Kintore Hydrogen Plant
Indicative Biodiversity Net Gain Feasibility Assessment

September 2024

CONTROL SHEET

Client: Kintore Hydrogen Limited
Project Title: Kintore Hydrogen Plan
Report Title: Indicative Biodiversity Net Gain Feasibility Assessment
Document number: 14331
Project number: 378762

Issue Record

Issue	Status	Author	Reviewer	Approver	Issue Date
1	Final	ACS/JB	JEP	GN	09/09/2024
2	Final V2	ACS/JB	JEP	GN	24/09/2024

EnviroCentre Limited Office Locations:

Glasgow **Edinburgh** **Inverness** **Banchory**

Registered Office: Craighall Business Park 8 Eagle Street Glasgow G4 9XA
Tel 0141 341 5040 info@envirocentre.co.uk www.envirocentre.co.uk

EnviroCentre Limited is registered in Scotland under no. SC161777.

VAT no. GB 348 6770 57.

EXECUTIVE SUMMARY

EnviroCentre Limited was commissioned by Kintore Hydrogen Limited to conduct an indicative Biodiversity Net Gain (BNG) Feasibility Assessment of a site south of Kintore, Aberdeenshire. The site covers over 135ha of neutral and acid grassland, lowland mixed deciduous woodland, wet woodland, coniferous woodland, scrub, lowland fens, rivers, standing water and buildings.

The aim of the indicative BNG Feasibility Assessment was to use the DEFRA Statutory Metric to determine if the development of an electrolysis plant and associated infrastructure would allow for BNG.

Proposed plans involve the construction of the electrolysis plant itself, an underground electrical connection into the nearby substation, an underground hydrogen export pipeline, and underground water intake and discharge pipelines to the River Don.

Based on the indicative layout plans, the loss of all existing habitats and successful subsequent implementation of the landscaping proposals is likely to lead to a 15.59% gain in habitat units, 15.10% gain in hedgerow units, and 2.68% gain in watercourse units.

Opportunities for biodiversity enhancement outside of the metric include:

- Installation of a range of bat boxes mounted on suitable trees to provide permanent roosting opportunities.
- A range of bird nesting boxes could be mounted on proposed and retained trees to provide permanent nesting opportunities.
- Creation of log piles within 10m of existing watercourses (excluding the River Don) to enhance sheltering and basking opportunities for amphibians including common toad, small mammals including hedgehog, and a range of invertebrates.
- Provision of artificial hedgehog nests within woodland and/or scrub adjacent to site boundaries to provide additional hibernation, resting and breeding opportunities.
- Provision of ‘insect hotels’ and bee banks to maximise refuge, breeding, and overwintering opportunities for invertebrates.

Contents

Executive Summary i
1 Introduction 1
1.1 Terms of Reference 1
1.2 Scope of Report 1
1.3 Site Description 1
1.4 Development Description 2
1.5 Legislation and Planning Policy 2
1.6 Report Usage 2
2 Methods 4
2.1 Names and Qualifications of Surveyors 4
2.2 Habitat Survey 4
2.3 Condition Assessment 4
2.4 Habitat Distinctiveness 5
2.5 Habitat Condition 6
2.6 Strategic Significance 6
2.7 Risk Factors 6
2.8 Encroachment 7
2.9 Disclaimer 8
2.10 Limitations 8
3 Baseline Conditions 9
3.1 Habitat Descriptions 9
3.2 Baseline Assessment 14
4 Feasibility of Biodiversity Net Gain 16
4.1 Proposed Development Biodiversity Calculations 16
4.2 Design and Management Suggestions 16
4.3 Recommendations for Further Biodiversity Gain 17

Appendices

A Indicative Layout Plan
B Habitats Plan
C MoRPH Watercourse Plan

1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre Limited was commissioned by Kintore Hydrogen Limited to conduct an indicative Biodiversity Net Gain (BNG) Feasibility Assessment of a site south of Kintore, Aberdeenshire to inform development of an electrolysis plant.

The 'site' is defined as the area demarcated by the red line boundary and the 'survey area' constitutes the area of the 'site' plus appropriate buffers, as shown in the Survey Area Plan in Appendix A.

The results and recommendations in this document relate to the site boundary as provided by the client at the time of the survey.

1.2 Scope of Report

The aim of the indicative BNG Feasibility Report is to assess the baseline habitats on site and evaluate the proposed landscape change to conclude whether a net gain in biodiversity can be achieved. The objectives were as follows:

- Conduct a habitat survey to confirm all broad habitats on site, including classification of habitat type, distinctiveness, condition, and strategic significance;
- Establish the theoretical value of biodiversity within the site pre- and post-development based on indicative development and landscaping proposals;
- Assess whether the project can deliver BNG for the design options being considered;
- Propose design and management suggestions, including use of any measures to avoid, minimise and compensate biodiversity loss, with the aim of maximising BNG, and where required, establish parameters of any biodiversity offsetting; and
- Identify the opportunities to deliver ecological enhancements outside of the BNG metric.

1.3 Site Description

The site is located south of Kintore, centred at National Grid reference: NJ 78276 14343, 91m above sea level. Habitats within the site comprise agricultural land, grassland, scrub, trees, heathland, woodland, residential and ruined buildings. The site also includes parts of several watercourses including the River Don, Park Burn, Dewsford Burn, Tuach Burn and Silver Burn and a pond in the central region.

The site comprises three main areas and a series of thin corridors between and to the south of the three main areas. The site is bounded to the north by the B977, the Harthills plantation and agricultural fields, to the east by the River Don, and to the south and west by agricultural fields. The site is crossed by the B977 in the west and the A96 and the Rushlach in the east.

In the wider landscape, a mostly industrial area is found east of the site, the town of Kintore to the northeast and with the remaining surrounding landscape being dominated by woodland, pastures and agricultural land. The electrolysis plant element of the proposed development is located within the north western part of the overall application boundary.

1.4 Development Description

The main elements of the development are the electrolysis plant, located west of Kintore 400 kV substation; a short underground electrical connection into the substation; an underground hydrogen export pipeline to a connection point on the existing high-pressure natural gas pipeline west of the A96; and underground water intake and discharge pipelines to the River Don. At the River Don, there will be intake and outfall structures on the south bank and a pumping station.

1.5 Legislation and Planning Policy

National policies and legislation of relevance to the BNG Feasibility Assessment, through which BNG is targeted, include:

- Nature Conservation (Scotland) Act 2004
- National Planning Framework 4
- Natural Environment and Rural Communities Act (2006) Section 41 (S. 41)[1]
- Scottish Biodiversity List (SBL)[2]
- Scottish Biodiversity Strategy to 2045[3]
- Scottish Planning Policy (SPP: 2014)
- Planning (Scotland) Act 2019
- Scottish Government Draft Planning Guidance on Biodiversity[4]
- NatureScot's work on a biodiversity metric[5]

Policies identified within the Aberdeenshire Local Development Plan 2023[6] and the North East Scotland Biodiversity Partnership (NESBiP) Biodiversity Action Plan[7] aim to protect and improve any natural habitats and features of importance, aiding the assessment of strategic significance (Section 2.6).

1.6 Report Usage

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre Limited.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre Limited for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

Whilst the Client has a right to use the information as appropriate, EnviroCentre Limited retains ownership of the copyright and intellectual content of this report. Any distribution of this report should be managed to avoid compromising the validity of the information or legal responsibilities held by both

[1] https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england
[2] https://www.nature.scot/doc/scottish-biodiversity-list
[3] Scottish Government (2023) Scottish Biodiversity Strategy to 2045: Tackling the Nature Emergency in Scotland. https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/09/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland-2/documents/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/govscot%3Adocument/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland.pdf
[4] https://www.gov.scot/publications/scottish-government-draft-planning-guidance-biodiversity/
[5] https://www.nature.scot/doc/biodiversity-metric-scotlands-planning-system-key-issues-consultation
[6] https://online.aberdeenshire.gov.uk/ldpmedia/LDP2021/AberdeenshireLocalDevelopmentPlan2023IntroductionAndPolicies.pdf
[7] https://www.nesbiodiversity.org.uk/

2 METHODS

2.1 Names and Qualifications of Surveyors

This report was written by Lead Ecologist Jake Brendish who is an associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM), reviewed by Lead Senior Ecologist Jennifer Paterson who is a full member of CIEEM (MCIEEM) and Associate Director Gemma Nixon who is a Chartered member of CIEEM (CEcol MCIEEM).

The habitat survey and condition assessments were undertaken by EnviroCentre Lead Ecologist Jake Brendish ACIEEM and Lead Senior Ecologist Alexandria Shaw ACIEEM.

2.2 Habitat Survey

A UK Habitat Classification (UKHab) Survey was carried out in accordance with the user manual[8]. UKHab is a hierarchical system for rapidly recording and classifying habitat via satellite imagery and field survey. The system comprises 5 levels of Primary Habitats which include ecosystems, broad habitats, priority habitats and Annex I habitats, along with non-hierarchical secondary codes which provide information on the environment, management and origin of Primary Habitats. The secondary codes are also used to map habitat mosaics and identify notable habitat features. The information collected is used to identify ecologically sensitive features and recommend mitigation and enhancement measures in connection with a proposed development.

The surveyor utilised the UKHab Version 2.0 Professional edition with a Minimum Mapping Unit (MMU) of 25m^2 and aimed to categorise habitats up to level 5. Where the level 5 habitat could not be determined or is not reflective of the habitat type due to a lack of indicative species, habitats were categorised to level 4 or the broader level 3 habitat.

Where present, point data such as scattered scrub and scattered tree is not included in the assessment, with the dominant primary habitat type selected instead (i.e. the habitat with the greatest area covered).

Where applicable, alterations to UKHab symbology on maps may occur for clarity.

2.3 Condition Assessment

2.3.1 Assessment Framework

For the purpose of the BNG Feasibility Report, the baseline habitats on site and any proposed habitats have been assessed using the DEFRA Statutory Metric in line with the user guide[9] and supporting

[8] UKHab Ltd (2023). UK Habitat Classification Version 2.0. Available at: https://www.ukhab.org.
[9] Department for Environment, Food and Rural Affairs (2023). *The Statutory Biodiversity Metric: User Guide (draft)*. Available at: https://assets.publishing.service.gov.uk/media/65673fee750074000d1dee31/The_Statutory_Biodiversity_Metric_-_Draft_User_Guide.pdf.

documents[10], in the absence of a Scottish specific metric. The principles of biodiversity net gain[11] have been considered throughout this process.

2.3.2 Habitat Measurements

The Statutory Biodiversity Metric includes separate calculations for area and linear habitats. Overall, there are three broad categories of habitats for which scores are calculated:

- Area habitats (such as grasslands, woodlands and mudflats) measured in hectares;
- Linear hedgerows and lines of trees measured in kilometres[12]; and
- Linear rivers and streams measured in kilometres.

Baseline habitat measurements were carried out in line with the results of the Habitat Survey. Measurements were predominantly made using open source mapping software (QGIS); however, habitats have been ground-truthed during the field survey.

All measurements were entered to the nearest 0.01ha in area and 1m in length.

Habitats which are to be 'reinstated' (to the original condition) within two years of works commencing, are considered as 'retained' within the BNG metric calculation as per guidance.

2.4 Habitat Distinctiveness

Habitats are assigned to distinctiveness bands automatically within the Statutory Biodiversity Metric. These are pre-determined for each primary habitat or linear feature and consider species richness, rarity (at local, regional, national and international scales), and the degree to which a habitat supports species rarely found in other habitats.

Under the current Metric definitions, habitats are considered to be of High or Very High distinctiveness only if listed under S.41 of the NERC Act: a list of priority habitats in England. Following CIEEM advice on adapting distinctiveness data for use in Scotland[13], categories have been assigned according to the SBL with reference to the existing S.41 criteria. Both S.41 and SBL priority habitats are derived from UK Biodiversity Action Plan (UKBAP) definitions[14]. These adapted definitions are shown in Table 2.1 below.

Table 2.1: Distinctiveness Assessments

Category	Definition
Very High	Priority Habitats featured on the SBL that are highly threatened, internationally scarce and require conservation action *e.g.* rivers, native pine woodlands; blanket bog
High	Priority Habitats featured on the SBL not requiring conservation action *e.g.* upland flushes, fens and swamps
Medium	Semi-natural habitats not classed as a Priority Habitat *e.g.* other neutral grassland

[10] Natural England (2023) *The Biodiversity Metric Supporting Documents (JP039)*. Available at: https://publications.naturalengland.org.uk/publication/6049804846366720.
[11] CIEEM (2019) Biodiversity Net Gain Good Practice Principles for Development. Available at: https://cieem.net/biodiversity-net-gain-guidance-published/.
[12] The Defra 'Hedgerow Survey Handbook' has been used to determine whether or not a feature is a hedgerow and to accurately describe the type of hedgerows present: DEFRA. (2007). *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK.* Defra, London. PB1195.
[13] CIEEM (2021) Biodiversity Net Gain in Scotland: Briefing Note for Local Planning Authorities. Available at: https://cieem.net/resource/biodiversity-net-gain-in-scotland-briefing-note-for-local-planning-authorities/
[14] Joint Nature Conservation Committee (2011) UK Biodiversity Action Plan: Priority Habitat Descriptions. Available at: https://hub.jncc.gov.uk/assets/2728792c-c8c6-4b8c-9ccd-a908cb0f1432

Category	Definition
Low	Habitat of low biodiversity value *e.g.* agricultural temporary grass and clover ley; intensive orchard; rhododendron scrub
Very Low	Little or no biodiversity value *e.g.* hard standing or sealed surface

2.5 Habitat Condition

Habitat Condition is a measure of quality based on the biodiversity value of the habitat relative to others of the same type.

Most baseline habitats will be assigned a result of Good, Moderate or Poor based on the scoring instructions provided within the condition criteria set out in the technical supplement[10], with the exception of river habitats that are assessed via Cartographer[15]. In order to reflect the preliminary design stage, condition assessments of habitats to be created will illustrate best and worst-case scenarios.

Certain habitats are allocated a fixed condition score and do not require an assessment. These are marked 'No assessment required – condition fixed at 'Poor'' for some Low distinctiveness habitats, or 'No assessment required – condition N/A' for all Very Low distinctiveness habitats.

It must be noted that during a condition assessment, a habitat parcel, hedgerow length or watercourse may be deemed to contain areas of differing condition. Any differences within a habitat should trigger a new condition assessment to ensure accurate representation.

2.6 Strategic Significance

Strategic significance relates to the spatial location of a habitat parcel and works at a landscape scale. It utilises published local strategies and objectives to identify local priorities for targeting biodiversity and nature improvement.

Strategic significance definitions are detailed within Table 2.2. The Aberdeenshire Local Development Plan[16] and NESBiP LBAP[17] was used to aid in the determination of 'Strategic Significance'.

Table 2.2: Strategic Significance Assessments

Category	Definition
High Strategic Significance	Within area formally identified in local strategy, plan or policy
Medium Strategic Significance	Location ecologically desirable but not identified in a local strategy, plan or policy (As this may be based on professional judgment, detailed justification must be provided)
Low Strategic Significance	Not identified in a local strategy, plan or policy OR No strategy or plan is in place in the area

2.7 Risk Factors

The scores for post-development habitats are estimated by accounting for the characteristics above (distinctiveness, condition and spatial significance), as well as additional factors to account for the risk

[15] https://cartographer.io/
[16] North East Scotland Biodiversity Partnership (Page 59)
[17] https://www.nesbiodiversity.org.uk/

associated with creating, restoring or enhancing habitats. Temporal, difficulty and spatial risks are standardised components considered within the Statutory Biodiversity Metric as summarised below.

2.7.1 Temporal Risk

A score based on how long the habitat takes to establish and reach target condition and any advances or delays in habitat creation as recommended by the HM Treasury Green Book[18].

Where a time lag occurs between habitat loss and creation of new habitat, there will be a loss of biodiversity for a period of time. This is a pre-determined value measured in years and will vary between habitat types based on the average time taken to achieve 'target condition'.

It is recognised that there will be situations where habitat creation occurs prior to habitat loss or may be delayed beyond the point at which the baseline losses occur. A review of the proposals and recommended habitat planting has been carried out as part of this BNG Feasibility Assessment. Where there is likely to be a significant advancement or delay in habitat creation, measured in years, this has been recorded within the metric and appropriate evidence provided.

2.7.2 Difficulty Risk

A pre-assigned score automatically generated by the Metric to reflect the difficulty in creating/restoring/enhancing the required habitat.

The difficulty risk is pre-assigned based on available science/expert opinion and uncertainty in the effectiveness of management techniques used to restore or create habitat. There are two separate difficulty multipliers assigned to each habitat, one for creation and one for enhancement/restoration, recognising that the technical challenges will not necessarily be the same for both.

2.7.3 Spatial Risk

A score based on the distance between the site of habitat loss and the site where creation / enhancement is provided.

Spatial risk has not been included in the preliminary post-development calculation as it is assumed that habitat compensation and retention will be delivered within the scheme's footprint or within the same ecological network as the loss occurs rather than off-site.

2.8 Encroachment

Encroachment refers to any development adversely affecting the natural function of watercourses or adjacent riparian habitat, including both physical structures and management practices. Two forms of encroachment are assessed within the Metric: riparian zone encroachment and watercourse encroachment.

[18] https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

2.8.1 Riparian Zone Encroachment

Any feature or intervention within the riparian zone that reduces the quantity, quality or ecological function of the riparian habitat.

The width of the riparian zone is determined by the type of watercourse in question: 10m for all rivers, streams and canals, and 5m for ditches. An assessment is undertaken for each bank (either No Encroachment, Minor, Moderate, or Major), considering the nature of the encroachment in addition to its distance from the watercourse.

2.8.2 Watercourse Encroachment

Any feature or action that adversely affects the natural function of the watercourse, or results in localised changes in habitat, species and migratory pathways.

While riparian zone encroachment is concerned with the adjacent habitat, watercourse encroachment accounts for the impact of development on the function of the river corridor itself. A single assessment is undertaken for the channel and both banks, with total encroachment considered to be either absent ('No Encroachment'), Minor, or Major.

2.9 Disclaimer

Habitat conditions can change frequently, primarily as a result of management. The reported baseline conditions provide a snapshot of the habitats present at the time of survey.

Please note that the indicative BNG Feasibility Assessment does not cover requirements arising from potential impacts on protected species and off-site designated sites. These are addressed in the EIA Report, Volume 2, Chapter 8: Ecology and Biodiversity.

2.10 Limitations

2.10.1 Field Survey

Surveyors were unable to access one watercourse (given the name 'Watercourse 4') to carry out a condition assessment. While the removal of Watercourse 4 from the Metric will have affected the baseline habitat value, the watercourse is set to be retained within the proposed development layout and its exclusion is therefore not considered to be a significant concern.

2.10.2 Biodiversity Metric

It should be noted that the accuracy of habitat area measurements is limited by the form of baseline data collection and resolution of development proposal plans. In this instance, baseline habitat areas have been calculated by cross referencing illustrative Habitats Plans with field survey work. Post-development habitat areas have been measured from an Illustrative Site Masterplan drawing.

3 BASELINE CONDITIONS

3.1 Habitat Descriptions

A total of 19 UKHab primary habitat types were recorded on site, detailed further below.

A UKHab survey plan is shown in Appendix B and MoRPH Watercourse Plan shown in Appendix C.

3.1.1 Other Lowland Acid Grassland

Lowland acid grassland was present in the north of the western region of the site and comprised dominant wavy hair grass (*Avenella flexuosa*), fescue (*Festuca sp*.), frequent lesser stitchwort (*Stellaria graminea*) and heath bedstraw (*Galium saxatile*), occasional common heather (*Calluna vulgaris*), sweet vernal grass (*Anthoxanthum odoratum*) and cocksfoot (*Dactylis glomerata*). Rarely observed yarrow (*Achillea millefolium*) and springy turf-moss (*Rhytidiadelphus squarrosus*) were also present.

Scattered mature rowan (*Sorbus aucuparia*), Scot's pine (*Pinus sylvestris*) and broom (*Cytisus scoparius*) were also present in this area.

3.1.2 Other Neutral Grassland

Other neutral grassland was identified within the east, centre and west of the site and varied in species composition between locations, however in general the species assemblage was noted to have >8 species per m^2 and comprised of dominant Yorkshire-fog (*Holcus lanatus*), cocksfoot, smooth meadow-grass (*Poa pratensis*) and sheep's fescue (*Festuca ovina*), with abundant cow parsley (*Anthriscus sylvestris*), comfrey (*Symphytum sp.*) and foxglove (*Digitalis purpurea*). Frequent bush vetch (*Vicia sepium*), dandelion (*Taraxacum sp.*), ribwort plantain (*Plantago lanceolata*), mouse-ear chickweed (*Cerastium fontanum*) and cleavers (*Galium aparine*) were present. Occasional rosebay willowherb (*Chamaenerion angustifolium*), nettle (*Urtica dioica*), red campion (*Silene dioica*), soft rush (*Juncus effusus*) and common knapweed (*Centaurea nigra*) were also present.

The area of other neutral grassland in the east also contained a mixture of ornamental species including daffodil (*Narcissus sp.*) and hybrid bluebell (*Hyacinthoides × massartiana*), and scattered broom, gorse (*Ulex europaeus*), bramble (*Rubus fruticosus agg.*), rowan, and goat willow (*Salix caprea*).

Deschampsia neutral grassland was present within the north of the west region of the site and comprised dominant tufted hair grass (*Deschampsia cespitosa*), with abundant creeping soft grass (*Holcus mollis*), common sorrel (*Rumex acetosa*), marsh thistle (*Cirsium palustre*) and soft rush (*Juncus effusus*).

A field in the west of the site comprised *Holcus-Juncus* neutral grassland habitat, with dominant Yorkshire fog and soft rush, frequent tufted hair grass, sharp flowered rush (*Juncus acutiflorus*), creeping buttercup (*Ranunculus repens*), marsh willowherb (*Epilobium palustre*) and cocksfoot were also present, with sweet vernal grass, sheep's sorrel (*Rumex acetosella*), marsh thistle, common hogweed, creeping thistle (*Cirsium arvense*) and nettle also noted. Rarely observed wavy bittercress (*Cardamine flexuosa*) was also identified.

3.1.3 Modified Grassland

Modified grassland was found in locations throughout the site and was used predominantly as pasture farmland which has been/ currently grazed by cattle and sheep. The species composition varied between fields (as detailed in the species list below), however in general the species assemblages noted for all fields was low (<9 species per m^2). The fields were dominated by or had a mix of either Yorkshire fog, perennial rye grass, cocksfoot, smooth meadow grass, meadow foxtail (*Alopecurus pratensis*), sweet vernal grass and timothy grass (*Phleum pratense*). Frequently observed were white clover, field buttercup (*Ranunculus arvensis*), broadleaved dock (*Rumex obtusifolius*), creeping thistle, yarrow, ragwort, daisy, ribwort plantain and meadowsweet (*Filipendula ulmaria*) were also identified as abundant.

An area of dense soft rush was present in the modified grassland field adjacent to the mosaic wetland habitat in the northwest of the site.

Scattered gorse and broom were present along field boundaries in some of the modified grassland fields.

Scattered trees ranging from young to mature were also present within some areas of modified grassland and include: lodgepole pine (*Pinus contorta*), ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*).

Dry stone dykes create the majority of the field boundaries where modified grassland is present, alongside metal post and wire fencing.

3.1.4 Wet Woodland

Areas of wet woodland were present in the east and west of the site.

The area of wet woodland in the east of the site, north of the railway line and along the tributary of the River Don was dominated by semi mature alder (*Alnus glutinosa*) with occasional downy birch (*Betula pubescens*), with the understory comprising of false oat grass (*Arrhenatherum elatius*), creeping soft grass, meadowsweet, soft rush, sharp flowered rush, tormentil (*Potentilla erecta*), perforate St John's-wort (*Hypericum perforatum*), brooklime (*Veronica beccabunga*), reed canary grass (*Phalaris arundinacea*), herb Robert (*Geranium robertianum*), marsh bedstraw (*Galium palustre*), common reed (*Phragmites australis*), reed sweet grass (*Glyceria maxima*), broadleaved dock, common hogweed (*Heracleum sphondylium*) and goosegrass. Monkey flower (*Erythranthe guttata*) was also present.

The wet woodland in the west of the site comprises dominant semi-mature to mature Scot's pine with a ground layer of field horsetail, sharp flowered rush, soft rush, *Sphagnum palustre*, common haircap moss (*Polytrichum commune*) and sedges.

3.1.5 Lowland Mixed Deciduous Woodland

The lowland deciduous woodland in central region of the site consists of the ancient native birch woodland, containing frequent mature Scot's pine and semi-mature rowan. A copse of mature wild cherry (*Prunus avium*) is present in this area, with multiple trees in good condition, some displaying veteran characteristics.

The understory consists of a mosaic containing grassland and dry heath mosaic with a sward consisting of dominant heather (*Calluna vulgaris*), abundant devils' bit scabious (*Succisa*

pratensis), tufted hair grass and sweet vernal grass and frequent broom, common chickweed (*Stellaria media*), sharp flowered rush, jointed rush (*Juncus articulatus*), glaucous sedge (*Carex flacca*), bilberry (*Vaccinium myrtillus*), and hairy mouse ear (*Cerastium fontanum*).

Cattle were observed within the woodland grazing during ecological survey.

3.1.6 Other Broadleaved Woodland

Other broadleaved woodland was present throughout the site mostly as linear features or thin strips of woodland.

One block in the east was likely previously planted as avenue trees along the existing farm access track or boundary, due to the linear nature of the trees, which has since expanded creating a wider block of trees (2-3 trees wide). The species comprise a mix of semi mature silver birch, ash, oak (*Quercus robur*), beech, sycamore (*Acer pseudoplatanus*) and rowan. Regenerating ash, sycamore and beech were also noted.

Four further treelines were present in the east, with one comprising semi mature ash, one comprising mature ash and beech and two comprising semi-mature rowan, elm (*Ulmus sp.*) and ash, with broom and gorse also present.

Three treelines were present in the central region of the site, with two comprising semi-mature cherry, one comprising semi-mature sycamore and one comprising semi-mature ash.

Two treelines were present in the west of the site and both comprised young sycamore.

A block of other broadleaved woodland comprising young-semi-mature silver birch was present in the north of the western region of the site, within a horse paddock.

A block of other broadleaved woodland present in the north east of the western region of the site and spilt by an access track, and comprised of mature beech, semi-mature rowan, ash, sycamore and silver birch, with an understory comprising Yorkshire fog, cocksfoot, cow parsley, foxglove, bush vetch, goosegrass and red campion.

3.1.7 Native Pine Woodland

Within the north of the west of the site, blocks of native pine woodland were present, comprising of dominant mature and semi-mature Scot's pine which had likely originated from self-seeding due to the non-uniform nature of the trees, with occasional mature rowan, beech, larch and silver birch also being present. The ground story comprised Yorkshire fog, broadleaved dock, nettle, goosegrass and climbing corydalis (*Ceratocapnos claviculata*), wood sorrel (*Oxalis acetosella*), chanterelle mushrooms (*Cantharellus cibarius*) and tufted hair grass.

3.1.8 Other Coniferous Woodland

Two blocks of Sitka spruce (*Picea sitchensis*) plantation were present in the west of the site and comprise semi-mature trees, with a relatively bare understory due to the densely packed nature of the woodland blocks.

A section of other coniferous woodland was also present in the north of the western region of the site, which has been planted and extends northwards into a larger woodland block and spans the north boundary and comprise Scot's pine, with frequent beech. This area of woodland is included within the

NWSS as 'Upland Birch woodland', however it is likely the polygon for this required reshaping since the area was replanted with Scot's pine.

3.1.9 Gorse Scrub

Areas of gorse scrub are present throughout the site and comprise dominant gorse.

3.1.10 Mixed Scrub

Areas of mixed scrub are present throughout the site and comprise no dominant species. The mixed scrub comprises a mix of broom, privet (*Ligustrum sp.*), with scattered sycamore and rowan.

3.1.11 Lowland Fens

Lowland fen habitat was present in the north of the west area of the site and comprised dominant soft rush, compact rush (*Juncus conglomeratus*), cross-leaved heath (*Erica tetralix*), heather, sweet vernal grass, blaeberry (*Vaccinium myrtillus*) and marsh pennywort (*Hydrocotyle vulgaris*). Abundant marsh thistle, marsh willowherb, sneezewort (*Achillea ptarmica*) sheep's sorrel, fen bedstraw (*Galium uliginosum*), lesser spearwort (*Ranunculus flammula*), common valerian (*Valeriana officinalis*), Yorkshire fog, marsh ragwort (*Jacobaea aquatica*), *Sphagnum fallax*, heath spotted orchid (*Dactylorhiza maculata*), creeping forget-me-not (*Myosotis secunda*), bogbean (*Menyanthes trifoliata*), marsh cinquefoil (*Comarum palustre*), marsh lousewort (*Pedicularis palustris*), water horsetail (*Equisetum fluviatile*) and ragged robin (*Silene flos-cuculi*) were observed. Frequent bog asphodel (*Narthecium ossifragum*) and young silver birch were observed and occasional wavy hair grass and bottle sedge (*Carex rostrata*). Rarely observed lesser butterfly orchid (*Platanthera bifolia*) and tufted cottongrass (*Eriophorum vaginatum*) was also recorded.

In the wetter areas, species including flea sedge (*Carex pulicaris*), carnation sedge (*Carex panicea*), heath grass, star sedge (*Carex echinata*), common yellow sedge (*Carex demissa*) and common sedge (*Carex nigra*) were present. This area also forms into small watercourse flowing down into the adjacent valley.

3.1.12 Purple Moor-grass and Rush Pastures

Areas of purple moor-grass and rush pasture were present in the east and west of the site and comprise soft rush dominant habitat with abundant sharp flowered rush, occasional angelica, marsh thistle, marsh willowherb, marsh bedstraw, Greater birds foot trefoil (*Lotus pedunculatus*), Yorkshire fog and tufted hair grass.

3.1.13 Arable Field Margins

Along the margins of arable fields in the central and eastern regions of the site, areas bordering the field boundaries had been left to grow with a sward dominated by a mix of tufted hair grass, common couch (*Elymus repens*), cocksfoot and Yorkshire fog, with creeping thistle, meadow foxtail, broadleaved dock, nettles, dandelion and cow parsley identified frequently. Teasel (*Dipsacus fullonum*), meadowsweet, goosegrass, ragwort, common chickweed, meadow buttercup (*Ranunculus acris*) and foxglove were identified occasionally. Green alkanet (*Pentaglottis sempervirens*), cuckoo flower (*Cardamine pratensis*), soft rush and bitter vetch (*Lathyrus linifolius*) were rarely identified.

One section in the central region of the site displayed damp underfoot conditions with vegetation including reed canary grass. Scattered gorse and broom were present within some of the field margins.

3.1.14 Temporary Grass and Clover Leys

Throughout the site a number of fields displayed temporary cover by grass and legume species.

The fields comprised a mix of recently sown and more mature sown legumes with dominant clover (*Trifolium sp*).

In the northeast of the site the grass cover was extensive with the sward consisting of dominant Timothy, perennial rye grass and meadow foxtail (*Alopecurus pratensis*). Fat hen (*Chenopodium album*), pineapple weed (*Matricaria discoidea*), hairy mouse ear and ox eye daisy (*Leucanthemum vulgare*) were identified occasionally.

Dry stone dykes create the majority of the field boundaries where this habitat is present, alongside metal post and wire fencing.

3.1.15 Cereal Crops

Throughout the site, a number of fields were in use for cereal crops or had been recently cut. A mixture of wheat (*Triticum aestivum*) and barley (*Hordeum vulgare*).

Dry stone dykes create the majority of the field boundaries where this habitat is present, alongside metal post and wire fencing.

3.1.16 Rivers (Priority Habitat)

The River Don is present in the north east of the site. The Don is Scotland's 6th largest river draining a catchment of 1312km^2.

The section of the River Don in the site has steeply sloping banks which are highly vegetated on the right hand bank and more exposed on the left hand bank. A range of run, riffle, glide, pools and marginal habitats are present within this section.

The two tributaries of the River Don within the site were also steeply sloping and highly vegetated, with reed canary grass and bullrush present.

3.1.17 Other Rivers and Streams

The Tuach burn, Silver burn, Dewsford burn and Park burn are present within the site, in addition to multiple unnamed burns (Table 3-1).

The Tuach and Park burns, flow east to west, appear to have been altered for field drainage and contain narrow steep heavily vegetated banks consistent with the arable field margin sward. In-channel contains occasional water-forget me not.

The Silver burn flows south to north and has been altered in the upper regions for field drainage. This burn contains narrow steep heavily vegetated banks in the upper reaches and flows through woodland in the lower reaches before joining the River Don.

The Dewsford Burn in the north west of the site flows west to east through the area of wetland and is highly vegetated. The flow in these burns was low during ecological surveys.

Table 3-1: Watercourse classification

Watercourse ID*	Length (km)	Final Condition	Riparian Encroachment (left bank / right bank)	Watercourse Encroachment
River Don (1)	2.26	Fairly Poor - Moderate	Major / Major	No Encroachment
Silver Burn 1 (2)	0.1	Fairly Poor	Moderate / Moderate	No Encroachment
Silver Burn 2 (3)	0.03	Moderate	Major / Major	No Encroachment
Unnamed River (4)[19]	-	-	-	-
Unnamed River (5)	0.01	Moderate	Major / Major	No Encroachment
Unnamed River (6)	0.10	Moderate	Major / Major	No Encroachment
Tillakae Burn (7)	0.40	Fairly Poor	Major / Major	No Encroachment
Unnamed River (8)	0.42	Fairly Poor	Major / Major	No Encroachment
Unnamed River (9)	0.30	Moderate	Major / Major	No Encroachment
Park Burn (10)	1.78	Moderate	Major / Moderate	Minor
Dewsford burn (11)	0.84	Fairly Good	Minor / No Encroachment	No Encroachment
Unnamed Burn (12)	0.02	Fairly Poor	Major/Minor	Major
Tuach Burn (13)	0.02	Moderate	Major / Major	Minor

3.1.18 Other Standing Water

A pond is present in the near the above-ground installation (AGI) for the gas connection and comprises a duck island in the centre, with shooting butts on the south aspect. Habitat surrounding the pond is dominated by tufted hairgrass and soft rush, with in-pond vegetation consisting of duckweed (*Lemna sp.*). An outflow into the Park Burn south of the pond is also present. The pond appeared to receive nutrient enrichment from the adjacent field with cows present.

Drainage ditches are also present throughout the site associated with arable fields. The majority of the drainage ditches are vegetated, with species including canary reed grass and duckweed being present. These ditches are considered likely to retain water for >4 months of the year due to the presence of low levels of water and aquatic vegetation identified during previous ecological survey.

3.1.19 Buildings

A residential building and associated outbuilding were present near the AGI.

A ruined building was present in the west of the site.

3.2 Baseline Assessment

A summary of habitats present, including assessment of condition, strategic significance, and associated trading rules[20], is provided in Table 3-2 overleaf.

[19] Watercourse 4 was inaccessible and therefore no details to determine classification were possible
[20] The Statutory Biodiversity Metric User Guide, p.12: "*The trading rules set minimum habitat creation and enhancement requirements to compensate for specific habitat losses, up to the point of no net loss. They are based on the habitat type and distinctiveness of the lost habitat.*"

Table 3-2: Summary of the Baseline Biodiversity Unit Assessment

Habitat	ha/km	Distinctiveness	Condition	Strategic Significance	Trading Rules[21]
Other lowland acid grassland	0.78	Medium	Moderate	Medium	=
Other neutral grassland	9.1	Medium	Moderate	Medium	≥
Other neutral grassland	4.01	Medium	Poor	Medium	≥
Modified grassland	1.01	Low	Good	Medium	≥
Modified grassland	59.21	Low	Poor	Medium	≥
Wet woodland	0.12	High	Moderate	Medium	=
Wet woodland	0.83	High	Poor	Medium	=
Lowland mixed deciduous woodland	0.7	High	Moderate	Medium	=
Lowland mixed deciduous woodland	0.21	High	Poor	Medium	=
Other woodland; broadleaved	0.2	Medium	Poor	Medium	≥
Other woodland; mixed	0.07	Medium	Poor	Medium	≥
Native pinewoods	2.01	High	Moderate	Medium	=
Other Scots pine woodland	0.16	Medium	Moderate	Medium	≥
Other Scots pine woodland	0.08	Medium	Poor	Medium	≥
Other coniferous woodland	0.94	Low	Poor	Medium	≥
Gorse scrub	2.35	Medium	Moderate	Medium	≥
Gorse scrub	0.39	Medium	Poor	Medium	≥
Mixed scrub	0.44	Medium	Moderate	Medium	≥
Mixed scrub	0.19	Medium	Poor	Medium	≥
Fens (upland and lowland)	0.74	Very High	Moderate	Medium	=!
Purple moor-grass and rush pastures	1.27	Very High	Moderate	Medium	=!
Arable field margins tussocky	0.04	Medium	N/A	Medium	≥
Temporary grass and clover leys	39.26	Low	N/A	Medium	≥
Cereal crops	9.07	Low	N/A	Low	≥
Ponds (non-priority habitat)	0.07	Medium	Moderate	Medium	≥
Artificial unvegetated, unsealed surface	1.32	Very Low	N/A	Low	N/A
Developed land; sealed surface	2.87	Very Low	N/A	Low	N/A
Rivers (priority habitat)	2.26	Very High	Moderate	High	=!
Other rivers and streams	0.84	High	Fairly Good	High	=
Other rivers and streams	2.64	High	Moderate	High	=
Other rivers and streams	0.46	High	Fairly Poor	High	=

[21] = Same habitat required
≥ Same broad habitat or a higher distinctiveness habitat required (≥)
=! Same habitat required – bespoke compensation option
N/A Compensation not required

4 FEASIBILITY OF BIODIVERSITY NET GAIN

Table 4-1 lists the existing and proposed size and value of the broad-scale habitats, with a calculation of net value post-development.

Table 4-1: Summary of the Baseline Biodiversity Unit Assessment

Habitat Group	Baseline		Proposed		Net Units	Justification
	ha/km	Habitat Units	ha/km	Habitat Units		
Cropland	48.37	104.70	21.99	46.84	-57.85	Large areas lost to development footprint and habitat creation.
Grassland	74.27	242.22	57.58	356.50	+114.28	Net loss of modified grassland to development footprint; large areas of neutral grassland created. Acid grassland retained.
Heathland and Shrub	3.37	27.10	3.96	28.23	+1.13	Areas of gorse and mixed scrub lost to development; compensatory creation of mixed scrub.
Lakes	0.07	0.62	0.07	0.62	0.00	N/A
Urban	4.19	0.00	39.78	3.40	+3.40	Development footprint.
Wetland	2.01	35.38	2.01	35.38	0.00	All wetland habitats retained.
Woodland & Forest	5.16	48.84	12.05	59.42	+10.58	Minor loss of lowland mixed deciduous woodland; planting to include lowland mixed deciduous woodland and mixed woodland.
Watercourse Footprint	0.08	0.00	0.08	0.00	0.00[22]	Development encroachment into River Don.
Hedgerows (km)	1.70	15.22	2.42	17.52	+2.30	Line of trees lost to development; compensatory planting of tree lines and native hedgerow.
Watercourses (km)	15.1	42.80	15.1	44.19	+1.39	Enhancement via commitment to remove INNS within the site. Consideration to nearby off-site removal in co-operation with neighbouring landowners as part of a co-ordinated INNS management plan should also be given, where possible.

4.1 Proposed Development Biodiversity Calculations

Based on the indicative layout plans, the loss of existing habitat and successful subsequent implementation of the landscaping proposals is likely to lead to a 15.59% gain in habitat units, 15.10% gain in hedgerow units, and 2.68% gain in watercourse units.

4.2 Design and Management Suggestions

A minimum target of 10% net gain has been set within the Statutory Biodiversity Metric, and although no minimum target value has been set in Scotland, there is a requirement in Scotland to demonstrate

[22] No change in units as no unit value – watercourse assessment has net increase as development offset by enhancements

'significant' enhancements. While this figure is already exceeded by the proposals for area and hedgerow habitats, opportunities to maximise possible watercourse units should be considered where feasible.

Management of the riparian zone represents the most significant opportunity for watercourse enhancement. The establishment and/or management of appropriate aquatic marginal vegetation has the potential to increase watercourse net gains to >10%. All habitat creation should comprise only native species, with grasses including common reed and reed sweet-grass (*Glyceria maxima*). For suitable forbs, see Scotia Seeds' Pond Edge Mix[23].

4.3 Recommendations for Further Biodiversity Gain

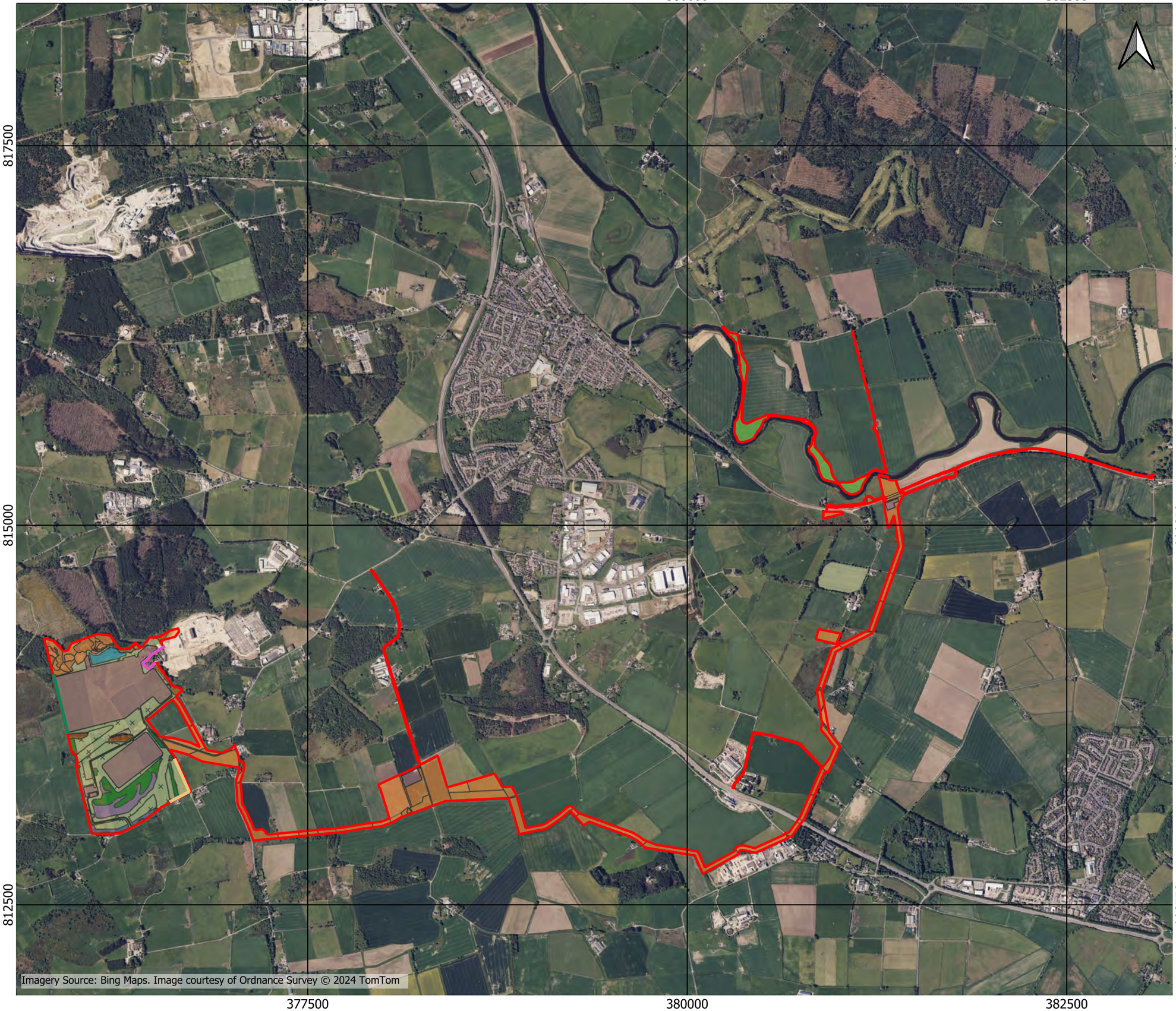
The following measures aim to enhance the site for protected and notable species within the locale:

- Installation of a range of bat boxes on trees to provide permanent roosting opportunities. Boxes should be mounted on southern or eastern aspects at a minimum height of 3m. Suitable boxes include the Schwegler 1FD bat box[24], Large Multi Chamber WoodStone Bat Box[25], and Greenwoods Ecohabitats boxes[26]. Specific locations should be agreed with a suitably experienced ecologist.
- A range of bird nesting boxes could be mounted on proposed or retained trees to provide permanent nesting opportunities. All bird boxes must be installed at a minimum height of 2m. Suitable boxes include the Vivara Pro Woodstone House Sparrow Nest Box[27], Eco Starling Nest Box[28], Schwegler Wren Roundhouse[29], Schwegler 1MR Avianex boxes[30], and Schwegler 1B Nest Box[31]. Specific locations should be agreed with a suitably experienced ecologist.
- Creation of log piles on site to enhance sheltering and basking opportunities for amphibians including common toad, small mammals including hedgehog, and a range of invertebrates. These should be located within 10m of existing watercourses (excluding the Don) and created using wood from on-site tree surgery works wherever possible.
- Provision of artificial hedgehog nests[32] to be installed within woodland and/or scrub adjacent to site boundaries to provide additional hibernation, resting and breeding opportunities.
- Provision of 'insect hotels' and bee banks[33] to maximise refuge, breeding, and overwintering opportunities for invertebrates. Insect hotels should be sited in full or partial shade, while bee banks should be located in full sun but sheltered from strong wind.

[23] https://www.scotiaseeds.co.uk/shop/pond-edge-mix/
[24] https://www.nhbs.com/1fd-schwegler-bat-box
[25] https://www.nhbs.com/large-multi-chamber-woodstone-bat-box
[26] https://www.greenwoodsecohabitats.co.uk/shop
[27] https://www.nhbs.com/vivara-pro-woodstone-house-sparrow-nest-box
[28] https://www.nhbs.com/Eco-Starling-Nest
[29] http://www.nhbs.com/1ZA-Schwelgler-Wren-Roundhouse
[30] https://www.nhbs.com/1mr-schwegler-avianex
[31] https://www.nhbs.com/1b-schwegler-nest-box
[32] https://www.nhbs.com/hedgehog-nest-box
[33] https://cdn.buglife.org.uk/2020/04/Bee-bank-booklet-4.pdf

APPENDICES

A INDICATIVE LAYOUT PLAN



Legend

- Site Boundary
- Works Footprint
- Native hedgerow
- Tree line (mixed)
- Tree line (Scots pine)
- Habitat Retained
- SuDS Basin
- Wildflower Grassland
- Woodland Planting (Deciduous)
- Mixed scrub
- Woodland Planting (mixed)
- Enhancement and Compensatory Area

Do not scale this map

Client
Kintore Hydrogen Ltd

Project
Kintore Hydrogen Plant

Title
Indicative Layout Plan

Status
Final

Drawing No.	Revision	Date
376782/GIS033		05 Sep 2024
Drawn	**Checked**	**Approved**
JB	JP	GN

Scale @ A3 — 0 200 400 600 800 m

Rev	Date	Amendment	Initials

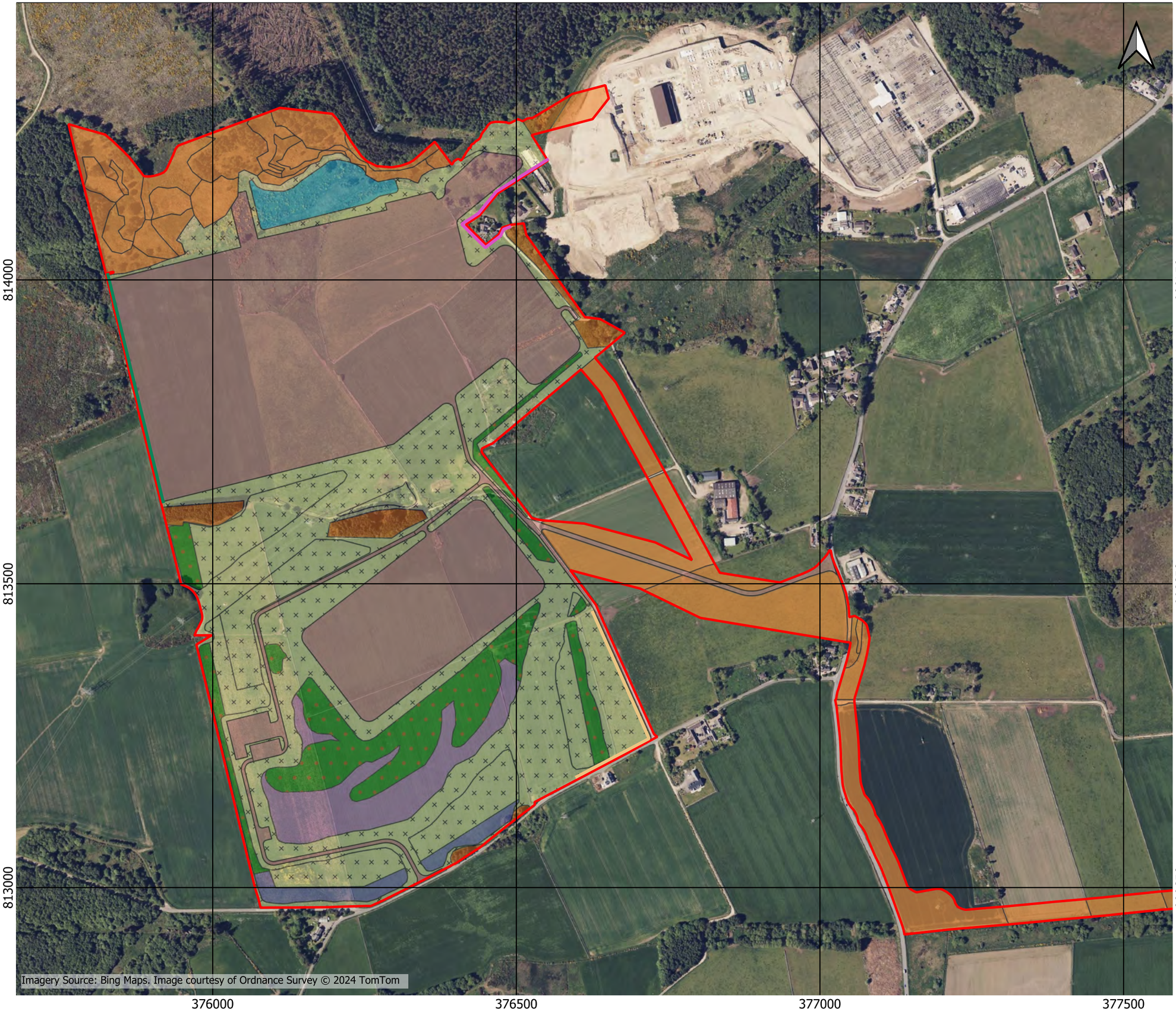
envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

376000 376500 377000 377500

814000

813500

813000



Imagery Source: Bing Maps. Image courtesy of Ordnance Survey © 2024 TomTom

Legend

- Site Boundary
- Works Footprint
- Native hedgerow
- Tree line (mixed)
- Tree line (Scots pine)
- Habitat Retained
- SuDS Basin
- Wildflower Grassland
- Woodland Planting (Deciduous)
- Mixed scrub
- Woodland Planting (mixed)
- Enhancement and Compensatory Area

Do not scale this map

Client
Kintore Hydrogen Ltd

Project
Kintore Hydrogen Plant

Title
Indicative Layout Plan - West

Status
Final

Drawing No.	Revision	Date
376782/GIS033		05 Sep 2024
Drawn	**Checked**	**Approved**
JB	JP	GN

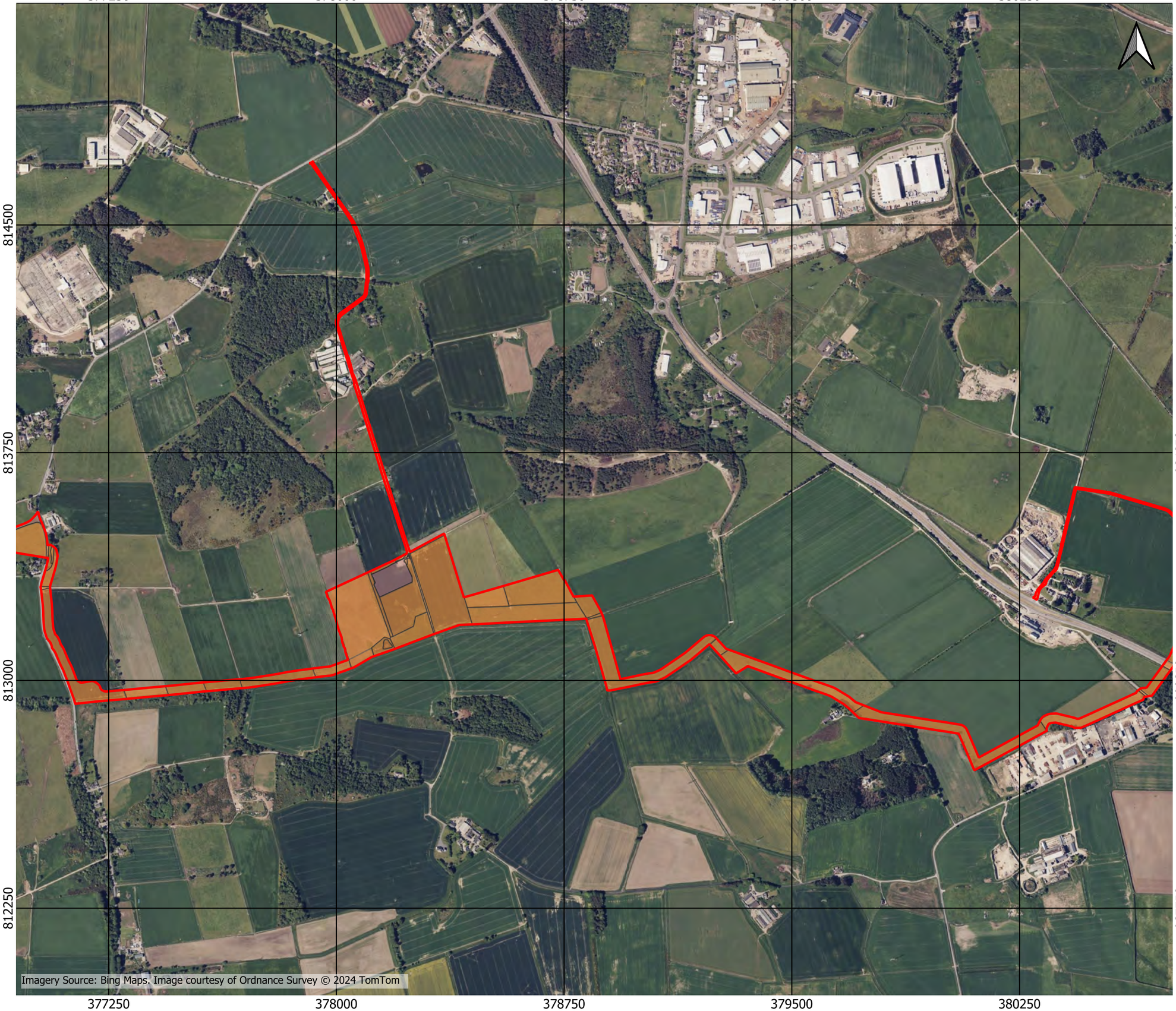
Scale @ A3 0 100 200 m

Rev	Date	Amendment	Initials

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

377250 378000 378750 379500 380250

814500 813750 813000 812250



Legend

- Site Boundary
- Works Footprint
- Native hedgerow
- Tree line (mixed)
- Tree line (Scots pine)
- Habitat Retained
- SuDS Basin
- Wildflower Grassland
- Woodland Planting (Deciduous)
- Mixed scrub
- Woodland Planting (mixed)
- Enhancement and Compensatory Area

Do not scale this map

Client
Kintore Hydrogen Ltd

Project
Kintore Hydrogen Plant

Title
Indicative Layout Plan - Centre

Status
Final

Drawing No.	Revision	Date
376782/GIS033		05 Sep 2024
Drawn	**Checked**	**Approved**
JB	JP	GN

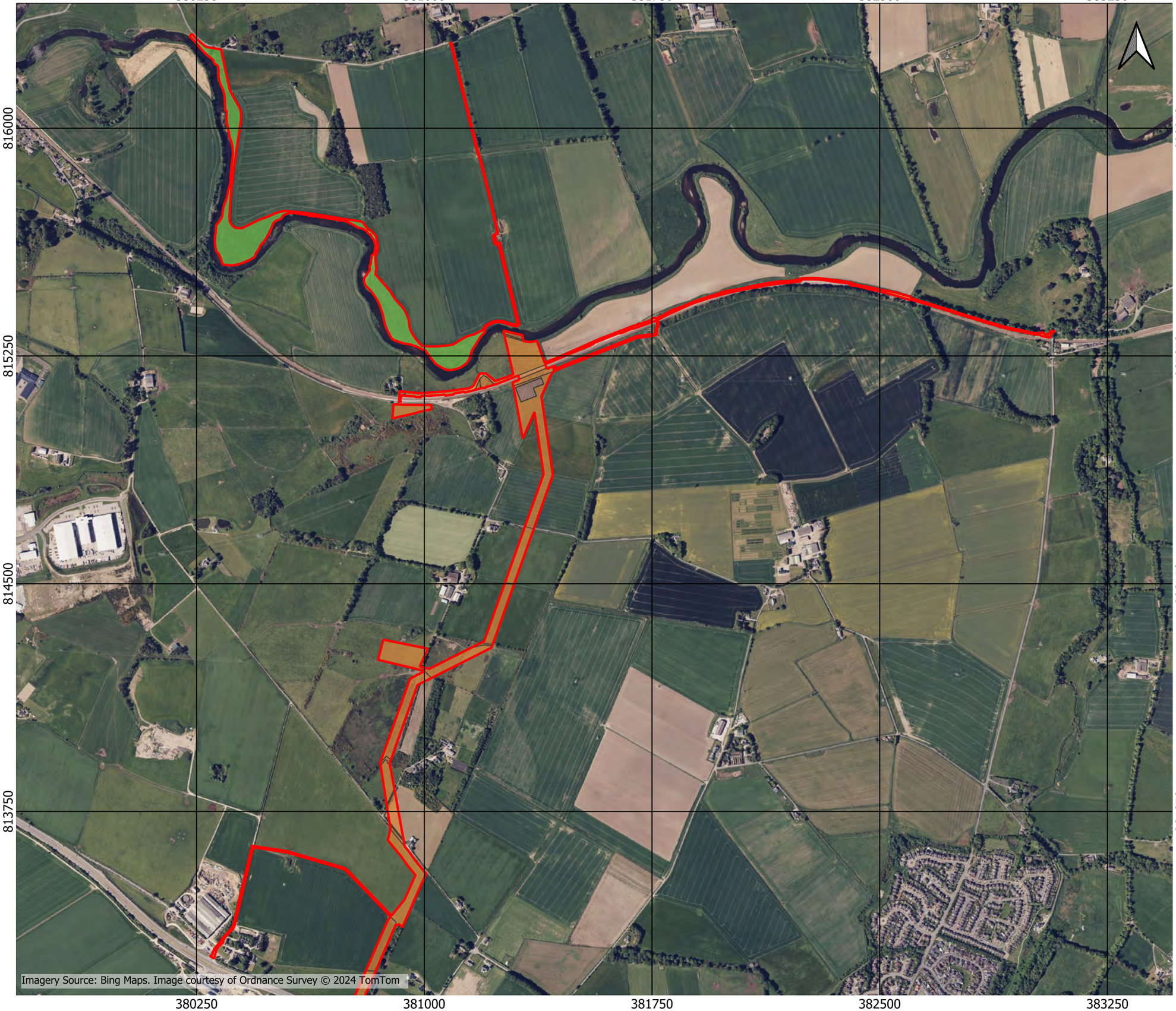
Scale @ A3 0 200 400 m

Rev	Date	Amendment	Initials

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

380250 381000 381750 382500 383250

816000 815250 814500 813750



Legend

- Site Boundary
- Works Footprint
- Native hedgerow
- Tree line (mixed)
- Tree line (Scots pine)
- Habitat Retained
- SuDS Basin
- Wildflower Grassland
- Woodland Planting (Deciduous)
- Mixed scrub
- Woodland Planting (mixed)
- Enhancement and Compensatory Area

Do not scale this map

Client
Kintore Hydrogen Ltd

Project
Kintore Hydrogen Plant

Title
Indicative Layout Plan - East

Status
Final

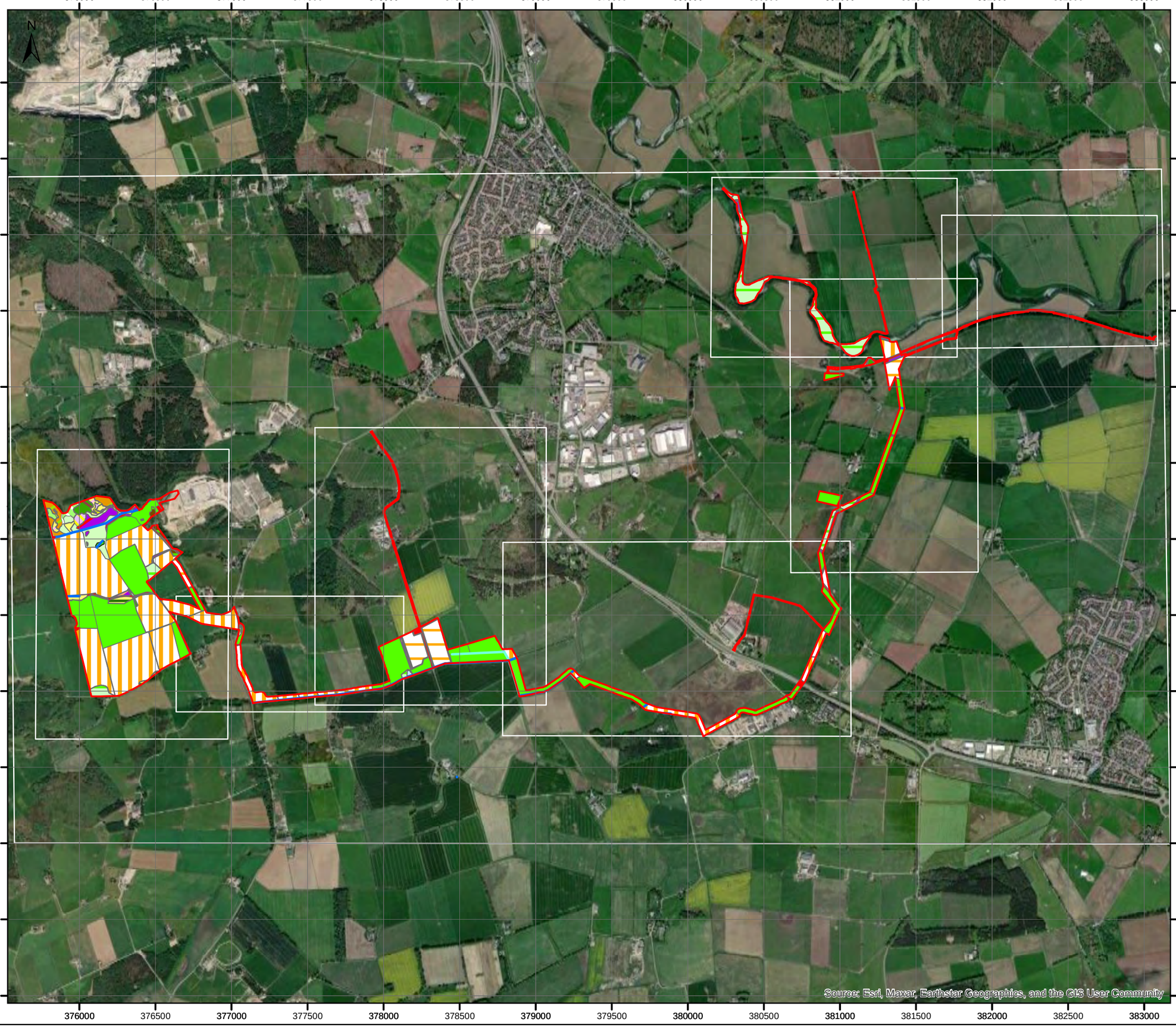
Drawing No.	Revision	Date
376782/GIS033		05 Sep 2024
Drawn	**Checked**	**Approved**
JB	JP	GN

Scale @ A3 0 200 400 m

Rev	Date	Amendment	Initials

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

B HABITATS PLAN



Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 1 of 8

Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:24,000 @A3
0 120 240 480 720 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

375500 376000 376500 377000

814000 813500 813000

N

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 2 of 8

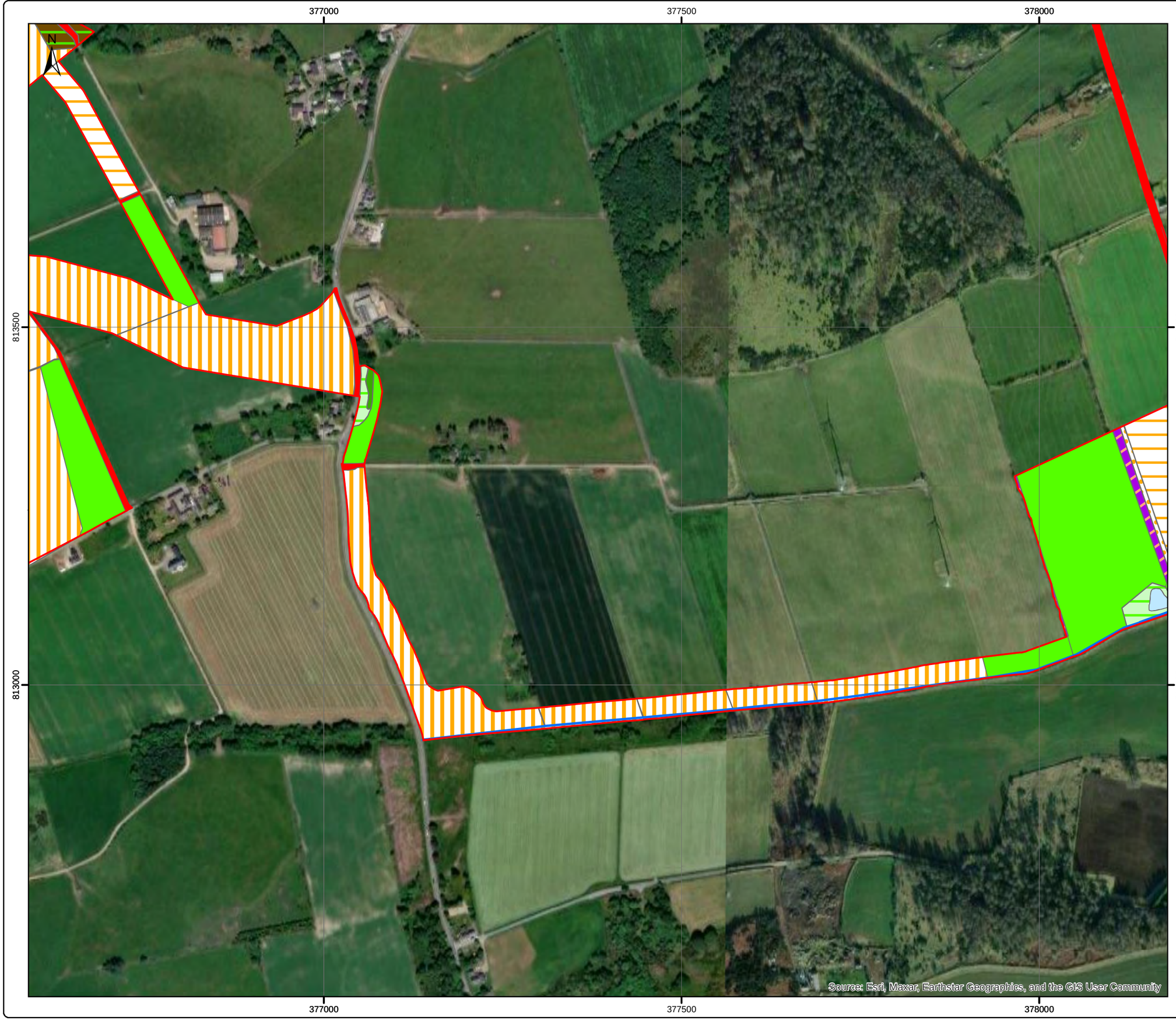
Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:5,600 @A3
0 25 50 100 150 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk



Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 3 of 8

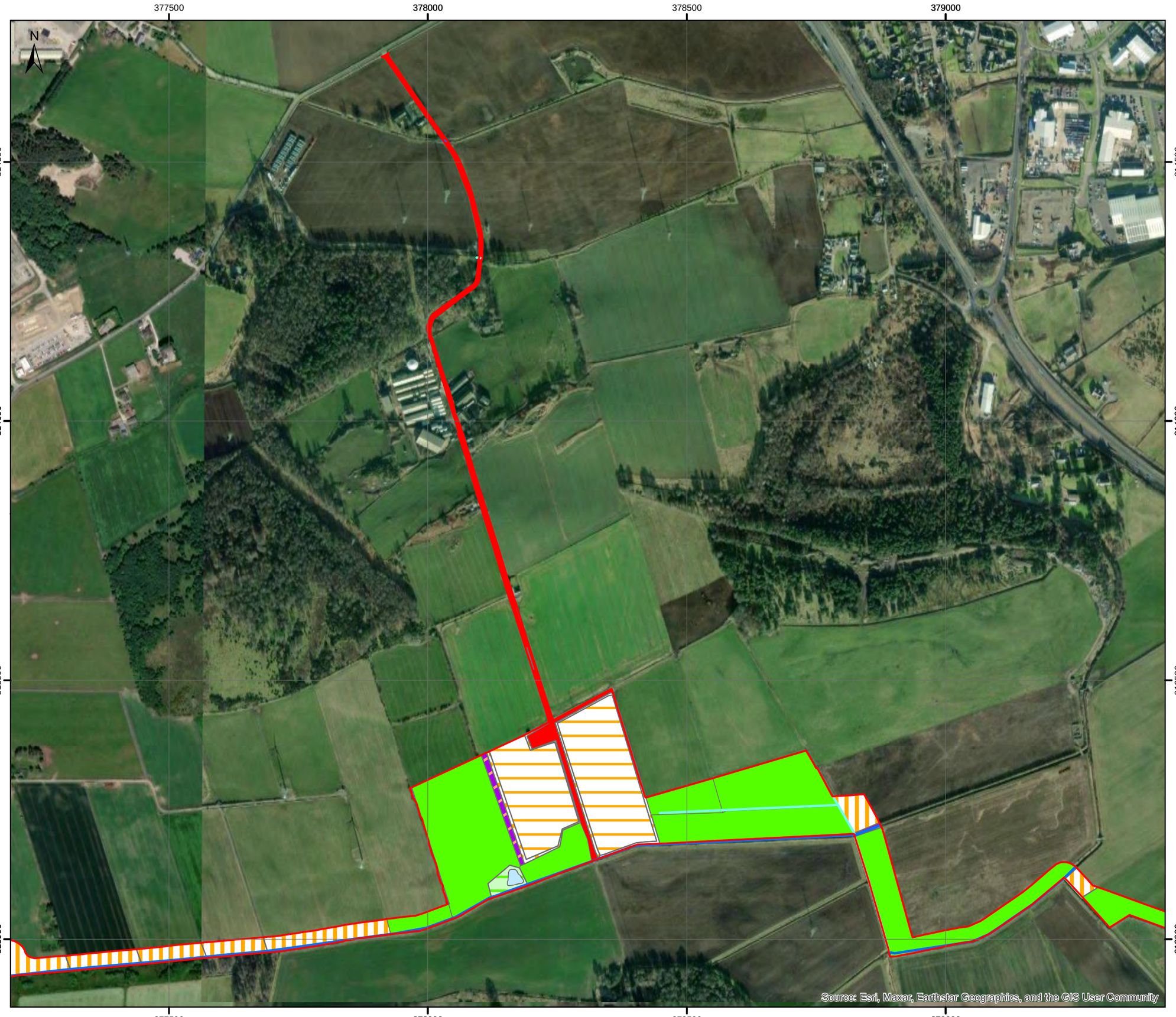
Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:5,000 @A3
0 25 50 100 150 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk



Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 4 of 8

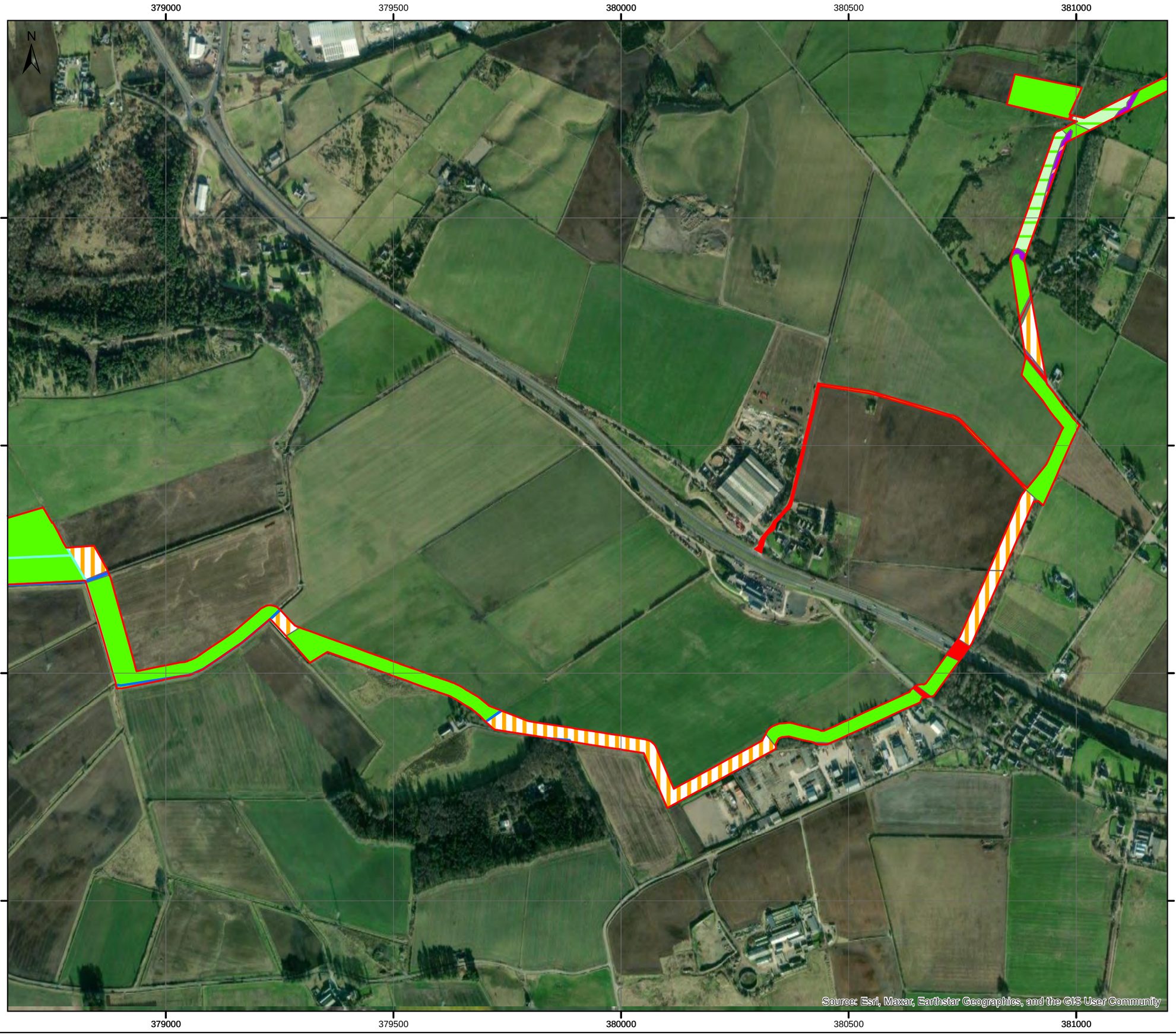
Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:7,000 @A3
0 35 70 140 210 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk



Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 5 of 8

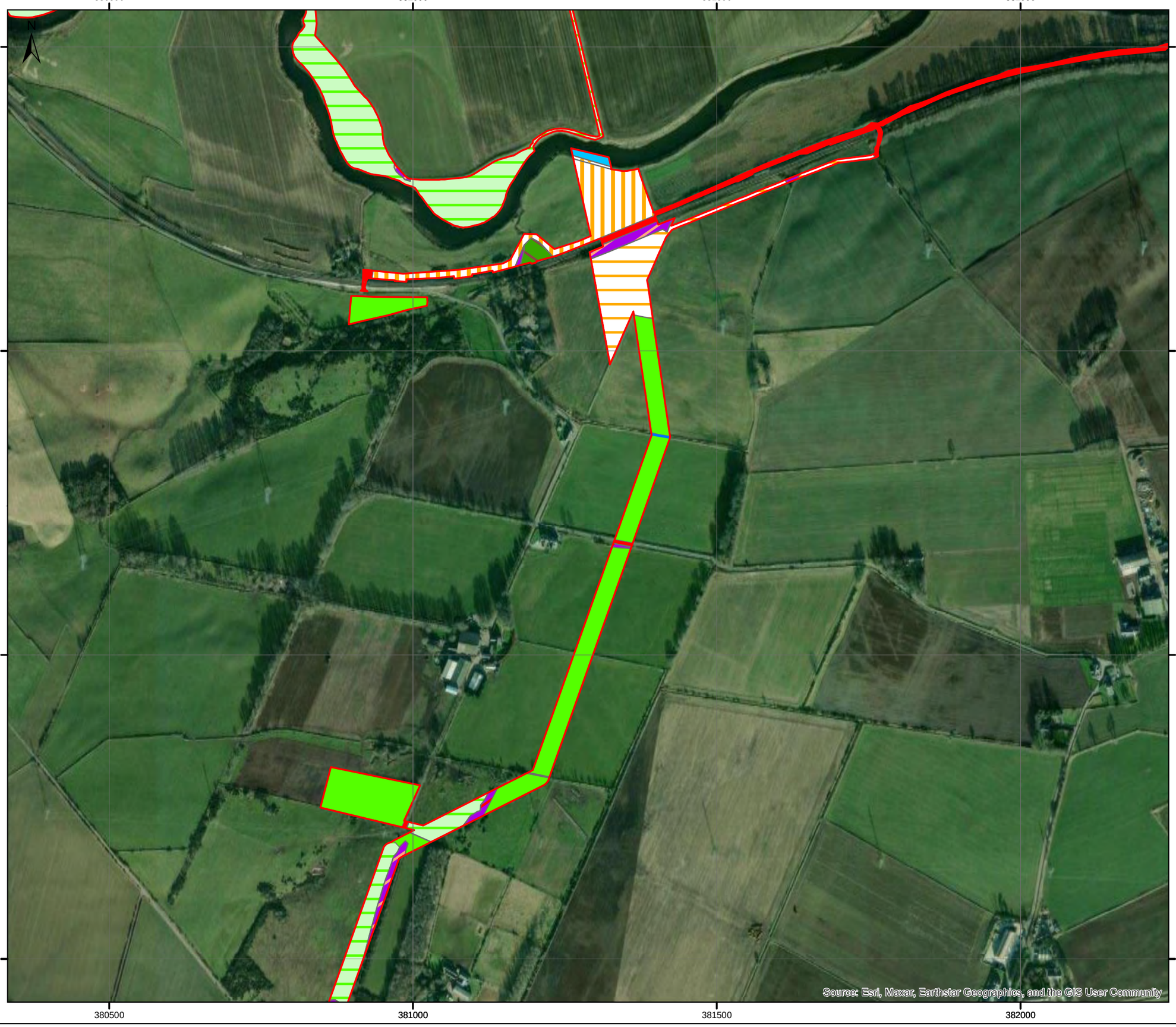
Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:8,000 @A3
0 40 80 160 240 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk



Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 6 of 8

Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:6,000 @A3
0 30 60 120 180 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 7 of 8

Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:6,500 @A3
0 30 60 120 180 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

382000 382500 383000

816000

815500

N

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend

- PAN boundary
- c1a Arable field margins
- c1b Temporary grass and clover leys
- c1c Cereal crops
- f2 Purple moor-grass and rush pasture
- f2a Lowland fen
- g1a Lowland dry acid grassland
- g3c Other neutral grassland
- g4 Modified grassland
- g3c7 Deschampsia neutral grassland
- g3c8 Holcus-juncus neutral grassland
- g3c8 and g1d mosaic - Holcus-juncus neutral grassland and other loland neutral grassland
- h3e Gorse scrub
- h3e and g1d mosaic - Gorse scrub and other lowland neutral grassland
- h3h Mixed scrub
- r1g Other standing water
- r2a Rivers (priority habitat)
- r2b Other rivers and streams
- u1 Built-up areas and gardens
- u1b5 Buildings
- u1e Built linear features
- w1d Wet woodland
- w1f Lowland mixed deciduous woodland
- w1g Other woodland broadleaved
- w2a Native pine woodlands
- w2c Other coniferous woodland

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
UKHab Map Addedndum
Page 8 of 8

Status
Final

Drawing No.	Revision	Date
376782-GIS025	A	09 Aug 2024
Drawn	**Checked**	**Approved**
JEP	JAS	GN

Scale
1:4,500 @A3
0 20 40 80 120 Metres

Rev	Date	Amendment	Initials
-	-	-	-

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

C MORPH WATERCOURSE PLAN

Legend

- PAN boundary
- Watercourses

Do not scale this map

Client
Kintore Hydrogen Limited

Project
Kintore Hydrogen Plant

Title
MoRPH Watercourses

Status
FINAL

Drawing No.	Revision	Date
376782-GIS022	-	20 Sept 2024
Drawn	**Checked**	**Approved**
JEP	GN	GN

Scale
1:23,000 @A3
0 115 230 460 690 Metres

Rev	Date	Amendment	Initials

envirocentre
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk