ELMS CARAVAN SITE EXTENSION
Phase 4

ADDLETHORPE, SKEGNESS

Biodiversity Management Plan

Client:

Mr D Cragg

Report Reference:

RSE_1632_R9_V1_BMP

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RammSanderson

ECOLOGY
FLOOD RISK
ARBORICULTURE
HABITATS

PROJECT	
Client:	Mr D Cragg
Project:	Elms Caravan Site Extension Phase 4
Reference	RSE_1632_R9_V1_BMP
Report Title	Biodiversity Management Plan

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DISCLOSURE:

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1 INTRODUCTION AND BACKGROUND

1.1 Purpose and Scope of this Report

i RammSanderson Ecology Ltd was commissioned by Mr D Cragg to produce a Biodiversity Management Plan (BMP) and identify management strategies to best maximise the biodiversity gain from the extension of an existing caravan park located off Orby Road, Addlethorpe. Previous surveys have been carried out on the wider site in phases, with previous Biodiversity Management Plans having been issued. This report pertains to Phase 4 of the development.

ii A Preliminary Ecological Appraisal Report has already been conducted for the application site and has identified the ecological constraints and opportunities available as a result of the proposed works (RammSanderson, 2022a). The BMP builds upon this and will advise site management on how to maintain biodiversity values during the construction phase, and how to enhance biodiversity on site during operation. Using the results from the PEAR, it is possible to identify which protected/priority species are at risk from impacts from the proposals (Appendix 1) and design suitable mitigation to reduce this to acceptable levels.

iii The aim of the BMP is to address any ecological constraints identified within the PEAR, mitigate impacts and suggest opportunities for enhancement (alongside how these enhancements can be managed).

iv The recommendations made in this management plan use the Mitigation Hierarchy as identified below:

- **Avoid:** Provide advice on how the development may proceed by avoiding impacts to any species or sites by either consideration of site design or identification of an alternative option.
- **Mitigate:** Where avoidance cannot be implemented mitigation proposals are put forward to minimise impacts to species or sites as a result of the proposals. Mitigation put forward is proportionate to the Site.
- **Compensate:** Where avoidance cannot be achieved any mitigation strategy will consider the requirements for site compensatory measures.
- **Enhance:** The assessment refers to planning policy guidance (e.g. NPPF) to relate the ecological value of the Site and identify appropriate and proportionate ecological enhancement in line with both national and local policy.

1.2 Biodiversity Impact Assessment

1.1.1 Outline Procedure

i Biodiversity Impact Assessment of proposals was carried out in accordance with guidelines published by DEFRA and via the DEFRA Metric Calculation Tool 3.0. The existing value of individual habitats on site is initially calculated by accurately mapping the proposed development site from information collected during a Biodiversity Scoping Assessment/Phase 1 Habitat Survey and by dividing the land into individual habitat parcels. This part of the study is informed by JNCC Phase 1 habitat and UK habitats classification systems. The distinctiveness, condition, connectivity, and strategic significance of these parcels is then assessed and together with the area of each habitat, a value is assigned. A summary of how habitat distinctiveness, condition assessment, connectivity and strategic significance is determined is detailed within DEFRA best practice literature

1.2.2 Calculation

ii Once the habitat types have been input into the Biodiversity Impact Assessment calculator, along with their area, distinctiveness, condition, connectivity, and strategic significance an overall score in biodiversity units is calculated.

1.2.3 Compensation

iii Once the biodiversity value of existing on-site habitats has been quantified, the value of indicatively proposed habitats to achieve a net gain as part of development must be calculated. This is calculated using the methodology applied above, considering the area/length of indicatively proposed habitats, their distinctiveness, condition, connectivity, and strategic significance once this is established. A further two parameters are also taken into consideration at this stage. These are the time it will take to reach this target condition and the difficulty of creating/restoring each habitat type proposed. By using these parameters, the calculation takes into account that the time it takes for a habitat to establish may result in a loss of biodiversity for a period of time and also the risk of failure associated with any habitat creation/restoration

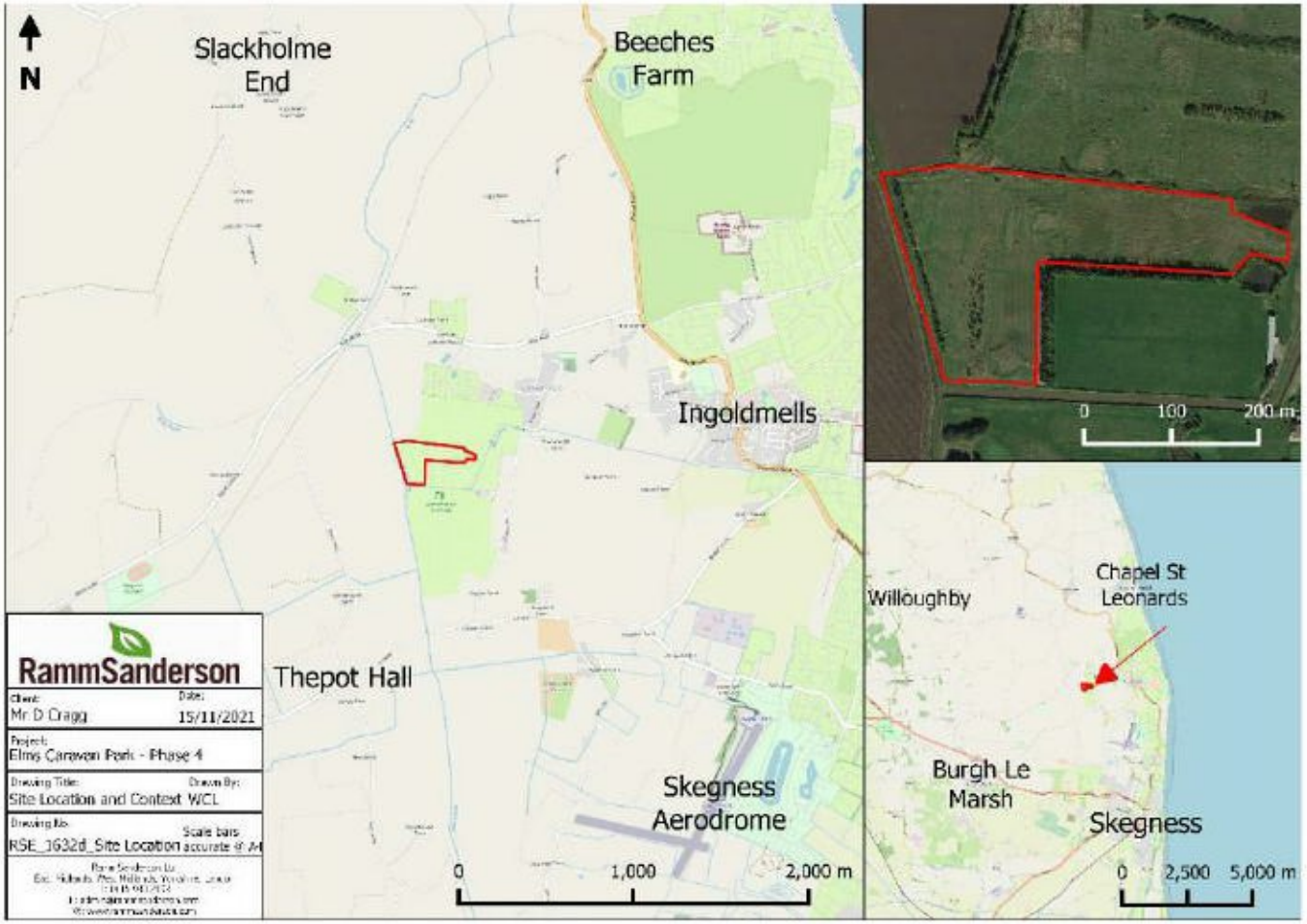
1.2.4 Results

iv Following the BIA calculation using the DEFRA Metric 3.0 (RammSanderson, 2022b), it was anticipated that the proposed works will result in a net gain of 3.41 habitat units (14.95%) and 1.01 hedgerow units (39.89%). There is likely to be a minor net loss Of 0.02 river units due to a small section of a seasonally fluctuating ditch being lost to facilitate the construction of the road across site. In order to achieve this result, the proposed habitats will need to be managed sympathetically in order to achieve the desired condition. Prescriptions for this management are provided in the sections below and are also detailed within the BIA calculator document.

1.3 Site Context and Location

i The site is located at Orby Road, Addlethorpe, Skegness, Lincolnshire, PE24 4TR; central grid reference TF 54229 68594. The site lies to the west of Ingoldmells and to the northwest of Skegness; the surrounding area is predominantly agricultural and residential. The site is adjacent to the existing caravan park, with the survey area being a former golf course comprising a large area of mown poor semi-improved grassland, with areas of tall ruderal, scattered trees and marginal vegetation. The site is bounded by ditches, drains and hedgerows.

Figure 1: Site Context & Location Plan



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2 LEGISLATION AND PLANNING POLICY

2.1 General & Regionally Specific Policies

i Articles of British legislation, policy guidance and both Local Biodiversity Action Plans (BAPs) and the NERC Act 2006 are referred to throughout this report. Their context and application are explained in the relevant sections of this report. The relevant articles of legislation are:

- The National Planning Policy Framework (2021);
- ODPM Circular 06/2005 (retained as Technical Guidance on NPPF 2021);
- The Environment Act (2021);
- Local planning policies (East Lindsey District Council);
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019);
- The Wildlife and Countryside Act 1981 (as amended);
- EC Council Directive on the Conservation of Wild Birds 79/409/EEC;
- National Parks and Access to the Countryside Act 1949;
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000;
- The Hedgerow Regulations 1997;
- The Natural Environment and Rural Communities (NERC) Act 2006;
- Local Biodiversity Action Plan for Lincolnshire.

2.2 Hedgerows

i All native hedgerows (including species-poor ones) are listed under Section 41 of the NERC Act (2006) and are a Local Biodiversity Action Plan (LBAP) habitat. All native hedgerows are considered to be of high conservation value.

ii The Hedgerow Regulations (1997) classifies a hedgerow as 'important' if it:

- Satisfies at least 1 of the criteria listed in Part II of Schedule 1
- Has existed for 30 years or more

iii Any person wishing to remove a hedgerow is required to submit a hedgerow removal notice to the LPA

iv Items of Legislation that are pertinent regarding hedgerows include:

- Hedgerow Regulations 1997
- The Countryside Rights of Way Act 2000
- Natural Environment and Rural Communities Act (NERC) 2006
- Planning Policy Statement (PPS) 9: Biodiversity and Geological Conservation
- The UK Biodiversity Action Plan (UK BAP)
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019)

2.3 Bats and Great Crested Newts

i Great crested newt and species of British bats are fully protected within UK Law under *Wildlife and Countryside Act 1981* (as amended) through their inclusion in Schedule 5. Under the Act, they are protected from:

- Intentional or reckless killing, injury, taking;
- Damage to or destruction of or, obstruction of access to any place of shelter, breeding or rest;
- Disturbance of an animal occupying a structure or place;
- Possession or control (live or dead animals);

- Selling, bartering or exchange of these species, or parts of.

ii This law is reinforced by the UK's transposition of the EU Habitats Regulations under *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*. These Regulations also prohibit:

- the deliberate killing, injuring or taking of great crested newt or bats;
- the deliberate disturbance of any great crested newt or bat species in such a way as to be significantly likely to affect:
- their ability to survive, hibernate, migrate, breed, or rear or nurture their young; or
- the local distribution or abundance of that species.
- damage or destruction of a breeding site or resting place;
- the possession or transport of great crested newt or bats or any other part of.

iii Under certain circumstances a licence may be granted by Natural England to permit activities that would otherwise constitute an offence. In relation to development, a scheme must have full planning permission before a licence application can be made.

iv In addition, seven British bat species are listed as Species of Principal Importance (SPI) under the Natural Environment and Rural Communities (NERC) Act 2006. These are barbastelle (*Barbastellus barbastellus)*, Bechstein's (*Myotis bechsteinii)*, noctule (*Nyctalus noctula)*, soprano pipistrelle (*Pipistrellus pygmaeus)*, brown long-eared (*Plecotus auritus)*, greater horseshoe (*Rhinolophus ferrumequinum)* and lesser horseshoe (*Rhinolophus hipposideros)*.

v Under the National Planning Policy Framework 2021 the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible or adequately mitigated/compensated for and that opportunities for ecological enhancement should be sought.

2.4 Birds

i The Wildlife and Countryside Act 1981 (as amended) is the principle legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is in use or being built;
- Take or destroy the egg of any wild bird.

ii For birds listed on Schedule 1 of the Act, it is an offence to disturb any bird while it is building a nest, is at or near a nest with young; or disturb the dependant young of such a bird.

iii Species listed in Annex 1 of the EU Birds Directive 1994 (e.g. barn owl) are required to have special conservation measures taken to preserve their habitats and site to be classified as Special Protection Areas where appropriate.

2.5 Reptiles

i All reptile species are partially protected under Schedule 5 (Sections 9(1) and 9(5)) of the Wildlife and Countryside Act 1981 (as amended). This legislation protects these animals from:

- Reckless or intentional killing and injury;
- Selling, offering for sale, possessing or transporting for the purpose of the sale or publishing advertisements to buy or sell a protected species.

ii In addition to the above legislation, UK rare reptiles; sand lizards (*Lacerta agilis*) and smooth snakes (*Coronella austriaca*), are listed under The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. This makes it an offence to;

- Capture, kill, injure and disturb;
- Take or destroying eggs;
- Damage or destroy breeding/resting places;
- Obstruct access to resting places; and
- Possess, advertise for sale, sell or transport for sale, live or dead (part or derivative).

iii Where these animals are confirmed as present on land that is to be affected by development guidance recommends that:

- The animals should be protected from injury or killing during construction operations;
- Mitigation should be provided to maintain the conservation status of the species locally;
- Under the National Planning Policy Framework 2021 the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible or adequately mitigated/compensated for and that opportunities for ecological enhancement should be sought.

[redacted]

2.7 Water Vole

i Water vole are given full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to:

- Intentionally or recklessly disturb water vole whilst they are occupying any structure or place which they use for shelter or protection;
- Intentionally or recklessly obstruct access to any structure or place which water vole use for shelter or protection; and to
- Sell, offer of expose for sale or have in possession or transport with the purpose of sale any live or dead water vole.

3 AVOIDANCE

3.1 Habitats

i Hedgerows and trees should be avoided where possible. To avoid damage to trees and hedgerows, a buffer is designated as the root protection area (RPA). The British Standard 5837:2012 RPA is calculated by multiplying the diameter of the tree at breast height in meters by 12 but is capped as an area with a radius of 15m.

ii Prior to works commencing, the retained trees will be fenced off with construction fencing to avoid destruction/removal.

3.2 Protected and Priority Species

3.2.1 Great Crested Newts

i Great crested newts (GCN) are considered absent from the site due to all ponds within the Zone of Influence either being beyond a barrier to dispersal or known to be stocked with fish. As such, any potential impacts upon GCN can be avoided.

3.2.2 Reptiles

ii Some areas of the grassland had a sward height of more than 10cm, and the hedgerows, water courses and refugia would facilitate reptile movement through the site. As such, habitats considered suitable for reptiles should be retained where possible, with clearance kept to a minimum. The hedgerows and waterbodies are to be retained, and grassland should only be cut where needed.

3.2.3 Water Vole

iii The ditches along the site boundaries were considered to provide suitable habitat for water vole, and due to the evidence in the form of potential burrows identified during the survey of the wider site ownership, measures should be put in place to avoid disruption or disturbance to this species. Further surveys are to be carried out regarding water vole within Ditch 1. As such, mitigation regarding this species are yet to be confirmed.

iv Development should take place more than 10m from other ditches surrounding the site including the Main Drain which runs along the western and southern boundaries. Where tree planting is required within 10m of the ditches, this should be young bare root trees rather than full standards, as this minimises the need for digging.

3.2.4 Birds

v The trees and hedgerows within the site provide suitable nesting bird habitat. It is recommended that any clearance of these habitats required should take place outside of bird nesting season. Should works commence or continue into the nesting bird period (March to September) it will be necessary to prevent impacts to nesting birds which can be achieved using the following method;

- Prior to works starting, telephone numbers will be exchanged between the nominated site ecologist and site manager to provide a clear line of communication.
- A detailed site walkover recording nesting activity will be required 24 hours prior to works starting on site by the nominated onsite ecologist. It is proposed that the nesting bird survey is completed over c. 2 hours to accurately record the location of any active nests. Any active nests or suspected active nests will be marked with barrier tape providing a 10m exclusion (more if considered appropriate), GPS recorded and highlighted on a plan and discussed during tool box talks with operatives before works commence.

- Should contractors subsequently observe or suspect nests during their works then work should immediately stop in that area and the site ecologist should be notified. The nest area will then be marked with barrier tape and GPS recorded as above. Clearance works will only be permitted to recommence within excluded nesting zones once an ecologist has reassessed the area and confirmed all birds and dependant young have fledged.

4 MITIGATION

4.1 Reptiles

i Where clearance of vegetation suitable for reptiles is required (the tussocky grassland), it should be conducted following a precautionary method of works. Prior to any clearance, a ground level fingertip search will be conducted by an ecologist with reptiles moved to a position of safety. Initial site clearance will be supervised by a trained ecologist. Any site clearance (vegetation and rubble) will take place in a linear fashion, working from north-west to south-east to allow any other fauna present to be directed further into the adjacent suitable habitat. This vegetation clearance should be conducted in temperatures above 11°C, ideally in the afternoon when reptiles are most active. Once the habitats are cleared to below 10cm in height, they are unsuitable for reptiles and amphibians and ecological supervision is no longer required.

4.2 Bat Foraging Habitat

i The site offers potential bat foraging habitat due to the presence of grassland, waterbodies and hedgerows that have connectivity to the wider environment, as well as local bat records. The suitable features for foraging are to be retained within the proposals, however the extension to the existing caravan park should consider the use of lighting and, where possible, avoid it altogether. If avoidance is not possible, light spill onto the ditches and drains should be minimised and should follow the guidance set out in Bats and Lighting in the UK (BCT and ILP, 2018). Therefore, associated site lighting proposals must consider the following:

- Avoid lighting where possible;
- Install lamps and the lowest permissible density;
- Lamps should be positioned to direct light to avoid upward spill onto any green corridors that could be used by commuting bats or features with bat roost potential;
- LED lighting – with no/low UV component is recommended;
- Lights with a warm colour temperature – 3000K or 2700K have significantly less impact on bats;
- Light sources that peak higher than 550nm also reduce impacts to bats; and
- The use of timers and dimmers to avoid lighting areas of the site all night is recommended.

ii

4.3 Terrestrial Mammals

i There is also a risk of foraging badgers, otter and other mammals traversing the site during the works period and so the following additional practical precautionary measures will also be put in place to minimise the risk of injury during construction;

- Ramps will be created by edge profiling excavations, or by using planks to allow mammal escape, or mammal ladders will be installed.
- Open pipework greater than 200mm external diameter are to be capped off at the end of each working day.
- Security lighting used during the development phase should be faced away from the boundary of the site.
- Any chemicals should be stored in secure compounds away from access for any animals.
- No night fires.
- If any new mammal holes are discovered in the works area, works will cease and an ecologist contacting to discuss.

4.4 Environmental Impacts

i Due to being adjacent to a watercourse, there is a risk of the works impacting the main drain and altering the water quality, thus impacting fauna that utilise this watercourse such as riparian mammals and aquatic invertebrates. As such, mitigation measures should be implemented to reduce this impact. Pollution Prevention Guidelines: PPG1 should be followed strictly and all measures put in place to minimise the risks and have an action plan for any accidents including ensuring adequate spill kits are on site and all measures are in place to prevent runoff into the river. Pollution prevention measures include:

- Avoidance of activities that produce contaminated water. If this is not possible, collect contaminated water in a sealed system for reuse or treatment.
- Ensure contaminated waste does not enter drain system, and be aware of where drains are located.
- Store materials, product and waste in containers that are in good condition, clearly marked and protected

ii Dust suppression techniques should also be utilised throughout the construction phase.

5 BIODIVERSITY ENHANCEMENTS

5.1 Habitats

5.1.1 Woodland Planting

i There will be a woodland area created along the western site boundaries. The trees planted should consist of a variety of species to improve biodiversity. The planting should utilise a range of native species that provide a broad variety of microclimates suited to different invertebrate species. The tree species recommended below all have many associated insect species (Kennedy & Southwood, 1984). Trees with berries and fruit will also be attractive to birds. These trees will provide connectivity to wider habitats. Tree species recommended below should be considered based upon their location within the site; for example, fruiting trees are unlikely to be suitable where they over-hang footpaths or roads. All trees should be planted as young whips, using hand tools only. Species recommended include;

- Pedunculate oak (*Quercus robur*)
- Silver birch (*Betula pendula*)
- Rowan (*Sorbus aucuparia*)
- Hornbeam (*Carpinus betulus*)
- Fruiting trees (apple *Malus* sp., plum & cherry *Prunus* sp., pear *Pyrus* sp.)
- Alder (near pond/SUDS)
- Sweet chestnut (*Castanea sativa*)
- White poplar (*Populus alba*)

ii Wherever possible, local tree stock standards will be used to establish the woodland. This will ensure that the woodlands, once mature, are in keeping with the landscape character of the surrounding area and will also be more likely to comprise species which thrive in local conditions.

iii Trees will be planted in groups at irregular spacing intervals between rows. This is typically preferred if a more natural appearance is desired or if wildlife and conservation are prime objectives. This variable spacing also allows space for natural regeneration to supplement the planted trees.

iv Management of these areas will be minimal, requiring the following only:

- Removal and replacement of any dead saplings within the first 5 years;
- Removal of the protective sheaths once the trees have established;
- Seek to retain leaf litter beneath trees, to allow it to decompose naturally. If removal is required for aesthetic reasons, composting on site should be encouraged to provide further habitat areas; and
- New planting may require watering in times of drought and replacement where new stock has failed to take;

v Within the BIA, it was assessed that the woodland will reach moderate condition, using guidance set out within the DEFRA metric 3.0. In order to achieve this condition, a range of woody species need to be included such as those listed above. The habitat should include a mixture of scrub species, smaller tree species such as cherry and birch, and larger tree species such as beech (*Fagus sylvatica*) and oak. Furthermore, specific management methods should be adhered to, targeted towards achieving moderate condition for this habitat type. This includes but is not limited to:

- Planting of seedlings to encourage regeneration;
- Planting of a woodland understory seed mixture such as the N10 Woodland Meadow Mixture available from Naturescape.co.uk.;
- Management of non-native and undesirable species with spot treatment of herbicide;
- Leaving any deadwood in situ;

- Managing any pests and diseases appropriately.

5.1.2 Hedgerows

vi The existing hedgerows on site can be enhanced with native species including planting a tree standard every 10m. In order to achieve a species rich hedgerow, a total of six woody species should be incorporated. Some suggestions include, but are not limited to:

- Hawthorn (*Crataegus monogyna*)
- Holly (*Ilex aquifolium*)
- Hazel (*Corylus avellana*)
- Elder (*Sambucus nigra*)
- Rowan (*Sorbus aucuparia*)
- Crab Apple (*Malus sylvestris*)

vii Planting prescriptions should follow those mentioned above for the woodland.

5.1.3 Wildflower Meadow

viii An area of wildflower meadow is currently proposed within the eastern portion of the site. Incorporating wildflowers and herbs of local provenance into the planting will benefit invertebrates, particularly pollinating insects. Any native plant with a simple, open-structured flower will provide the greatest benefit.

ix The ground could be prepared for supplementary planting with minimal effort, using a chain harrow. Any existing vegetation should be removed, and the soil should be raked to break it up, producing a fine, firm layer of soil. It is recommended that Long Season Meadow Seed Mix N5 (available from Naturescape, Appendix 3) is used as it contains a diverse mix of 29 native wildflower species (N5F) and 10 species of grass. It also allows for a long growing season, producing an aesthetically pleasing meadow of flowers, thus negating the requirement for an extensive mowing regime. This seed mix could also be supplemented with additional species from grasslands of local provenance.

x Within the first year of establishment, the grassland should be mown regularly to allow wildflowers to compete with grass species. In the following years, the grassland should be subject to an annual late season cut.

xi Within the BIA, it was assessed that this grassland will reach good condition, following guidance set out within the DEFRA metric 3.0. To achieve this, management must include:

- Rotational cutting to achieve a varied sward height;
- Management and removal of bracken, scrub and invasive or undesirable species using mechanical removal methods and spot treatment of herbicides;
- Scrapes to create areas of bare ground.

5.1.4 Enhancement of the existing grassland

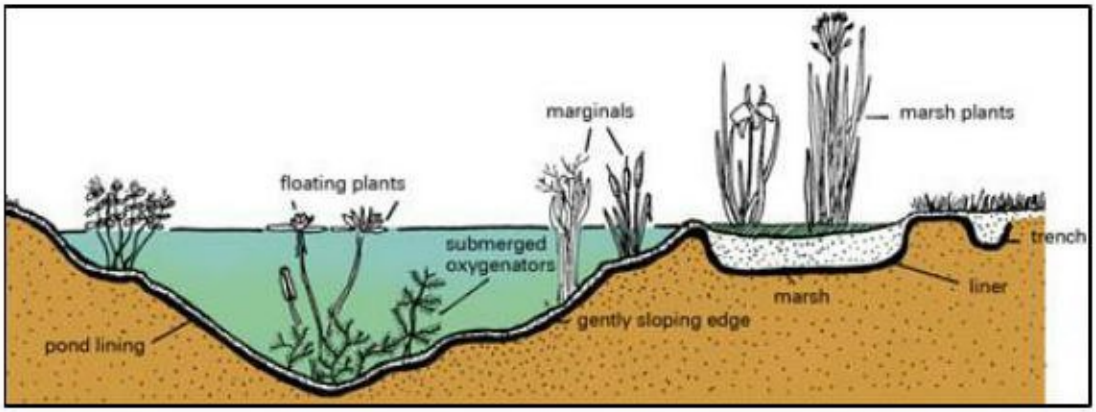
xii The grassland making up the majority of the site is to be retained as its current habitat. This grassland was assessed as being of moderate condition during the initial Phase 1 Habitat Survey (RammSanderson, 2022a). It is recommended that the condition of this retained grassland is enhanced to 'good condition' through the creation of bare ground scrapes, and the management of undesirable species using mechanical removal methods or spot treatment of herbicides. Additional planting would also increase species diversity and enhance the condition of this habitat.

5.1.5 Water Features

xiii As part of the proposals, five new water features will be created on the site. These ponds are to be fishing ponds and as such, will not be designed for amphibians. However, enhancing the ponds will attract invertebrates and subsequently other wildlife such as bats, birds and other mammals. Creating a 'varied' pond design with separate basins will add variety to a site, which is advantageous for wildlife. Including a shallow shelf for marginal vegetation is desirable, as these plants will also provide food and shelter. A large central pond basin will hold water throughout the year in most years, increasing the biodiversity value of the pond

xiv The peripheries of the ponds could be planted with a wildflower seed mix such as N8 Water's Edge Meadow Mixture. This would be managed using the same methods previously described and would attract invertebrates to the water's edge.

Figure 2: Pond Profile



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xv Ideally, shading should be limited to 40 per cent of the pond perimeter, with the majority of cover to the north, to provide shelter, and the southern aspect to be kept as open as possible.

xvi To keep water healthy and provide a variety of habitats, the ponds need to include a mix of submerged aquatic oxygenators, floating aquatics, deep water aquatics and marginal plants. Recommended species to include are: hornwort *(Ceratophyllum demersum*) and Frogbit (*Hydrocharis morsus – ranae*).

xvii For the benefit of the public on site, interpretation boards and wooden boardwalks over the water bodies could be installed.

5.2 Protected and Priority Species

5.2.1 Nest Box Provisions

i Additional enhancements that could easily be met within the development scope include the incorporation of bat and bird nest boxes, as well as insect and hedgehog boxes. Boxes could be placed within the new woodland once trees have matured with hedgehog boxes within the understorey. The tree mounted bat boxes should face south (for additional warmth), and be positioned at least 4 metres from the ground, with the entrances being free of overhanging branches. It is also recommended that bird nest boxes be placed 1.5m below each bat box, to ensure that the birds have somewhere to nest and do not inhabit the bat boxes. Suitable bat box dimensions are 430mm high X 270mm wide X 140mm deep. The boxes are designed to mimic natural roost sites and to provide a stable environment.

ii Insect houses within the newly created woodland, and wildflower meadows could also be easily met within the development scope. These nest boxes will help to provide a variety of niches for a diverse spectrum of invertebrates to inhabit, and therefore help to increase the terrestrial invertebrate species diversity on site.

Figure 3: Nest Box Examples

Insect House © NHBS

Hedgehog Nest Box © NHBS

Bird Box © NHBS

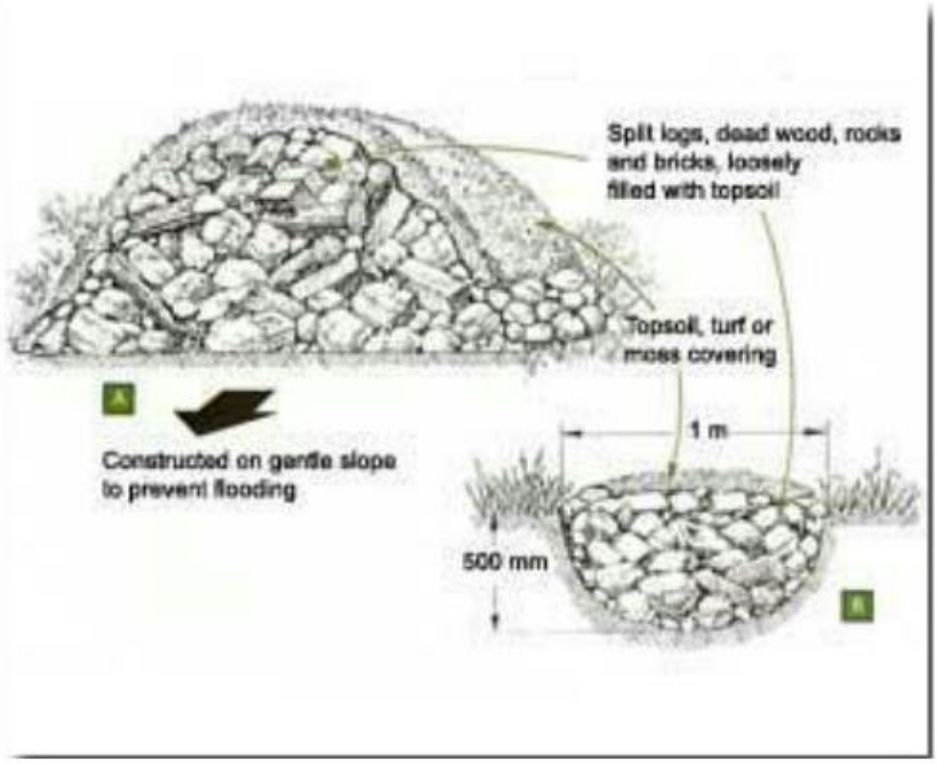
Bat Box © NHBS

5.2.2 Hibernacula

iii Log piles, rocks and dead wood under dense ground cover could also be created across the site for herpetofauna hibernacula. These will provide important places for herpetofauna to rest during the day or during cold or dry weather. Hibernacula should be c. 2m² long, a minimum of 0.5m wide and c.1m in height and comprise log or debris piles with a cap composed of topsoil and a turf covering. Any spoil from the pond creation can be used to create herpetofauna hibernacula, adjacent to the waterbodies.

iv It is also advisable to create a pebbly beach on the sloping sides of the new ponds, graduating the size of stones from large to small. Building this slope from the outside to the floor of the pond will create a ramp for aquatic animals to use.

Figure 4: Hibernacula Example



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5.3 Timescales

i Details of the timescales of the implementation of all proposed works are provided in Appendix 2.

5.4 Location of Biodiversity Enhancements

i The locations of all proposed biodiversity enhancements are shown in Appendix 4.

6 REFERENCES

i Institution of Lighting Professionals and Bat Conservation Trust,2018. 'Bats and Artificial Lighting in the UK – Bats and the Built Environment Series Guidance Note'. 08/18

ii BS 42020:2013 'Biodiversity – Code of Practice for Planning and Development 2013: The British Standards Institution'.

iii Dean, M. *et al*. 2016. 'The Water Vole Mitigation Handbook'. The Mammal Society, London

iv Department of Communities & Local Government, 2021. 'National Planning Policy Framework', London: DCLG.

v Environment Agency, 2013. 'Pollution Prevention Guidelines: PPG1'

vi Froglife, 2001: Great Crested Newt Conservation Handbook.

vii Gent, A. H., and Gibson, S. D., eds. 2003, 'Herpetofauna Workers' Manual'. Peterborough, Joint Nature

viii Lincolnshire Biodiversity Partnership, 2011. Lincolnshire Biodiversity Action Plan

ix Office of the Deputy Prime Minister, 06/2005.' Government Circular: Biodiversity and Geological Conservation - Statutory Obligations and their impact within the planning system'. London: ODPM.

x RammSanderson Ecology Lt. 2022a. Elms Caravan Site Extension Phase 4, Addlethorpe, Skegness, Preliminary Ecological Appraisal Report (RSE_1632_R8_V1), March 2022.

xi RammSanderson Ecology Ltd 2022b. Elms Caravan Site Extension Phase 4 Biodiversity Impact Assessment (RSE_1632_Phase 4_BIA) March 2022.

xii Roper T.J., 2010, 'Badger'. Collins New Naturalist.

Appendix 1: Proposed site plan, provided by client

pdf

Appendix 2: Management Timetable

Ecological Feature	Prescription	Timing	Pre-construction	During construction	Annual	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
Woodland and Trees	Planting of stock	Winter				x					See section 5.1 for further details
	Replacement of failed stock	September - February				x	x	x	x	x	
	Removal of guards	As required						x	x	x	
	Watering in times of drought	During periods of prolonged drought				x	x	x			
	On site vegetation removal	October - February				x					
Wildflower grassland	Prepare ground for planting through raking/chain harrow.	Winter				X					See section 5.1
	Sow seeds	Spring									
	Cutting	Regularly in first year, one late season cut thereafter. On a rotational basis				X	X	X	X	X	

Ecological Feature	Prescription	Timing	Pre-construction	During construction	Annual	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
		for sward height variation.									
	Management of grasslands with herbicides, creating bare ground scrapes.	As required.			X	X	X	X	X	X	
Bat boxes	Installation on trees		x								See section 5.2
Bird boxes	Installation on trees		x			x					See section 5.2
Insect boxes	Installation within wildflower meadow and new woodland		x								See section 5.2
Hedgehog boxes	Installation within woodland		X								See section 5.2
Pond creation	Dig ponds and line if needed	Winter	x			x					See section 5.1
	Plant marginal vegetation	Spring	x	x		x	x				

Ecological Feature	Prescription	Timing	Pre-construction	During construction	Annual	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
Hibernacula creation	Rubble, log and earth piles	Winter	x			x					See section 5.2

7 APPENDIX 3: PROPOSED GRASSLAND MIXTURES

Table 1: N5 Long Season Meadow Mix

Latin Name	Common Name	% Composition
Wildflowers		
Achillea millefolium	Yarrow	3%
Centaurea nigra	Common knapweed	5%
Centaurea scabiosa	Greater knapweed	3%
Daucus carota	Wild carrot	5%
Echium vulgare	Viper's bugloss	2%
Galium verum	Lady's bedstraw	6%
Geranium pratense	Meadow cranesbill	2%
Hypochaeris radicata	Common catsear	2%
Knautia arvensis	Field scabious	3.50%
Lathyrus pratensis	Meadow vetchling	2%
Leontodon hispidus	Rough hawkbit	2%
Leucanthemum vulgare	Oxeye daisy	5%
Linaria vulgaris	Common toadflax	1%
Lotus corniculatus	Birdsfoot trefoil	4%
Malva moschata	Musk mallow	3%
Plantago media	Hoary plantain	2.50%
Primula veris	Cowslip	3%
Prunella vulgaris	Self heal	7%
Ranunculus acris	Meadow buttercup	5%
Ranunculus bulbosus	Bulbous buttercup	5%
Rhinanthus minor	Yellow rattle	6%
Rumex acetosa	Common sorrel	5%
Scabiosa columbaria	Small scabious	3%
Silene dioica	Red campion	4%

Latin Name	Common Name	% Composition
Stachys officinalis	Betony	3%
Succisa pratensis	Devilsbit scabious	2%
Trifolium pratense	Wild red clover	2.5%
Verbascum nugrum	Dark mullein	1.5%
Vicia cracca	Tufted vetch	2%
Grass species		
Agrostis capillaris	Common bent	3%
Anthoxanthum odoratum (N)	Sweet vernal grass	3%
Briza media (N)	Quaking grass	2%
Cynosurus cristatus	Crested dogstail	22%
Festuca Trachyphylla	Hard fescue	22%
Festuca rubra ssp. commutata	Chewing's fescue	22%
Festuca rubra ssp. litoralis	Slender creeping red fescue	13%
Hordeum secalinum (N)	Meadow barley	1%
Poa pratensis	Smooth stalked meadow grass	10%
Trisetum flavescens	Yellow oatgrass	2%

Table 2: N10 Woodland Meadow Mixture

Latin Name	Common Name	% Composition
Wildflowers		
Agrimonia eupatoria	Common Agrimony	5%
Alliaria petiolata	Garlic Mustard	8%
Allium ursinum	Ramsons/ Wild Garlic	3%
Angelica sylvestris	Wild Angelica	5%
Campanula trachelium	Nettle Leaved Bellflower	3%
Digitalis purpurea	Wild Foxglove	5%
Filipendula ulmaria	Meadowsweet	5%
Galium mollugo	Hedge Bedstraw	5%

Latin Name	Common Name	% Composition
Geranium robertanianum	Herb Robert	0.50%
Geum urbanum	Wood Avens	7%
Hyacinthoides non-scripta	English Bluebell	12%
Hypericum hirsutum	Hairy St. John's Wort	3%
Primula vulgaris	Wild Primrose	1%
Prunella vulgaris	Self Heal	8%
Silene dioica	Red Campion	7.50%
Stachys officinalis	Betony	5%
Stachys sylvatica	Hedge Woundwort	8%
Teucrium scorodonia	Wood Sage	5%
Torilis japonica	Upright Hedge Parsley	4%
Grass species		
Agrostis capillaris	Common Bent	3%
Anthoxanthum odoratum (N)	Sweet Vernal Grass	3%
Cynosurus cristatus	Crested Dogstail	11%
Deschampsia cespitosa (N)	Tufted Hairgrass	5%
Festuca trachyphylla	Hard Fescue	14%
Festuca rubra ssp. Litoralis	Slender Creeping Red Fescue	14%
Festuca rubra ssp. Rubra	Strong Creeping Red Fescue	14%
Poa nemoralis	Wood Meadowgrass	22%
Poa pratensis	Smooth Stalked Meadow Grass	14%

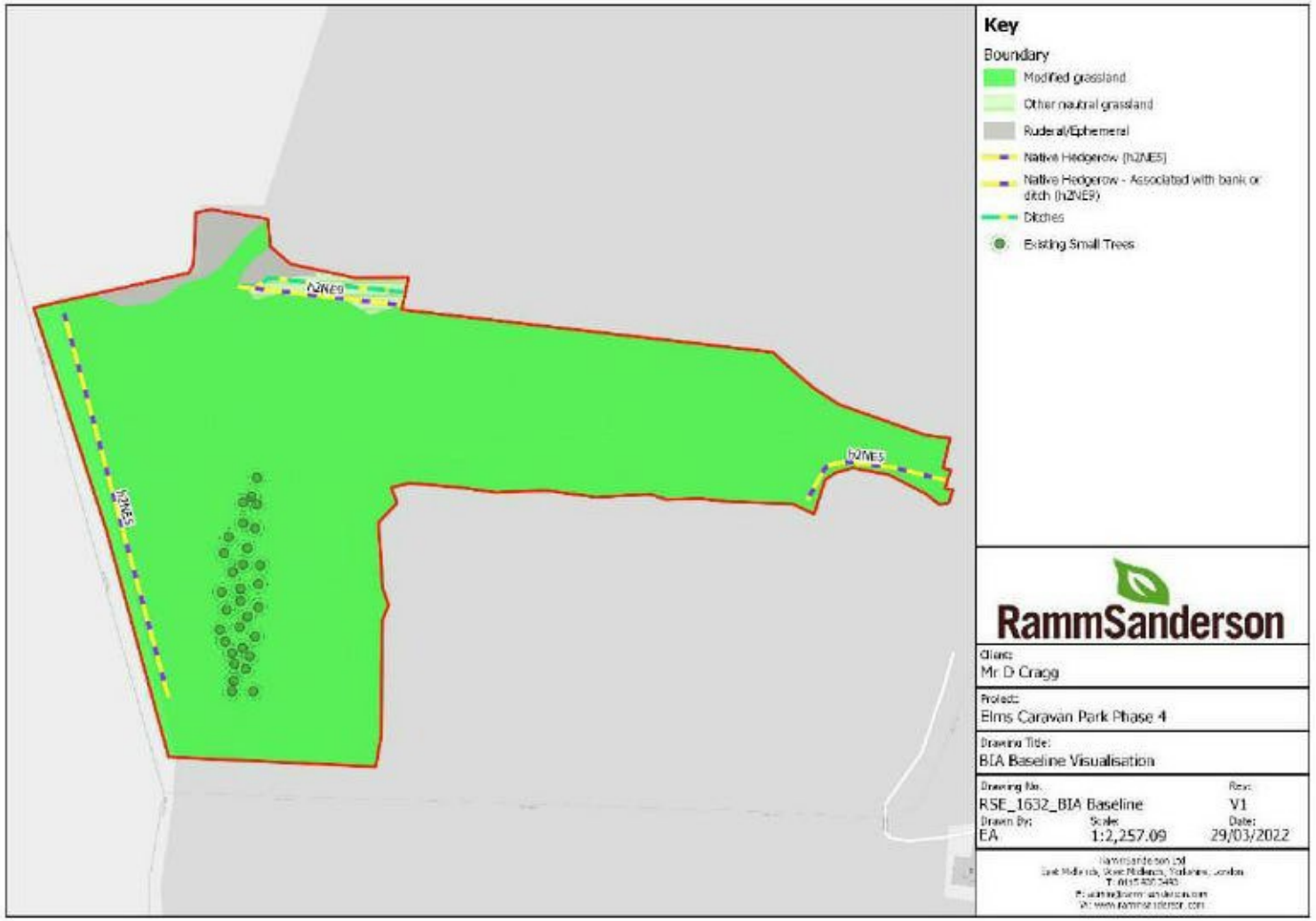
Table 3: N8 Water's Edge Species Mixture

Latin Name	Common Name	% Composition
Wildflowers		
Achillea ptarmica	Sneezewort	3%
Angelica sylvestris	Wild Angelica	4%
Caltha palustris	Marsh Marigold	2%

Latin Name	Common Name	% Composition
Carex pendula	Pendulous Sedge	2%
Centaurea nigra	Common Knapweed	4%
Eupatorium cannabinum	Hemp Agrimony	2%
Filipendula ulmaria	Meadowsweet	11%
Geum rivale	Water Avens	4%
Hypericum tetrapterum	Square Stemmed St. John's Wort	1%
Iris pseudacorus	Yellow Flag Iris	21%
Juncus effusus	Soft Rush	1%
Juncus inflexus	Hard Rush	4%
Lathyrus pratensis	Meadow Vetchling	2%
Lotus pedunculatus	Greater Birdsfoot Trefoil	5%
Lychnis flos-cuculi	Ragged Robin	4%
Lycopus europaeus	Gypsywort	3%
Lythrum salicaria	Purple Loosestrife	7%
Pulicaria dysenterica	Common Fleabane	1%
Ranunculus acris	Meadow Buttercup	7%
Sanguisorba officinalis	Great Burnet	1%
Scrophularia auriculata	Water Figwort	2%
Stachys palustris	Marsh Woundwort	1%
Succisa pratensis	Devilsbit Scabious	4%
Vicia cracca	Tufted Vetch	4%
Grass species		
Agrostis capillaris	Common Bent	4%
Alopecurus pratensis (N)	Meadow Foxtail	4%
Anthoxanthum odoratum (N)	Sweet Vernal Grass	5%
Cynosurus cristatus	Crested Dogstail	14%
Deschampsia cespitosa (N)	Tufted Hairgrass	5%
Festuca trachyphylla	Hard Fescue	17%

Latin Name	Common Name	% Composition
Festuca rubra ssp. Litoralis	Slender Creeping Red Fescue	17%
Festuca rubra ssp. Rubra	Strong Creeping Red Fescue	17%
Poa pratensis	Smooth Stalked Meadow Grass	17%

8 APPENDIX 4: BIA BASELINE VISUALISATION



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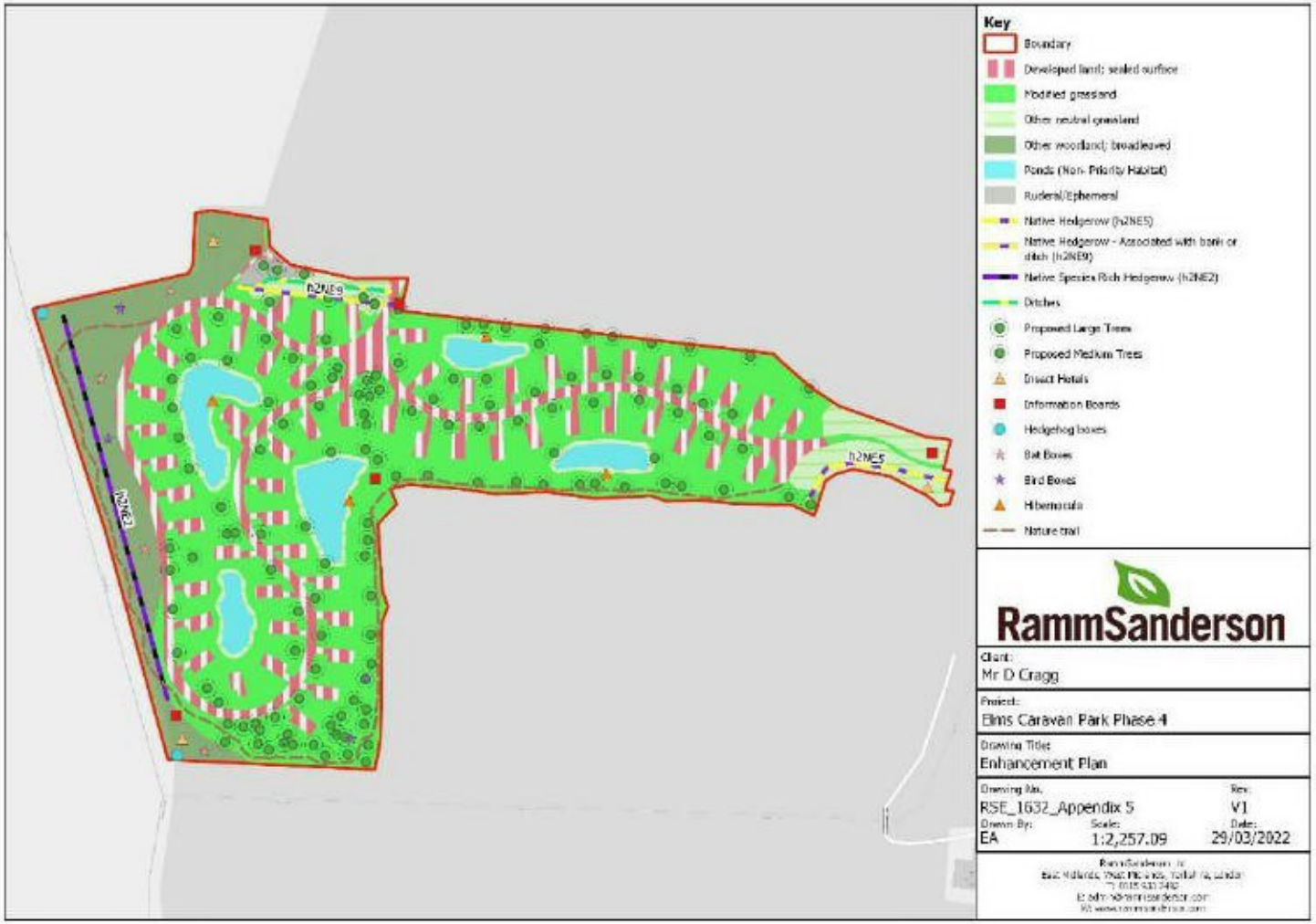
9 APPENDIX 5: ENHANCEMENT PLAN



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