

Land to the West of Faraday Road and East of Alchemy Way

NW1 IOS 3 UNIT TRUST

Biodiversity Net Gain Report

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1. Introduction

1.1. Site Background and Proposals

- 1.1.1. Ecology Solutions was originally commissioned by NW1 IOS 3 Unit Trust, in April 2025 to provide a Biodiversity Net Gain (BNG) report of a parcel of Land to the West of Faraday Road and East of Alchemy Way, Knowsley Industrial Park, Kirkby, Knowsley (see Plan ECO1), hereafter, referred to as 'the site'.
- 1.1.2. The site as well as areas to the east was previously assessed by Phlorum Limited in June 2024 where a Preliminary Ecological Appraisal (PEA)¹ was undertaken. Phlorum's assessment was based on a wider site area; however, the proposed red line boundary has since been reduced with the proposal now focusing on the western side.
- 1.1.3. The BNG report has been updated to reflect comments raised by the Local Planning Authority (LPA) regarding strategic significance and linear habitats. In addition, the report was updated to reflect the historic habitat degradation as a result of an adjacent planning permission (23/00064/FUL). The habitat degradation rule;
- Confirmation whether there has been any loss or degradation of onsite habitats resulting from activities carried out:***
- a) On or after 30 January 2020 not in accordance with a planning permission; or***
- b) On or after 25 August 2023 in accordance with a planning permission.***
- 1.1.4. Therefore, to align with the habitat degradation rule, historical habitat data from Phlorum's assessment in 2024 and Satellite Imagery was used where necessary. This original habitat data was updated to conform with the latest Statutory Biodiversity Metric Calculation Tool and guidelines.
- 1.1.5. The Proposed Development is for open storage (Class B8), provision of new hardstanding, and all other associated works.

1.2. Site Characteristics

- 1.2.1. The site is approximately 1.09ha in size and is situated in Knowsley Industrial Park, Liverpool. The site is industrial in character, comprising areas of grassland, scrub, and areas of disturbed land.
- 1.2.2. The site has been subject to frequent levels of disturbance between 2005 and 2025 (Google Earth) as a result of the adjacent development to the north and east, the latter currently a car park for Amazon. Historically, the site was an agricultural field evidenced in late 19th Century Ordnance Survey maps.
- 1.2.3. The local area is characterised by commercial properties. The site is bounded to the north, east and south by commercial units. Otis Meadow Local Wildlife Site

¹ Phlorum Limited (June 2024) Knowsley Industrial Estate, Liverpool. *Preliminary Ecological Appraisal*. Ref: 13000.PEA.V1

(LWS) borders the sites western boundary which is a habitat associated with damp and dry scrubby grassland. The A580 dual carriageway lies approximately 250m south of the site boundary.

1.3. Biodiversity Net Gain Report

- 1.3.1. This document assesses the level of Biodiversity Net Gain within the site. This report has been prepared with due consideration to the guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)²³ in relation to Biodiversity Net Gain. This assessment has primarily been based around findings from a National Vegetation Classification (NVC) Survey undertaken in May 2025 by Chesire Ecology on behalf of Ecology Solutions as well as Phlorum's assessment in 2024.

² CIEEM (2019). *Biodiversity Net Gain. Good Practice Principles for Development, A Practical Guide.*

³ CIEEM, CIRIA, IEMA (2016). *Biodiversity Net Gain: Good Practice Principles for Development.*

2. Statutory Biodiversity Metric

- 2.1. The Statutory Biodiversity Metric was released on 29 November 2023 and was updated on 12 February 2024. It uses habitat features as a proxy measure for capturing the value and importance of nature and uses calculations to assess the importance of each habitat based on its size, ecological condition and strategic location.

2.2. Methodology

- 2.2.1. The site was previously surveyed in May 2024 by Phlorum Limited using UK Habitat survey (UKHab) methodology⁴, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.
- 2.2.2. Measurements for on-site habitats pre-development were calculated using Natural England's QGIS Net Gain Habitat Mapping template and QGIS Import Tool. Information regarding the habitats present, as well as their condition, were based on survey information obtained in Phlorum Limited's PEA report dating from June 2024 and the NVC survey undertaken in May 2025. The Arboricultural Impact Assessment by SEED⁵ was also referenced to ascertain age and height of trees where necessary.
- 2.2.3. The Biodiversity Metric User Guide⁶, Technical Supplement⁷ as well as professional judgement, was used to inform the habitats condition criteria.
- 2.2.4. Measurements for post-development on-site habitats are based on the proposed planting plan (see Appendix 1).
- 2.2.5. In addition to the UKHab survey, a NVC survey was undertaken to assess whether any specific plant communities/species were present. The survey was completed on 13th May 2025 by Dr Martin Page MCIEEM of Chesire Ecology. Further details of the NVC results are detailed in Appendix 2 with the results referenced hereafter where appropriate.
- 2.2.6. As stated in the supporting NVC report, the site doesn't meet the pre-conditions for NVC owing to the size of the site and lack of homogeneous habitat. The findings of the NVC survey were translated into UKHab for the purposes of BNG, for example Sparsely Vegetated Urban Land has been included within the dominant habitat type of Artificial Unvegetated; Unsealed Surface.

⁴ UKHab Ltd (2023). *UK Habitat Classification Version 2.0* (at <https://www.ukhab.org>)

⁵ SEED (March 2026) Land West of Faraday Road & East of Alchemy Way. *Arboricultural Impact Assessment*. Ref: 2136-AIA-V1-B.

⁶ Natural England (2024). *The Statutory Biodiversity Metric, User Guide*, Department for Environmental, Food and Rural Affairs

⁷ Department for Environment, Food and Rural Affairs (2024). *The Statutory Biodiversity Metric: User Guide*, Department for Environment, Food and Rural Affairs. Available at: <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides>

- 2.2.7. The other neutral grassland (NG2) was appraised based on the PEA report findings by Phlorum Limited. Habitat conditions were assumed a worst-case scenario, where appropriate, due to the Phlorum Limited Report not including a habitat condition assessment.

Otis Meadow Local Wildlife Site (LWS)

- 2.2.8. Otis Meadow is classified as a LWS; therefore, the strategic significance for all habitats has been updated to reflect the Liverpool City Region BNG Guidance note⁸ to 'area/compensation not in local strategy/no local strategy'.

Priority Habitats

- 2.2.9. It is noted on MAGIC database that the majority of the site is designated as Open Mosaic Habitat on Previously Developed Land (OMHPDL). Furthermore, the western part of the site as "Good quality semi-improved grassland [Non-Priority]". It is important to note these classifications are based on desk study information; National Land Use Database of Previously Developed Land (withdrawn as of 23rd February 2022), English Nature Lowland Grassland Inventory 1994 and aerial photography.

- 2.2.10. In addition, it is considered the site doesn't achieve the full criteria list (passes 4 / 5 criteria) for OMHPDL as summarised below. All five criteria must be met in order for OMHPDL to be considered present.

1. The site is greater than 0.25 ha in size. **(Pass – the site measures 1.04 hectares in size).**
2. Known history of disturbance, with evidence of soil and industrial waste being removed/deposited on site. **(Pass – the site has been subject to varying levels of disturbance owing to previous site works fragmenting and damaging habitats).**
3. The site contains early successional plant communities consisting of mainly stress-tolerant species. Early successional communities are composed of one of the following: annuals, mosses/liverworts, lichens, ruderals, inundation species, open grassland, flower-rich grassland and heathland. **(Pass – the site supports open grassland, flower-rich grassland, inundation, mosses and ruderals).**
4. Contains unvegetated, loose bare substrate, and pools may be present. **(Pass – bare ground and waterlogged conditions present on site).**
5. The site shows spatial variation within 0.25ha., forming a mosaic of >1 early successional communities as summarised in criterion three plus bare substrate. **(Fail – there is not more than one plant community within 0.25ha).**

⁸ Merseyside Environmental Advisory Service (February 2025). *Guidance Note on Mandatory Biodiversity Net Gain and its Implementation in the Liverpool City Region.*

- 2.2.11. The lack of plant community variation within 0.25ha means the site does not qualify for OMHPDL. Reasons being are the habitats on site (except the other neutral grassland) have no coefficients because the vegetation has been severely damaged in the past or species poor in composition. Furthermore, the frequent disturbance of the site, especially within the past five years, has not resulted in plant variations on a small scale nor time for plant communities to fully establish.

3. Results and Discussion of Metric

- 3.1. This section should be read in conjunction with the Natural England Biodiversity Metric calculation tool, Phlorum's PEA and NVC report.

3.2. On-site Baseline Habitat (Pre-Development)

- 3.2.1. The following main habitat / vegetation types were identified within the site during the surveys undertaken:
1. Other neutral grassland (UKHab code g35c);
 2. Artificial unvegetated sealed surface (UKHab code u1c);
 3. Willow scrub (UKHab code h3j);
 4. Modified grassland (UKHab code g4); and
 5. Mixed Scrub (UKHab code h3h).
- 3.2.2. The location of these habitats are shown on Plan ECO2. Further information including photographs are described in detail within the NVC Survey report by Chesire Ecology and the PEA report by Phlorum Limited respectively.
- 3.2.3. Table 3.1 below summarises the habitats present on site. A baseline total of 6.30 habitat units are present pre-development. No watercourse or hedgerow units are present on site.
- 3.2.4. Habitats were classified based on their conformity to UK habitat classifications and condition assessments were completed for each habitat identified within the site. The Biodiversity Technical Supplement as well as professional judgment was used to inform the habitats' condition criteria.

Table 3.1. Summary of on-site baseline habitats.

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes	After Works – Unit Loss
Other neutral grassland (NG1)	2.79	Grassland Medium Distinctiveness		Moderate (4 / 6 condition criteria passed = Moderate)	Most of the northern part of the site (NG1) is covered by False Oat-grass <i>Arrhenatherum elatius</i>, <i>Festuca rubra</i> sub-community, thus assigned to UKHab code g3c5. Common Bent <i>Agrostis capillaris</i>, Creeping Bent, False Oat Grass, Rough-stalked Feather Moss <i>Brachythecium rutabulum</i>, Hedge Bindweed, Creeping Thistle <i>Cirsium arvense</i>, Cocksfoot <i>Dactylis glomerata</i>, Common Couch <i>Elymus repens</i>, Field Horsetail <i>Equisetum arvense</i>, Red Fescue, Hogweed, Yorkshire Fog, Meadow Vetchling <i>Lathyrus pratensis</i>, Ribwort Plantain, Smooth Meadow-grass <i>Poa pratensis</i>, Silverweed, Creeping Cinquefoil <i>Potentilla reptans</i>, Common Fleabane, Oak saplings <i>Quercus robur</i>, Bramble, Common Sorrel <i>Rumex acetosa</i>, Curled Dock <i>Rumex crispus</i>, Tall Fescue <i>Festuca arundinacea</i>, Goldenrod, Dandelion <i>Taraxacum officinale</i>, Meadow Salsify <i>Tragopogon pratensis</i> and Vetch sp., <i>Vicia</i>. NG1 achieves a 'Moderate' condition owing to its species richness reflecting a semi-natural habitat and tussocky sward. The habitat, however, contains areas of scrub which overtime will encroach, outcompeting the grassland species. It is noted possible succession in habitat to scrub if left unmanaged.	2.79 units lost
		A – Habitat represents UKHab definition.	Pass			
		B – Sward height is varied.	Pass			
		C – Cover of bare ground is between 1-5%.	Fail			
		D – Cover of Bracken <i>Pteridium aquilinum</i> is >20% and cover of scrub is >5%.	Fail			
		E – Species of suboptimal condition and Invasive Non-native Species (INNS) (Schedule 9 of Wildlife Countryside Act).	Pass			
		F – <10 species per m ² .	Pass			

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes	After Works – Unit Loss
Other neutral grassland (NG2)	3.06	Grassland Medium Distinctiveness		Moderate (5 / 6 condition criteria passed = Moderate)	A section of other neutral grassland (NG2) was degraded as part of development works associated with the adjacent planning permission (Ref: 23/00064/FUL). Phlorum's report as well as Google Earth was used to assess its habitat condition. Phlorum's report recorded >7 species per m² with scattered bare ground and scrub patches. The grass coverage was recorded at 75% with the following flowering species: False Oat Grass, Ragged Robin, Northern Marsh-orchid <i>Dactylorhiza purpurella</i>, Fleabane sp., Field Horsetail, Oil seed rape <i>Brassica napus</i>, Ground Elder <i>Aegopodium podagraria</i>, Rosebay Willowherb <i>Chamerion angustifolium</i>, Mullein sp., Beach rose <i>Rosa rugosa</i>, Birds-foot trefoil <i>Lotus corniculatus</i>, Common Nettle <i>Urtica dioica</i> and Creeping Buttercup <i>Ranunculus repens</i>. NG2 achieves a 'Moderate' condition as it fails additional criterion F.	3.06 units lost
		A – Habitat represents UKHab definition.	Pass			
		B – Sward height is varied.	Pass			
		C – Cover of bare ground is between 1-5%.	Pass			
		D – Cover of Bracken is >20% and cover of scrub is >5%.	Pass			
		E – Species of suboptimal condition and INNS (Schedule 9 of Wildlife Countryside Act).	Pass			
		F – <10 species per m ² .	Fail			
Artificial unvegetated ; unsealed surface	0.00	Urban Condition Assessment N/A		Condition Assessment N/A	This is an area making up the southern half of the site located west of the new car park. The original topsoil appears to have been removed and replaced with less fertile subsoil. There is very little vegetation other than isolated plants of Creeping Bent and Creeping Buttercup. The site also includes evidence of fly-tipping mainly consisting of garden waste. There is a lot	0.00

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes	After Works – Unit Loss
					of Ground Elder and Large Yellow Loosestrife <i>Lysimachia punctata</i> , the former a non-native species listed under the non-native species secretariat ⁹ . The habitat is homogenous in nature with no varied habitat structure.	
Developed land; sealed surface	0.00	Urban Condition Assessment N/A		Condition Assessment N/A	Existing access road leading in from Alchemy Way to the southwestern corner of the site.	0.00
Willow scrub (WS and G3)	0.30	Medium/High Distinctiveness		Poor (2 / 5 condition criteria passed = Poor)	This part of the site (WS) has been colonised by Grey Willow <i>Salix cinerea</i> and Osier <i>Salix viminalis</i> scrub and makes up a small portion of the southern section of the site. The same habitat extends off-site to the east. The dominant species comprise Grey Willow, Osier and Downy Birch <i>Betula pubescens</i> . The understorey predominantly comprises Creeping Bent <i>Agrostis stolonifera</i> and Rough-stalked Meadow Grass <i>Poa trivialis</i> , with smaller quantities of Marsh Bird's-foot Trefoil <i>Lotus uliginosus</i> , Common Fleabane <i>Pulicaria dysenterica</i> , Bush Vetch <i>Vicia cracca</i> , Common Nettle and Wild Angelica <i>Angelica sylvestris</i> .	0.17 units lost 0.13 units enhanced
		A – The scrub is a good representation of the habitat type it has been identified as.	Pass			
		B – Seedlings, saplings, young shrub and mature (or ancient/veteran) shrub are all present.	Fail			
		C – Absence of INNS and undesirable species make up <5% of ground cover.	Pass			
		D – Scrub has well-developed edges, scattered scrub and tall grassland /forbs present.	Fail			
		E – Clearings, glades, rides present.	Fail			

⁹ <https://www.nonnativespecies.org/non-native-species/information-portal/view/66>

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes	After Works – Unit Loss
					Other species recorded include Hedge Bindweed <i>Calystegia sepium</i>, Common Knapweed <i>Centaurea nigra</i>, Fireweed <i>Chamerion angustifolium</i>, Creeping Thistle <i>Cirsium arvense</i>, Scotch Broom <i>Cytisus scoparius</i>, Red Fescue <i>Festuca rubra</i>, Hogweed <i>Heracleum sphondylium</i>, Yorkshire Fog <i>Holcus lanatus</i>, Rough Meadow-grass <i>Poa trivialis</i>, Goldenrod <i>Solidago virgaurea</i>, Perennial Sow-thistle <i>Sonchus arvensis</i>, Rowan <i>Sorbus aucuparia</i> and Tufted Vetch <i>Vicia cracca</i>. The willow scrub has been subject to previous disturbance due to development activities, limiting the scrubs maturity and structure, thus resulting in a 'Poor' condition. A pair of young multi-stemmed Willow sp. are also present in the northeast corner of the site (G3) achieving the same habitat condition as WS.	
Modified grassland	0.11	Grassland Low Distinctiveness		Moderate (4 / 7 condition criteria passed = Moderate)	A small area of species rich grassland is located in the southwest corner of the site. Aerial photography shows that this area was greatly impacted by the previous construction work, with regularly used tracks crossing the site. The regular disturbance resulted in soil displacement and created waterlogged conditions. The NVC survey identified the vegetation as an example of the SD17a <i>Potentilla anserina</i>-<i>Carex</i>	0.11 units lost
		A – 6-8 species per m ² .	Pass			
		B – Sward height is varied.	Fail			
		C – Scrub accounts for <20% of area.	Pass			
		D – Physical damage evident in <5% of total area.	Fail			
		E – Cover of bare ground between 1% and 5% of total area.	Fail			

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes	After Works – Unit Loss
		F – Cover of Bracken <20%.	Pass		<i>nigra</i> plant community, which is characteristic of dune slacks and other seasonally inundated sites. The grassland includes the following plant species Creeping Bent <i>Agrostis stolonifera</i>, Red Fescue, Yorkshire Fog, Spotted Medick <i>Medicago arabica</i>, Yellow Sweet Clover <i>Melilotus officinalis</i>, Ribwort Plantain <i>Plantago lanceolata</i>, Selfheal <i>Prunella vulgaris</i>, Creeping Buttercup, Bramble <i>Rubus fruticosus</i>, Grey Willow, White Clover <i>Trifolium repens</i>, Pointed Spear-moss <i>Calliergonella cuspidate</i>, Silverweed <i>Poterium anserina</i>, Bird's-foot Trefoil, Yellow-wort <i>Blackstoniana perfoliate</i>, Wild Angelica, Ragged Robin, Common Fleabane, Compact Rush <i>Juncus conglomeratus</i> and Jointed Rush <i>Juncus articulatus</i>. The grassland achieves a 'Moderate' condition owing to previous disturbance works limiting structural diversity of habitat.	
		G – Absence of INNS and undesirable species make up <5% of ground cover.	Pass			
Mixed scrub (G1 and G2)	0.05	Medium/High Distinctiveness		Poor (2 / 5 condition criteria passed = Poor)	A small stand of young, low quality group of Silver Birch and Willow sp. trees (G1) are present in southwestern corner of the site. An area of Mixed scrub (G2) is present along the northern end of the western boundary of the site.	0.02 units lost
		A – The scrub is a good representation of the habitat type it has been identified as.	Pass			
		B – Seedlings, saplings, young shrub and mature (or ancient/veteran) shrub are all present.	Fail			

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes	After Works – Unit Loss
		C – Absence of INNS and undesirable species make up <5% of ground cover.	Pass		Species recorded include Sycamore <i>Acer pseudoplatanus</i> , Pedunculate Oak, Goat Willow, Hawthorn <i>Crataegus monogyna</i> , Cherry <i>Prunus avium</i> and Silver Birch. Both areas of mixed scrub achieve a 'Poor' condition.	0.03 units retained
		D – Scrub has well-developed edges, scattered scrub and tall grassland /forbs present.	Fail			
		E – Clearings, glades, rides present.	Fail			

3.3. On-site Post-Development

- 3.3.1. Table 3.2 summarises the habitats that are to be created post-development illustrated on Plan ECO3 with reference made to Appendix 1. Habitats to be retained and enhanced are shown in Plan ECO4.
- 3.3.2. The landscape strategy will create new habitats including native shrub planting, three species-rich native hedgerows, native trees and wildflower grassland. Areas of mixed scrub to the northwest will be retained alongside enhancement of existing Willow scrub along the southern site boundary.
- 3.3.3. Overall, when assessed against the planting plan, the site is expected to result in a net loss of -84.64% for habitats (-5.33 unit decrease). There is no net loss of hedgerow habitats, an additional 1.75 units will be provided post-development.
- 3.3.4. Trading rules have not been satisfied for the medium distinctiveness habitats group due to the loss of other neutral grassland and willow scrub. The loss of modified grassland also contributes to the trading rule deficit.

Table 3.2. Summary of post-development habitats and hedgerow types that will be created.

Created Habitats				
Proposed Habitat	Landscape Plan Habitat	Target Condition	Biodiversity Units Delivered	Target Condition Notes
Developed land; sealed surface	Buildings and Infrastructure (including access road)	Condition Assessment N/A	0.00	One proposed rentable storage land with associated access and includes the proposed area of gravel adjacent to the boundary.
Mixed scrub	Shrub planting	Moderate	0.05	Shrub planting with 10 native species to bolster the existing Willow scrub along the southern site boundary with the herbaceous layer seeded with Emorsgate EW1 Woodland Mixture. Through appropriate management, the scrub will be allowed to grow at varying heights and be subject to a suitable cutting regime promoting different ages of scrub. The ground flora will also be subject to sensitive mowing to ensure this habitat establishes and provides opportunities for wildlife.
Other neutral grassland	Wildflower meadow areas	Moderate	0.56	New areas of wildflower grassland, using Emorsgate EM5 meadow mixture, will be established along the site boundaries. Grassland will be subject to relaxed management to allow for flowering and self-seeding, whilst allowing for a diverse sward structure which would offer greater opportunities for wildlife. The grassland will be managed to ensure no adverse encroachment of scrub occurs and no INNS establish.
Individual trees	Tree planting	Moderate	0.09	A total of seven new trees will be planted within the site, which have been classed as small and will be managed to achieve 'Moderate' condition. The trees will be subject to a suitable pruning regime owing to their locations oversailing grassland and neighbouring developed land. Nonetheless, the trees will be allowed to mature overtime and provide ecological niches for wildlife.
Artificial unvegetated; unsealed surface	Bark mulch	Condition Assessment N/A	0.00	Planted hedgerow bases to be covered with 75mm depth bark mulch and kept weed free.

Created Hedgerows				
Proposed Habitat	Landscape Plan Habitat	Target Condition	Biodiversity Units Delivered	Target Condition Notes
Species-rich native hedgerow	Native hedge	Moderate	1.75	Three new species rich hedgerows will be planted consisting of 10 native species. It is expected that with good sympathetic management, the hedgerows will achieve a 'Moderate' condition.

Table 3.3. Summary of habitat enhancements.

Enhanced Habitats					
Baseline Habitat	Baseline Condition	Proposed Habitat	Target Condition	Biodiversity Units Delivered	Target Condition Notes
Willow scrub	Poor	Mixed scrub	Moderate	0.24	The enhancement of the remaining Willow scrub from Poor to Moderate will be achieved by implementing greater species diversity and structure through appropriate pruning and cutting back of scrub promoting different age classes.

4. Evaluation

4.1. The Principals of Evaluation

Biodiversity Net Gain – Good Practice for Development

- 4.1.1. CIRIA, CIEEM and IEMA have developed principles of good practice to achieve Biodiversity Net Gain. These principles provide a framework that helps improve the UK's biodiversity by contributing towards strategic priorities to conserve and enhance nature through sustainable development. There are ten principles in total, and all principles must be applied together as one approach. The ten principles are set out below.
- 4.1.2. **Principle 1. Apply Mitigation Hierarchy.** Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision makers where possible, compensate for losses that cannot be avoided. If compensation for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.
- 4.1.3. **Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere.** Avoid impacts on irreplaceable biodiversity; these impacts cannot be offset to achieve no net loss or net gain.
- 4.1.4. **Principle 3. Be inclusive and equitable.** Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to net gain. Achieve Net Gain in partnership with stakeholders where possible and share the benefits fairly among stakeholders.
- 4.1.5. **Principle 4. Address risks.** Mitigate difficulty, uncertainty and other risks to achieving Net Gain. Apply well accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.
- 4.1.6. **Principle 5. Make a measurable net gain contribution.** Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.
- 4.1.7. **Principle 6. Achieve the best outcomes for biodiversity.** Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly justified choices when:
1. Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses.
 2. Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation.
 3. Achieving net gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels.
 4. Enhancing existing or creating new habitat.

5. Enhancing ecological connectivity by creating more bigger, better and joined areas for biodiversity.
- 4.1.8. **Principle 7. Be additional.** Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).
- 4.1.9. **Principle 8. Create a net gain legacy.** Ensure net gain generates long-term benefits by:
 1. Engaging stakeholders and jointly agreeing practical solutions that secure net gain in perpetuity.
 2. Planning for adaptive management and securing dedicated funding for long-term management.
 3. Designing net gain for biodiversity to be resilient to external factors, especially climate change.
 4. Mitigating risks from other land uses.
 5. Avoiding displacing harmful activities from one location to another.
 6. Supporting local-level management of net gain activities.
- 4.1.10. **Principle 9. Optimise sustainability.** Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.
- 4.1.11. **Principle 10. Be transparent.** Communicate all net gain activities in a transparent and timely manner, sharing the learning with all stakeholders.

Lawton's Principle

- 4.1.12. Principles for enhancing England's wildlife sites were developed as part of the Lawton Review¹⁰. Across the UK, these principles can be used to design Biodiversity Net Gain activities to boost wildlife sites. They are:
 1. Improving the quality of wildlife sites;
 2. Increasing the size of the wildlife sites;
 3. Enhancing connections between, or joining up wildlife sites;
 4. Creating new wildlife sites; and
 5. Reducing pressure on wildlife sites.

4.2. Post-Development Evaluation

- 4.2.1. The site's contribution to Biodiversity Net Gain has been assessed with due regard to the principles outlined and discussed above.
- 4.2.2. In line with Section 4.2 of the draft version of the Liverpool City Region Combined Authority Local Nature Recovery Strategy¹¹ published for public consultation in April 2025, a strip of mixed scrub on the northwestern side of the site will serve as

¹⁰ Department for Environment, Food and Rural Affairs (2010). *Making Space for Nature: A Review of England's Wildlife Sites*, DEFRA.

¹¹ <https://api.liverpoolcityregion-ca.gov.uk/wp-content/uploads/LCRCA-Local-Nature-Recovery-Strategy-2025.pdf>

a natural screen between the site and neighbouring Otis Meadow LWS to increase resilience and mitigate external pressures. It will also maintain a green corridor to wider area to increase connectivity and dispersal opportunities.

- 4.2.1. The landscape strategy will create new habitats including native shrub planting, three species-rich native hedgerows, native trees and wildflower grassland. Areas of mixed scrub to the northwest will be retained alongside enhancement of existing Willow scrub along the southern site boundary. There is no further scope on-site to provide further landscaping given the limited nature of the Proposed Development (open storage) with the need to maximise developed space, no buildings or other suitable green infrastructure measures can be incorporated. Efforts have nonetheless been made to retain and enhance existing habitats where appropriate along the periphery of the site.
- 4.2.2. Overall, when assessed against the planting plan (see Appendix 1), the site is expected to result in a net loss of -84.64% for habitats (-5.33. unit decrease) and no net loss of hedgerows (see Table 4.1 below).

Table 4.1. Summary of Biodiversity Metric Results.

On-site Baseline	Habitat Units	6.30
	Hedgerow Units	0
	Watercourse Units	N/A
On-Site Post-intervention	Habitat Units	0.97
	Hedgerow Units	1.75
	Watercourse Units	N/A
Total net unit gain	Habitat Units	-5.33
	Hedgerow Units	1.75
	Watercourse Units	N/A
Total net % gain	Habitat Units	-84.64
	Hedgerow Units	0
	Watercourse Units	N/A

4.3. Satisfying Trading Rules

- 4.3.1. Medium distinctiveness habitat losses must be replaced by habitat units of the same broad habitat, or a higher distinctiveness habitat type i.e. other neutral grassland for another grassland habitat of medium distinctiveness. Low distinctiveness habitats require the same distinctiveness habitat or better as compensation.
- 4.3.2. To satisfy the medium distinctiveness trading rule, further neutral grassland and scrub would need to be planted. This also applies for low distinctiveness habitats which can be compensated by providing similar habitats to the ones stated above.

4.4. Off-site Compensation

- 4.4.1. The Proposed Development is currently showing a net loss of -84.64%. Since it is not possible to compensate for all biodiversity losses on-site; the remainder of the 10% biodiversity net gain and trading rule deficit is to be achieved through the purchase of off-site habitat units. At the time of writing, discussions are ongoing with Biodiversity Units UK Ltd to secure a suitable offsite provider ideally from the

same National Character Areas (NCA) and Local Planning Authority (LPA) and/or from adjoining NCA or LPA where appropriate.

5. Legislation and Policy Context

- 5.1.1. The planning policy framework that relates to Biodiversity Net Gains at the site is issued nationally through the National Planning Policy Framework (NPPF) and locally through the planning policies of the Knowsley Council.

5.1. National Policy

National Planning Policy Framework (February 2025)

- 5.1.1. Guidance on national policy for Biodiversity Net Gain is provided by the NPPF, published in March 2012, revised on 24 July 2018, 19 February 2019, July 2021, 5 September 2023, 20 December 2023, December 2024, and again in February 2025. The following sections of the policy relate to Biodiversity Net Gain:
- 5.1.2. Paragraph 187(d) states that planning policies and decisions should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current future pressures.
- 5.1.3. Paragraph 192(b) states that to protect and enhance biodiversity and geodiversity, plans should promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.
- 5.1.4. Paragraph 193(d) states that when determining planning application, local planning authorities should apply the following principle: development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

5.2. Local Policy

Knowsley Local Plan: Core Strategy January 2016

- 5.2.1. The Knowsley Local Plan sets out the objectives and policies for new developments within Knowsley until the year 2028. Policies relevant to conservation are summarised below.
- 5.2.2. **Policy CS8 Green Infrastructure.** This policy summarises how green infrastructure should be maximised within the borough and its surrounding areas managed to benefit the natural environment and safeguard landscape and vital ecosystem services.
- 5.2.3. **Policy CS21 Greenspaces and Trees.** This policy summarises how an appropriate quantity of diverse high quality greenspaces play an important role in the protection of the environment providing new opportunities for wildlife and people. The council will support the following implementations with regards to new greenspace:
1. Greenspace protection;

2. Local Greenspace Standards;
3. Accessible and Quality Greenspaces;
4. Local Green Spaces; and
5. Enhancement of natural and semi-natural greenspace and tree protection.

Other Guidance – Liverpool City Region Combined Authority Local Nature Recovery Strategy (Draft version - April 2025)

- 5.2.4. LNRSs are a new spatial strategy for nature and are required by the Environment Act 2021, in recognition of the significant global decline in biodiversity and nature.
- 5.2.5. The purpose of the strategy is to locally-agree a shortlist of priorities (aims) and measures (practical actions) for nature's recovery and the wider environment, identify a shortlist of species requiring bespoke support, and to map where best to take action.
- 5.2.6. Although a draft version of the LCRCA LNRS was published for public consultation in April 2025, the final version is not expected to be published until Spring 2026.

Other Guidance – LCR Mandatory BNG Guidance Note and its Implementation in the Liverpool City Region, created by the Merseyside Environmental Advisory Service (June 2025)

- 5.2.7. **The Mitigation Hierarchy and Biodiversity Gain Hierarchy:** To ensure that the Mitigation Hierarchy and Biodiversity Gain Hierarchy are adequately applied, developers must consider BNG in the early stages of the site design process. It would be beneficial for landscape architects to be in conversation with ecologists at the design stage.

Sequential Approach and Off-Site Compensation

- 5.2.8. **Section 3.15:** The metric incentivises habitat delivery on or close to the development site through a 'Spatial Risk Multiplier', which reduces the value of habitats biodiversity units delivered further away from the development. This is based on three categories: off-site provision located within the same LPA or National Character Area (NCA); within a neighbouring LPA or NCA; or elsewhere (not in a neighbouring LPA or NCA). Geospatial data showing NCA profiles can be downloaded from gov.uk.
- 5.2.9. **Section 3.16** Where a development cannot achieve 10% BNG on-site after following the Mitigation Hierarchy and Biodiversity Gain Hierarchy, the developer can secure the unit shortfall off-site. In these cases, the sequential approach set out below should be followed. In the first instance, off-site options within the same Local Authority area should be sought, where ecologically feasible. Where this is not possible, off-site mitigation within the adjacent Local Authority area should be investigated, then elsewhere within the wider LCR.
- 5.2.10. **Section 3.17** The sequential approach should be applied to developments alongside the Mitigation Hierarchy and Biodiversity Gain Hierarchy.

5.3. Environment Act 2021

- 5.3.1. The Act details a legal requirement for all developments to ensure that a minimum of 10% net gain in Biodiversity is delivered. As of 12th February 2024, Biodiversity Net Gain is a mandatory requirement for new developments and has been adopted as a regulation by the Secretary of State.

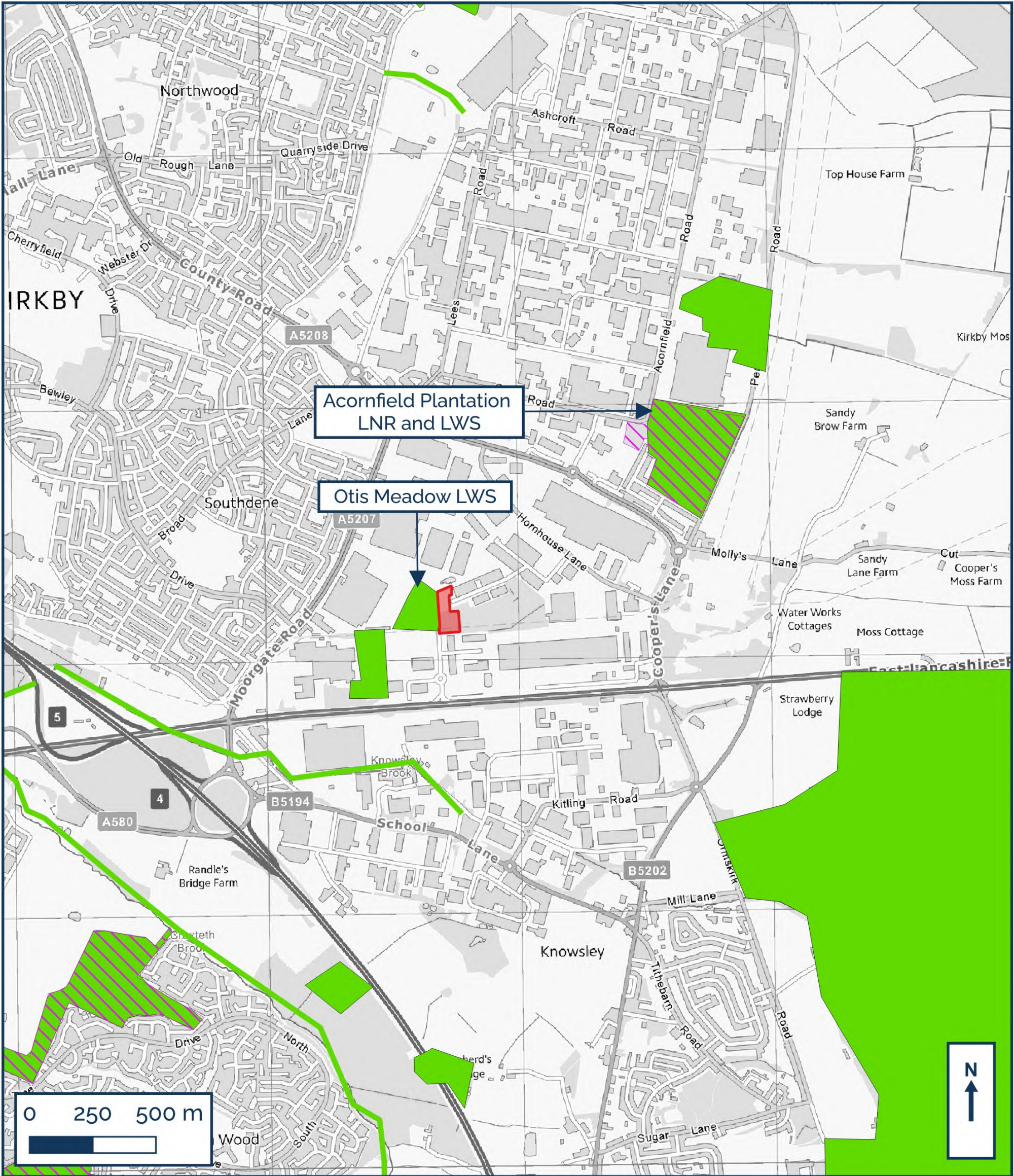
6. Summary and Conclusions

- 6.1. Ecology Solutions was originally commissioned by NW1 IOS 3 Unit Trust, in April 2025 to provide a BNG report of a parcel of land within Knowsley Industrial Park (see Plan ECO1), hereafter, referred to as 'the site'.
- 6.2. The Proposed Development is for open storage (Class B8), provision of new hardstanding, and all other associated works .
- 6.3. The BNG report has been updated to reflect comments raised by the LPA regarding strategic significance and linear habitats. In addition, the report was updated to reflect the historic habitat degradation as a result of an adjacent planning permission (23/00064/FUL).
- 6.4. Overall, when assessed against the site plan, the site is expected to result in a net loss of -84.65% for habitats (-5.33 unit decrease) and no net change of hedgerows.
- 6.5. In order to ensure that the trading rules and 10% net gain biodiversity is achieved, off-site habitat unit credits will be purchased. At the time of writing, discussions are ongoing with Biodiversity Units UK Ltd to secure a suitable offsite provider ideally from the same NCA and LPA and/or from adjoining NCA or LPA where appropriate.
- 6.6. In conclusion, the 10% biodiversity net gain and trading rule deficit is to be achieved through the purchase of off-site habitat units to accord with local and national policy.

Plans

PLAN ECO1

Site Location and Ecological Designations



KEY:

- SITE BOUNDARY
- ▨ LOCAL NATURE RESERVES (LNR)
- LOCAL WILDLIFE SITES (LWS)



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12592: LAND TO THE WEST OF FARADAY
ROAD AND EAST OF ALCHEMY WAY

PLAN ECO1: SITE LOCATION AND
ECOLOGICAL DESIGNATIONS

Rev: C
Mar 2026

PLAN ECO₂

Pre-Development Habitats

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Habitat reference number	Habitat Type	Area (hectares)	Condition
	Modified grassland	0.0264	Moderate
NG1	Other neutral grassland	0.3482	Moderate
NG2	Other neutral grassland	0.382	Moderate
G1 and G2	Mixed scrub	0.0118	Poor
WS	Willow scrub	0.0431	Poor
G3	Willow scrub	0.0322	Poor
	Artificial unvegetated, unsealed surface	0.245	N/A - Other

KEY:

SITE BOUNDARY

HABITATS

OTHER NEUTRAL GRASSLAND (NG1 AND NG2)

ARTIFICIAL UNVEGETATED, UNSEALED SURFACE

MODIFIED GRASSLAND

WILLOW SCRUB (WS AND G3)

MIXED SCRUB (G1 AND G2)

DEVELOPED LAND, SEALED SURFACE





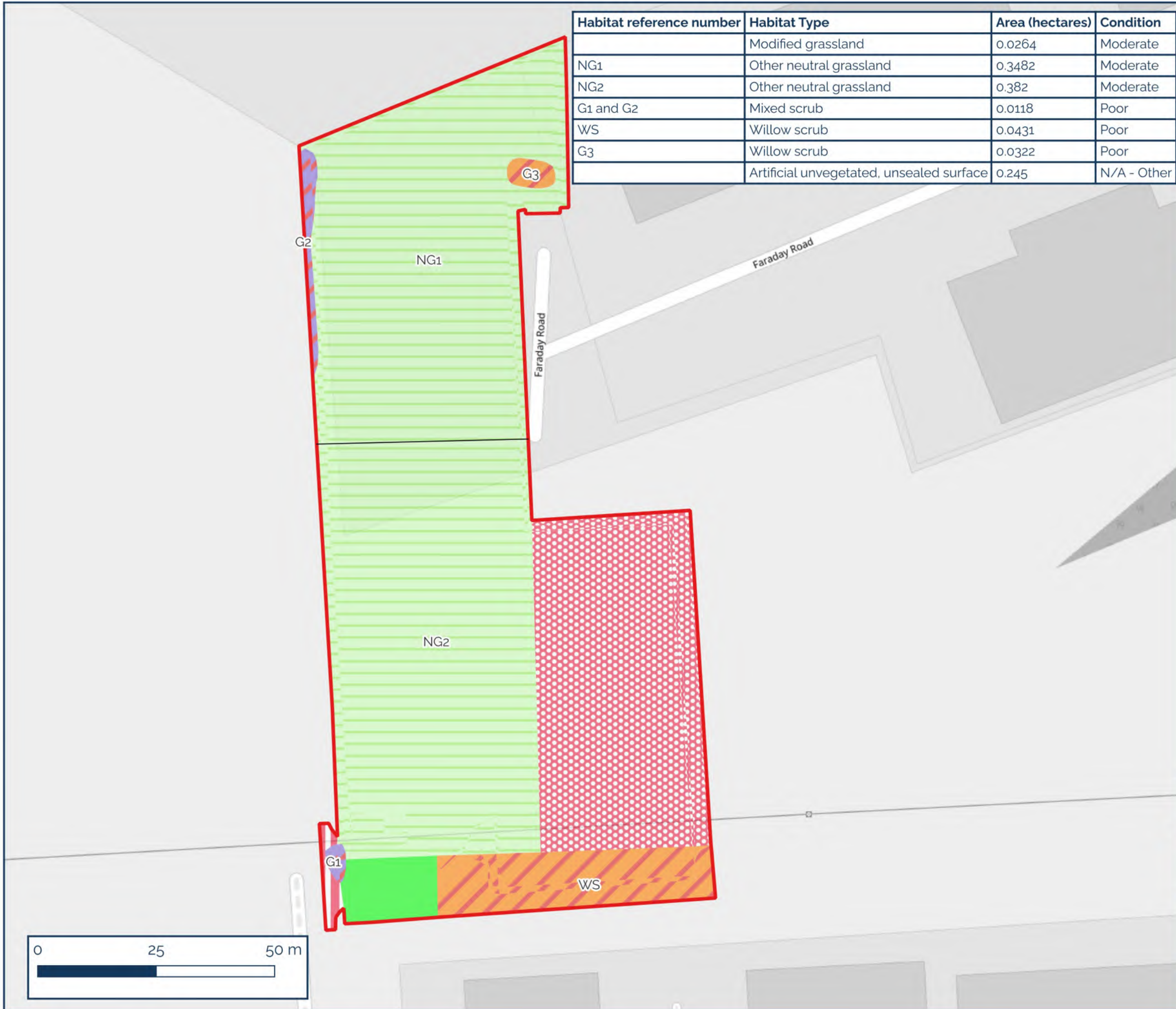
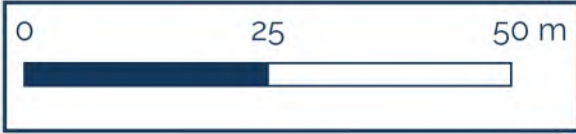
ECOLOGY SOLUTIONS
LANDSCAPE, MITIGATION & BIODIVERSITY
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12592: LAND TO THE WEST OF
FARADAY ROAD AND EAST OF
ALCHEMY WAY

PLAN ECO2: PRE-DEVELOPMENT
HABITATS

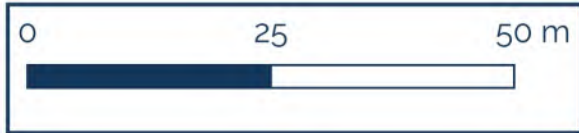
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PLAN ECO₃

Post-Development Habitats

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Proposed habitat	Area (hectares)	Condition
Other neutral grassland	0.0836	Moderate
Mixed scrub	0.0077	Moderate
Artificial unvegetated, unsealed surface	0.0247	N/A - Other
Urban tree	0.0285	Moderate

New hedge number	Habitat type	Length (km)	Condition
H1	Species-rich native hedgerow	0.06	Moderate
H2	Species-rich native hedgerow	0.098	Moderate
H3	Species-rich native hedgerow	0.104	Moderate

KEY:

SITE BOUNDARY

HABITATS

ARTIFICIAL UNVEGETATED; UNSEALED SURFACE

MIXED SCRUB

OTHER NEUTRAL GRASSLAND

SPECIES-RICH NATIVE HEDGEROW (H1-H3)

X7 SMALL URBAN TREE

Basemap reference: Planting Plan by Bea Landscape Design Ltd (Drawing Number: BEA-26-025-02) Revision PO1



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12592: LAND TO THE WEST OF FARADAY ROAD AND EAST OF ALCHEMY WAY

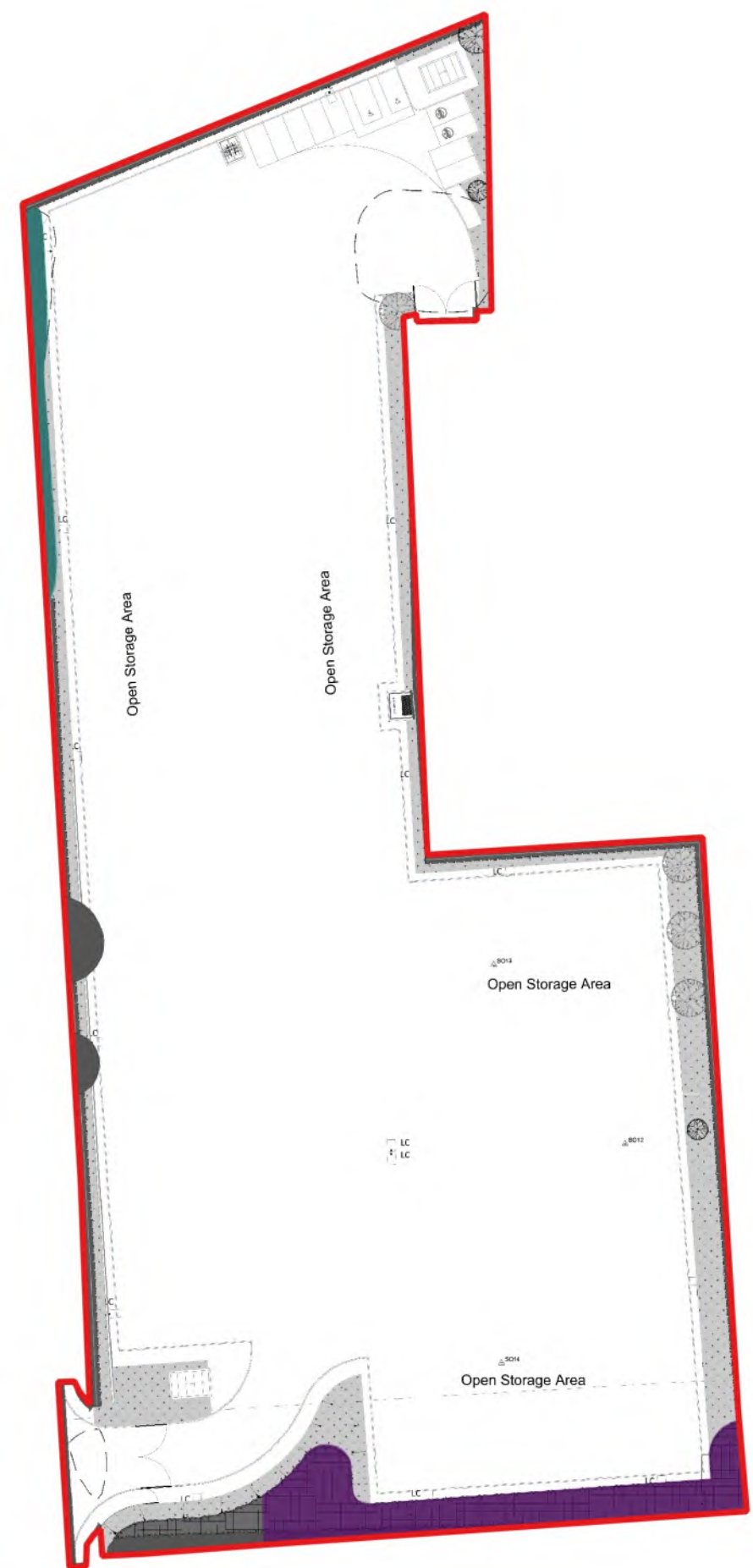
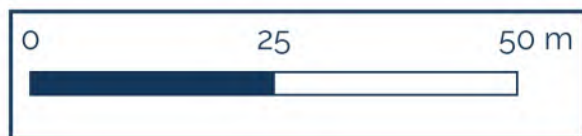
PLAN ECO3:
POST-DEVELOPMENT HABITATS

Rev: C
Mar 2026

PLAN ECO4

Retained and Enhanced Habitats

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KEY:

 SITE BOUNDARY

HABITATS

 ENHANCED WILLOW SCRUB TO MIXED SCRUB

 RETAINED MIXED SCRUB

Basemap reference: Planting Plan by Bea Landscape Design Ltd (Drawing Number: BEA-26-025-02) Revision PO1



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12592: LAND TO THE WEST OF
FARADAY ROAD AND EAST OF
ALCHEMY WAY

PLAN ECO4: RETAINED AND
ENHANCED HABITATS

Rev: A
Mar 2026

Appendices

APPENDIX 1

Planting Plan by Bea Landscape Design Ltd
(Drawing Number: BEA-26-025-02) Revision P01

APPENDIX 2

National Vegetation Classification Survey Report (Cheshire Ecology)



**LAND OFF FARADAY ROAD
KNOWSLEY INDUSTRIAL ESTATE
NVC SURVEY**

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01270 611125

EXECUTIVE SUMMARY

Ecology Solutions Ltd., has been commissioned to carry out a National Vegetation Classification (NVC) survey of a plot of land near Faraday Road, Knowsley Industrial Estate, Liverpool L33 7XN.

The site is bounded to the north by industrial units in Faraday Road, to the east by a Makro warehouse, to the south by Platinum Court and the Titan Building, and the west by an agricultural field. The site lies at an altitude of 30m AOD.

A National Vegetation Classification (NVC) Survey was carried out using the methodology outlined in Rodwell (2006). The survey was carried out by Dr Martin Page MCIEEM.

This has proved to be a difficult site to survey using the NVC methodology. One of the main requirements of this classification system is that the vegetation must be homogeneous, and the results will be invalid if this requirement is ignored. Unfortunately, the site has been badly damaged by earlier construction activities and most of the remaining vegetation is fragmentary or damaged.

The MG1 grassland is the only vegetation at the site that has remained relatively undamaged. The relevés have high coefficients of similarity. None of the other vegetation has similar coefficients, mainly because the vegetation has been altered in some way or is species poor.

The previous consultants recommended that the site should have an NVC survey. Unfortunately, the site isn't really suitable for this type of survey.

A site must satisfy a number of preconditions before an NVC survey can be carried out successfully.

- The site must be large enough to allow a sufficient number of relevés to be recorded that will characterise the site.
- The vegetation must be homogeneous.

The site does not satisfy these conditions and what remains has been damaged.

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PHOTOGRAPHS

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FIGURES AND PLANS

Figure 1: Site location.

1 INTRODUCTION

- 1.1.1 Ecology Solutions Ltd., has been commissioned to carry out a National Vegetation Classification (NVC) survey of a plot of land near Faraday Road, Knowsley Industrial Estate, Liverpool L33 7XN.
- 1.1.2 The site is bounded to the north by industrial units in Faraday Road, to the east by a Makro warehouse, to the south by Platinum Court and the Titan Building, and to the west by an agricultural field. The site lies at an altitude of 30m AOD.

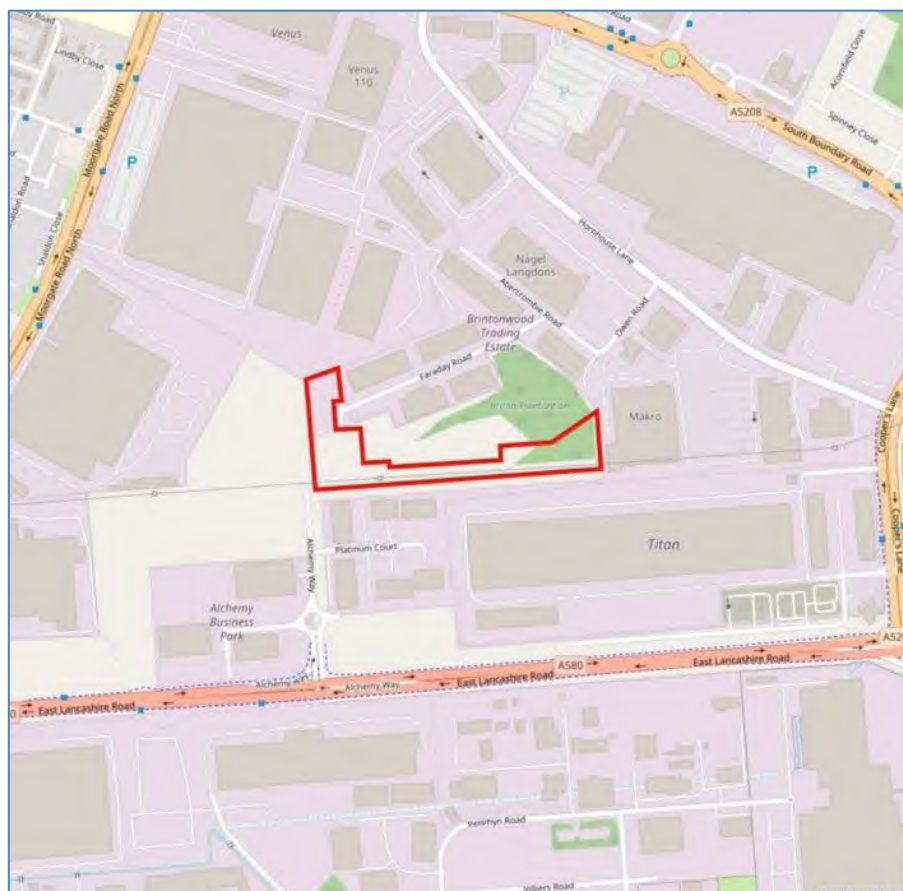


Fig 1: Site location

1.2 Context

- 1.2.1 Late 19th century 25-inch Ordnance Survey maps show that the site was originally an agricultural field, with a railway line crossing from north to south. There was a small ditch in the extreme north western corner and another running along the southern boundary. An area of woodland, known as 'Briton Plantation', lay to the east. The railway line has since been removed and a large area of car parking has been built to the north of the site.

- 1.2.2 Aerial photography shows that the site was badly disturbed when the adjacent car park was built. A well-used track can be seen between Alchemy Way and the car park and a large area to the west was heavily impacted.

2 METHODS

- 2.1.1 A National Vegetation Classification (NVC) Survey was carried out using the methodology outlined in Rodwell (2006). The survey was carried out by Dr Martin Page MCIEEM.
- 2.1.2 Martin studied the plant ecology of mesotrophic grasslands for his PhD and contributed data to the NVC. He was responsible for analysing the NVC's data from mesotrophic grasslands. Martin was a botanist with the 2007 Countryside Survey and has worked as a consultant ecologist for the last eighteen years.
- 2.1.3 The location of each relevé¹ was recorded using a Garmin GPSMAP 64SX. A ten figure Ordnance Survey grid reference was recorded for each relevé.
- 2.1.4 Locations were chosen to provide an overview of the vegetation at the site, with additional samples taken in areas with distinct vegetation. All samples were randomly selected within stands of vegetation. One of the guiding principles of phytosociology is that the vegetation in the relevé must be homogeneous. Heterogeneous samples are normally discarded.
- 2.1.5 The data was analysed using a combination of experience, the keys in Rodwell (1991a, 1991b, 1992, 1995 and 2000) and confirmed using the computer program TABLEFIT (Hill, 2011). TABLEFIT is a useful tool, but it must be used with caution. The software is a rather a blunt instrument and can allocate relevés to the incorrect plant community.
- 2.1.6 The total cover of each species was recorded using the Domin scale (Dahle and Hadac, 1941) and tabulated in a Microsoft Excel spreadsheet (see Appendix C). Species that were absent from within the relevé but present within the same stand of vegetation were recorded with a +. This information is not used in analysis but can be useful for allocating species-poor or heterogeneous samples.
- 2.1.7 Plant communities are normally defined by the fidelity of different species to each plant community (see below). Constancy classes can only be calculated where there are five or more relevés of the same plant community available. Where there are less than five relevés the constancy of species is shown as Arabic numerals, rather than Latin.

Constancy class	Fidelity to plant community
V	1-20%
IV	21-40%
III	41-60%
II	61-80%
I	81-100%

¹ The NVC uses the term relevé, rather than quadrat. The term is taken from the European School of Phytosociology. It provides a lot information than a quadrat.

- 2.1.8 The names of higher plants follow the Fourth Edition of the *New Flora of the British Isles* (Stace, 2019). The names of the NVC plant communities follow Rodwell (1991a, 1991b, 1992, 1995 and 2000). Bryophyte names follow Smith (2003) and Paton (1999).

2.2 Limitations

- 2.2.1 The site has been badly damaged by the development of the adjacent land. Much of the vegetation on the southern part of the site is heterogeneous and could not be surveyed using the NVC standard methodology (Rodwell, 2006).
- 2.2.2 The small area of swamp vegetation present at the site was below the Minimum Mapping Area specified for the UK Habitat Classification (UK Hab) methodology.

3 RESULTS

- 3.1.1 The following information will be used to complete the Statutory Metric, so we have listed the vegetation using the equivalent UK Hab methodology category.

f3b willow scrub

- 3.1.2 The southern part of the site is close to a ditch and the ground is quite wet. This part of the site has been colonised by grey willow *Salix cinerea* and osier *S. viminalis* scrub. The best match for this vegetation in the NVC is the W24 *Rubus fruticosus-Holcus lanatus* underscrub plant community. From, the perspective of the UK Habitat methodology, it is f3b willow scrub. Left to develop naturally it will probably develop into the W6 *Alnus glutinosa-Urtica dioica* plant community.
- 3.1.3 The dominant species in this area are currently grey willow, osier and downy birch *Betula pubescens*. The understorey has a lot of creeping bent *Agrostis stolonifera* and rough stalked meadow grass *Poa trivialis*, with smaller quantities of marsh bird's foot trefoil *Lotus uliginosus*, fleabane *Pulicaria dysenterica*, bush vetch *Vicia cracca*, nettle *Urtica dioica* and wild angelica *Angelica sylvestris*.

g3c5 Arrhenatherum elatius neutral grassland

- 3.1.4 Most of the western part of the site is covered by false oatgrass, which can be ascribed to the MG1a *Arrhenatherum elatius* false-oat grass plant community, *Festuca rubra* sub-community. This is the characteristic plant community of ungrazed grassland in the southern part of Britain. False oat grass (4) is prominent in the summer, but there are usually large amounts of cock's-foot *Dactylis glomerata* (2) and Yorkshire fog *Holcus lanatus* (3). The other constant species are red fescue *Festuca rubra* (4), hogweed *Heracleum sphondylium* (3), meadow vetchling *Lathyrus pratensis* (3) and creeping thistle *Cirsium arvense* (3).
- 3.1.5 The MG1 grassland community is widespread in mown habitats in the British Isles and will normally develop into W21 *Crataegus monogyna-Hedera helix* scrub if there no grazing. This type of grassland is common on roadside verges, in churchyards and on abandoned land earmarked for development. The grassland is usually dominated by tussock-forming grasses and has a thick litter layer. This is ideal for small mammals such as field voles and, as a result, this type of habitat is often frequented by barn owls *Tyto alba*.
- 3.1.6 This type of grassland is recognised in the UK Hab methodology as g3c5 *Arrhenatherum elatius* neutral grassland.

g4 modified grassland

- 3.1.7 This is a small area of more species rich grassland in the south-west corner of the site. Aerial photographs show that this area was greatly impacted by the previous construction work, when there was a regularly used track crossing

the site.

- 3.1.8 The regular disturbance presumably churned up the soil and contributed to it becoming waterlogged. This allowed silverweed *Poterium anserina* to colonise the land, a plant that is characteristic of wet and often disturbed grassland.
- 3.1.9 TABLEFIT has identified the vegetation as an example of the SD17a *Potentilla anserina-Carex nigra* plant community, which is characteristic of dune slacks and other seasonally inundated sites. The vegetation at Knowsley has small amounts of bird's foot trefoil *Lotus corniculatus* and yellow-wort *Blackstoniana perfoliata* growing in it. These species also occur in sand dune slacks.
- 3.1.10 The grassland includes several wetland plants such as wild angelica, ragged Robin *Lychnis flos-cuculi*, fleabane and compact rush *Juncus conglomeratus* and jointed rush *J. articulatus*.

u1c sparsely vegetated land

- 3.1.11 This is an area to the west of the new car park. The original top soil appears to have been removed and replaced with less fertile sub-soil. There is very little vegetation other than isolated plants of creeping bent *Agrostis stolonifera*.
- 3.1.12 This vegetation is an example of the OV28 *Agrostis stolonifera-Ranunculus repens* community in the NVC. It is a common and very impoverished plant community typically found on river banks and inundated arable fields. The only constant species are creeping bent and creeping buttercup.

u/1f Sparsely vegetation urban land

- 3.1.13 The site has experienced a lot of fly-tipping. This mainly consists of garden throw-outs, but the discarded material can still damage the local environment by competing with the native flora. There is a lot of ground elder *Aegopodium podagraria*. This plant is a very persistent garden weed, which is extremely difficult to eradicate once it has become established. It is not included on Schedule 9 of the Wildlife and Countryside Act 1980, but we recommend that it is removed.
- 3.1.14 This type of vegetation cannot be allocated to an NVC plant community, because that classification system only describes native vegetation. *Lysimachia punctata* is an introduced ornamental plant, widely grown in domestic gardens, and the ground elder doesn't occur with any consistency in natural plant communities. It is considered to be an archaeophyte².

² An alien species that was introduced in 'ancient' times.

4 CONCLUSIONS

- 4.1.1 The previous consultants recommended that the site should have an NVC survey. Unfortunately, the site isn't really suitable for this type of survey.
- 4.1.2 A site must satisfy a number of preconditions before an NVC survey can be carried out successfully.
- The site must be large enough to allow a sufficient number of relevés to be recorded that will characterise the site.
 - The vegetation must be homogeneous.
- 4.1.3 The site does not satisfy these conditions and what remains has been damaged.
- 4.1.4 Old Ordnance Survey maps show that the site was originally part of a much larger field. It is possible that this may have had some botanical interest in the as is shown by the presence of northern marsh orchid *Dactylorhiza purpurella*.

4.2 Comparison of the NVC and UK Hab methodologies

- 4.2.1 The results of this study are interesting because it shows the difference between the UK Hab methodology and the NVC. Using the UK Hab methodology, the vegetation in the southern part of the site is willow scrub, but with the NVC the best match is bramble scrub. This is because the UK Hab methodology classes the vegetation upon dominance and the NVC uses constancy (fidelity) to a specific plant community.
- 4.2.2 Another issue is that the remaining samples of vegetation are too small to satisfy the UK Hab's Minimum Mapping Unit (MMU) requirement (In Touch Geospatial Services, 2023). This is usually a square of 5mx5m.

4.3 Results of the NVC survey

- 4.3.1 This has proved to be a difficult site to survey using the NVC methodology. One of the main requirements of this classification system is that the vegetation must be homogeneous, and the results will be invalid if this requirement is ignored. Unfortunately, the site has been badly damaged by earlier construction activities and most of the remaining vegetation is fragmentary or damaged.
- 4.3.2 The NVC survey methodology is extremely useful if it is applied correctly. It allows the vegetation at the site to be compared with other examples from around the British Isles and its relative value to be assessed by decision makers, such as local authorities.
- 4.3.3 The MG1 *Arrhenatherum elatius* grassland is the only vegetation at the site that has remained relatively undamaged. The relevés have high coefficients of similarity. None of the other vegetation has similar coefficients, mainly because the vegetation has been altered in some way or is species poor.

5 RECOMMENDATIONS

- 5.1.1 A large proportion of the site has been disturbed by machinery and there are large areas of bare ground. The only significant area of remaining semi-natural vegetation is the MG1 *Arrhenatherum elatius* grassland. This is a widespread plant community, and many better examples exist. The remaining area is too small to manage in the correct way and it will soon be succeeded by hawthorn or blackthorn scrub.
- 5.1.2 The site has a large number of garden throw-outs, such as dotted loosestrife *Lysimachia punctata*. This is an attractive alien perennial with large panicles of bright yellow flowers. Large amounts of ground elder *Aegopodium podagraria* have also be dumped at the site. This is a very persistent and invasive weed. It is a native plant and very difficult to eradicate if it is introduced to a garden.
- 5.1.3 Dotted loosestrife is not invasive, but the ground elder is a serious and pernicious weed. It should be treated as hazardous waste and disposed of in a licensed landfill site.

6 REFERENCES

- Averis, A., Averis, B., Birks, J., Horsfield, D., Thompson, D. & Yeo, M. (2004). *An Illustrated Guide to British Upland Vegetation*. Peterborough, Joint Nature Conservation Committee (JNCC).
- Dahl, E. and Hadac, E. (1941) Strandgesellschaften der Insel Ostoy in Oslofjord. Eine pflanzensoziologische Studie. *Nytt Magasin for Naturvidenskapene B*, 82, 251-312.
- Department for Communities and Local Government, (2012). *The National Planning Policy Framework*.
- Hill, M.O. (2011). TABLEFIT. Version 1.1.
- In Touch Geospatial Services (2023). <https://intouchgeospatial.com/wp-content/uploads/2023/09/biodiversity-net-gain-and-gis-a-practical-guide.pdf>
- Paton, J. A. (1999). *The Liverwort Flora of the British Isles*. Harley Books.
- Poore, M. E. D. (1955). The Use of Phytosociological Methods in Ecological Investigations: I. The Braun-Blanquet System. *The Journal of Ecology*, Vol. 43, 1, pp. 226-244.
- Rackham, O. (1986). *The History of the Countryside*. Weidenfeld and Nicolson.
- Rodwell, J. S. (1991a). *British Plant Communities. Volume 1: Woodlands and scrub*. Cambridge University Press.
- Rodwell, J. S. (1991b). *British Plant Communities. Volume 2: Mires and heaths*. Cambridge University Press.
- Rodwell, J. S. (1992). *British Plant Communities. Volume 3: Grasslands and Montane Communities*. Cambridge University Press.
- Rodwell, J. S. (1995). *British Plant Communities. Volume 4: Aquatic communities, swamps and tall-herb fens*. Cambridge University Press.
- Rodwell, J. S. (2006). *British Plant Communities. Volume 5: Maritime communities and vegetation of open habitats*. Cambridge University Press.
- Rodwell, J. S. (2006). *National Vegetation Classification: User's Handbook*. JNCC, Cambridge.
- Smith, A. J. E. (2003). *The Moss Flora of Britain and Ireland*. Second Edition. Cambridge University Press.
- Stace, C. (2019). *New Flora of the British Isles*. Fourth Edition. C&M Floristics.

APPENDIX A: PHOTOGRAPHS



Photograph 1: The site is covered by MG1 *Arrhenatherum elatius* false oat grassland.



Photograph 2: Large amounts of dotted loosestrife *Lysimachia punctata* and ground elder *Aegopodium podagraria* have been dumped at the site. Both of these are alien species (the latter is considered to be an archaeophyte).



Photograph 3: There is a small area of species rich grassland in the south west corner. This has occasional plants of yellowwort.



Photograph 4: The wet areas of the site are being colonised by grey willow and osier.



Photograph 5: The tussocky grassland is already being colonised by brambles and sloe.



Photograph 6: Pedunculate oak saplings are quite common.

APPENDIX B: GLOSSARY OF TERMS

Character species	Species that show fidelity to a particular association.
Constancy Class	This is an indication of frequency of a species with the community. The Roman numeral I = 1-20%, II = 21-40%, III = 41-60%, IV = 61-80% and V = 81-100%.
Differential species	Species that can be used to differentiate between different associations.
Eutrophication	This is the enrichment of soil by agricultural chemicals or by the seepage of organic manure. Nettles (<i>Urtica dioica</i>) are a good indicator of eutrophication.
Flood-plain mire	An area of vegetation beside a stream or river. The ground is often flooded and may or may not have a peat layer. The vegetation can be very species-rich.
Grassland	A grass-dominated plant community that is maintained by grazing, cutting or burning.
Marshy grassland	This covers a very wide range of plant communities. The ground is usually permanently water and can be dominated by rushes. Some sites can be very species rich and support orchids and rare plants.
Mesotrophic	Of intermediate nutrient status.
Neutral Grassland	Neutral grasslands are defined as “Agricultural grasslands (and related mown or grazed communities) developed on mesotrophic to eutrophic soils where neither nutrient deficiency, nor soil toxicity problems occur. The management that they receive and the water regime throughout the year determine these plant communities.”
NVC	The Nature Conservancy Council established the National Vegetation Classification project in August 1975. Its remit was to undertake a phytosociological classification of natural, semi-natural and artificial habitats in Great Britain (but excluding Northern Ireland). NVC surveys are sometimes referred to as ‘Phase Two Surveys’.
Pasture	Pasture is ‘neutral grassland’ that is permanently used for grazing animals. The name pasture is derived from the Latin word <i>pastura</i> . In medieval times the majority of pasture was on higher ground, while the meadows were in the valleys.
Quadrat	A defined plot of vegetation usually marked out with a square or rectangular grid.

Relevé	A picture of the vegetation; usually composed of a species list from a quadrat of defined area and a description of the physical features of the stand of vegetation.
Ruderal	These are plants of waste ground. The word is derived from the Latin <i>rudera</i> , the plural of <i>rudus</i> , meaning 'rubble'.
Stand	An area of homogeneous vegetation.
Sedge swamp	A sedge-dominated area that is often covered with water for parts of the year. Sedge swamp is often very species-poor.

APPENDIX C: RELEVÉ DATA

APPENDIX 3

Statutory Biodiversity Metric (Provided Separately)



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