



Knowsley Redevelopments Ltd

Knowsley Industrial Estate, Penrhyn Road, Knowsley

ECOLOGICAL APPRAISAL

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FPCR Environment and Design Ltd

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1.0 NON-TECHNICAL SUMMARY

- 1.1 FPCR Environment and Design Ltd. were commissioned by Knowsley Redevelopments Ltd to undertake an ecological walkover survey of a former industrial site in Knowsley, Merseyside in late 2021.
- 1.2 There are no international statutory designated sites within 5km and no nationally designated Sites within 2km. Although the Site is within a potentially relevant Impact Risk Zones for conservation sites, impacts are considered to be unlikely given the similarity of previous land-use. The only statutory site in the search area comprised a Local Nature Reserve 940m north-east which is isolated from the development and no constraints are considered to exist in respect to these statutory designated sites.
- 1.3 There are two locally designed wildlife sites within 1km of the Site boundary, both are isolated from the Site and no impacts are anticipated.
- 1.4 In terms of habitats, the Site is dominated by bare ground with smaller areas of rank grassland, scrub, ephemeral/short perennial vegetation and introduced shrub which are all of relatively limited conservation value. The woodland and native trees have intrinsic value and some of this habitat is to be retained. Working methods adhering to standard best practice guidance shall ensure that valued retained habitats are appropriately protected during the construction phase or subject to compensatory planting.
- 1.5 A potentially invasive form of cotoneaster plant was recorded within the south of the Site and should be subject to good practice removal.
- 1.6 Some habitats on Site have value for badger but no setts were present so there is no constraint to the proposed development from this species.
- 1.7 No bat roosts were recorded on Site and only one tree with low roosting bat potential was recorded which will be subject to good practice removal. The Site has some limited value for foraging bats, mostly in association with the northern woodland and the block of scrub to the south-west, but the majority of the Site is of negligible value. Nevertheless, good practice with relation to a lighting scheme is recommended.
- 1.8 Suitable foraging and nesting habitat for breeding birds was identified in association with woody vegetation (woodland, scrub, trees) but no nest sites were recorded. Best efforts should be made to retain woody habitat but where sections are to be affected, it is recommended that removal should follow established good practice outside of the bird breeding season.
- 1.9 No ponds are present within/adjacent Site and the habitats had generally negligible value for herpetofauna. Furthermore, the areas of value for herpetofauna (woodland, scrub) are isolated and/or retained and the Site in general is isolated within busy urban environment. Overall, the presence of amphibians and reptiles can be reasonably discounted.
- 1.10 Red squirrel are known to be in the area but their potential is reasonably unlikely within the Site and impacts on this species are considered to be unlikely.
- 1.11 Recommendations for biodiversity enhancements (as part of BREEAM and Biodiversity Net Gain) such as native species planting have also been provided.

2.0 INTRODUCTION

- 2.1 This report has been prepared by FPCR Environment and Design Ltd. on behalf of Knowsley Redevelopments Ltd. It provides details of an ecological assessment of a former industrial site in Knowsley, hereafter referred to as 'the Site' (central OS grid reference SJ 42958 96735).
- 2.2 A detailed Biodiversity Net Gain (BNG) calculation has been provided within a separate report¹ for further details relating to conditions of habitats and proposed planting please consult this document.

Site Context

- 2.3 The Site is situated just off Penrhyn Rd, in the town of Knowsley, Merseyside. The Site habitats comprise bare ground (resulting from the removal of previous industrial buildings), with a band of woodland to the north, dense scrub and trees to the south-west, some areas of species-poor grassland, trees, patches of ephemeral vegetation and some introduced shrub and hardstanding.
- 2.4 Immediately surrounding habitats comprise the A580 carriageway to the north, industrial units to the west and east and Penrhyn Road and an area of undeveloped land to the south. The wider area is dominated by urban environment on all aspects.

Study Objectives

- 2.5 The objectives of the assessment were to:
- a) Identify the existing habitats within the Site;
 - b) Check for evidence of, or potential for, protected species;
 - c) Identify potential ecological constraints to development proposals;
 - d) Identify any potential requirements for further survey;
 - e) Consider potential mitigation and enhancement measures that might be required for redevelopment of the Site; and

Proposals

- 2.6 The current proposals² for Site comprise:
- Construction of a large new industrial unit within the centre of the Site.
 - Retention of some of the woodland band to the north and enhancement of the retained section.
 - Loss of some scrub to the south-west with enhancement of the retained areas.
 - Grass, scrub, tree and shrub planting along the site frontage to the south, this will remove areas of existing rank grassland, trees and introduced shrub.

¹ FPCR (2022) Knowsley Industrial Estate, Biodiversity Net Gain Assessment

² UMC Architects (2021) Site Layout – Option 3 – Penrhyn Road, Knowsley Business Park, Merseyside

3.0 METHODOLOGY

Desk Study

- 3.1 In order to compile existing baseline information, relevant ecological data was requested from Merseyside Biobank in December 2021.
- 3.2 In addition, the following resources were checked for additional information and context:
- Multi Agency Geographic Information for the Countryside (MAGIC) website³;
 - Colour 1:25,000 OS base maps⁴;
 - Aerial photographs from Google Earth⁵.
- 3.3 The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:
- 5km around the application area for sites of International Importance (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites).
 - 2km around the application area for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSIs)), records of European Protected Species (EPS) such as great crested newt *Triturus cristatus* or bats, and species records (e.g. protected, Local Biodiversity Action Plan (LBAP) or notable species).
 - Where data is available, a 1km around the application site for sites of County Importance (e.g. Sites of Importance for Nature Conservation (SINC)/Local Wildlife Sites (LWS)/County Wildlife Site (CWS).

Field Survey - Habitats and Flora

Extended Phase 1 Survey

- 3.4 An Extended Phase 1 Habitat survey was conducted on 13th December 2021, which involved classification of the broad habitat types present using the system published by the UK Joint Nature Conservation Committee (JNCC 2010)⁶, with the scale of recording of habitat parcels adjusted to provide more detail for smaller sites. The survey comprised a walkover of the survey area, mapping and describing the principal habitat types present and identifying the dominant or characteristic plant species present within them. The abundance of species was quantified using the DAFOR scale (Dominant, Abundant, Frequent, Occasional and Rare).

Field Survey – Fauna

- 3.5 During the Phase 1 Habitat Survey, observations, signs of, or suitable habitat for, any species protected under Part I of the Wildlife and Countryside Act 1981 (as amended)⁷ (WCA), the

³ [Online]. <http://magic.defra.gov.uk/>

⁴ [Online]. www.ordnancesurvey.co.uk

⁵ [Online]. www.maps.google.co.uk

⁶ JNCC. (2010). *Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit*. Peterborough JNCC.,

⁷ Wildlife and Countryside Act 1981 (as amended). London:HMSO. [Online]. Available at: <http://www.legislation.gov.uk/ukpga/1981/69> [Accessed 23/03/2020]

Conservation of Habitats & Species Regulations 2017 (as amended)⁸ (CHSR) and the Protection of Badgers Act 1992⁹ were recorded. Consideration was also given to the existence and use of the Site by other notable fauna such as WCA Schedule 1 bird species, Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and Local Biodiversity Action Plan (LBAP) or Red Data Book (RDB) species.

Badgers

3.6 During the walkover surveys, all potentially suitable habitats within the Site boundary and within 30 m where accessible were searched for evidence of badger *Meles* activity, using standard methodology as recommended by Harris, Creswell and Jefferies¹⁰. Evidence of badger occupation and activity sought included:

- Setts: including earth mounds, evidence of bedding and runways between setts;
- Latrines: often located close to setts, at territory boundaries or adjacent to favoured feeding areas;
- Prints and paths or trackways;
- Hairs caught on rough wood or fencing; and
- Other evidence: including snuffle holes, feeding and playing areas and scratching posts.

Bats

3.7 The assessments below were undertaken by a licenced bat worker from FPCR WML CL18 (Level 2) 2015-11246-CLS-CLS.

Assessment of Trees

3.8 Trees were assessed for their potential to support roosting bats. Assessments were undertaken from ground level, with the aid of a torch and binoculars (where appropriate). During the survey Potential Roosting Features (PRF) such as the following were sought (Based on p16, BS 8596:2015¹¹):

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems);
- Woodpecker holes;
- Cracks/splits in stems or branches (horizontal and vertical);
- Partially detached, loose or bark plates;
- Cankers (caused by localised bark death) in which cavities have developed;

⁸ Conservation of Habitats & Species Regulations 2017 (SI 1012) London:HMSO. [Online]. Available at: <http://www.legislation.gov.uk/uksi/2017/1012/contents/made> [Accessed 23/03/2020]

⁹ Protection of Badgers Act 1992. London:HMSO. [Online]. Available at: <http://www.legislation.gov.uk/ukpga/1992/51/contents> [Accessed 23/03/2020]

¹⁰ Harris, S., Creswell, P. & Jefferies, D. (1989). *Surveying for badgers. Occasional Publication of the Mammal Society No. 9.* Bristol: Mammal Society.

¹¹ British Standards Institution, (2015) *BS 8596:2015 Surveying for bats in trees and woodland.* Milton Keynes: BSI

- Other hollows or cavities, including butt rots;
 - Compression of forks with occluded bark, forming potential cavities;
 - Crossing stems or branches with suitable roosting space between;
 - Ivy *Hedera helix* stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk); and
 - Bat or bird boxes.
- 3.9 Certain factors, such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features, may enhance or reduce the potential value.
- 3.10 Trees were classified into general bat roost potential groups based upon the presence of these features based upon Table 4.1 and Chapter 6 in *Bat Surveys for Professional Ecologists: Good Practice Guidelines*¹².
- 3.11 Although British Standard 8596:2015 groups trees with moderate and high potential, these have been separated in the results where appropriate to allow more specific survey criteria to be applied.

Limitations

- 3.12 The Phase 1 botanical survey was undertaken outside the peak survey period for botanical survey however given the previous use and isolated nature of the Site this is not considered to be a significant constraint.
- 3.13 No significant constraints were identified.

¹² Collins, J. (Ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition.)*. London: Bat Conservation Trust

4.0 RESULTS

Desk study (Figure 1)

Statutory Designated Sites

- 4.1 There are no international sites of conservation interest within 5km and no national Sites within 2km.
- 4.2 The Site does fall within SSSI Impact Risk Zones (IRZ) for Sites outside 2km, however the majority pertain to development types such as helipads and landfill which are not applicable.
- 4.3 The Site is approximately 940m south-east of Acornfield Plantation Local Nature Reserve (LNR) which is designated¹³ based on the following features *'Predominantly mature broadleaf woodland of birch, oak and sycamore. The centre of the site has a lowland basin mire dominated by sphagnum moss and soft rush. Other habitats include a pond, stream, drainage channels, acidic and neutral grasslands, bracken and rhododendron thickets.'* There is no connectivity to this site and intervening habitats include roads and urban environment.

Non-Statutory Designated Sites

- 4.4 There are five LWS within the search area which are situated between 360m and 970m from Site. All these conservation areas are separated from the Site by urban environment such as roads, industrial units and houses with no direct connectivity. The closest Site is Otis Meadow c.360m north-west which is designed for grassland and scrub habitats. The other sites are listed in the table below (in distance order) and are shown on Figure 1.

Table 1: Designated Sites within 1km

Site/designation	Citation (based on Merseyside Biobank information December 2021)	Proximity to Site (approx.)
Otis Meadow LWS	<i>The closest Site is Otis Meadow c.360m north-west which is designed for a mix of damp and dry grasslands with developing scrub. Unusual habitats within the Knowsley Industrial Estate.</i>	360m north-west
Kraft Operational Land LWS	<i>A wetland with good species diversity. Drier areas of grassland add to the interest of the site.</i>	415m north-west
Knowsley Park LWS	<i>Ancient parkland and estate on a mix of acidic(peat) and neutral soils with sandstone exposures along the brooks. Much coniferous planting has taken place although several of the woodlands contain plants indicative of ancient semi-natural woodland. Other habitats include dams with open water, acidic grassland, remnant heath and mire. The Park also has populations of bats and other protected species.</i>	790m south-east
Howards Pits LWS	<i>A mature broadleaf woodland with ponds and drainage ditches.</i>	970m south-west

¹³ [ONLINE] <https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1009640>

Site/designation	Citation (based on Merseyside Biobank information December 2021)	Proximity to Site (approx.)
Acorn Plantation LWS	<i>Predominantly a mature/over-mature broadleaf woodland of birch, oak and sycamore with a unique basin mire. Mire provides habitat for breeding dragon and damselflies. Other habitats include: pond, stream, drainage channels, acidic and neutral grasslands, bracken and rhododendron thickets. LNR designated in 1995/6.</i>	970m north-east

Species Records (See Figure 1 and Appendix A)

- 4.5 There are no European Protected Species Licences (EPSL) for GCN or bats within 2km of the Site.
- 4.6 Desktop data from Merseyside Biobank indicates that there are no records which fall within the Site boundary or directly adjacent. The closest record (dated from 2008) pertains to red squirrel *Sciurus vulgaris* which is present within the land c.40m south. The data is shown in Appendix A and on Figure 1.

Field Survey – Habitats and Flora (see Figure 2)

- 4.7 The locations of habitats described in the following sections can be found mapped on Figure 2 and photographs of habitats in Appendix B. For a full list of tree species please see the arboricultural report¹⁴. Please note an examination of the condition of these habitats in order to inform biodiversity offsetting is provided in the separate Biodiversity Net Gain (BNG) document.

Semi-natural Mixed Woodland

- 4.8 A block of woodland c.8 to 12m wide was present along the Site's northern boundary and had a mix of broad leaved and coniferous species. Canopy species included crack willow *Salix fragilis*, pedunculate oak *Quercus robur*, yew *Taxus baccata*, silver birch *Betula pendula*, field maple *Acer campestre*, goat willow *Salix caprea*, sycamore *Acer pseudoplatanus*, wild cherry *Prunus avium* and aspen *Populus tremula*. Shrub species included hawthorn *Crataegus monogyna*, a rose *Rosa* sp. elder *Sambucus nigra* and bramble *Rubus fruticosus* agg. Ground flora was often limited with ground either covered with common nettle *Urtica dioica*, bramble or ivy *Hedera helix* with very occasional fern species *Asplenium* sp. and a moss.

Scattered Trees

- 4.9 Scattered trees were recorded within the dense scrub area to the south-west including goat willow, alder *Alnus glutinosa*, aspen, and Leyland cypress *Cupressus × leylandii*. In addition, the front of the Site (southern boundary) had a row/double row of trees/shrubs, some of which were non-native/ornamental including Leyland cypress, butterfly-bush *Buddleja davidii*, silver birch, dogwood *Cornus sanguinea*, wild cherry, hawthorn and whitebeam *Sorbus aria*.

¹⁴ FPCR (2022) Knowsley Industrial Estate, Penrhyn Road, Knowsley, Arboricultural Report

Dense Scrub

- 4.10 An area of dense scrub was present in the south-west of the Site which included shrubs such as dogwood, gorse *Ulex europaeus*, broom *Cytisus scoparius*, and elder, as well as a mix of species such as common nettle, bramble, cock's-foot *Dactylis glomerata*, and ground ivy *Glechoma hederacea* as well as areas of bare ground.

Species Poor Semi-Improved Grassland

- 4.11 A band of formerly-mown amenity grassland was present along the front/south of the Site, which was species poor with a sward height of around 5cm. Grass species included Yorkshire-fog *Holcus lanatus* (dominant species), perennial rye-grass *Lolium perenne*, false oat-grass *Arrhenatherum elatius*, cock's-foot and creeping bent *Agrostis stolonifera*. Forb interest was very limited and included only scattered instances of dandelion *Taraxacum officinale* agg. and common ragwort *Jacobaea vulgaris*.
- 4.12 A very small patch of remaining grassland was also noted just west of the hardstanding at the Site entrance and along the western boundary north of the scrub. Both areas had similar species mix to that listed above though the western grassland had a longer more tussocky sward of c.10-20cm.

Short Ephemeral/Perennial Vegetation

- 4.13 The marginal and often disturbed areas of Site had some limited coverage of ephemeral vegetation including willowherb species *Epilobium* sp, Yorkshire-fog, false oat-grass, bramble, ribwort plantain, cock's-foot, common ragwort, bristly ox-tongue *Helminthotheca echioides*, creeping thistle *Cirsium arvense* and greater plantain *Plantago major*. The thin marginal areas to the west and east (c.1m wide) had a higher proportion of grass and some scattered scrub such as butterfly-bush and the others had less frequent grass cover.

Bare Ground

- 4.14 The Site was dominated by disturbed bare ground (the remnants of the demolished industrial estate) and its surrounds, there was very little colonisation by plants with only a few species from surrounding habitat being recorded within margins, most of which were ephemeral in character. There were also some recently created piles of earth and rubble within the bare ground.

Hardstanding

- 4.15 There were the remnants of the tarmac and block paving access road to the south-east of Site, which was used for a site compound, parking and materials storage.

Introduced Shrub

- 4.16 Ornamental species were present along the Site's front including laburnum *Laburnum* sp. cotoneaster *Cotoneaster* sp. (see invasive species section below). In addition, a handful of small palm *Trachycarpus* sp. trees were present along the western boundary of the entrance hardstanding and an ornamental bed was noted along the Site's south-eastern boundary.

Fence/Wall

- 4.17 The Site was surrounded by an eight feet tall metal fence on most aspects with a low brick wall present to the south.

Invasive plant species

- 4.18 Some of the ornamental vegetation included cotoneaster species, although the exact species could not be identified. Some cotoneaster species are included within the Wildlife and Countryside Act 1981 (as amended) Section 14, Schedule 9 as a controlled plant species.

Field Survey - Fauna**Badger** **CONFIDENTIAL**

- 4.19 Whilst the woodland and scrub had value for sett creation, and the grassland had value for foraging badgers, no evidence of badger activity was recorded during the survey within the Site or accessible areas within 30m of the Site boundary.

BatsTrees

- 4.20 No roosts were recorded but a single tree with roosting bat potential was observed in association with the woodland edge to the north. TA comprised a willow tree with a shallow stem crack and small cavity 3m up which was orientated north to south, and was considered to have low roosting potential overall.

General Habitats

- 4.21 The woodland, trees and scrub are likely to have value for foraging and commuting bats, but the other habitats on Site are likely to have negligible value. In terms of the context it is worth noting that the Site's existing use and proximity to built environment is such that lighting is already present in the wider urban environment and bats will likely be inured to some level of light spill.

Birds

- 4.22 During the survey no active nest sites were noted, however, the woodland, trees and some of the woody dense scrub were all considered to provide suitable foraging and nesting habitat for birds.

Herpetofauna

- 4.23 Given the overlapping habitat requirements, the following section has been grouped to include both amphibians and reptiles (known collectively as herpetofauna).
- 4.24 There are no ponds/areas of standing water on Site or directly adjacent. The following ponds were recorded within 500m of the Site:
- An attenuation feature was present c.70m to the north within another industrial area and a pond was present within a small block of plantation c.310m north but these on the other side of the busy A580 which is considered likely to be a significant barrier to dispersal for animals.

- A pond is present 495m east in association with woodland and greenspace but is on the other side of industrial units, roads and other urban environment.
- 4.25 In terms of terrestrial habitats, the woodland and dense scrub could have some value for resting (and in some cases hibernating) herpetofauna, but these habitats are isolated by extensive areas of unsuitable habitat such as bare ground and hardstanding. The rubble and earth piles in the centre have only been recently created and are unlikely to provide suitable habitat at this stage.
- 4.26 The Site is also isolated within urban environment, especially to the north. Overall, the suitability of the Site is considered to be negligible for these groups.

Other Species

- 4.27 There was no evidence of red squirrel in association with the on-site habitats, and although the woodland block and scrub areas on the margins have some limited suitability, they are considered to be too small, isolated and disturbed (adjacent A580 etc.) to provide significant potential.
- 4.28 No other protected species evidence or potential habitat for such species was identified during the survey.

5.0 DISCUSSION AND RECOMMENDATIONS

Designated Sites

- 5.1 The data confirms the absence of any sites with an international statutory nature conservation designation within 5km and 2km.
- 5.2 The Site does fall within a IRZ for SSSI's however, not for the type of development proposed. As such, Natural England are of the view that it would not consider that there would be an adverse effect on the features for which the site has been designated, any impacts to any SSSI are therefore considered to be highly unlikely.
- 5.3 One Local Nature Reserves (LNRs) were identified within 1km of the Site, 940m north-east which is isolated from the Site by roads and urban environment, with no direct connectivity.
- 5.4 Based on the above it is considered that no statutory designated sites would be affected by the development proposals.
- 5.5 Five non-statutory designated Local Wildlife Sites (LWS) were identified within 1km of the Site boundary between approximately 340 and 970m from the boundary. These are all isolated from the development by existing areas of built environment and busy roads. Based on their distance and isolation it is considered that none would be adversely impacted by the development proposals.

Habitats

- 5.6 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:
 - Inclusion within a specific policy, for example veteran trees, ancient woodland and linear habitats within the National Planning Policy Framework¹⁵ (NPPF);
 - A non-statutory site designation (e.g. Local Wildlife Site); and
 - Habitats considered as Habitats of Principal Importance (HPI) for the conservation of biodiversity as listed within Section 41 of the NERC Act (2006), or listed as Priority Habitats in the local (LBAP)¹⁶.
- 5.7 The majority of habitats on Site were species-poor and of relatively limited ecological value including bare ground, species poor-grassland (former mown amenity), scrub, ephemeral and hardstanding. These do not qualify under any NPPF, LWS, HPI or LBAP criteria and therefore are not considered to form a constraint to development.
- 5.8 The woodland and native trees on Site boundary have intrinsic conservation value. The majority of the woodland is to be lost to facilitate the levels required on Site and some native trees along the frontage are likely to be retained (though non-natives are likely to be removed and replaced).

¹⁵ Ministry of Housing, Communities and Local Government. (2021). *National Planning Policy Framework*. London: Ministry of Housing, Communities and Local Government. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf [Accessed 03.08.21.].

¹⁶ LRERC. (2016). *Space for Wildlife, Leicester, Leicestershire and Rutland Biodiversity Action Plan 2016 – 2026* 2nd edition: December 2016. [Online]. Available at: <https://www.lrwt.org.uk/about-us/caring-wild-places/biodiversity-action-plan> [Accessed 23.03.20].

All retained trees should be protected from damage and from soil compaction during works by maintaining fenced Root Protection Areas (RPAs) in accordance with BS5837:2012 Trees in relation to design, demolition and construction - Recommendations.

- 5.9 Any trees lost as part of development should be compensated for with appropriate native planting in the new scheme. A restrictive easement associated with an underground culverted water course under the authority of the Environment Agency is present within the Site and takes up much of the western area proposed as greenspace. The potential to replace woodland is limited by the layout requirements of the Site and elements such as this easement which cannot have woody vegetation planted on top, however, native scrub is to be provided around the Site with a view to enhancing habitat biodiversity. In addition, retained woody habitat (trees, scrub) will be subject to enhancement (through management) to maintain/improve the conservation value. Please consult the BNG document for full details.

Invasive species

- 5.10 An unidentified cotoneaster species was recorded within the vegetation to the south and south-west, as some cotoneaster species are included within the Wildlife and Countryside Act 1981 (as amended) Section 14, Schedule 9 as a controlled plant species which makes it illegal to distribute or allow their spread into the wild. Therefore, it is recommended that the plant is removed under good practice which would comprise the following:
- Mechanical Control such as manual pulling, removal of root mass and burning of removed plants or removal to landfill under controlled waste.
 - Chemical Control such as spraying with herbicide and stump treatment of larger, thicker plants.

Fauna

Badger **CONFIDENTIAL**

- 5.11 The woodland and scrub within the Site are of some value for sett creation and foraging, and other vegetated habitats such as grassland are likely to be of value for foraging. However, as no setts were recorded within the Site and there is no evidence of badgers utilising the Site, they are not considered to pose a constraint to development.

Bats

Trees

- 5.12 No roosts were recorded but a single tree (TA) with low roosting potential was identified within the northern woodland band. The feature present is such that a roost is reasonably unlikely however some limited remnant potential is present. As this feature is to be lost works should be undertaken under good practice comprising:
- An information sheet showing what bats/bat evidence looks like should be provided to the contractor.
 - Sectional feeling of the tree in c.0.5-1.5m sections with the contractor checking for evidence of roosting bats continually. The contractor should also be mindful for larger cavities or other potential roosting features not seen during the ground-based survey.

- The sections would be lowered to the ground as carefully as possible and any timber left in-situ overnight prior to chipping or transport.
- Given the level of potential, it is considered that bat worker supervision is not required.
- If at any stage bats/bat evidence is observed, works should cease until further advice has been sought from a qualified ecologist.

General Habitats

- 5.13 Woodland, scrub and trees have some value for foraging and commuting bats with other habitats such as bare ground having more negligible value. At this stage despite loss of areas of suitable habitats (woodland, some scrub) the Sites isolation and placement within urban environment means impacts to foraging and commuting bats should be limited. In addition, the proposed habitats (such as areas of native scrub) should provide suitable replacement habitat for foraging/commuting bats.
- 5.14 In addition, given the amount of lighting in the former active industrial Site and surrounding urban environment, it is likely bats are inured to a current level of light spill. Nevertheless, it is recommended that any lighting scheme associated with the proposals is implemented in accordance with best practice¹⁷. This would comprise the following:
- Reducing height of lighting columns where possible (use of bollards etc);
 - Placing lighting away from areas of interest (treelines, woodland);
 - Use of directional lighting which points lighting away from features of interest (see bullet above);
 - Limiting lighting proposals to the minimum required;
 - Having lights not operational when not required; and
 - Use of white rather than yellow lighting.
- 5.15 Although the above is bat-based guidance, this will benefit a range of fauna (badgers, birds etc) by minimising light-based disturbance.

Birds

- 5.16 No active nests were confirmed but suitable foraging and nesting habitat for breeding birds is provided by the woody vegetation on Site (woodland, scrub, trees). All nesting birds and their nests are protected under WCA.
- 5.17 Any removal/disturbance of nesting habitat should therefore occur outside of the bird breeding season (March to August, inclusive). If this is not possible, such areas should be checked prior to removal by a suitably experienced ecologist. If active nests are found, vegetation/structures should be left untouched and suitably buffered from works until all birds have fledged. Specific advice should be sought prior to undertaking the clearance.

Herpetofauna

- 5.18 There are no ponds on Site and the only ponds are isolated from site by roads/urban environment.

¹⁷. Gazaryan, S. & Meyer-Cords, T. (Eds). (2018): Guidelines for consideration of bats in lighting projects. EUROBATs Publication Series No. 8. Bonn: UNEP/EUROBATs Secretariat.

- 5.19 In terms of terrestrial habitats, some habitats could have some limited value for resting (and in some cases hibernating) herpetofauna, but these habitats are isolated by large areas of bare ground and extensive areas of unsuitable urban environment. The recently created rubble and earth piles are not expected to provide potential at this stage.
- 5.20 Given the above, it is considered that the presence of amphibians and reptiles can be reasonably discounted, and they are not considered to be a constraint to any potential development and no further surveys are required.

Other Species

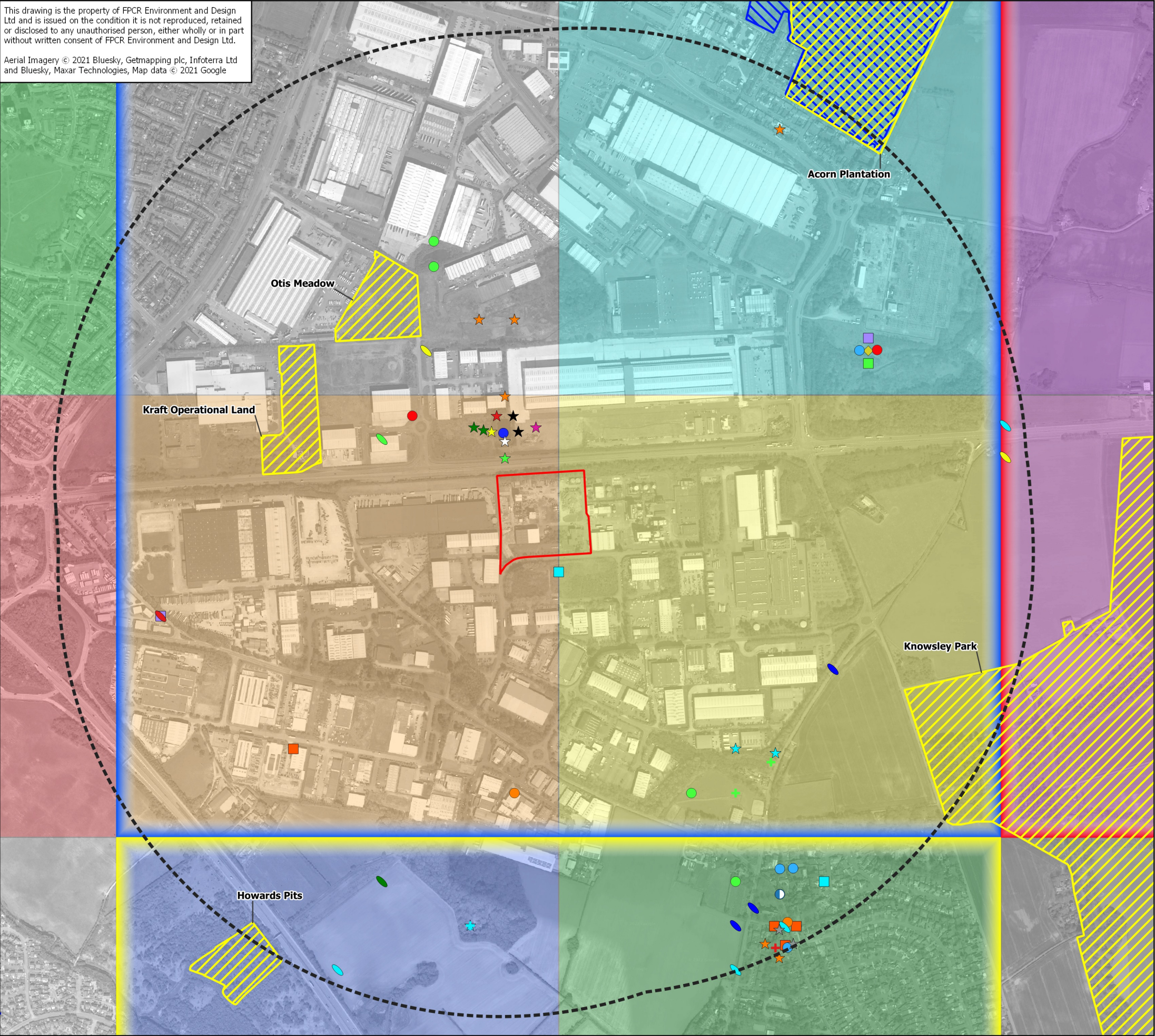
- 5.21 Whilst there is a historical record of red squirrel within land to the south, the habitats on Site are considered to be of limited value for this species due to their extent or isolation, therefore their presence can be reasonably discounted. Overall, there are no constraints to development from the presence of red squirrel.
- 5.22 No other species constraints were identified.

6.0 ECOLOGICAL ENHANCEMENTS

- 6.1 For full details of the proposed planting, as well as management of retained habitats please consult the separate BNG document.
- 6.2 Where possible it is recommended that faunal habitat measures be incorporated into the redevelopment. These could include features such as bird boxes, bat boxes, hedgehog houses and insect tubes/boxes. The following provides details of suitable bird nest box types:
- House sparrow *Passer domesticus* terrace nest boxes, swift *Apus apus* boxes and house martin *Delichon urbicum* nest sites on buildings;
 - A mixture of small hole (26mm and 32mm) boxes placed on suitable trees would provide nesting opportunities for species like blue tit *Cyanistes caeruleus* and great tit *Parus major*. These boxes generally have a high uptake rate;
 - Small open fronted nest boxes placed on trees, especially those which support a climber such as ivy which provides a degree of concealment. These boxes typically attract species such as robin *Erithacus rubecula* and blackbird *Turdus merula*; and
 - Large nest boxes with large holes (45-50 mm) placed on suitable trees to provide breeding sites for species like great spotted woodpecker *Dendrocopos major* and starling *Sturnus vulgaris*.

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Key

- Site Boundary
- 1km Buffer
- Local Wildlife Site (LWS)
- Local Nature Reserve (LNR)

- Amphibians**
- Great Crested Newt
- Bats**
- Common Pipistrelle
 - Daubenton's Bat
 - Noctule Bat
 - Soprano Pipistrelle
 - Unidentified Bat sp.
 - Unidentified Pipistrelle sp.
- INNS**
- Eastern Grey Squirrel
 - Himalayan Balsam
 - Himalayan Cotoneaster
 - Japanese Knotweed
 - Rhododendron ponticum
 - Three-cornered Garlic
- Invertebrates**
- Alder Leaf Beetle
- Mammals**
- Brown Hare
 - Hedgehog
 - Red Squirrel
 - Water Vole
- Plants**
- Bluebell
 - Cornflower
 - Welsh Poppy
- Other Species**
- Black-tailed Skimmer
 - Blue-tailed Damselfly
 - Brown Hawker
 - Common Blue Damselfly
 - Common Darter
 - Emerald Damselfly
 - Emperor Dragonfly
 - Large Red Damselfly
 - Variable Damselfly

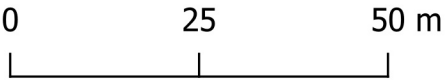
- Species Within 1km**
- SJ4196: Brown Long-eared Bat, Common Pipistrelle, Large-leaved Lime
 - SJ4197: Eastern Grey Squirrel, Hedgehog
 - SJ4295: Common Toad, Lapwing, Skylark, Eastern Grey Squirrel, Alder Leaf Beetle, Broad-bodied Chaser, Emperor Dragonfly, Hedgehog, Red Squirrel, Water Vole, Bluebell
 - SJ4296: Greater Yellow-rattle
 - SJ4395: Hedgehog
 - SJ4396: Hedgehog, Red Squirrel
 - SJ4397: Great Crested Newt, Unidentified Bat sp., Eastern Grey Squirrel, Himalayan Balsam, Japanese Knotweed, Water Fern, Alder Leaf Beetle, Common Blue Damselfly, Common Darter, Common Hawker, Four-spotted Chaser, Large Red Damselfly, Migrant Hawker
 - SJ4496: Eastern Grey Squirrel
 - SJ4497: Japanese Knotweed
- Species Within 2km**
- SJ49H: Polydrusus formosus
 - SJ49I: Blue-tailed Damselfly, Common Blue Damselfly, Common Hawker, Four-spotted Chaser, Large Red Damselfly, Migrant Hawker
 - SJ49N: Eastern Grey Squirrel, Broad-bodied Chaser, Brown Hawker, Common Darter, Emperor Dragonfly, Large Red Damselfly, Red Squirrel

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Key

- Site Boundary
- Bare ground
- Built Environment: Buildings/hardstanding
- Cultivated/disturbed land - ephemeral/short perennial
- Introduced ornamental shrub
- Mixed woodland - semi-natural
- SI Poor semi-improved grassland
- Scrub - dense/continuous
- Fence
- Tree with bat potential
- Scattered trees





client
Knowsley Redevelopments Ltd

project
Penrhyn Road, Knowsley Industrial Estate

drawing title
PHASE 1 HABITAT PLAN

scale
1:1000

drawing / figure number
Figure 2

drawn
HJ/EF/IJ

issue
4/2/2022

rev
-

APPENDIX A: DESKTOP RECORDS OF SPECIES

Species	Conservation Status	Number of Records	Location Relative to Site (closest record)
Amphibians			
Great crested newt <i>Triturus cristatus</i>	WCA5, LBAP, UKHAB	1	700m North-East
Mammals			
Brown Hare <i>Lepus europaeus</i>	LBAP, WCA5, NERC S41, UKHAB	1	700m North-East
Hedgehog <i>Erinaceus europaeus</i>	WCA5, NERC S41, UKHAB	4	615m South-West
Red Squirrel <i>Sciurus vulgaris</i>	WCA, LBAP, NERC S41	2	40m South
Water Vole <i>Arvicola amphibius</i>	WCA, LBAP, NERC S41	2	700m North-East
Common Pipistrelle <i>Pipistrellus pipistrellus</i>	LBAP, WCA5, NERC S41, UKHAB	4	700m North-East
Daubenton's Bat <i>Myotis daubentonii</i>	LBAP, WCA5, NERC S41, UKHAB	1	95m North
Noctule Bat <i>Nyctalus noctula</i>	LBAP, WCA5, NERC S41, UKHAB	2	230m North-West
Pipistrelle species <i>Pipistrellus</i> sp.	LBAP, WCA5, NERC S41, UKHAB	1	860m South-East
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	LBAP, WCA5, NERC S41, UKHAB	2	500m South
Unidentified bat spp. <i>Chiroptera</i> spp.	LBAP, WCA5, NERC S41, UKHAB	4	485m North
Invertebrates			
Alder Leaf Beetle <i>Agelastica alni</i>	NERC s41	3	555m South-East
Black-Tailed Skimmer <i>Orthetrum cancellatum</i>	NERC s41	1	95m North
Blue-Tailed Damselfly <i>Ischnura elegans</i>	NERC s41	1	95m North
Brown Hawker <i>Aeshna grandis</i>	NERC s41	1	95m North
Common Blue Damselfly <i>Enallagma cyathigerum</i>	NERC s41	2	95m North

Species	Conservation Status	Number of Records	Location Relative to Site (closest record)
Common Darter <i>Sympetrum striolatum</i>	NERC s41	6	95m North
Emerald Damselfly <i>Lestes sponsa</i>	NERC s41	2	95m North
Emperor Dragonfly <i>Anax imperator</i>	NERC s41	1	95m North
Large Red Damselfly <i>Pyrrhosoma nymphula</i>	NERC s41	2	985m South-East
Variable Damselfly <i>Coenagrion pulchellum</i>	NERC s41	1	95m North
INNS			
Eastern Grey Squirrel <i>Sciurus carolinensis</i>	-	4	950m South-East
Himalayan Balsam <i>Impatiens glandulifera</i>	-	1	780m West
Himalayan Cotoneaster <i>Cotoneaster simonsii</i>	-	1	275m North-West
Japanese Knotweed <i>Reynoutria japonica</i>	-	2	320m North-West
Rhododendron ponticum <i>Rhododendron ponticum</i>	-	1	745m South-West
Three-cornered Garlic <i>Allium triquetrum</i>	-	3	610m South-East
Plants			
Bluebell <i>Hyacinthoides non-scripta</i>	-	1	800m South
Cornflower <i>Centaurea cyanus</i>	-	1	985m South
Welsh Poppy <i>Meconopsis cambrica</i>	-	2	630m South-East
UKHAB – The Conservation of Habitats and Species Regulations 2017 (as amended); NERC S41 - Natural Environment and Rural Communities Act 2006 (Section 41); WCA1.1 -Wildlife & Countryside Act 1981 (as amended) Schedule 1.1; WCA5 - Wildlife & Countryside Act 1981 (as amended) Schedule 5; BoCC Amber list -Birds of Conservation Concern - Amber list; BoCC Red list -Birds of Conservation Concern - Red list; PBA – Protection of Badgers Act 1992			

APPENDIX B: SITE REFERENCE PHOTOGRAPHS (DECEMBER 2021)



Photograph 1: Bare ground and ephemeral to north-east of Site with woodland in rear of image



Photograph 2: Woodland along northern boundary adjacent bare ground



Photograph 3: Woodland adjacent northern boundary fence



Photograph 4: Woodland and bare ground north-western boundary



Photograph 5: Ephemeral and bare ground along western boundary with woodland in rear of image



Photograph 6: Grassland on western boundary



Photograph 7: Dense scrub and trees to south-west



Photograph 8: Central Site habitats (bare disturbed ground from western boundary).



Photograph 9: Bare ground, grassland and shrub/tree to south-west



Photograph 10: Bare ground, grassland and shrub/tree to south-east



Photograph 11: Small grassland area and hardstanding compound to south-west



Photograph 12: Road to south of Site boundary