

**Landscape and Site Management Plan
Rev A**

Development at Low Lane, Holbeach

**Erection of four detached two-storey dwellings,
two detached garages and demolition
of existing bungalow (H09-0801-20)**

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12 July 2021

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1.0 Introduction:

This document has been prepared to accompany the approved planning application 'H09-0801-20 - Erection of four detached two-storey dwellings, two detached garages and demolition of existing bungalow at Low Lane, Holbeach' granted on 25 February 2021.

The contents of this document detail the proposed landscaping, habitat, and site maintenance proposals to ensure the development is assimilated into the surrounding landscape and built environment, including the protection and enhancement details of the existing habitats where applicable. The document includes a schedule of all required maintenance regimes, operations and works necessary for the satisfactory management of the landscape in perpetuity.

This document seeks to discharge the following planning conditions attached to the granted development.

4. Before the commencement of the development hereby permitted beyond oversight, the approval of the Local Planning Authority is required to a scheme of landscaping and tree planting for the site indicating, inter alia, the number, species, heights on planting and position of all the trees, together with details of post-planting maintenance. Such scheme as is approved by the Local Planning Authority shall be carried out and completed in its entirety during the first planting season following practical completion of the development. All trees, shrubs and bushes shall be maintained by the owner or owners of the land on which they are situated for the period of five years beginning with the date of completion of the scheme and during that period all losses shall be made good as and when necessary.

5. The existing hedge along the eastern and southern site boundaries as shown on Drawing No.001 Rev E shall be retained and details of any proposed maintenance measures shall be agreed in writing by the Local Planning Authority before the commencement of the development hereby granted.

6. Prior to work commencing on site a detailed landscape, habitat and site management plan, including long term design objectives, management responsibilities, maintenance schedules for all landscape areas and details for habitat enhancement and protection (and including a monitoring programme) shall be submitted to and approved in writing by the Local Planning Authority. The landscape and site management plan shall thereafter be carried out in full accordance with the approved details in accordance with timings to be approved before work commences on site.

7. Prior to its installation, details of the proposed boundary treatments, including a schedule of fencing levels, heights and materials, and details of the size and species of any hedging, shall be submitted to and approved in writing by the Local Planning Authority, and the details so approved shall be implemented in full before the development is first brought into use and retained thereafter.

This document shall be made available to all owners, occupiers, and stakeholders upon completion of the scheme to ensure the contents are referenced and implemented in perpetuity.

2.0 Development Proposals & Landscape Design:

The proposed development layout and overall landscape design is presented within 'Appendix A - Landscape Strategy' and should be read in conjunction with the contents of this report.

An ecological Construction Environmental Management Plan (biodiversity) for the site is included within 'Appendix B – Ecological Report' which provides details of ecological protection and enhancement measures to be incorporated into the schemed and working method statements to be adopted during the construction phase.

The development will consist of two four bedroom two-storey detached dwellings with detached garages, one four bedroom two-storey detached dwelling with integral garage and one five bedroom two-storey detached dwelling with integral garage. Each of the four dwellings benefit from private rear gardens and parking spaces.

The properties will be accessed from Low Lane, making use of the existing vehicular site entrance and driveway. The access drive will be upgraded from the existing loose limestone formation to a permeable block paving specification providing Sustainable Urban Drainage System (SUDS) to the bulk of the hard-landscaped areas.

All plots will have private parking provisions with a minimum of three spaces per dwelling and consist of permeable block paving and gravel surfaces to ensure SUDS are incorporated to all vehicular surfaces. Provisions for the storage of bicycles will be accommodated within the curtilage of each property and a minimum of two electric vehicle charging points will be provided to each property.

The frontage of the properties consists of a mix of native hedging (Beech), shrubs for pollinators, wildflower, bulbs (daffodils, snowdrops & bluebells), turf laid to lawn and formal boundary treatment consisting black metal estate fencing, timber post and rail fencing and brick walls with timber infill panels. The access drive, parking and pedestrian footpaths provide easy and unobstructed access from the highway to the principal entrance and rear amenity space of each property.

The private rear gardens provide amenity space to each of the plots comprising paths to the perimeter of the dwellings and patio space, turf laid to lawn, new tree planting comprising Silver Birch, Cherry Blossom, Cultivated Apple & Rowan and the retained Leylandii Cypress hedge to the east and south boundaries.

The site is within walking distance of Holbeach town centre which can be accessed via the dedicated pedestrian and cycle path off Low Lane. The scheme has been designed to comply with all aspects of Building Regulations Part M to ensure there is step free access available from the principal entrances of each unit to the public highway, Low Lane.

3.0 Maintenance & Management Responsibilities:

Following the completion of the landscape implementation works, the developer/contractor will be responsible for all maintenance, management, and monitoring of the approved landscape scheme within the first 12 months following practical completion and up to the first handover/occupation of the properties. Any failed or defective planting shall be replaced by the developer/contractor within the first 12 months following practical completion.

Thereafter the responsibility for the maintenance and monitoring of the approved landscape scheme will be inherited by the owners/occupiers of the properties in perpetuity. There will be no public or communal areas within the confines of the site with all properties being of private ownership. Full details of maintenance responsibilities and copies of the landscape management plan will be made available to the owners/occupiers at handover.

The responsible person(s) may appoint consultants to provide specialist advice, monitoring, or to undertake a watching brief in relation to particular aspects of the site or specific maintenance operations. This may include suitably qualified ecologists, arboriculturists, landscape architects, engineers or health and safety professionals.

4.0 Health, Safety, Environmental & Legislative Considerations:

Health and Safety

Prior to any maintenance and management activities being carried out, the parties involved will have an obligation to ensure that all health and safety implications have been identified, all necessary risk assessments have been made, a safe system of work is in place and that operatives are properly trained and provided with appropriate personal protective equipment (PPE). Risks and proposed mitigation measures should be identified within the site-specific risk assessments.

All work undertaken on the site by contractors, volunteers or direct employees must comply with the appropriate legislation relating to health safety and the Control of Substances Hazardous to Health (COSHH).

Environmental Considerations

The use of Integrated Pest Management (IPM) is the preferred approach for weed, insect and disease management. IPM is an approach to pest control that uses regular monitoring to determine if and when treatments are needed, and employs physical, mechanical, cultural, and biological tactics to keep pest number low enough to prevent intolerable damage or annoyance. Least-toxic chemical controls are used as a last resort.

In addition to the benefits to biodiversity there are significant cost savings to be gained by this approach. General IPM steps and methods include:

- Prevention first – plant vigorous, pest-resistant, site adapted varieties. Plan cultural practices to minimize pests (watering, mulching, pruning etc.).
- Identify/know the pests and weeds and their life cycle.
- Set action thresholds to tolerate some damage.
- Regular monitoring.
- When pests exceed threshold, use control methods with the least non-target impact. Try cultural, physical, or biological methods first. Avoid using pesticides if practicable. Any pesticides used must be non-residual/biodegradable. As a last resort, use spot applications of least toxic chemical.

Only treat when the pest is most vulnerable, and its natural enemies are in their least susceptible life stage.

- Keep records of control methods and results, evaluate and adapt cultural practices.
- Replace problem plants/designs with more pest, disease and weed resistant varieties.

IPM techniques for controlling weeds include mulching, pulling, allowing plantings to grow densely and shade ground, heat and hot water controls. As a preventative measure control all weeds before they go to seed. If herbicides must be used, choose the least toxic available and spot apply on weeds. The use of pre-emergent herbicides is to be discouraged. Maintaining a thick mulch later combined with mechanical weeding is as effective.

Horticultural peat is not to be used as mulch on any beds or as a soil conditioner, and wherever possible plants grown without peat will be preferred to those grown using peat.

Where appropriate use should be made of materials made from recycled components e.g. wood chip mulch.

Where necessary, plants are to be watered at appropriate times of the day to ensure minimum water evaporation. Where possible recycled water should be used e.g. from rainwater harvesting.

Opportunities for the creation of additional micro-habitats and habitat enhancement should be taken wherever possible. For example, allow deadwood, jagged stumps, splits, fungal growth, and holes in tree trunks to remain unless they are creating a safety hazard. Discrete habitat piles hibernation sites (log piles/brush wood piles) in locations where they will not be disturbed may be created from the arisings of tree works.

Legislation

The following legal obligations, among others must be considered in carrying out any management and maintenance operations:

The Health and Safety at Work Act 1974

All operations carried out on site must only be undertaken by suitably qualified or trained personnel, using methods and equipment approved by the Health and Safety Executive (HSE).

Conservation of Habitats and Species Regulations

The Habitat Regulations assign a greater level of protection to a variety of native species of animals and plants listed, which are known as European Protected Species (EPS).

Wildlife and Countryside Act 1981

There is an obligation to comply with legislation for species protected (including amphibians, reptiles, and bats) under this Act. All birds and their nests are protected under the Act. Site management must be aware of the need to avoid disturbance or harm to nesting birds either by avoiding the nesting season, March to August inclusive and / or by checking that no nests would be affected by particular works

The site lies within the administrative authority of South Holland District Council. The site is not subject to any nature conservation or landscape designation.

5.0 Maintenance Objectives

This section of the report is to clearly set out the basic maintenance techniques appropriate to the site landscaped areas after implementation.

Generally, the landscape maintenance objectives for the site are:

- To ensure newly planted areas become established and are inherited by the property owners in a healthy condition.
- Ensure successful integration of the development within the surrounding landscape.
- Maintain an attractive/visually appealing and robust landscape setting to the development.
- Replacing plants that have died in the 12 months since practical completion.
- To conform to the Construction Environmental Management Plan for the site.
- To carry out maintenance work according to best practice using sustainable techniques and materials.

Generally, all the planting should be according to the relevant drawing, in a healthy condition, and free from litter and competition from weed growth.

6.0 Scheduled Operations

Existing Trees & Hedges

Maintenance Objective:

- To maintain and enhance habitats of existing wildlife populations. Protect wildlife, particularly nesting birds from disturbance.
- Retain existing line of Leylandii Cypress hedge to the east and south boundaries as an established informal screen to the new development and as a landscape feature within the wider landscape character areas.
- Ensure continuity of tree and hedge cover and their contribution to the landscape structure, biodiversity, and screening/amenity value of the site.
- Maintain the health and safety of all trees and hedges contained therein. Particularly in places in proximity to residential properties.
- Maintain the height of the existing Leylandii Cypress hedge to the east and south at a height of approximately 4.5m.

Maintenance Operations:

- Provide Root Protection Zones (RPZ's) during construction in accordance with BS 5837:2012.
- Cut annually to maintain a natural profile the existing Leylandii Cypress hedges to approximately 4.5m in heights to form an even and tidy hedge line.
- Occasional works recommended such as crown raising, crown reduction, substantial pruning, removal of limbs, pollarding or felling should be carried out by a qualified Arboriculturist
- All works should be completed at an appropriate time of year and in accordance with relevant UK Wildlife legislation. Where possible this should be outside of the bird nesting season (i.e. between October through to March).

- Trees should be regularly visually checked for the presence of any diseased or rotten wood; fungal or other infections/disease; and stability. If any such issues are identified, then the advice of qualified Arboriculturist should be sought immediately.
- Fell any tree that has become damaged. Cut up and remove branches. Major limbs to be cut up and left on site to provide a habitat for invertebrates.
- Replace with feathered tree of same species, together with stake and tie, and maintain new trees.

Proposed Trees

Maintenance Objective:

- To ensure early establishment and healthy growth.
- To create a well-shaped framework for future balanced growth.
- To enhance appearance and visual interest.

Maintenance Operations:

- One metre diameter circle to be maintained weed free around all specimen trees. Circle to be topped up with mulch as necessary and to be maintained weed free.
- All dead and missing specimen tree(s) which fail to develop properly during the first season after planting shall be replaced. Specification for replacements shall be the same as for their originals.
- Water newly planted trees throughout the summer months (April to August) at fortnightly intervals and after any period of two weeks without significant rainfall (less than 5mm). Apply sufficient water to thoroughly wet the top 150mm of soil around the tree roots. This will normally require 10 litres for a seedling or whip and 20 litres for a standard tree.
- Check stakes and ties for firmness and support and adjust or replace as necessary.
- Firm the soil around the roots to ensure that the tree is securely planted in the ground and upright.
- Formative prune the tree to remove any dead, diseased, or damaged shoots and create a balance form for future growth.
- Begin phased removal of tree stakes and ties beginning with the stakes of the most vigorous and established trees, except in special circumstances during year 2.

Proposed Native Hedgerows

Maintenance Objective:

- To maintain new native hedgerows to a naturalistic appearance and to a given predetermined ultimate height, shape, and width.
- To ensure continuity of form and density through under or inter-plant any gaps or sparse areas using species mixes to match as required.
- To ensure that leggy unkempt growth is pruned back and maintained at a functional size so that the hedge does not hold litter or present Health and Safety problems.

Maintenance Operations:

- Maintenance operations during the establishment phase (until branches of adjacent plants fully merge together) will comprise of weed control, watering, and formative 'facing up' of the hedgerow to establish dense branch growth. New planting will be re-firmed as required.
- The first cut to newly planted hedgerows is recommended within years 2 to 3 (dependant on growth) and will consist of 'facing up' either side of the hedge. All hedge cuts must be undertaken using appropriate hand or power tools.
- The hedge will be cut in an 'A' shape to maintain a wide base for bird nesting and roosting's and if possible, only be cut annually.
- Additional hedgerow cutting may be required from a health and safety perspective should there be a good growing season (although this is unlikely within the first few years of establishment of new hedgerows).
- Top up mulch levels for new hedges where necessary, using the same or similar product to that previously supplied.
- Prune any diseased or rotten wood (including the removal of main stems and limbs) back to sound wood.
- Remove all stems and limbs which are unsafe or are in danger of falling or breaking up during gales.
- Remove failed plants for new native hedges and replace with a plant of the same species, to a minimum size of an open ground whip, 0.9-1.2m high, planted between the months of December and mid-March inclusively.
- Gap up areas of less dense growth with additional plants as required to achieve a continuous hedge alignment, taking due allowance for natural growth.

Shrub Beds & Ornamental Planting

Maintenance Objective:

- Maintenance of ornamental planting will focus on maintaining a neat and tidy appearance, which will also encourage plant growth.
- To maintain boscaje of shrub growth to cover as much as possible of the border area and allowing the individual plants to achieve as nearly as possible their natural form.
- Maintain the borders free of visible weeds and shape and prune the shrubs to avoid obstructing pathways or blocking light to windows.

Maintenance Operations:

- Immediately after planting, and thereafter yearly, in the appropriate season for the species involved, prune the shrubs to develop their desirable ornamental characteristics. At the same time remove intermediate plants that are restricting the natural and attractive development of their neighbours. These plants may be used to fill gaps produced elsewhere in the scheme where species have not been as successful in their development.
- The following maintenance operations to be applied as appropriate to the relevant species:
 - Hard prune March – April (where species flowers on current year's wood)
 - Remove flower wood after flowering (Where species flower on last years wood)
 - Clip or trim to maintain shape and bushy habit.

- Maintain the soil surface substantially free of weeds (less than 5% weed cover) by hand during the growing season, or by spot treating.
- Top up mulch to 75mm depth as required. Replace any dead or missing plants to the original specification.
- Prune the shrubs as much as is necessary to achieve their desirable ornamental features (flowering, autumn colours, overcrowded, leggy plants etc.), following sound horticultural practices, and to prevent them overgrowing footpaths or blocking light to windows.
- Remove all arisings from site as well as any damaged, dead or diseased part of the shrub.
- Maintain any visible surface soil free of weeds as specified for newly planted borders.
- Apply organic fertiliser prior to commencement of the growing season, except adjacent to any watercourses, prior to re-mulching any bare areas where necessary.
- Thin out over mature plants that are becoming unsightly and have outgrown their useful life. Replace these with young plants as per the original specification where gaps remain.

Grass Areas

Maintenance Objective:

- To create a level, attractive and even grass sward with uniform height and colour.
- To enhance appearance and visual interest.
- To ensure satisfactory establishment of the grass sward.

Maintenance Operations:

- Mowing shall be carried out using a suitable mower to maintain the vegetation within the limits of 20mm and 50mm during April to September inclusive and between 30mm and 60mm during the rest of the year. The clippings may be returned but must be distributed evenly over the surface, and at no time shall the layer of clippings be of such a depth that will affect the growth of the sward.
- Spot treat isolated weed growth may be carried out by hand or herbicide application.
- Scarify grass annually in the autumn.
- Apply organic fertiliser in the spring and autumn.
- Spike for aeration to 150mm depth as required.
- Remove all litter, debris, and deleterious materials from the site at regular intervals and prior to mowing's.
- All edges of grass areas, against buildings, footpaths, roadways, trees, posts, and any other obstruction shall be kept neat and tidy by use of hand/mechanical edge trimmer.
- Reinstatement by re-turfing or re-seeding of worn areas shall be undertaken as necessary and at the appropriate time of year.

Wildflower & Bulbs

Maintenance Objective:

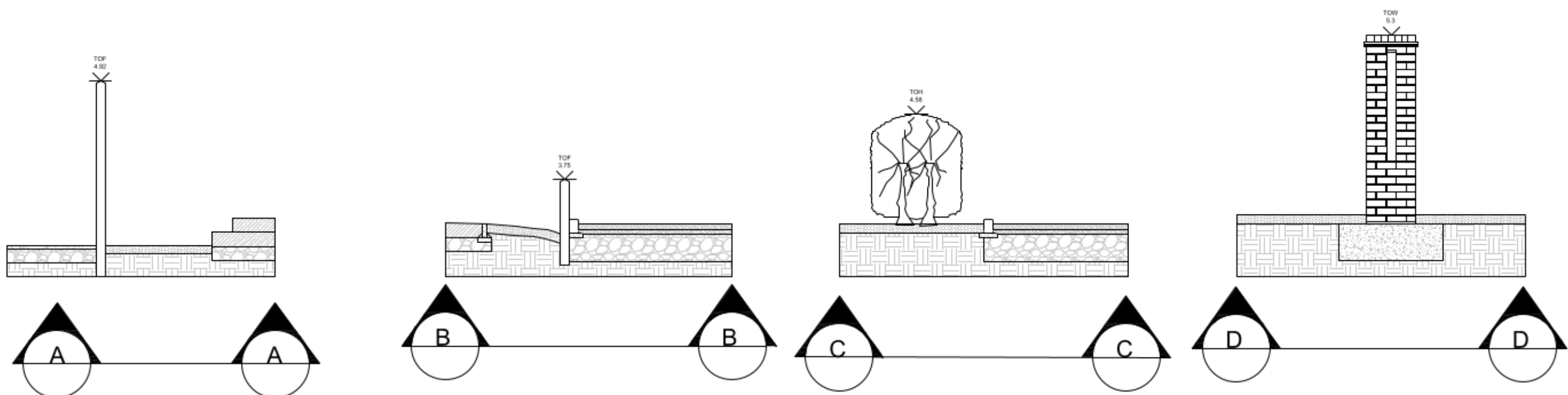
- Establish a healthy and diverse range of wildflower and bulbs to benefit a variety of species including, birds, bats, and invertebrates and to maximise biodiversity whilst providing extended periods of attractive flowering.
- To ensure satisfactory establishment of the wildflower and bulbs.

Maintenance Operations:

- Cut wildflower in April down to 75mm to reduce competition from grasses. Remove all grass cuttings to avoid adding fertility back to the soil. If any unwanted weed species emerge these will need removing by hand or by carefully spot treating.
- Towards the end of summer (August to September) most flowers will begin to die back and is the suitable time to make a hay cut. The area will want cutting down to 75mm with the cuttings being left to dry on the surface for up to a week to allow flowers to shed their seeds.
- Rake up and remove cuttings thereafter. If annuals are present it is important that their seed is returned to the soil to allow them to regenerate again the following spring.
- Vigorously rake the area to break the surface and allow annual seed to contact the soil.
- Perennial bulbs such as daffodils, snowdrops and bluebells require little maintenance. Bulbs that rapidly increase in number should not be allowed to produce excessively large clusters. Once the leaves have died, dig up bulbs that are tightly massed together, split them into smaller quantities, and replant.

Appendix A Landscape Design

Boundary treatment sections

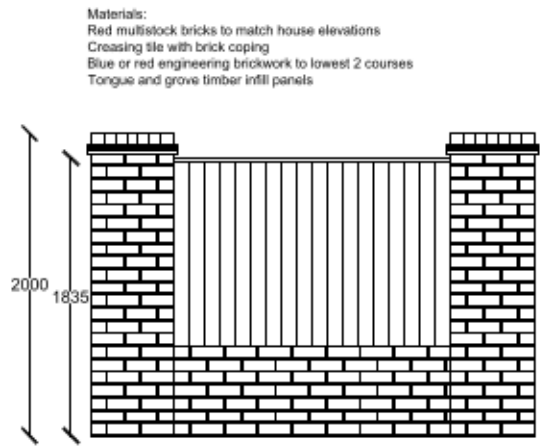


Existing 1800mm high timber fence with concrete post and gravel boards retained.

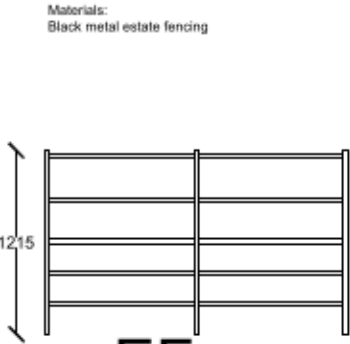
Existing 600mm high concrete post and wire fence retained.

Beech hedge

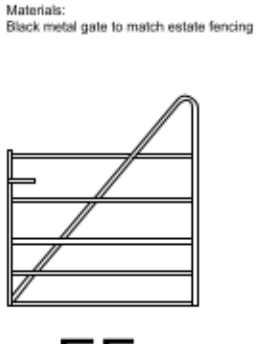
Brick wall with timber infill panels



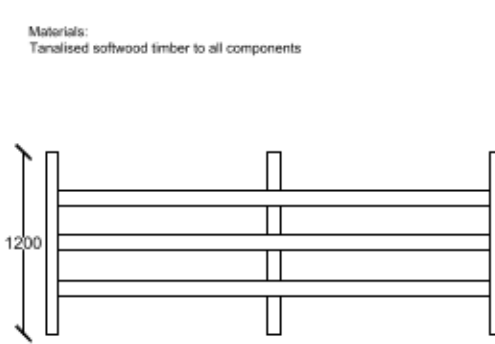
Brickwall with timber infill panels



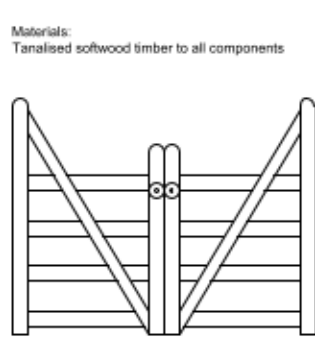
Estate fencing



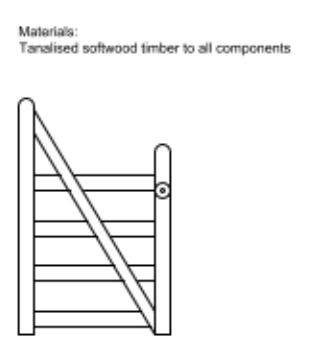
Estate fencing gate



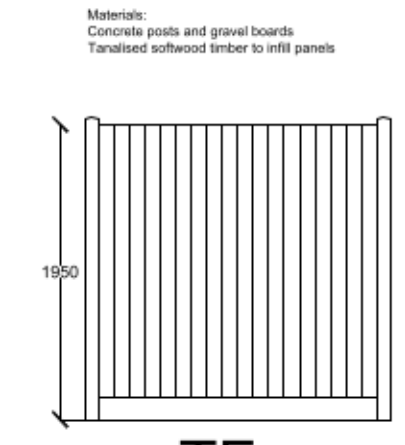
Timber post and rail fence



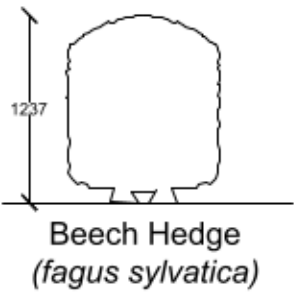
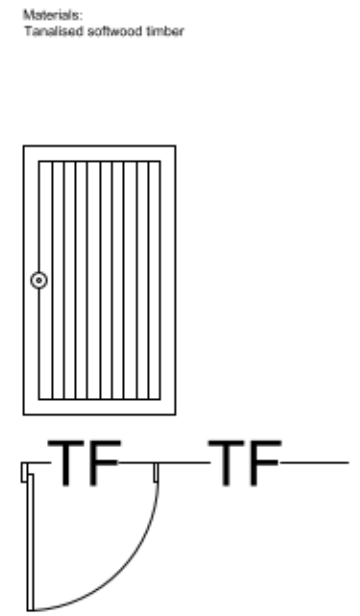
Double timber gate to match post and rail fence



Single timber gate to match post and rail fence

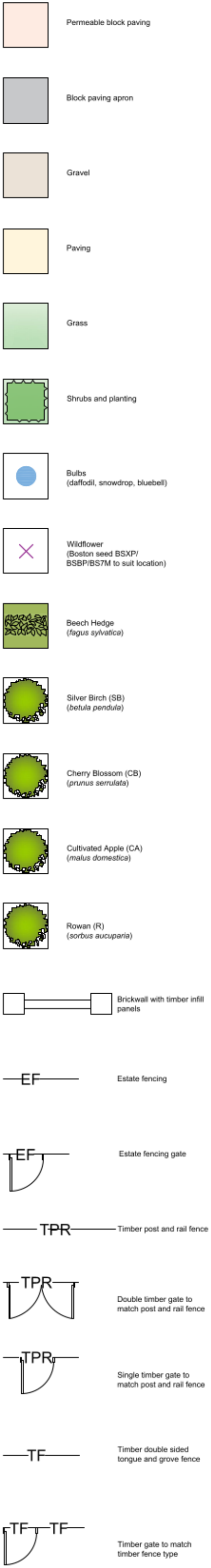


Timber double sided tongue and groove fence



Beech Hedge (fagus sylvatica)

LEGEND



TREES				
Number	Abbreviation	Species	Size	Girth
4 No.	SB	Silver Birch (<i>betula pendula</i>)	400-450cm	14-16cm
2 No.	CB	Cherry Blossom (<i>prunus serrulata</i>)	400-450cm	14-16cm
3 No.	CA	Cultivated Apple (<i>malus domestica</i>)	300-350cm	11-13cm
4 No.	R	Rowan (<i>sorbus aucuparia</i>)	350-400cm	12-14cm

HEDGES					
Number	Abbreviation	Species	Size	Pot Size	Density
213 No.	B	Beech (<i>fagus sylvatica</i>)	90-120cm	Bare root	7/m

SHRUBS					
Number	Abbreviation	Species	Size	Pot Size	Density
90 No.	WP	Wild Privet (<i>ligustrum vulgare</i>)	40cm	Cell grown	7/m
55 No.	FT	Firethorn (<i>pyracantha</i>)	60cm	2L	5/m
10 No.	BA	Barberry (<i>berberis</i> spp)	60cm	3L	4/m2
15 No.	BH	Bell Heather (<i>erica cinerea</i>)	25cm	1L	6/m2
15 No.	GR	Gaulther Rose (<i>viburnum opulus</i>)	90	Bare root	5/m
2 No.	HS	Honeysuckle (<i>lonicera periclymenum</i>)	100cm	7.5L	1/m2
50 No.	SK	Skimmia (<i>skimmia japonica</i>)	40cm	2L	5/m2

BULB MIX			
Number	Abbreviation	Species	Density
539 No.	D	Daffodil mix (<i>narcissus</i>)	7/m2
539 No.	BB	Blue Bell (<i>hyacinthoides non-scripta</i>)	7/m2
539 No.	S	Snowdrop (<i>galanthus</i>)	7/m2

WILDFLOWER MIX		
Abbreviation	Mix	Sow Rate
BSB	Butterfly and Bee	3g/m2
BSX	Dual Purpose	3g/m2
BSTM	Hedgerow & Shade	5g/m2

Project:
DEMOLITION OF EXISTING BUNGALOW AND ERECTION OF 4NO. DETACHED DWELLINGS
LAND KNOWN AS 47 LOW LANE
HOLBEACH
LINCOLNSHIRE
PE12 7PW

Applicant:
MR D J RULEWSKI & MR A T RULEWSKI

Drawing:
LANDSCAPING DESIGN

Sheet Size: A1	Project No: -
Drawing No: 013	Revision: Rev A
Date: 12 July 2021	Drawn: DR
Scale: NTS	Checked: RR
	Approved: DR

Appendix B Ecological Report



Construction Environmental Management Plan (biodiversity)

For

Land at 47 Low Lane

Holbeach

Spalding PE12 7PW

Client: Mr D Rulewski

Project Ref: TE/LB/2021_638

Revision: FINAL

Issue date: May 2021

Notice

Client	Mr D Rulewski
Site	Land at 47 Low Road, Holbeach, Lincolnshire PE12 7PW
Report Reference	2021_638/1
Author	Louise Brown BSc (Hons) MSc, MCIEEM, Director
Technical Review	Shaun Baker, MCIEEM, Principal Ecologist
Approved	Shaun Baker, MCIEEM, Principal Ecologist
Date	May 2021
Version	FINAL

This report has been prepared by Torc Ecology Ltd for the sole and exclusive use by Mr D Rulewski in response to his particular instructions.

This report has been prepared by an ecology specialist and does not purport to provide legal advice.

This report aims to provide advice on the practical implementation of Reasonable Avoidance Measures (RAMs) and enhancements in relation to the development of the above site. The recommended approaches are based on the status of the site at the time that the most recent surveys were completed; any changes to the site or proposals may alter these recommendations. Any changes to the detailed RAMs and enhancements that may be required for practical purposes on site should be agreed with a suitably experienced ecologist prior to implementation.

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1. INTRODUCTION

1.1. Background information

1.1.1. This Construction Environmental Management Plan (CEMP) has been produced to address Condition 6 of planning permission (reference H09-0801-20) issued by South Holland District Council (SHDC) to permit development activities at Land at 47 Low Lane, Holbeach, Spalding (hereafter referred to as 'the site').

1.1.2. The site is located at Ordnance Survey (OS) grid reference TF 36537 25511. Proposals for the site include the demolition of an existing bungalow, associated workshop and pond removals to facilitate the construction of four detached two-storey dwellings and two detached garages.

1.1.3. Planning condition 6 states:

'Prior to work commencing on site a detailed landscape, habitat and site management plan, including long term design objectives, management responsibilities, maintenance schedules for all landscape areas and details for habitat enhancement and protection (and including a monitoring programme) shall be submitted to and approved in writing by the Local Planning Authority. The landscape and site management plan shall thereafter be carried out in full accordance with the approved details in accordance with timings to be approved before work commences on site.'

Reason: To ensure that site maintenance is not detrimental to use of the land by protected species/other wildlife and to ensure effective long term landscape and site management to assimilate the proposal into its countryside context. This Condition is imposed in accordance with advice within Section 15 of the National Planning Policy Framework, 2019.'

1.1.4. This CEMP therefore outlines the baseline ecological conditions, sensitive ecological receptors and impacts of the proposed works in light of the approved development. Precautionary Methods of Working (PMoW) are provided to mitigate any impacts along with an ecological enhancement strategy that will secure wildlife opportunities upon the site for the longer-term.

1.2. CEMP author and survey details

1.2.1. Ms Louise Brown is the principal author of this CEMP. Ms Brown is a Full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) and a Director at Torc Ecology Ltd. Ms Brown holds a Natural England survey licence for bats (Ref: 2016-20937-CLS-CLS) and is also a Registered Consultant (RC062) on the Bat Mitigation Class Licence. Ms Brown also holds a Natural England survey licence for great crested newts *Triturus cristatus* (Ref: 2016_27348 CLS-CLS) and barn owls *Tyto alba* (Ref: CL29/00224).

1.2.2. A Preliminary Ecological Appraisal (PEA) of the site was undertaken on the 12th March 2021 by Ms Brown as well as a Preliminary bat Roost Assessment (PRA) of the bungalow on site. The surveys were undertaken with reference to the guidelines specified within the 'Handbook for Phase I Habitat Survey' (JNCC, 1993); English Nature's Bat Mitigation Guidelines (Mitchell-Jones, 2004); and the Bat Conservation trust (BCT) Good Practise Guidelines (Collins ed., 2016). In addition a data search for

records of protected sites and protected and notable species within 2km of the site was also undertaken with Lincolnshire Environmental Records Centre (LERC), and a search of the planning portal with respect to local development and great crested newt considerations was also undertaken. This desktop study was completed by Ms Brown.

1.2.3. Waterbodies both onsite and within 250m of the site were subject to a Habitat Suitability Index (HSI) assessment (Oldham *et al*, 2000) at the time of the PEA to assess their suitability to support breeding great crested newts. A subsequent environmental DNA (eDNA) test was undertaken of the ponds and filter system on site on 16th April 2021. This eDNA survey was undertaken by Mr Shaun Baker MCIEEM, a Principal Ecologist at Torc Ecology Ltd and holder of a Natural England Class 2 survey licence for great crested newts (Ref: 2020-48685-CLS-CLS-CL09). Mr Baker is also a Registered Consultant (RC) on the great crested newt Low Impact Class Licence (LICL) (RC 030).

1.3. Declaration of compliance

1.3.1. The information prepared and detailed within this report by Torc Ecology Ltd is true based on the information provided and/or obtained, and is in accordance with the CIEEM's Code of Professional Conduct. Where necessary the information prepared and provided is compliant with the British Standard BS 42020:2013, with appropriate modifications, where necessary, to the report template to account for site specific circumstances.

2. SUMMARY OF RELEVANT ECOLOGICAL FEATURES

(Refer to Figure 1: Phase 1 Habitat plan)

2.1. Site description

2.1.1. The site is situated on the northern outskirts of Holbeach and comprises a bungalow, patio area and attached garage/workshop within mature garden habitat. Access to the site is via a private access drive from Low Lane to the north. On the south and east site boundaries are tall leylandi *Cupressus x leylandii* varying between 5m – 8m in height; a smaller hedgerow (approximately 1.2m in height) comprising holly *Ilex aquifolium*, yew *Taxus baccata* and *Pyracantha* *Pyracantha* sp. is also present that screens off an area of disturbed ground (brash piles, a compost heap, areas of bare ground/ruderal vegetation). Well-maintained lawns comprise a large proportion of the garden and surround an ornamental fish pond with associated (now redundant) sunken fish filter, and three small ephemeral ponds under the coniferous tree canopy. A small number of fruit trees are also present upon the west boundary. The site is surrounded by residential housing in all directions with the A47 lying approximately 95m to the north.

2.2. Habitats

2.2.1. The site was considered to have low botanical interest with no notable or protected plant species upon the site and was generally low in availability of nectar producing plant species. However the boundary hedgerows and coniferous trees provided good structure and connectivity from and through the site to the wider area. The ornamental pond was approximately 12m x 12m and was brick

built, with limited aquatic vegetation. The pond habitat was not considered of high conservation value although common frog *Rana temporaria* and frog spawn were observed in the pond at the time of the survey.

2.3. Bats

2.3.1. The bungalow was found to have limited potential for roosting bats. The pitched roof consisted of concrete inter-locking tiles with no obvious gaps with the exception of a small line of cracked mortar (approximately 70mm x 30mm) on the west facing gable verge. Upon checking with an endoscope no bat evidence was found with some leaf debris inside the feature, possibly indicative of mouse (*Mus musculus* or *Apodemus sylvaticus*). Internally there was no evidence of bats within the roof void with the underfelt being intact and well-sealed. A small section of the roof void above the west facing extension could not be fully accessed but from a limited view there were no droppings apparent upon insulation material within this section of the roof void. The garage was found to have negligible potential for roosting bats.

2.3.2. The trees on site were all considered to have negligible bat roost suitability; there were no Potential Roost Features (PRF) noted and there were no features that could have obscured PRF e.g. ivy growth.

2.3.3. The only habitat on site of potential value to commuting bats was the leylandii treeline. This provided a strong connective feature for bats moving to and from the site to further mature residential garden habitat beyond. Leylandi hedgerows and coniferous trees were unlikely to attract a good supply of invertebrate prey although the pond, and to a lesser extent the fruit trees, did slightly increase the value of the site for foraging bats. Field records of common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bats *Plecotus auritus* within 2km of the site were provided from the desk top search. Overall the site was considered to have low-moderate suitability for commuting/foraging bats.

2.4. Great crested newts

2.4.1. Great crested newt records were provided from the desktop study although the records were over 1km to the southwest and beyond barriers to newt dispersal, i.e. major roads and built up areas. There were no records of great crested newt locally from nearby development sites. Anecdotal evidence of smooth newts *Lissotriton vulgaris* identified on the patio adjacent the ornamental pond and within the fish filter was provided by the landowner (*Pers comm.* to L. Brown, March 2021).

2.4.2. The ornamental pond, fish filter and three smaller ponds located under the canopy of the coniferous trees adjacent the ornamental pond scored 'Poor' for breeding great crested newts when applying the HSI assessment. A drain located just over 100m to the west and within connective habitat to the site was also subject to a HSI assessment which scored 'Good' for breeding great crested newts. A further two drains were assessed, one to the immediate rear of the site that connected to the drain to the west, and another to the northeast within 100m of the site, but both were found to be dry with no evidence of aquatic vegetation.

2.4.3. Whilst a large proportion of the garden habitat on site was not optimal for newts, piles of brash and shaded areas beneath the conifers could provide shelter and hibernation opportunities. Taking into account the HSI score of the drain, the anecdotal evidence of smooth newts, and the presence of great crested newts within the wider area, the potential for great crested newts to use the site could not be ruled out without further investigation.

2.4.4. An eDNA test was undertaken of the ornamental pond, filter and two of the smaller ponds (the third pond being dry). The test was confirmed to be negative i.e. no great crested newts DNA present. The drain was not subject to an eDNA test as water levels had dropped sufficiently by April 2021 to render the drain unsuitable for breeding great crested newts with no water to test.

2.4.5. There are therefore no further constraints with respect to great crested newts; however a sensitive working methodology will reduce the risk of killing and injury to any smooth newts (and other common amphibians) upon the site.

2.5. Nesting birds

2.5.1. Hedgerows and trees provided suitable nest sites for bird species including wood pigeon *Columba palumbus*, robin *Erithacus rubecula* and goldcrest *Regulus regulus*, whilst piles of brash could provide nest sites for dunnoek *Prunella modularis*. However the wider environment offered similar nesting opportunities, and in this context, the site was not considered to be more favourable for nesting birds than other local habitats. A dunnoek and a chaffinch *Fringilla coelebs* were observed upon the site whilst house sparrows *Passer domesticus* were heard within neighbouring residences.

2.5.2. There were no obvious signs of nesting birds at the bungalow and no obvious features that could be used by nesting birds commonly found to use residential houses, e.g. swift *Apus apus*, house sparrow or jackdaw *Corvus monedula*. Both swift and house sparrow records were provided from the data search.

2.6. Hedgehog, common toad and common frog

2.6.1. Garden habitat and piles of brash would provide suitable foraging and shelter opportunities for hedgehog *Erinaceus europaeus*. No evidence of this species was identified upon the site although anecdotal evidence of hedgehog using the garden was provided by the landowner (*Pers comm.* To L. Brown, March 2021). In addition the data search provided records of hedgehog within close proximity (within 15m) of the site; therefore it should be assumed hedgehog could use the site on a regular basis.

2.6.2. Up to seven common frogs were identified within the pond whilst a single common toad *Bufo bufo* was identified under some timber boarding close to the conifers. A small number of records of both species were provided from the data search although they did not relate to the site and were largely historic, i.e. over 20 years old.

2.7. Other ecological constraints

2.7.1. Torc Ecology Ltd did not identify any other ecological constraints relating to this development.

3. PROPOSED WORKS WITH ECOLOGICAL IMPACTS

3.1. Demolition of bungalow

3.1.1. Demolition of the bungalow is required to facilitate the development. This is considered to have a limited risk of impacting upon roosting bats given the well-sealed structure of the building and absence of any evidence of bat activity. However it would be prudent to demolish the bungalow under a precautionary method statement to ensure no opportunistic bat(s) is present in association with the cracked mortar upon the west gable.

3.2. Clearance of trees, vegetation and garden paraphernalia

3.2.1. Tree felling, the removal of the small hedgerow and the clearance of brash piles and paraphernalia over the site, i.e. timber boarding, logs, pallets etc., particularly in association with the coniferous trees, has the potential to negatively impact upon nesting birds, hedgehogs and common amphibians, if present during works. Completing clearance works under a method statement will mitigate this impact. The longer-term impact of the development will be the removal of places of shelter for hedgehog and common amphibians to use in the longer term.

3.2.2. Leylandi hedgerows will be retained as part of the development. Undertaking construction works without protecting the hedgerows from unnecessary damage during construction works may affect their integrity and functionality if roots are damaged from compression or if uprooting occurs during ground works.

3.3. Removal and infilling of the ornamental pond and fish filter

3.3.1. Pond and fish filter removal works may directly impact upon common amphibians (smooth newts, common frog and common toad) if present during the works. Individual hedgehogs and common amphibians could become trapped in these excavated or drained features if left exposed. Carrying out works under a method statement will mitigate this impact¹.

3.3.2. The removal of the pond and fish filter will permanently remove breeding habitat for common amphibians.

3.4. Construction of new dwellings

3.4.1. Individual hedgehogs and common amphibians could fall into and become trapped in any development trenches or excavations left open overnight during construction. Carrying out works under a method statement will mitigate this impact.

3.5. Post-development external lighting at new dwellings

3.5.1. Insensitive positioning of external lighting at new dwellings could negatively affect bat commuting and foraging activity on and adjacent site, and discourage use of any new bat roost provision. Sensitive placement of lighting will be needed to mitigate this impact.

¹ At the time of writing fish had been removed from the pond into the fish filter pending re-homing.

4. WORKING METHOD STATEMENTS

(Refer to Figure 2: Ecological Constraints Plan)

4.1. Demolition of the bungalow

4.1.1. As a precaution a tool box talk will be given to contractors by a licenced bat ecologist upon the day of works and/or prior to works commencing. The roof tiles in association with the small crack upon the west gable verge will be lifted carefully one at a time and the area beneath the tiles checked for the presence of any bat evidence, including individual bats and/or bat droppings. In the highly unlikely event of a bat, evidence of bat activity is found then works will halt immediately. A licenced bat ecologist will then advise on the best way to proceed. This may involve a requirement to obtain a Natural England Bat Mitigation Class Licence (BMCL) or European Protected Species Licence (EPSL) prior to works re-commencing

4.2. Clearance of trees, removal of vegetation and garden paraphernalia

4.2.1. As a precaution and where feasible, tree, hedgerow and brash clearance works should be undertaken outside of the nesting bird season (bird nesting season generally March to September, inclusive). However if this is not possible then a nesting bird check should be undertaken by an ecologist who is a member of CIEEM and adheres to their code of professional conduct to ensure that no nests are present up to five days prior to works. Should any remedial works be required to retained hedgerows, e.g. height reduction works, the above will still apply.

4.2.2. All brash piles and garden paraphernalia should be removed by hand. Should any hedgehog or common amphibian be found, they should be removed from the working area, checked for injuries and placed under the leylandi hedgerow to the rear (south) end of the garden. A dry ditch is present that connects to adjoining garden habitat and the drain to the west which will help with wildlife dispersal. Prior to vegetation clearance log piles should be created beneath the leylandi hedgerow. This will at least provide some refuge for any displaced animals and could continue to be used in the longer-term.

4.3. Drainage of the ornamental pond, small ephemeral ponds and fish filter

4.3.1. Ideally the ponds and fish filter should be drained after the frog spawning and newt aquatic phase (generally spanning March to September taking into account the presence of first year juvenile common amphibians). This will greatly reduce the risk of common amphibians being killed or injured. However should drainage works commence within this aquatic period attempts to remove common amphibians should be made by carefully sweep netting the pond prior to drainage works commencing. Once the water levels are sufficiently low a hand search for any common amphibians within leaf litter, mud or silt at the bed of the pond should be made with animals removed out of the working area and to log piles under the leylandi hedge at the southern end of the garden.

4.3.2. Should the drained pond and fish filter be left exposed overnight or for a longer period prior to infilling, a suitable cover should be placed over the top of these features to prohibit hedgehog or common amphibians from falling in and becoming trapped, or from suffering injury or death.

4.4. Ground works during the construction phase

4.4.1. All retained hedgerows should be protected from accidental damage during the construction phase in accordance with industry standard guidance whereby the hedgerows' Root Protection Areas are fenced off from the working area.

4.4.2. As a precaution, all excavations and trenches will be fitted with a plank of wood or similar so any hedgehog or common amphibian that could be active on site that may inadvertently fall into the excavations/trenches, have a means of escape. Ideally excavations/trenches will be filled in immediately following completion of works.

4.5. Post-development lighting

4.5.1. A sensitive light strategy will be developed for the site that avoids direct illumination of the site boundary vegetation or any introduced bat roost features, and reduces prolonged illumination with the use of PIR sensor activated external lighting.

5. ECOLOGICAL ENHANCEMENTS

(Refer to Figure 3: Ecological Enhancement Plan)

5.1. Habitats

5.1.1. Additional native trees will be planted in new created residential gardens that will help to increase connectivity. Species proposed include silver birch *Betula pendula*, rowan *Sorbus aucuparia*, apple *Malus domestica* and cherry *Prunus serrulata*. In addition a small section of beech *Fagus sylvatica* hedging will be planted on the north site boundary.

5.1.2. There will be three small areas of wildflower planting created comprising Boston Seed (BS) wildflower mixes for bees and butterflies (ref BSBP), a 100% wildflower mix (ref BSXP) and a mix specifically for sowing adjacent hedgerows (ref BS7M). This, along with nectar producing shrubs including honeysuckle *Lonicera periclymenum*, bell heather *Erica cinerea*, Japanese skimmia *Skimmia japonica*, and guelder rose *Viburnum opulus* and bulb planting, will increase the availability of nectar of benefit to invertebrates which in turn will benefit species further up the food chain that feed on invertebrates e.g. bats and birds.

5.2. Bats

5.2.1. Three bespoke facing Habitat bat boxes (Habitat, 2021) or similar bat boxes will be installed into the dwellings. A single box will be installed upon the west elevation of the dwelling in Plot 1; the east elevation of the dwelling in Plot 3; and the west elevation of the dwelling at Plot 4. The boxes will provide permanent features that can be used year round by bats i.e. during both summer and winter. The boxes will be positioned at least 4m at height (with the bat entrance approximately one metre below the swift brick entrance – see paragraph 5.3.2. below). The boxes will be of a height that will be unaffected by any PIR sensor lighting.

5.2.2. There are currently no lighting plans for the development, however any new external lighting should be positioned to be as low level as possible and downward directional to minimise light spill. All lighting should be positioned to avoid illumination of bat boxes or connective habitat.

5.3. Birds

5.3.1. Three sparrow terraces (refer to RSPB, 2021) or similar will be placed upon the site in locations where disturbance will be minimal and where birds will have good access to hedgerow habitat. These sparrow terraces will be located upon the west elevation of the dwelling in Plot 1, and upon the east elevations of garages within Plots 3 and 4. The boxes will be positioned at eaves height or up to 3m in height and are targeted at house sparrow as well as other small passerine birds including blue tit *Cyanistes caeruleus* and great tit *Parus major*.

5.3.2. Manthorpe swift bricks (NHBS, 2021) or similar swift bricks will be incorporated into the new residences. The bricks will be positioned at least 5m in height and directly into brick work on a gable. The boxes will be located on the west elevation of the dwelling in Plot 1; the east elevation of the dwelling in Plot 3; and the west elevation of the dwelling at Plot 4 and at least 1m above the box (refer to paragraph 5.2.1. above). The bricks will provide permanent nest sites for swifts that are currently unavailable on site.

5.4. Hedgehog and common amphibians

5.4.1. Hedgehogs should be able to freely access the rear garden of Plot 3 around the outskirts of the garage, and access all plots via the leylandi hedge on the south and east boundaries from neighbouring gardens. To enable hedgehog access between garden habitats of all properties, two hedgehog access holes will be installed within gravel boards of dividing fences between Plots 1, 2 and 3, with a further two hedgehog access holes installed within the brick walls upon the north and south boundaries of Plot 4. The access holes will be 13cm x 13cm and will be cut into the bottom of the fence gravel boards and brick walls.

5.4.2. As discussed previously log and rubble piles will be created beneath the leylandi hedgerow upon the southern boundary. This will provide some refuge for any displaced animals and could continue to be used in the longer-term.

6. PERSONS RESPONSIBLE FOR IMPLEMENTATION

6.1. Advising ecologist / licenced bat ecologist

6.1.1. The advising ecologist/licenced bat ecologist will be responsible for providing a tool box talk to contractors prior to undertaking a careful check of the tiles for bat evidence at the west gable of the bungalow. The licenced bat ecologist will be on call for the duration of the day when the west gable of the bungalow is demolished. The licence ecologist will also be responsible for confirming that the ecological enhancements are fit for purpose (refer to paragraph 6.2.2. below for the evidence required).

6.2. Mr Daniel Rulewski

6.2.1. Mr Rulewski is the developer and will be responsible for ensuring that all development activities are undertaken in accordance with this CEMP document, including the installation of any mitigation measures, i.e. sensitive lighting, and the installation of ecological enhancements.

6.2.2. Mr Rulewski will be responsible for providing a record of the installation of all enhancement measures including dates of installation/planting, sowing and planting specification and photographs of all enhancement measures. The advising ecologist/licenced bat ecologist will review the evidence to confirm whether the supplied details are sufficient for them to have confidence that the ecological enhancements are fit for purpose, or whether a site inspection is needed.

6.3. Site contractors

6.3.1. Site contractors will be responsible for ensuring that they follow the working methodologies and procedures detailed within this document. The site contractors will also be responsible for installing the bat boxes, bird boxes/bricks, hedgehog access and log piles in accordance with this document.

7. AFTERCARE AND MAINTENANCE

7.1. Habitats

7.1.1. The retention of the leylandi hedgerow upon the south and east boundaries is a condition of planning and therefore apart from residences undertaking regular cutting to maintain height and shape there should be no specific aftercare required.

7.1.2. The responsibility for the aftercare and maintenance of all new planting will lie with the new residences once these plots are sold. Mr Rulewski will provide an information package to all new owners with aftercare and maintenance recommendations from the relevant suppliers to enable the new residence owners to successfully manage these new habitats.

7.2. Bat and bird boxes

7.2.1. The bat boxes and swift bricks are permanent features and should not require any maintenance. The sparrow terraces should remain in place for a minimum of five years with any damaged boxes replaced.

7.3. Hedgehog access holes

7.3.1. The hedgehog holes should be kept unobstructed at all times.

7.4. Log piles

7.4.1. The log piles should be left undisturbed.

8. PHASING OF WORKS

Phase of development	Species	Activity
Demolition of bungalow and garage	Bats	Immediately prior to works commencing a tool box talk will be given to contractors regarding the sensitive removal of roof tiles around the cracked mortar on the west gable.
Clearance of trees, removal of vegetation and garden paraphernalia	Birds	The vegetation on site should be cleared outside the nesting bird season (bird nesting season generally March to September, inclusive). If this is not possible then a nesting bird check should be undertaken of the trees to be removed by an ecologist up to five days prior to works.
	Hedgehog and common amphibians	All brash piles and garden paraphernalia, i.e. timber boarding, logs, pallets, etc. should be removed by hand. Log piles should be created under the leylandi hedge on the southern boundary. Should any hedgehogs or common amphibians be found they should be relocated out of the working area under the leylandi hedge and in association with the log piles.
Ponds and fish filter drainage	Common amphibians	The ponds and filter should be netted prior to drainage. Any common amphibians found should be relocated under the leylandi hedge and in association with the log piles. Once drained a further search of the pond bed should be undertaken to ensure all common amphibians have been removed prior to infilling.
	Hedgehogs and common amphibians	Should the drained pond and fish filter be left exposed overnight or for a longer period of time, a suitable cover should be placed over both features to prohibit hedgehog or common amphibians from falling in and becoming trapped, or from suffering injury or death.
Construction	Retained hedgerows	The Root Protection Area of all retained hedgerows should be protected in accordance with industry standard guidance prior to any ground works commencing.
	Hedgehog and common amphibians	All excavations and trenches will be fitted with a plank of wood or similar so any hedgehog or common amphibian that may inadvertently fall into the excavations/trenches, have a means of escape.
Post-construction	Habitats	Planting of a new trees, hedgerow, shrubs, wildflower and spring bulb planting in association with new residences.
	Bats	Installation of three integrated bespoke habitat bat boxes upon the gable ends of Plots 1, 3 and 4. Sensitive lighting plan to prevent illumination of boundary habitats or bat box entrances. External security lighting to be downward directional and on a PIR activated sensor.

	Birds	Installation of three sparrow terrace nest boxes upon the dwelling in Plot 1 and the garages of Plots 3 and 4. Installation of integrated swift bricks upon the gable ends of of Plots 1, 3 and 4. Swift bricks to be at least 1m higher than the integrated bat box entrances.
	Hedgehog	Creation of two hedgehog holes in the garden fences and brick walls.
Aftercare and maintenance	Habitats	New residences to take on responsibility for new planting. Mr Rulewski to provide new residents with information from the relevant suppliers of plants/seeds to ensure successful establishment and ongoing care for the longer-term.
	Bats	No aftercare or maintenance required.
	Birds	Swifts bricks do not require any aftercare or maintenance. Sparrow terraces to remain in place for a minimum of five years. Replacement of any damaged bird boxes.
	Hedgehog	Hedgehog holes maintained unobstructed.
	Log pile	Log pile should be left undisturbed.

9. REFERENCES

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RSPB (2021). RSPB Sparrow Terrace Nest Box. Accessed: <https://shopping.rspb.org.uk/garden-bird-nest-boxes/rspb-sparrow-terrace-nest-box.html> (04/21)

APPENDIX I: PLATES 1- 6

Plate 1: West and south aspects of the bungalow. Red circle indicates small crack at gable verge. No bat evidence found.



Plate 2: North and west aspects of the bungalow and garage.



Plate 3: Ornamental pond with conifers in background. eDNA test for great crested newts was negative.



Plate 4: Fish filter. Common toad identified under boarding adjacent filter.



Plate 5: Tall Leylandi hedgerows on south and east site boundaries. Smaller hedgerow to right hand side of disturbed ground.



Plate 6: Conifer trees at southeast corner of site. Potential for hedgehog and common amphibians under brash piles under trees.



APPENDIX II: eDNA RESULTS



Folio No: E9343
Report No: 1
Purchase Order: 47 Low Road, Holbeach
Client: TORC ECOLOGY
Contact: Shaun Baker

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (*TRITURUS CRISTATUS*)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 20/04/2021
Date Reported: 23/04/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1488	47 Low Lane - Garden Pond	TF3653125505	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

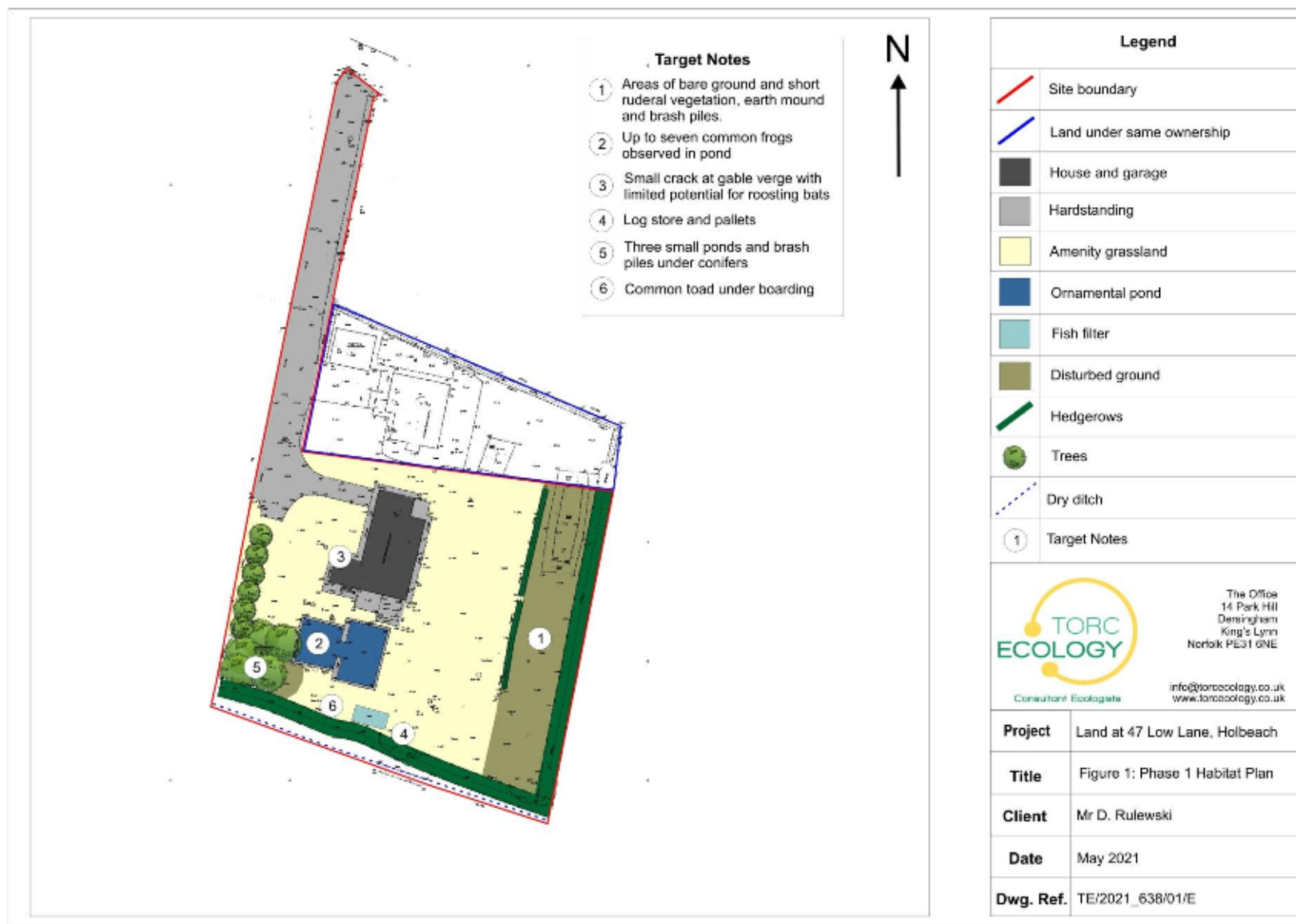
Reported by: Chris Troth

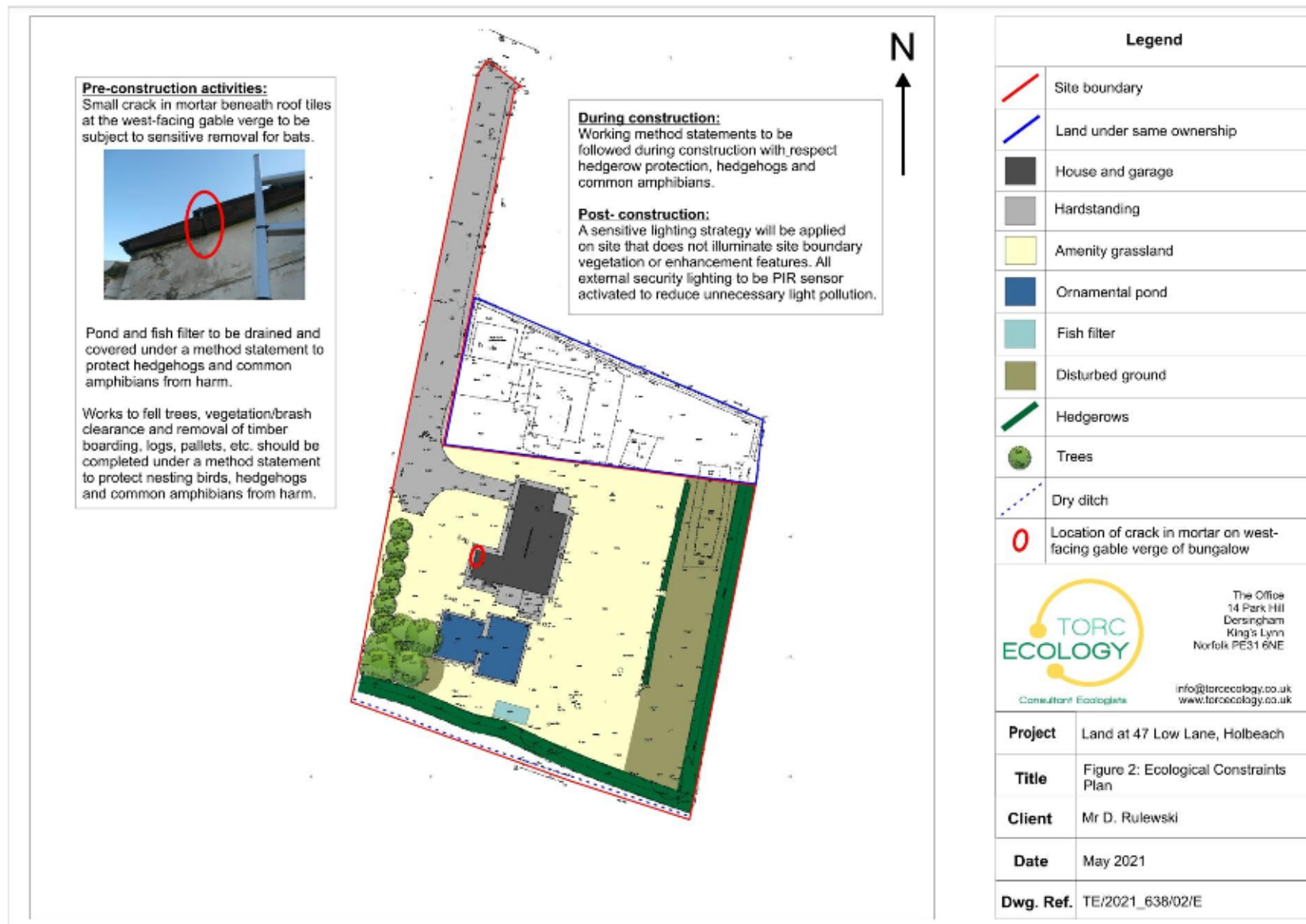
Approved by: Chris Troth



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APPENDIX III: Figures 1 - 3







Appendix C Maintenance Matrix

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