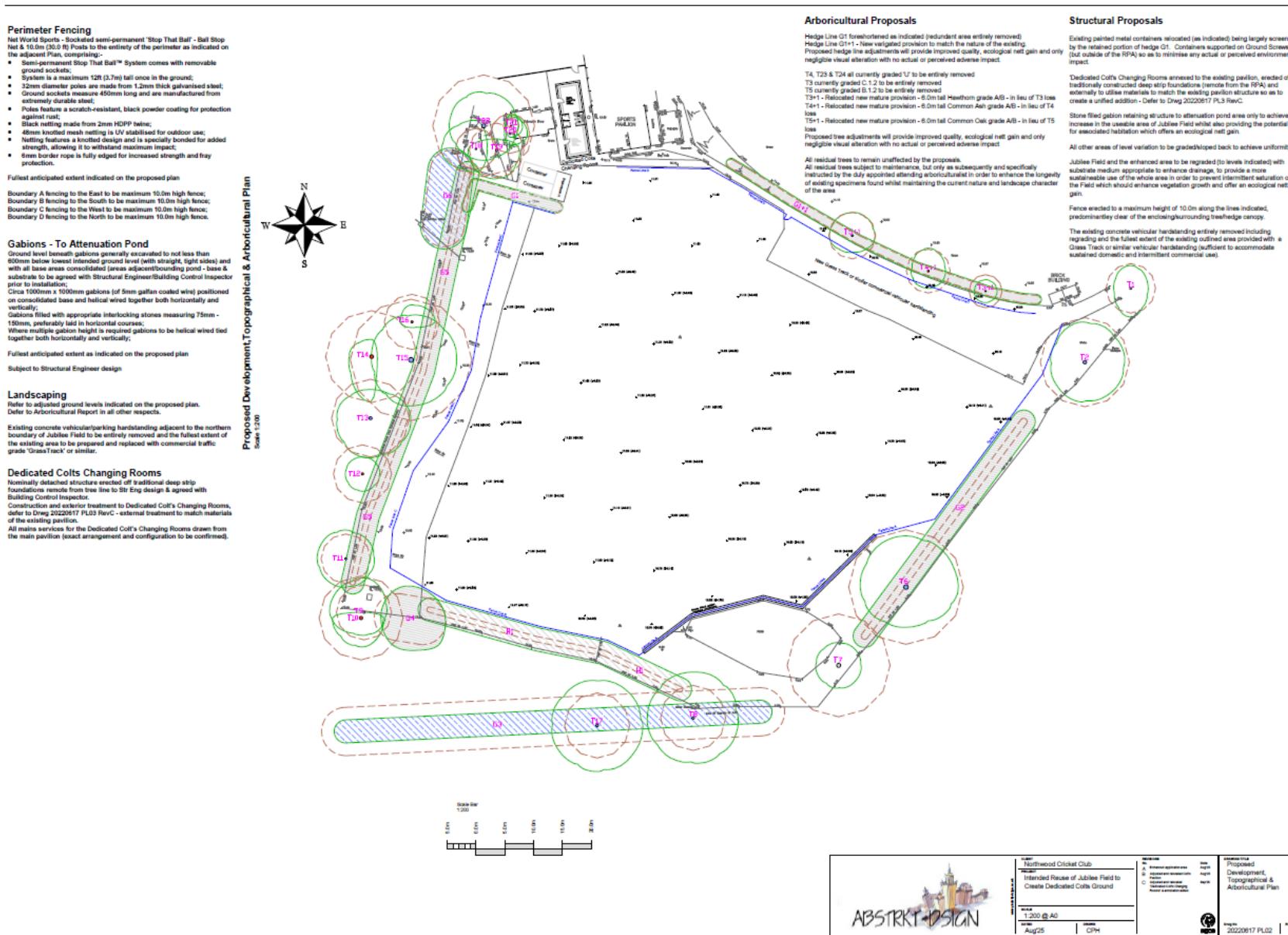


Figure 6: A schematic representation of a man-made hibernacula to provide suitable refuge.

Appendix 1: Proposed Development Plan



Appendix 2: Site Location Plan



Appendix 3: New Landscaping and Species-Specific Enhancements Plan

