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ECOLOGICAL DESIGN STRATEGY

At

East Lancs Paper Mill

Church Street East
Radcliffe
M26 2PG

NGR: SD 79632 07371

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A handwritten signature in black ink that reads 'K James'.



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1 INTRODUCTION

1.1 Author and qualifications

This report is compiled and written by Heather Tewnion BSc, Field Ecologist for United Environmental Services Ltd (UES).

It has been verified by Kathryn James BSc MRes MCIEEM, UES Senior Project Manager.

1.2 Proposed development

Outline planning permission was granted by Bury Council on 19th December 2018 (62969). Following approval of planning permission 62969, a s73 application was granted by Bury Council on 24th March 2022 (67597), as detailed below.

62969 - Outline application for up to 400 residential dwellings including details of vehicular access (all other matters reserved) and associated works including relocation of cricket pitch, including a pavilion, provision of open space and sports facilities and demolition of existing building and structures.

67597 - s73 application - Variation to conditions 2 for consistency and to allow phasing; 3 removing indicative masterplan from list of approved plans; 8 and 42 for consistency; 9, 23, 33 and 39 to amend the trigger point for submitting information; 11 to allow site clearance and preparation to take place prior to commencement of development; 15, 18 and 37 to amend the trigger point for submitting information and consistency; 16, 27, 28 and 34 for flexibility and to amend the trigger point as to when information is submitted; 17 and 30 to increase flexibility and 26 to allow for phasing, following approval of planning permission 62969.

A suite of ecological surveys were undertaken by WYG to inform the planning applications; the most relevant of which is a extended phase 1 habitat (EXP1) survey produced in December 2016. Further surveys include:

- Breeding bird survey in August 2017 by WYG
- Invertebrate survey in September 2017 by WYG
- Bat survey in October 2017 by WYG
- Preliminary bat roost assessment in October 2023 by Tetra Tech

Surveys have been undertaken by WYG and UES to inform the development at the cricket pitch relocation site. These are discussed further in UES' landscape and ecology management plan (reference UES03854/15).

1.3 Objectives and scope

UES was commissioned by Morris Homes (North) Ltd to produce an ecological design strategy (EDS) for the proposed development at East Lancs Paper Mill, Radcliffe in support of condition 23 of planning permission 67597:

No phase of development shall commence (excluding works of site clearance and preparation) until a landscaping scheme for that phase has been submitted to and approved in writing by the Local Planning Authority. The contents of the plan should include:



- *Native tree and shrub planting;*
- *Mitigation for bat foraging habitat;*
- *Loss of nesting bird habitat;*
- *Measures to enhance the existing reservoir, goits and River Irwell; and*
- *Marshy grassland and woodland habitat.*

The approved scheme shall thereafter be implemented not later than 12 months from the date the building(s) is first occupied or within the first available tree planting season; and any trees or shrubs removed, dying or becoming severely damaged or becoming severely diseased within five years of planting shall be replaced by trees or shrubs of a similar size or species to those originally required to be planted.

Reason: To secure the satisfactory development of the site and in the interests of visual amenity pursuant to Policies H2/2 - The Layout of New Residential Development, EN1/2 - Townscape and Built Design and EN8/2 - Woodland and Tree Planting of the Bury Unitary Development Plan and chapter 15 – Conserving and enhancing the natural environment of the NPPF.

1.4 Structure of the report

This EDS presents a scheme for protecting and enhancing the biodiversity and opportunities for wildlife onsite. It details the habitat creation and enhancement measures which will promote protected or otherwise notable species and enhance the overall biodiversity and ecology of the site. This report should be read in conjunction with appendices 1 – 3.

2 LANDSCAPING AND HABITAT ENHANCEMENT

A landscape masterplan has been produced for the development site by Barnes Walker (see Appendix 1). In addition, a phasing plan has been prepared by Morris Homes (North) Ltd which supports this landscape masterplan (see Appendix 2).

2.1 Phases 1, 3A, 3B, 4 and 5

2.1.1 Amenity gardens and ornamental planting

As the proposed development is a housing scheme, numerous areas of amenity garden will be created onsite most of which will be associated with the residential properties and access roads. In addition, there will be areas of ornamental planting throughout the proposed development site. Ornamental structural and accent planting will occur around the plots and mainly comprise either evergreen or flowering species.

2.1.2 Tree and hedgerow planting

To increase biodiversity the planting scheme includes areas of tree and hedgerow planting throughout the proposed development site. Four species have been indicated as proposed for street-side planting:

- Birch (ornamental) *Betula Albo sinensis* 'Fascination'
- Silver birch *Betula pendula*
- Himalayan birch *Betula utilis jacquemontii*
- Birch (ornamental) *Betula pendula* 'Fastigiata Joes'

A mixture of native and non-native hedgerows are proposed within the residential scheme. Evergreen hedges will comprise Japanese holly *Ilex crenata* 'Caroline upright'. Native shrub species to be planted within the proposed native hedgerows should include species such as:

- Blackthorn *Prunus spinosa*
- Common dogwood *Cornus sanguinea*
- Dog rose *Rosa canina*
- Elder *Sambucus nigra*
- Hawthorn *Crataegus monogyna*
- Hazel *Corylus avellana*
- Holly *Ilex aquifolium*
- Wild privet *Ligustrum vulgare*

The provision of tree and hedgerow planting will provide foraging opportunities for invertebrates including larval stages, adult herbivorous species and pollinators. Providing a range of planted species will support a greater diversity of invertebrate species, which will in turn benefit other faunal species that will predate these invertebrates, such as bats and birds. In addition, the trees and hedgerows will provide increased nesting opportunities for birds and sheltered commuting opportunities for amphibians and mammals.

Once planted and established, the proposed trees should not require any management in the long-term, unless addressing issues with disease or damaged limbs that cause health and safety concerns. If any intensive pruning, or ongoing management, of trees and hedgerows is to be undertaken, it should be avoided during the nesting bird season (avoid during March to

August inclusive), or alternatively a check for nesting birds can be undertaken immediately prior to the works.

2.2 Phase 2

Detailed landscaping proposals for the cricket pitch relocation site (phase 2) are provided separately as part of a landscape and ecology management plan (LEMP) prepared by UES (reference UES03854/15).

2.3 Flood zones and public open space

2.3.1 Scattered trees

To increase biodiversity on site the planting scheme includes areas of tree planting to the south of site. The exact species to be planted have not been specified within the landscape masterplan but should be native species that are appropriate for the location and reviewed by a landscape architect. Suitable tree species include but are not limited to:

- Bird cherry *Prunus padus*
- Common alder *Alnus glutinosa*
- Common whitebeam *Sorbus aria*
- Crab apple *Malus sylvestris*
- Crack willow *Salix fragilis*
- English oak *Quercus robur*
- Field maple *Acer campestre*
- Hawthorn
- Hazel
- Hornbeam *Carpinus betulus*
- Pedunculate oak *Quercus robur*
- Rowan *Sorbus aucuparia*
- Silver birch
- Small-leaved lime *Tilia cordata*
- Whitebeam *Sorbus aria*
- Wild cherry *Prunus avium*

In addition, a selection of native trees able to withstand waterlogged soils are to be planted alongside the swales onsite.

Tree planting will provide foraging opportunities for invertebrates including larval stages, adult herbivorous species and pollinators. Providing a range of planted species will support a greater diversity of invertebrate species, which will in turn benefit other faunal species that will predate these invertebrates, such as bats and birds. In addition, the trees will provide increased nesting opportunities for birds and sheltered commuting opportunities for amphibians and mammals.

Once planted and established, the proposed trees should not require any management in the long-term, unless addressing issues with disease or damaged limbs that cause health and safety concerns. If any intensive pruning, or ongoing management, of trees is to be undertaken, it should be avoided during the nesting bird season (avoid during March to August inclusive), or alternatively a check for nesting birds can be undertaken immediately prior to the works.

2.3.2 Broad-leaved semi-natural woodland

The woodland to the south of site will be retained and managed for the benefit of the habitat and its wildlife. Areas of woodland planting have been incorporated into the landscaping strategy to enhance biodiversity by providing connectivity between different habitats onsite and through green corridors.

The new area of woodland will be created through planting native trees and shrubs, such as:

- Blackthorn
- Common dogwood
- Holly
- Field maple
- Guelder rose *Viburnum opulus*
- Hawthorn
- Hazel
- Hornbeam
- Horse chestnut
- Small-leaved lime
- Wild cherry

The woodland will provide nesting habitat for birds, and once fully mature, the trees may develop potential roosting features for bats such as cavities and crevices. The woodland will also provide foraging opportunities for invertebrates. Providing a range of planted species will support a greater diversity of invertebrate species, which will in turn benefit other faunal species that will predate these invertebrates, such as bats and birds.

Any tree felling or arboricultural works that are required will only be undertaken outside of the breeding bird season and these works will be avoided between March and August inclusive. If this isn't possible and works need to take place during this period, a nesting bird check will be undertaken immediately prior to the works by a suitability qualified ecologist and an ecological clerk of works will be appointed to oversee the works if considered necessary. If any specialist works are required, then an arboriculturalist should be appointed.

2.3.3 Wildflower grassland

Areas of wildflower meadow have been incorporated into the landscape design. The wildflower grasslands will be created by sowing the Emorsgate EM3 special general purpose meadow seed mix. The composition of the Emorsgate EM3 mixture is detailed below:

Wildflowers

- | | |
|--|--|
| • Agrimony <i>Agrimonia eupatoria</i> | • Meadow cranesbill <i>Geranium pratense</i> |
| • Black medick <i>Medicago lupulina</i> | • Meadow vetchling <i>Lathyrus pratensis</i> |
| • Bladder campion <i>Silene vulgaris</i> | • Musk mallow <i>Malva moschata</i> |
| • Bulbous buttercup <i>Ranunculus bulbosus</i> | • Oxeye daisy <i>Leucanthemum vulgare</i> |
| • Common knapweed <i>Centaurea nigra</i> | • Red campion <i>Silene dioica</i> |
| • Common vetch <i>Vicia sativa</i> ssp. | • Ribwort plantain <i>Plantago lanceolata</i> |
| <u>Segetalis</u> | • Rough chervil <i>Chaerophyllum temulum</i> |
| • Cowslip <i>Primula veris</i> | • Sainfoin <i>Onobrychis viciifolia</i> |
| • Crosswort <i>Cruciata laevipes</i> | • Salad burnet <i>Poterium sanguisorba</i> ssp |
| • Field scabious <i>Knautia arvensis</i> | • <i>sanguisorba</i> |
| • Great burnet <i>Sanguisorba officinalis</i> | • Selfheal <i>Prunella vulgaris</i> |
| • Greater knapweed <i>Centaurea scabiosa</i> | • Tufted vetch <i>Vicia cracca</i> |
| • Hedge bedstraw <i>Galium album</i> | • Viper's-bugloss <i>Echium vulgare</i> |
| • Hoary plantain <i>Plantago media</i> | • Wild carrot <i>Daucus carota</i> |
| • Kidney vetch <i>Anthyllis vulneraria</i> | • Wild marjoram <i>Origanum vulgare</i> |
| • Lady's bedstraw <i>Galium verum</i> | |

Grasses

- Common bent - *Agrostis capillaris*
- Crested dog's-tail - *Cynosurus cristatus*
- Red fescue - *Festuca rubra*
- Smaller cat's-tail - *Phleum bertolonii*
- Smooth-stalked meadow-grass - *Poa pratensis*

Alternative wildflower grassland mixtures could be used; however, these will be agreed with the project ecologist to ensure they contain similar and appropriate native species.

The provision of wildflower grassland will provide immediate benefits for wildlife in the form of foraging, breeding and sheltering opportunities. In the longer term, the grassland will also be colonised naturally by additional native plant species.

2.3.4 Scrub planting

The landscaping plan includes areas of native scrub planting throughout the proposed development site to form boundaries around areas of public open space and to connect to existing habitats onsite. Native scrub species will be incorporated into the landscape design including:

- Blackthorn
- Common dogwood
- Hawthorn
- Hazel
- Holly

The areas of shrub planting will also be sown with Emorsgate EG1 general purpose meadow grass mixture to create the ground flora of the shrub habitat.

The provision of shrub planting will ensure that foraging opportunities (for both larval stages and adult pollinators) are available for a greater diversity of invertebrate species, which will in turn benefit other faunal species that will predate these invertebrates, such as bats and birds. In addition, the shrubs will provide increased nesting opportunities for birds and sheltered commuting opportunities for amphibians and mammals.

2.3.5 Sustainable drainage system

Sustainable drainage system basins will be created as part of the proposed development and landscape design. Although the primary function of SuDS is drainage, they also provide the opportunity to enhance biodiversity onsite by providing ecologically valuable features for local wildlife including birds, amphibians, small mammals and invertebrates.

The swales proposed to be located throughout the residential area of the development site, will be planted with a mixture of species as indicated in the urban swales & shrub planting plan prepared by Barnes Walker (reference M3477-SD-08-V02).

Two attenuation ponds will be created onsite to aid with the direction and treatment of surface water. Aquatic and marginal plants will naturally colonise the basins, but in order to prevent dominance by competitive grasses and undesirable ruderal species, the margins of the ponds will be sown with Emorsgate EP1F wildflowers for pond edges. Additionally, the banks and surrounding 2-3m will be sown with a wildflower meadow mix compatible with wet soils, such

as Emorsgate EM8F wildflowers for wetlands. The composition of the Emorsgate EP1F wildflowers for pond edges is detailed below:

- | | |
|--|---|
| • Common knapweed | • Meadow vetchling <i>Lathyrus pratensis</i> |
| • Corky-fruited water-dropwort
<i>Oenanthe pimpinelloides</i> | • Meadowsweet <i>Filipendula ularia</i> |
| • Crosswort | • Purple loosestrife <i>Lythrum salicaria</i> |
| • Grey sedge <i>Carex divulsa ssp divulsa</i> | • Ragged robin <i>Silene flos-cuculi</i> |
| • Gypsywort <i>Lycopus europaeus</i> | • Red campion |
| • Hedge bedstraw <i>Galium album</i> | • Ribwort plantain |
| • Hedgerow crane's-bill <i>Geranium pyrenaicum</i> | • Selfheal |
| • Hemp agrimony <i>Eupatorium cannabinum</i> | • Water avens <i>Geum rivale</i> |
| • Meadow buttercup <i>Ranunculus acris</i> | • Wild angelica <i>Angelica sylvestris</i> |
| | • Wild teasel <i>Dipsacus fullonum</i> |
| | • Yellow iris <i>Iris pseudacorus</i> |

The composition of the Emorsgate EM8F wildflowers for wetlands is detailed below:

- | | |
|---|---|
| • Agrimony | • Lady's bedstraw |
| • Betony <i>Betonica officinalis</i> | • Meadowsweet |
| • Common bird's-foot trefoil <i>Lotus corniculatus</i> | • Meadow buttercup |
| • Black medick | • Meadow vetchling |
| • Common knapweed | • Oxeye daisy |
| • Common sorrel <i>Rumex acetosa</i> | • Ragged robin |
| • Cowslip | • Ribwort plantain |
| • Dandelion <i>Taraxacum officinale</i> | • Rough hawkbit <i>Leontodon hispidus</i> |
| • Greater bird's-foot trefoil <i>Lotus pedunculatus</i> | • Selfheal |
| • Great burnet | • Tufted vetch <i>Vicia cracca</i> |
| • Hedge bedstraw | • Wild angelica |
| | • Yellow rattle <i>Rhinanthus minor</i> |
| | • Yarrow |

The SuDS features will increase botanical and invertebrate diversity by providing a marshy and semi-aquatic habitat, which will in turn benefit other faunal species such as bats, birds, reptiles and amphibians.

2.3.6 Riverbank planting

The southern boundary of the site borders the River Irwell, and as such the landscape masterplan proposes marginal and aquatic planting along the river's edge. EP1F wildflowers for pond edges will be sown within the riparian buffer zone, with additional marginal planting including:

- | | |
|--|--|
| • Brooklime <i>Veronica beccabunga</i> | • Ragged robin <i>Lynchnis flos-cuculi</i> |
| • Common fleabane <i>Pulicaria dysenterica</i> | • Reed sweet-grass <i>Glyceria maxima</i> |
| • Flowering rush <i>Butomus umbellatus</i> | • Slender-tufted sedge <i>Carex acuta</i> |
| • Great willowherb <i>Epilobium hirsutum</i> | • Water forget-me-not <i>Myosotis scorpioides</i> |
| • Greater pond sedge <i>Carex riparia</i> | • Water mint <i>Mentha aquatica</i> |
| • Greater spearwort <i>Ranunculus lingua</i> | • Water plantain <i>Alisma plantago-aquatica</i> |
| • Hemp agrimony <i>Eupatorium cannabinum</i> | • Water speedwell <i>Veronica anagallis-aquatica</i> |
| • Meadowsweet <i>Filipendula ulmaria</i> | |



- Purple loosestrife *Lythrum salicaria*
- Yellow iris *Iris pseudacorus*

2.3.7 Lodge side habitat

The grassland bordering the existing pond to the south of site will also be planted with Emorsgate EM8F wildflowers for wetlands to create a species-rich flood plain habitat, which will benefit a variety of faunal species such as bats, birds, reptiles and amphibians.

2.3.8 Removal of invasive species

Four non-native, invasive species were identified onsite: Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera* and New Zealand pigmyweed *Crassula helmsii*. All four species are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). As such, it is an offence to plant or otherwise cause this species to grow in the wild.

A separate invasive species method statement should be prepared which details the required eradication methods for each species. Alternatively, this information can be included within a construction and environmental management plan (CEMP).

3 PROTECTED SPECIES

The proposed mitigation measures will be undertaken across all phases of the development. The majority of the compensation and enhancement measures will be provided during the flood zone and public open space phases, although bat, bird and insect boxes and hedgehog highways will be installed as part of phases 1, 3A, 3B, 4 and 5 as well.

3.1 Bats

The habitats onsite mainly provide moderate quality habitat for bats. The scrub, ponds, woodland and tall ruderal habitats will provide commuting and foraging opportunities for bats, whilst the buildings and trees onsite may provide roosting opportunities.

3.1.1 Mitigation measures

Bats in buildings

A preliminary bat roost assessment was undertaken by Tetra Tech in September 2022. Building 9 (cricket club pavilion) was assessed as having moderate suitability for roosting bats on a precautionary basis, due to lack of internal access during the inspection. Prior to starting onsite, an updated building inspection should be undertaken to confirm the roosting suitability of Building 9. Further presence / absence surveys should then be undertaken during the bat survey season (May to August inclusive), if required, and appropriate mitigation measures implemented if necessary.

Bats in trees

WYG carried out bat ground-level tree assessments of all trees located within the development boundary in November 2018. Seven trees were identified as having low potential to support roosting bats due to the presence of ivy *Hedera helix* and minor cracks; a single tree was identified as having moderate potential to support roosting bats due to the presence of cracks and fissures within the bark. All other trees onsite were assessed as having negligible potential to support roosting bats.

None of the trees with potential for roosting bats are being affected by the proposed development.

3.1.2 Compensation and enhancement measures

The retained woodland, as well as the proposed tree and scrub planting, will provide potential roosting opportunities for bats, particularly when the trees reach a maturity where fissures and cavities develop. To provide an additional and immediate ecological enhancement, a suite of bat boxes will be installed onsite.

Bat boxes will be installed on a south facing aspect in close proximity to good quality habitat for bats such as hedgerows, tree lines, woodland, waterbodies and scrub. The proposed make and model of bat box has been chosen to target species likely to be present on site or within the local area. If the proposed model of bat box is not available due to stock shortages, an alternative model can be used instead. All proposed changes must be discussed and agreed with the project ecologist to ensure that they provide similar nesting opportunities. The use of woodcrete or woodstone boxes will be prioritised due to their durability and longevity. The following bat boxes will be installed onsite:

- 15x Schwegler 1FF box – to be installed on the southern aspect of buildings to expose the box to high levels of sunlight, as per Appendix 3. The box should be positioned as high-as possible towards the eaves of the building.
- 5x Schwegler 2F bat box – affixed to semi-mature / mature trees which are due to be retained within the proposed development site and fences / poles until tree planting has matured. Once tree planting has matured the boxes can be moved and installed on trees under the supervision of a suitably qualified ecologist. The boxes should be installed at a height of 3-6m and should be positioned on the southern aspect, to expose the box to high levels of sunlight.
- 5x Schwegler 2FN bat box - see recommendations for 2F bat box above.

Any external lighting installed must be directed away from the bat boxes in order to minimise disturbance and increase the likelihood of occupancy. If this is not possible, UES should be contacted to discuss alternative locations for bat boxes due to be impacted by external lighting.

It should be noted that once inhabited by a bat, boxes may only be inspected or disturbed by a licenced bat ecologist. Once installed, the bat boxes should not require any management in the long-term.

All species of British bats and their roosts are fully protected under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats & Species Regulations 2012 (as amended), and seven species of bat are listed as NERC S41 priority species. The provision of targeted roosting opportunities will provide an ecological enhancement as suitable roosting opportunities for bats are currently limited onsite.

3.2 Birds

WYG undertook breeding bird surveys of the proposed development site between March and June 2017, which recorded species on both the red and amber lists breeding onsite including song thrush *Turdus philomelos*, starling *Sturnus vulgaris* and house sparrow *Passer domesticus* (of which house sparrow were found to be nesting on site).

There are a number of habitats onsite which are suitable to support nesting birds including woodland, trees, scrub, tall ruderal, semi-improved and marshy grasslands, and buildings. Additionally, the retaining wall of the River Irwell, along the southern boundary of the site, will be retained to continue to provide nesting habitat for the sand martin *Riparia riparia* colony currently in situ.

3.2.1 Mitigation measures

Building demolition, tree felling, arboricultural works and vegetation removal could result in the direct loss of nests, any individuals within the nests and of available nesting territories if conducted during the breeding season. As such, building demolition, site clearance, tree felling, arboricultural works and vegetation removal (including enabling works) are to take place outside of the breeding bird season and should not be undertaken from March to August inclusive. If this is not possible and works need to take place between this period, a targeted breeding bird nest scoping survey should be conducted by a suitably qualified ecologist immediately prior to the works, or an ecological clerk of works appointed to oversee the works.

3.2.2 Compensation and enhancement measures

The proposed landscaping will provide potential nesting opportunities for birds, particularly when mature. To provide an additional and immediate ecological enhancement, a suite of bird boxes will be installed onsite.

Bird boxes will be installed on a north facing aspect of buildings in close proximity to good quality habitat for birds such as hedgerows, tree lines, woodland, waterbodies and scrub. The proposed make and model of bird box has been chosen to target species likely to be present on site or within the local area. If the proposed model of bird box is not available due to stock shortages, an alternative model can be used instead. All proposed changes must be discussed and agreed with the project ecologist to ensure that they provide similar nesting opportunities. The use of woodcrete or woodstone boxes will be prioritised due to their durability and longevity. The following bird boxes will be installed onsite:

- 15x Schwegler 1B bird nest box (26mm, 32mm and oval entrances) – affixed to semi-mature / mature trees which are due to be retained within the proposed development site or fences / poles until tree planting has matured. Once tree planting has matured the boxes can be moved and installed on trees under the supervision of a suitably qualified ecologist. The boxes should be installed at a height of 3-6m and should be positioned on the northern or eastern aspect, thus avoiding the strongest sunlight and wettest winds.
- 5x Vivara Pro woodstone swift nest box – to be installed as high as practically possible, ensuring that there is unobstructed access for birds entering and leaving. If possible, the box should be sited under the shelter of eaves or overhanging roofs. The box will be positioned on the northern aspect of buildings, thus avoiding the strongest sunlight and wettest winds.
- 5x Vivara Pro woodstone house sparrow nest box – see recommendations for swift nest box above.

Once installed, the bird boxes should not require any management in the long-term.

House sparrows are a NERC S41 priority species and are a red-listed bird of conservation concern (BoCC). Swifts are listed on the BoCC amber list, with both species showing population declines nationally. The provision of targeted nesting opportunities for both species will provide an ecological enhancement onsite.

3.3 Amphibians

GCN are considered as likely absent from the proposed development site, however, due to the potential presence of common amphibian species, the following reasonable avoidance measures (RAMs) will be implemented during the construction phase of the development to protect amphibians on the chance they are present onsite during the works:

- Vegetation is to be mown / cleared to have a sward length below 10cm. The sward length is to be reduced gradually in order to give any amphibians present time to move off site of their own accord. The mown / cleared area will then be maintained with a short sward until the works on site have been completed.

- Any potential hibernacula will be removed from the working area by a suitably experienced ecologist, and placed in a suitable area close to site. Hibernacula could include piles of rubble, bricks, loose soil, debris, brash piles etc.
- No excavations are to be left open overnight. If this is not feasible a plank should be left within the excavation at a 45 degree angle to allow amphibians to escape. Any open excavations should be checked for amphibians in the morning prior to start of works on site.
- Materials will be stored on pallets off the ground in order to reduce the risk of amphibians sheltering underneath them.
- UES will remain on-call throughout the development and if any newts are encountered, work on site is to stop immediately and ecological advice is to be sought.

The landscape plan includes the creation of woodland, scrub, wildflower meadows and SuDS basins which will provide commuting and foraging opportunities for amphibians. As an additional ecological enhancement, two hibernacula will be created onsite. Proposed hibernacula locations are shown on the ecological enhancements plan at Appendix 3.

Each hibernacula will be created by excavating a pit in the ground (500mm depth, 2000mm length, and 1000mm width). Ideally, these pits will then be filled using materials already present on site, including hay, brash, cut timber / logs and brick / rock hard-core, or the materials can be sourced from elsewhere if necessary. The pits will be piled up to a height of approximately 1000mm above ground level. Hibernacula will then be loosely capped with topsoil ensuring that access is still available through to the lower layers at the margins. The hibernacula will provide sheltering and hibernating opportunities for reptiles, common amphibian species, small mammals and invertebrates. The following diagram provides a visual representation of the hibernacula, with the only additional requirement to the diagram being that a pit is first excavated.

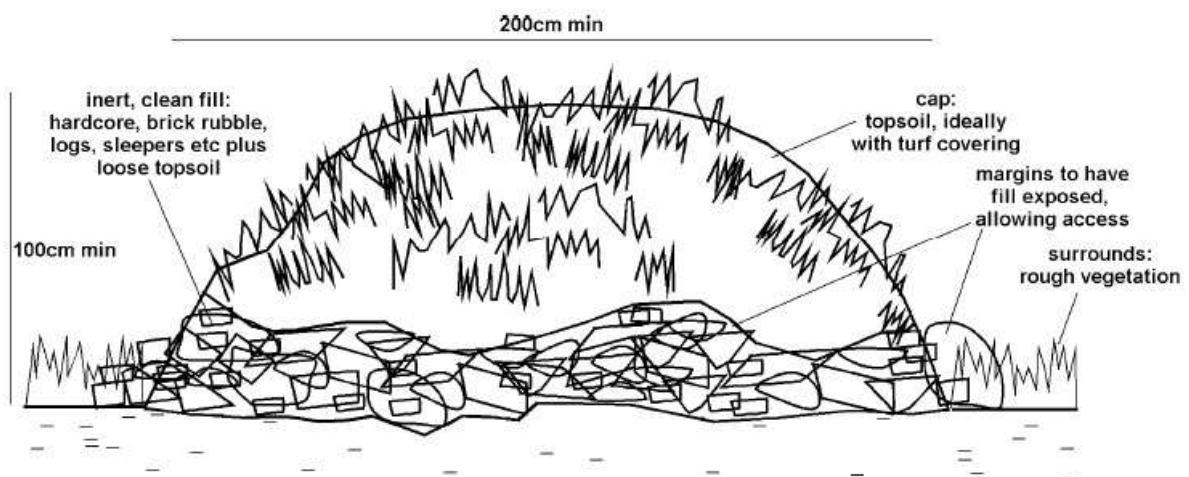


Figure 1 – Hibernacula design.

The hibernacula installed will provide sheltering and hibernating opportunities for amphibian and reptile species that have potential to be present onsite or in the local area, as well as other NERC S41 priority species, such as hedgehogs.

3.4 Reptiles

WYG carried out a phase 1 habitat survey in August 2016 and concluded that reptiles are unlikely to be present on the proposed development site. Although the site is unlikely to support reptiles, there is some suitable habitat on site and as such their presence cannot be entirely ruled out. The RAMs proposed in relation to amphibians will protect reptiles on the chance they are present onsite during the works.

The proposed landscape plan incorporates the creation of parkland with green corridors, hedgerows, SuDS features, dense scrub, woodland, grassland and wildflower meadows which will provide a connected landscape for commuting and foraging reptiles in the local area. As an additional ecological enhancement, two log piles will be created onsite. Proposed log pile locations are shown on the ecological enhancements plan at Appendix 3.

The log piles will be created using wood and brash from the vegetation clearance works onsite. These log piles will include a mix of different size logs to provide structural diversity and micro niches that favour different groups of species e.g. larger cavities for hedgehogs and smaller cavities for invertebrates. These log piles will provide sheltering, foraging and hibernating opportunities for common amphibian species, reptiles, small mammals and invertebrates.

3.5 Badgers

WYG undertook an extended phase 1 habitat survey of the proposed development site in August 2016. No evidence of badger *Meles meles* activity was identified onsite during the survey but suitable habitats for foraging badgers were recorded.

As no setts, confirmed foraging signs or other evidence of badger activity were identified on or adjacent to the application site, the proposed development is not considered to pose a direct risk to badgers. Nevertheless, the site covers a large area and provides broadly suitable habitat for badgers. Therefore, RAMs will be implemented during the construction phase of the development to minimise potential harm to mammals to negligible levels:

- A pre-commencement badger scoping survey will be undertaken prior to the start of each development phase to confirm the presence or absence of badgers.
- Regular site checks must be undertaken during construction to ensure that no setts have been created. If there is any doubt whether an excavation may support badgers, UES will be contactable on 01565 757 788 throughout the duration of the works.
- No trenches or excavations will be left open overnight. They will be backfilled or covered with a board, or alternatively fitted with a means of escape for any badger (or other animal) which may become trapped within, such as a plank leading out of the bottom of the excavation at an angle of 45°.
- Any pipes will be stored with caps on to prevent entry by badgers and other animals, and materials such as barbed wire will be stored so that animals cannot become entangled in them.
- Any chemicals or harmful materials will be stored so that they cannot be accessed by badgers or other animals.

- Excavations will be checked before they are backfilled to ensure that no animals have become trapped.

The proposed landscaping plan incorporates the creation of parkland with green corridors, tree lines, woodland, dense scrub and hedgerows which will provide a connected landscape for commuting and foraging badgers.

3.6 Hedgehogs

The RAMs proposed in relation to badgers will protect hedgehogs on the chance they are present onsite during the works.

The proposed landscape plan incorporates the creation of parkland with green corridors, hedgerows, SuDS features, dense scrub, woodland, grassland and wildflower meadows which will provide a connected landscape for commuting and foraging hedgehogs in the local area.

To allow continued use of the site by hedgehogs and to ensure commuting routes are not blocked, any fences installed onsite will be designed to allow passage of hedgehogs. This can either be through the choice of material e.g. choosing a fence style that naturally contains suitable sized holes at the base or through the inclusion of hedgehog highways. Hedgehog highways are small 13cm x 13cm holes at the base of fences. Hedgehog highways will be incorporated at a distance of every 15m in all installed fences.

Brash / deadwood piles will also be created across the site, including within the woodlands, to provide sheltering and hibernating opportunities for a variety of wildlife onsite including small mammals, invertebrates and amphibians. The brash / deadwood piles will be created using arisings from any vegetation clearance works undertaken onsite. The arisings will be cut into different shapes and sizes and will be stacked in loose and randomly created piles, measuring approximately 0.5m x 0.5m x 0.5m to 1m x 1m x 1m in dimension. The brash and deadwood piles will be created as and when material becomes available during the vegetation clearance works.

3.7 Invertebrates

WYG undertook an invertebrate survey of the main development site between March and August 2017, which recorded four species which are protected and / or notable including a ground beetle *Oodes helopioides* and cinnabar moth *Tyria jacobaeae*.

Insect boxes will be provided onsite to provide an enhancement in the availability of breeding and sheltering opportunities. Insect boxes will be installed on a south facing aspect in close proximity to good quality habitat for insects such as hedgerows, tree lines, woodland, wildflower grassland, as well as ornamental planting. See Appendix 3 for mapped locations.

The proposed make and model of insect box has been chosen to target species likely to be present on site or within the local area. If the proposed model of insect box is not available due to stock shortages, an alternative model can be used instead. All proposed changes must be discussed and agreed with the project ecologist to ensure that they provide similar nesting opportunities. The use of woodcrete or woodstone boxes will be prioritised due to their durability and longevity. The following insect boxes will be installed onsite:



- 10x Bee brick – integrated within the external wall of the newly constructed buildings. The bee brick should be a minimum of 1m high on a southerly aspect to expose the box to high levels of sunlight.
- 5x Schwegler insect nesting aid – affixed to semi-mature / mature trees which are due to be retained within the proposed development site and fences / poles within the ECA until tree planting has matured. Once tree planting within the ECA has matured the boxes can be moved and installed on trees under the supervision of a suitably qualified ecologist. The boxes will be placed at a height of 4-6m and on a south-facing aspect.

The insect boxes installed will provide breeding and sheltering opportunities for solitary Hymenopterans species that are likely to be present onsite or in the local area.

Once installed, the insect boxes should not require any management in the long-term.

The retention and enhancement of the ponds, marshy grassland, scrub, swamp and woodland habitats, as well as native species-rich hedgerow and tree planting, and the provision of hibernacula, log piles and insect boxes, will ensure that a variety of habitats are available onsite for foraging, sheltering, hibernating and breeding invertebrates.



4 CONCLUSION

Once implemented, the landscaping and habitat enhancements will provide a biologically diverse landscape and deliver a net benefit for biodiversity. The green infrastructure network onsite will promote the natural distribution of species, ensuring that ecological resilience is maintained within the wider landscape.

Provided the measures within this report are followed, it is considered that the proposed development will be compliant with all relevant legislation and planning policy and will result in a positive outcome for biodiversity.



APPENDICES

Appendix 1 – Landscape masterplan

Landscape Strategy

The development site is set within a substantial green and blue landscape infrastructure framework and the close relationship that the site has with the River Irwell and Radcliffe Ees provides an opportunity to create a development with a mature established landscape characteristic, integrated and connected to the existing and proposed green infrastructure assets found within the local area. Existing wetlands and scrub habitats within the site support significant populations of willow warbler, bullfinch, goldfinch, greenfinch and chiffchaff. These would be supplemented with additional planting using native species linking areas of established habitat to form a mosaic of native habitats providing a rich, varied and ecologically diverse naturalistic landscape for informal recreation & leisure.



Newly Planted Trees

Tree lined streets and green links within the development planted with a range of native and ornamental trees in-keeping with the residential character of the local area will be used to provide a robust green infrastructure, promoting biodiversity and complementing the many existing trees that will be retained and protected. New trees have been included as informal groups and singles to compliment the groups of mature and semi-mature trees retained across the site and to strengthen the structural integrity and definition of the new landscape framework as a whole.



Hedgerows

Hedgerows have been used to define space, provide screening, soften boundary treatments and provide a unifying element throughout the development. Native hedgerows will act as wildlife corridors increasing connectivity throughout the development and non-native ornamental evergreen hedge species have been proposed for the private garden boundaries away from areas of POS to provide year-round structural definition and screening.



Ornamental Shrub Planting

Ornamental shrub planting is to be used to bring colour, character and diversity to the individual gardens and street scene throughout the development. Large 25 litre specimen shrubs with loose canopy forms will be introduced where space allows providing an established and varied ornamental character. Contemporary shrub beds will be planted along verges, boundary walls and gable sides to bring form, texture and colour to the principal access routes.



Native Woodland

New belts of native woodland and understorey planting will be introduced to the boundaries of the development to create a substantial landscape buffer and to frame areas of open meadow grass and mown margins. New planting will connect physically with existing tree groups and incorporate retained scrub vegetation, linking isolated elements of vegetation and improving habitat connectivity.



Native Wildflower Meadow & Amenity Grassland

The native wildflower meadows and grassland areas will be specified primarily to provide a visual and ecological transition between the shorter grass and hedgerows / tree belts providing a sward with a greater diversity of species than short grass, with a predominance of wildflowers, thus providing a species rich habitat / hunting ground for local bird and bat populations. Amenity grassland is included to create areas of short mown grass for informal recreation with easy pedestrian access for the users of the site.



Attenuation Pond & Wetland Planting

Areas of native species-rich wetland meadow would be introduced to reinstate the historic Hutchinsons's Golt as a principle element of the sustainable drainage strategy creating a visual and ecological transitional corridor running across the site, enhancing landscape character and biodiversity. The attenuation ponds will provide natural water storage and drainage. They will be planted with native wetland meadow species suitable for seasonally wet soils, based on the vegetation of traditional water meadows. Mown grass around the swales enhances the visual impact and definition of these features, contrasting with the tall grasses and wetland species to the internal banks and bases. A network of raised timber walkways will run throughout the wetlands providing access to people of all abilities encouraging outdoor recreation for the residents and the wider community.



KEY & NOTES

- Buildings**
Refer to Architects drawings for details
- Proposed Street Trees**
A variety of native and ornamental trees selected for their form, site suitability and seasonal interest
- Proposed Native Woodland Trees**
A variety of native trees selected for the Public Open Space to enhance the character of the proposed development and provide a rich habitat with varying opportunities for local wildlife
- Proposed Native Wet Woodland Trees**
A selection of native trees able to withstand waterlogged soils and be tolerant alongside the swales within the Public Open Space increasing biodiversity across the proposed development
- Proposed Scrub**
A variety of native and ornamental species selected to complement the existing areas of scrub, providing habitat to support the populations of native species: bullfinch, goldfinch, greenfinch and chiffchaff found within the site
- Proposed Amenity Grassland**
Areas of short mown grassland for informal recreation with easy pedestrian access for the users of the site
- Proposed Native Meadow & Grassland**
Native meadow with a predominance of wildflowers, providing a species rich habitat and forming ground encouraging local wildlife
- Proposed Attenuation Pond & Wetland Planting**
Native species rich flowers and grasses selected for seasonally wet soils based on the vegetation of traditional water meadows
- Proposed Hedges**
A variety of native and ornamental hedgerow species selected to provide structure, texture and seasonal interest
- Proposed Areas of Ornamental Shrub Planting**
A selection of shrubs, treeaceous plants, climbers and ground cover chosen for their site suitability, form, texture and colour
- Proposed Rain Gardens & Bioswales**
Linear planting beds with multi-layered planting, aiming to increase urban biodiversity and create a visible corridor, protect pedestrians from air pollution
- Proposed Lawn Areas**
To create a soft edge to the water and a natural appearance along Church Street East and open functional flood plain
- Existing Natural Shrubs and Habitat**
To be retained and managed in accordance with the ecological management plan including species-rich, diversity and creation of new habitat for breeding birds, foraging bats, invertebrates and protected species
- Proposed Riverbank Planting (Riparian Buffer Zone)**
Native, conservation emergent and aquatic planting selected to enhance the riverbank, providing species rich aquatic habitat for local wildlife
- Proposed Native Woodland Planting**
A variety of native trees selected for their form to enhance the character of the proposed development and provide a rich habitat with varying opportunities for local wildlife
- Existing Trees & Vegetation**
To be retained and managed

Metres
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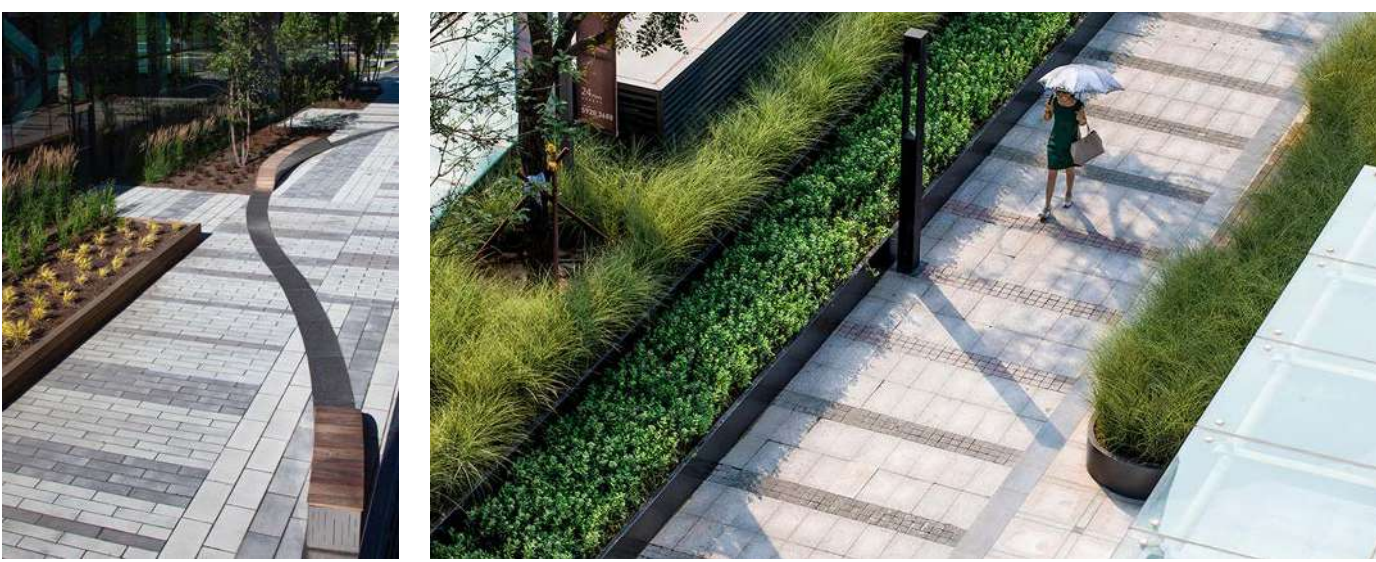
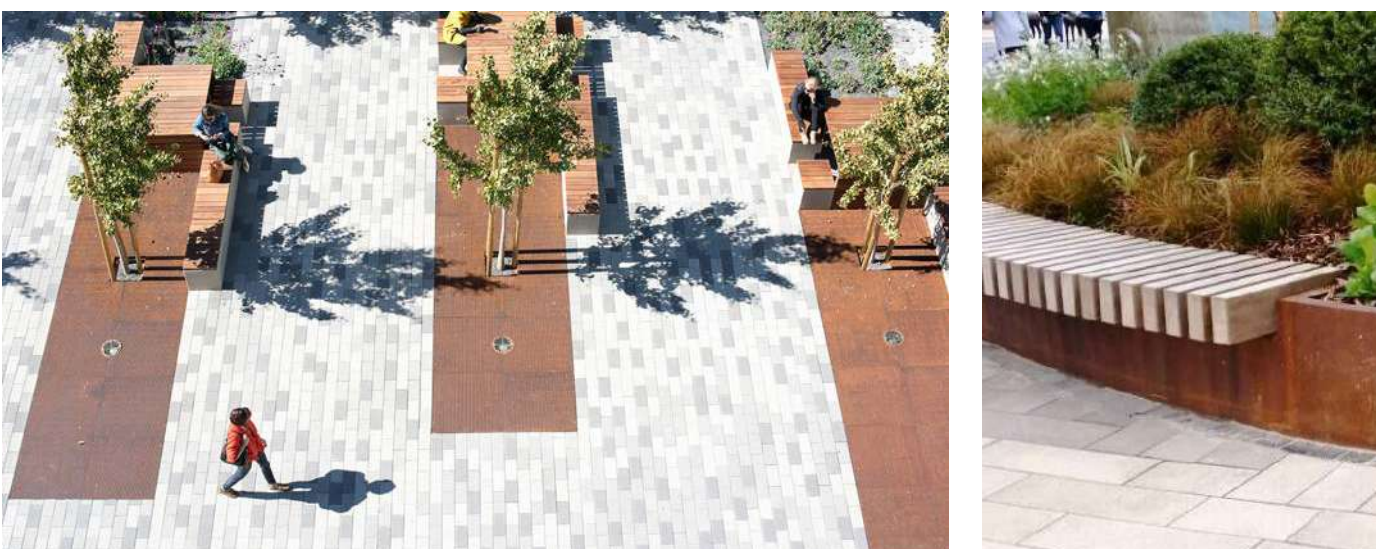


Church Street East

This space will form a central focal point to the development. The contemporary design will establish a pedestrian orientated linear open space. Feature strips combining planting and street furniture will form focal points providing pedestrian orientated communal gathering places.

Distinctive paving patterns and attractive materials will be used to create a hardwearing and long-lasting surface treatment that indicates a hierarchy of footpaths and cycleways, encouraging sustainable travel within the local community.

Tree planting will include large species suited to urban environments such as Acer platanoides and Sorbus aria, to provide structure, shelter and shade within the open space. Smaller species such as Prunus and Amelanchier will also be used to provide seasonal interest and attractive foliage. Rain gardens and bioswales will be used to form linear planting beds with multi-layered planting, aiming to increase urban biodiversity and create a wildlife corridor, protect pedestrians from air pollution.



Play Areas

A range of timber play equipment alongside natural play features such as large boulders and raised earth forms will be used within the play areas to encourage informal play. In keeping with the informal and naturalistic design the remaining space around the play areas would be maintained as open lawn, allowing space for informal ball games and sports.



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Landscape Masterplan
PROJECT TITLE
East Lancs Paper Mill, Radcliffe
DATE
01/2022

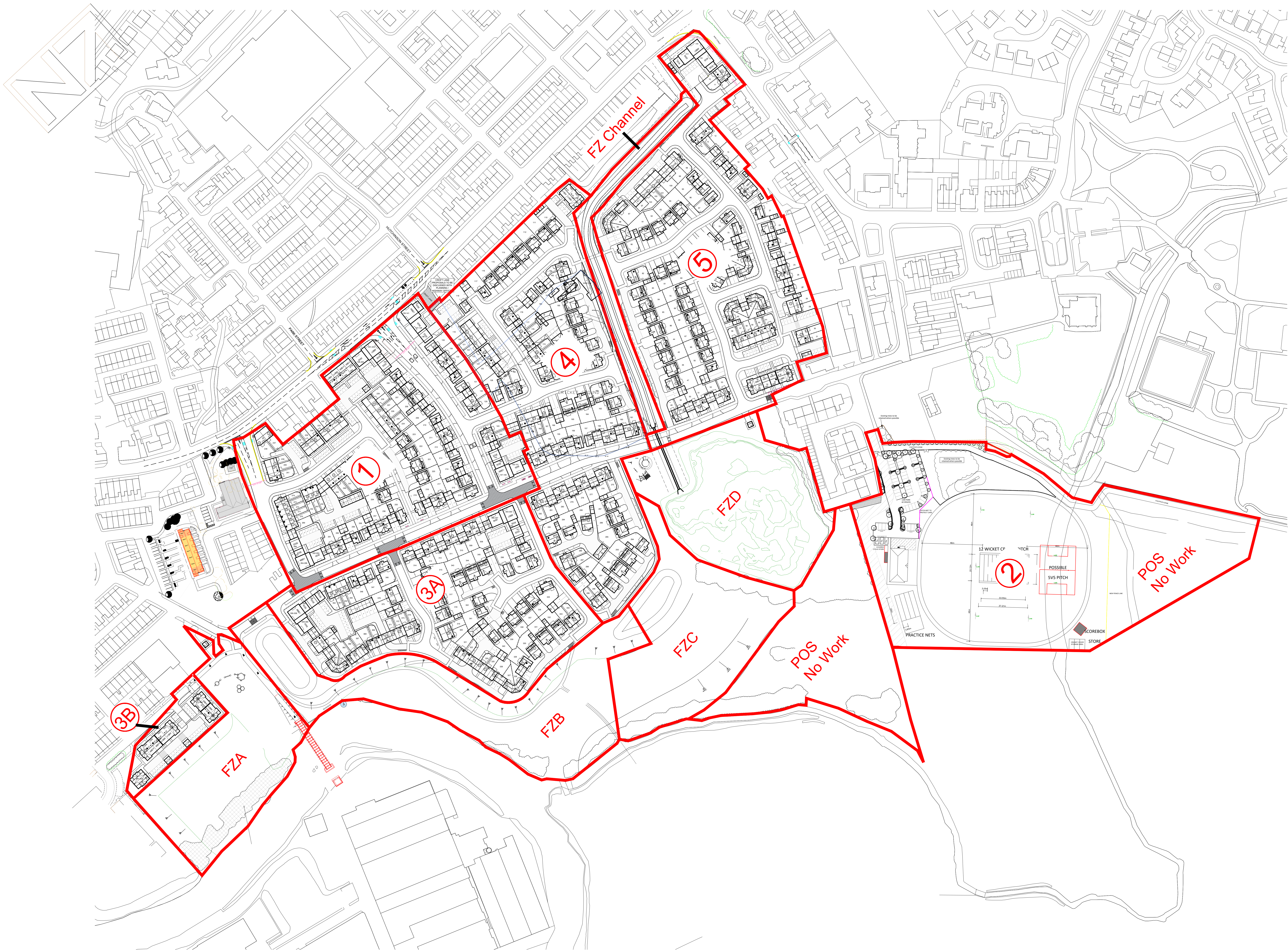
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Appendix 2 – Phasing plan



LEGEND

- Existing Cricket Club Land
- Affordable Units:
Phase 1 - 26 (26%) Affordable dwellings 81 (27%) Market dwellings
Phase 2 - 28 (28%) Affordable dwellings 75 (25%) Market dwellings
Phase 3 - 13 (13%) Affordable dwellings 74 (25%) Market dwellings
Phase 4 - 33 (33%) Affordable dwellings 70 (23%) Market dwellings

D	PHASING UPDATED FOLLOWING COMMENTS	05.11.24	CW
C	UPDATED TO SUIT PLANNING LAYOUT REVISION L	24.10.24	CW
B	UPDATED TO SUIT PLANNING LAYOUT REVISION L	24.06.24	CW
A	AMENDED FOLLOWING COMMENTS RECEIVED	17.11.23	CW
REV	DESCRIPTION	DATE	INIT

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Job Title
EAST LANCS PAPER MILL
RADCLIFFE

Dwg Title
PHASING PLAN

date	drawn	checked	scale	desig	rev
05.10.23			1:1000 @ A0	PP-01	D



Appendix 3 – Enhancement plan

