

## **Kintore Hydrogen Plant National Vegetation Classification**



**September 2024**

# CONTROL SHEET

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## EXECUTIVE SUMMARY

Envirocentre Limited were commissioned by Kintore Hydrogen Limited to undertake a National Vegetation Classification (NVC) of habitats within the site known as Kintore Hydrogen Plant, in land south of Kintore. The survey was required to inform development of a Hydrogen electrolysis plant.

The aim of the survey was to classify the vegetation communities present within habitats identified during the Preliminary Ecological Appraisal as being wetlands with potential for being Ground Water Dependent Terrestrial Ecosystems (GWDTEs) or Priority Habitats.

The following communities were identified during the NVC:

- MG9 *Holcus lanatus* - *Deschampsia cespitosa* grassland
- MG10 *Holcus lanatus* - *Juncus effusus* rush-pasture
- U4 *Festuca ovina*-*Agrostis capillaris* - *Galium saxatile* grassland
- M6 *Carex echinata* - *Sphagnum fallax/denticulatum* mire
- M23 *Juncus effusus/acutiflorus* – *Galium paulustre* rush-pasture
- S10 *Equisetum fluviatile* swamp
- W6 *Alnus glutinosa* – *Urtica dioica* woodland
- W18 *Pinus sylvestris* – *Hylocomium splendens* woodland
- W23 *Ulex europaeus* - *Rubus fruticosus* scrub

In terms of GWDTE, the M6 community contains species which are indicative of base enrichment which is often associated ground water influence. Considering species present and overall topography, the M6 community and the associated M23 community in the west of the site are considered to be potentially ground water dependent, however, further hydrological assessment would be required to determine groundwater dependency. The other wetlands (M23 in the east, S10, MG9, MG10 and W6) are most likely to be fed predominantly by surface water.

The M23 community is included in the Scottish Biodiversity List (SBL) habitat Purple moor-grass and rush pasture. M6 and S10 are included within the Lowland Fens SBL habitat. W6 is encompassed within the Wet Woodlands SBL habitat and W18 represents the Native Pine woodlands SBL habitat. U4 is part of the Lowland Acid Grasslands priority habitat.

The mosaic of wetlands, grassland and woodland in the west is particularly diverse and contains SBL priority species lesser butterfly-orchid.

INNS monkey flower and Himalayan balsam were identified in the eastern section of the site.

Development design should seek to retain priority habitats as far as possible. Where this cannot be achieved, compensatory habitat should be provided. It should be noted that many of the habitats are difficult to re-create and so any compensatory habitat would likely be of a lesser value.

Similarly, the lesser butterfly-orchid habitat should also be retained.

An INNS management plan is required.

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# 1 INTRODUCTION

## 1.1 Terms of Reference

Envirocentre Limited were commissioned by Kintore Hydrogen Limited to undertake a National Vegetation Classification of habitats within the site known as Kintore Hydrogen Plant, in land south of Kintore. The survey was required to inform development of a Hydrogen electrolysis plant.

## 1.2 Scope of Report

The aim of the survey was to classify the vegetation communities present within habitats identified within the Preliminary Ecological Appraisal<sup>1</sup> as being wetlands with potential for being Ground Water Dependent Terrestrial Ecosystems (GWDTEs) or Priority Habitats.

The communities were then compared to the Scottish Environment Protection Agency (SEPA) list of GWDTE communities within their planning guidance<sup>2</sup> to determine if they require further hydrological assessment. NVC communities were also cross-referenced with NatureScot Priority Habitat descriptions<sup>3</sup> and the Join Nature Conservancy Councils Annex I habitat descriptions<sup>4</sup> to determine the conservation status of habitats.

## 1.3 Site Description

Wetlands representing potential GWDTE habitats were situated within the north west and eastern limits of the wider site. The site boundary and the areas targeted for NVC survey within that can be seen in Appendix A.

The western area comprises a mix of grassland, wetland and woodland habitat, situated to the north of agricultural fields. There is conifer plantation present to the north and east and an area of broadleaved woodland to the west. The Dewsford Burn flows from east to west along the boundary between the wetland and agricultural fields to the south. There is no apparent livestock grazing or other management.

Underlying bedrock is Kemnay pluton granite with Banchory till formation sedimentary deposits. The soil is partially mineral in the north but southern section of the site is listed as Class 5 soil in Scotlands Carbon Peatland Map. This indicates that peat soils are likely to be present but peatland habitats have not been recorded<sup>5</sup>.

SEPA's Wetland Inventory<sup>6</sup> shows the site as having wet/marshy grassland and springs/flushes and seepages present. The Aquifer is classified as good status/potential<sup>7</sup>.

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<sup>1</sup> Envirocentre (2023) Report No 13628: Kintore Hydrogen Plant Preliminary Ecological Appraisal.

<sup>2</sup> Scottish Environment Protection Agency (2017) Land Use Planning System SEPA Guidance Note 31. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Ground Water Dependent Terrestrial Ecosystems. LUPS-GU31.

<sup>3</sup> Available here: <https://www.nature.scot/landscapes-and-habitats/habitat-types/habitat-definitions> (Accessed 19/12/2023) Note at the time of writing links in the page relating to habitat descriptions are broken.

<sup>4</sup> Available at: <https://sac.jncc.gov.uk/habitat/> (Accessed 19/02/2023)

<sup>5</sup> <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/> (accessed 3/07/2023)

<sup>6</sup> <https://map.environment.gov.scot/sewebmap/?layers=scotWetlandInven> (accessed 13/07/2023)

<sup>7</sup> <https://map.environment.gov.scot/sewebmap/?layers=groundwaterClassification> (accessed 13/07/2023)

The other NVC areas comprise two small patches of habitat in the east. One is an area of wet woodland surrounding an unnamed watercourse which flows into the River Don c. 50m to the north. It is bounded to the south by the trainline and to the east, west and north by agricultural fields. The other is a patch of marshy grassland which sits at the top of a small gorse covered hill which is grazed by cattle. A small unnamed watercourse originates to the south of the grassland and flows through the eastern edge of it. The water course is culverted under the trainline at the bottom of the hill and flows into the River Don c.500m to the north of the grassland.

The underlying bedrock is for both is Aberdeen formation Psammite and Semipelite. The woodland sits on superficial deposits of alluvium clay, silt, sand and gravel whilst the area of marshy grassland has no recorded superficial deposits meaning the bedrock sits near the surface.

Both areas are classified as low productivity aquifers with small amounts of groundwater in near surface weathered zone and fractures. Neither is listed within SEPAs Wetland Inventory and neither are classed as peatland on the Carbon and Peatland Map.

## **1.4 Report Usage**

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## 2 METHOD

### 2.1 NVC Survey

The NVC survey was conducted in line with the Joint Nature Conservation Committee (JNCC) handbook<sup>8</sup>. The field work was undertaken on the 12<sup>th</sup> of July and 8<sup>th</sup> August 2023 by Mhairi Mackintosh BSc (Hons) MSc who is a member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). The weather during the first survey was dry initially followed by heavy showers. The second survey was dry and overcast with a light breeze.

The NVC aims to classify natural and semi-natural vegetation communities in a standardised fashion based on species composition and frequency. A site walkover was conducted to gain an overview of the vegetation present. Homogenous stands were then identified by eye and mapped digitally onto aerial imagery using the QFIELD app on a Samsung Galaxy Active Tab 3. Notes on the species composition and frequency, structure, and any apparent management were taken. Observations of local topography and features such as springs, diffuse ground water emergence and floristic indicators of base enrichment were also made. This data, alongside the keys and floristic tables presented in Volumes 1 to 5 of the British Plant Communities<sup>9</sup>, were used to determine the NVC communities. The communities were identified to the sub-community level where sufficient data was available to do so. The naming convention follows Stace (2019)<sup>10</sup> for vascular plants and Smith (2004) for bryophytes<sup>11</sup>.

### 2.2 Survey Constraints

The survey was conducted within the main growth season. However, the peak times for growth and flowering vary between species, so it is possible that some species were missed as their vegetative and/or flowering parts were not visible at the time of survey. It is considered unlikely that this would alter the NVC communities assigned or the evaluation of GWDTEs.

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<sup>8</sup>Rodwell, J.S. (2006) *National Vegetation Classification: Users' Handbook*. JNCC Peterborough.

<sup>9</sup>Rodwell, J.S. (1991) *British Plant Communities, Volume 1: Woodlands and Scrub*. Cambridge University Press, Cambridge.

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Rodwell, J.S. (1992) *British Plant Communities, Volume 3: Grasslands and Montane Communities*. Cambridge University Press, Cambridge.

Rodwell, J.S. (1995) *British Plant Communities, Volume 4: Aquatic Communities, Swamps and Tall-herb Fens*. Cambridge University Press, Cambridge.

Rodwell, J.S. (2000) *British Plant Communities, Volume 5: Maritime Communities and Vegetation of Open Habitats*. Cambridge University Press, Cambridge.

<sup>10</sup> Stace, C.A. (2019) *New Flora of the British Isles*. 4<sup>th</sup> edition. C&M Floristics.

<sup>11</sup> Smith, A.J.E. (2004) *The Moss Flora of Britain and Ireland*. 2<sup>nd</sup> edition. Cambridge University Press.

## 3 RESULTS

The following section should be read in conjunction with the NVC Plan presented in Appendix A, the Photographic Record in Appendix B and the GWDTE Plan presented in Appendix C.

### 3.1 NVC Communities

#### 3.1.1 Grasslands

##### MG9 *Holcus lanatus* - *Deschampsia cespitosa* grassland

Yorkshire fog (*Holcus lanatus*) and tufted hair-grass (*Deschampsia cespitosa*) neutral grassland is present within the western NVC area. It is present on the sloped edges of a gorse (*Ulex europaeus*) covered ridge in the south and two smaller slightly raised patches associated with mire habitats and acid grassland. The dominant species is tufted hair-grass with abundant Yorkshire fog and frequent soft rush (*Juncus effusus*). Common sorrel (*Rumex acetosa*) and marsh thistle (*Cirsium palustre*) are present occasionally.

##### MG10 *Holcus lanatus* - *Juncus effusus* rush-pasture

Yorkshire fog and soft rush neutral grassland is present in a small patch to the south of the main western NVC area. It sits in a low lying area next to the remnants of a field dyke. Yorkshire fog is co-dominant with soft rush. Tufted hair-grass is locally abundant. Sharp-flowered rush (*Juncus acutifolius*) marsh willowherb (*Epilobium palstre*), and creeping thistle (*Cirsium arvense*) are frequent within the sward. Common ragwort (*Jacobaea vulgaris*), marsh thistle, common sorrel, sweet vernal grass (*Anthoxam odoratum*) and cleavers (*Galium aparine*) are present occasionally with wavy bitter-cress (*Cardamine flexuosa*) occurring rarely.

##### U4 *Festuca ovina*-*Agrostis capillaris* - *Galium saxatile* grassland

Sheep's fescue (*Festuca ovina*), common bent (*Agrostis capillaris*) and heath bedstraw (*Galium saxatile*) acid grassland is present in the north west of the western NVC area, on raised ground where the surrounding woodland opens up. There is an undulating topography with drier raised areas with more characteristic acid species (Photo 1) and wetter depressions which have a more neutral character. Sweet vernal grass and common bent are abundant throughout along with Yorkshire fog. Red fescue is also present abundantly here rather than the more typical sheep's fescue. Wavy hair-grass (*Avenula flexuosa*) and cleavers occurs frequently. Tormentil (*Potentilla erecta*) and heath bedstraw (*Galium saxatile*) are locally abundant on small raised knolls. Devil's-bit scabious (*Succisa pratensis*), harebell (*Campanula rotundifolia*) germander speedwell (*Veronica chamaedrys*) and perforated St John's wort (*Hypericum perforatum*) are present occasionally.

#### 3.1.2 Mires

##### M6 *Carex echinata* - *Sphagnum fallax/denticulatum* mire

The star sedge (*Carex echinata*), flat-topped bog moss (*Sphagnum fallax*) mire is present in several patches within the western NVC area. It is a variable community which is typically found in flushed peats or peaty gleys. The typical sub-community with star sedge is present along with sub-communities c and d which are dominated by soft rush and sharp-flowered rush respectively. All of the



communities have a ground layer comprising flat-topped bog-moss, blunt-leaved bog-moss (*Sphagnum palustre*), common haircap moss (*Polytrichum commune*) and occasional bog bead-moss (*Aulacomnium palustre*), although these were sparse in areas with more open water. Bog asphodel (*Narthecium ossifragum*) and cross-leaved heath (*Erica tetralix*) become dominant in channels with water flowing through them (Photo 2). Other associated species include locally abundant common sedge (*Carex nigra*), bottle sedge (*Carex rostrata*) (Photo 3). Hare's tail cotton-grass (*Eriophorum vaginatum*) is locally frequent as is heath spotted-orchid (*Dactylorhiza maculata*). Occasional species included congested heath-rush (*Luzula multiflora subsp congesta*), carnation sedge (*Carex panacea*), common sorrel, wavy hair-grass, red fescue, flea sedge (*Carex pulicaris*), heath-grass (*Danthonia decumbens*), common yellow-sedge (*Carex demissa*), lesser spearwort (*Ranunculus flammula*), marsh pennywort (*Hydrocotyle vulgaris*), fen bedstraw (*Galium uliginosum*), valerian (*Valeriana officinalis*), marsh ragwort (*Jacobaea aquatica*), marsh willowherb (*Epilobium palustre*), bogbean (*Menyanthes trifoliata*), march cinquefoil (*Comarum palustre*), marsh lousewort (*Pedicularis palustris*), water horsetail (*Equisetum fluviatile*), ragged-robin (*Silene flos-cuculi*), creeping forget-me-not (*Myotis secunda*) and sneezewort (*Achillea ptarmica*).

One lesser butterfly-orchid (*Platanthera bifolia*) was also found within this habitat (Photo 4). It had gone past its peak flowering by the time the survey occurred and so it is possible that other individuals were present but not observed. Downy birch (*Betula pendula*) saplings showing high levels of herbivory were present rarely (Photo 5).

Water flowing through this community forms channels which feed into the Dewford Burn to the east of the site (Photo 6). Species such as flea sedge and fen bedstraw indicate some base influence within the water which may be associated with ground water.

#### M23 *Juncus effusus/acutiflorus* – *Galium palustre* rush-pasture

Soft rush/sharp-flowered rush pasture is present in the eastern NVC area, at the top of a gorse covered slope (Photo 7). Soft rush is dominant with abundant sharp-flowered rush and occasional wild angelica (*Angelica sylvestris*), marsh thistle, marsh willowherb, marsh bedstraw, tufted hair-grass, Yorkshire fog, greater bird's-foot trefoil (*Lotus pedunculatus*) and creeping forget-me-not. The Invasive Non-Native (INNS) species monkeyflower (*Erythranthe guttata*) is present abundantly (Photo 8).

This community is also present across much of the western NVC area (Photo 9) with a similar mix of species, apart from the INNS.

### **3.1.3 Swamps**

#### S10 *Equisetum fluviatile* swamp

Water horsetail swamp is present in two small patches within the western NVC area (Photo 10). These appear to be the locations of pooled or emergent water which forms into a small watercourse which flows east through the M6 mire habitats before joining the Dewford Burn to the east. Both are dominated by water horsetail with abundant lesser spearwort. Marsh cinquefoil, star sedge, yellow sedge and marsh pennywort are frequent and marsh lousewort occurs rarely. Flat topped bog moss is present frequently in the ground layer.

### 3.1.4 Woodland

#### W6 *Alnus glutinosa* – *Urtica dioica* woodland

Alder (*Alnus glutinosa*) and nettle (*Urtica dioica*) woodland is present within the eastern NVC area (Photo 11). Semi-mature alder is the dominant species within the canopy. It is likely the woodland is self-sown/of natural origins. Scot's pine (*Pinus sylvestris*) is present occasionally and downy birch (*Betula pubescens*) rarely. Creeping soft-grass (*Holcus mollis*) and rough meadow grass (*Poa trivialis*) are present abundantly in the field layer. Frequently occurring species include creeping forget-me-not and heath speedwell (*Veronica officinalis*) and common valarian. Occasional species include sweet vernal grass, soft rush, common sorrel, ragwort, lady-fern (*Athyrium filix-femina*) and marsh-marigold (*Caltha palustris*). Reed canary-grass (*Phalaris arundinacea*) and floating sweet-grass (*Glyceria maxima*) are occasional in patches along the banks of the watercourse as is common reed (*Phragmites australis*). Sharp-flowered rush, tormentil, perforate St Johns-wort and common knapweed (*Centaurea nigra*) are rare. Broom (*Cytisus scoparius*) and gorse both occur on the outer edges of the woodland.

Invasive non-native species monkey flower and Himalayan balsam (*Impatiens glandulifera*) (Photo 12) are present in patches adjacent to and within the small watercourse which runs through the wood.

There were no seedlings or saplings observed within the woodland and roe deer were seen during the course of the survey indicating high levels of herbivory.

#### W18 *Pinus sylvestris* – *Hylocomium splendens* woodland

Scot's pine woodland is present within the north east and west of the NVC area in the west of the site. Mature Scot's pine is the dominant tree in the canopy and has likely self-seeded from adjacent plantations. Rowan (*Sorbus aucuparia*), European Larch (*Larix decidua*), Silver birch (*Betula pendula*) and grey willow (*Salix cinerea*) all occur rarely.

The field layer in the east (Photo 13) does not fit any of the describes sub-communities given within the NVC. Dwarf shrubs and purple moor-grass (*Molinia caerulea*) which normally are associated with pine woods were absent. The field layer instead comprises abundant common sedge, Yorkshire fog and soft rush, with locally abundant wood horsetail (*Equisetum sylvaticum*). Tormentil, marsh thistle, tufted hair grass and sweet vernal grass are frequent within the sward. Velvet bent, greater wood-rush and devils' bit scabious are present occasionally. The species are consistent with permanently damp acid to neutral conditions.

The field layer in the west is more typical of Scot's pine woodland. Wavy hair-grass, sheep's fescue and heath bedstraw are abundant, with locally abundant creeping soft-grass. Sweet vernal grass and lesser stitchwort (*Stellaria graminea*) and heather (*Calluna vulgaris*) are present frequently. Yarrow, cock's-foot (*Dactylis glomerata*) and broad buckler-fern (*Dryopteris dilatate*) occur occasionally. The ground layer has scattered springy turf-moss (*Rhytidadelphus squarrosus*). Broom is present occasionally in the understory.

There are infrequent birch saplings across both areas but these all displayed signs of herbivory. Roe deer were observed frequently in the area during the survey and other Envirocentre surveys associated with the site.

#### W23 *Ulex europaeus* - *Rubus fruticosus* scrub

Gorse scrub is present on a raised ridge in the south of the western NVC area, between the Dewsford Burn to the south and the mires and pine woodland to the north. Gorse is the dominant species. Due to

the dense growth there are few other species present. The edges of the scrub grade into MG9 grasslands.

### 3.2 GWDTE Evaluation

The GWDTE status of the habitats are presented in table 3-1 below.

**Table 3-1 GWDTE Status of Wetlands on Site**

| <b>NVC Community</b> | <b>SEPA Classification (dependent on hydrological settings)</b> | <b>Site Observations</b>  | <b>GWDTE Assessment*</b>   |
|----------------------|---|---|--|
| M23                  | Highly dependent  | <p>The M23 in the east is associated with a watercourse and is in an area which has bedrock close to the surface and so water from rain and surface water flows is likely to be held close to the surface. It is likely that there is minimal ground water influence in this area.</p> <p>The M23 in the west is in a relatively low-lying area of land with the slope of Stony hill to the north. Hydrology may also be influenced by drainage from adjacent forestry plantations. The presence of this habitat in an area which is otherwise acid does suggest a flow of water creating more neutral conditions however and so it may be at least partially ground water dependent.</p> | <p>Negligible ground water dependence.</p> <p>Potential ground water dependence, further hydrological assessment required.</p> |
| M6                   | Highly dependent  | <p>These areas were very wet with a constant flow of water which appeared to flow from the base of raised areas of ground rather than overground flow. Species indicative of mineral enrichment often associated with ground water were present.</p>  | <p>Potential ground water dependence, further hydrological assessment required.</p>  |
| MG9                  | Moderately dependent  | <p>This community was found on small, sloped areas of the site. It is indicative of damp conditions but no species particularly associated with ground water were present.</p>  | <p>Potential for some ground water dependence, further hydrological assessment required.</p>                                   |
| MG10                 | Moderately dependent  | <p>This community is in an area of low lying ground, surrounding an area marked as an unnamed water course on the OS map. It is considered likely that this is predominantly surface water fed.</p>   | <p>Negligible ground water dependence.</p>   |
| S10                  | No GWDTE potential  | -   | <p>No ground water dependence.</p>   |

|     |                      |   |                                    |
|-----|----------------------|---|------------------------------------|
| U4  | No GWDTE potential   | -   | No ground water dependence.        |
| W18 | No GWDTE potential   | -   | No ground water dependence.        |
| W23 | No GWDTE potential   | -   | No ground water dependence.        |
| W6  | Moderately dependent | The community was located on the banks of an unnamed watercourse and due to topography likely receives surface water run-off from adjacent fields and the trainline to the north. | Negligible ground water dependence |

\*Based on botanical and site observations. Further hydrology assessment required to confirm.

### 3.3 Conservation Evaluation

The conservation status of all the NVC communities identified is presented in table 3-2 below. Generally the area of wetland and woodland in the west of the site contains a diverse range of neutral to acid wetlands as well drier grassland and woodland habitats. Such complexes of wetland habitats are rare within the lowlands as many have been historically drained for agriculture or forestry production. As such many of the wetland species have declining trends within the UK as a whole<sup>12</sup>. The lesser butterfly-orchids present within the site are a Scottish Biodiversity List Priority Species and they are listed as Vulnerable on the Great Britain Red List for Plants<sup>13</sup>. Other notable species include hare's tail cotton grass which is unusual in areas lacking deep peat.

**Table 3-2 Conservation Status of NVC Communities**

| NVC Community | Conservation Status                                      |
|---------------|--|
| M23           | SBL Priority Habitat - Purple moorgrass and rush pasture |
| M6            | SBL Priority Habitat – Lowland Fens                      |
| MG9           | Common and widespread                                    |
| MG10          | Common and widespread                                    |
| S10           | SBL Priority Habitat – Lowland Fens                      |
| U4            | SBL Priority Habitat – Lowland Acid Grassland            |
| W18           | SBL Priority Habitat – Native Pine Woodlands             |
| W23           | NESBiP Priority Habitat – Gorse scrub                    |
| W6            | SBL Priority Habitat – Wet Woodlands                     |

<sup>12</sup> BSBI Plant Atlas 2020 Available online at: <https://plantatlas2020.org/> (accessed 20/12/2023)

<sup>13</sup> Available at: <https://hub.jncc.gov.uk/assets/cc1e96f8-b105-4dd0-bd87-4a4f60449907> (accessed 20/12/2023)

## **4 POTENTIAL IMPACTS AND RECOMMENDATIONS FOR MITIGATION**

### **4.1 Potential Impacts**

The following potential impacts could occur as a result of the proposed development if no mitigation is employed:

- Permanent loss of SBL and NESBiP priority habitats as a result of direct removal to facilitate works.
- Degradation or damage to habitats during and post works as a result of pollution events, soil compaction and disturbance of surface vegetation as a result of vehicle and plant movements, or inappropriate material storage.
- Wetlands (GWDTE or otherwise) may be particularly vulnerable to pollution via surface water run-off and/or degradation as a result of disruption to hydrological flows.
- Loss of SBL priority species, lesser butterfly-orchid through direct habitat removal or habitat degradation as a result of altered hydrological regimes, or damage from machinery or material storage.
- Spread of INNS.

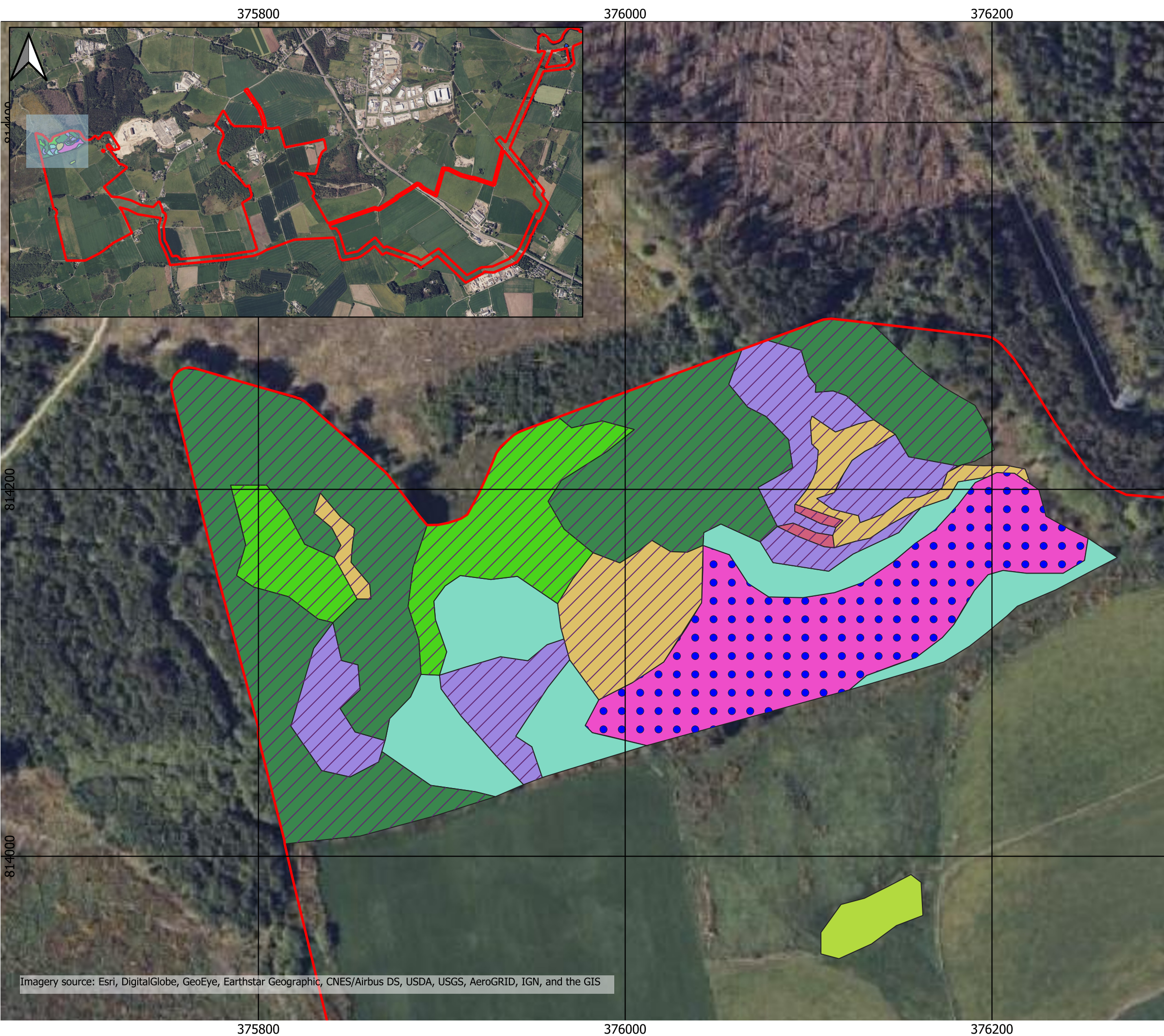
### **4.2 Mitigation**

The following mitigation should be employed to avoid the potential negative impacts listed above:

- Retain priority habitats as far as possible. If habitats cannot be retained, then compensatory habitat should be provided. It should be noted however that many of the habitats, particularly the wetlands are extremely difficult to fully replicate as they are dependent on particular hydrological regimes and in the case of M6 base enrichment of waters. Any compensatory habitat is therefore likely to be of reduced quality and value to wildlife.
- A hydrological assessment should be undertaken to ensure the proposed works do not interrupt the flow of water (ground or surface) to wetland habitats.
- Areas of retained habitat should be clearly demarcated and separated from the works area to avoid trampling, vehicle rutting, or soil compaction.
- Pollution prevention measures should be put in place to avoid damage to retained habitats.
- Lesser butterfly-orchid habitat should be retained. If this cannot be avoided, a detailed survey should be undertaken within the peak flowering period to identify individuals. A translocation plan should be produced to move the orchids to another suitable donor site. It should be noted that orchid translocation are of variable success and there is no guarantee that an attempted translocation would be successful and so it should be considered a last resort.
- An INNS management plan should be produced to avoid their spread.

# APPENDICES

# **A NVC PLAN**



**Legend**

- Site Boundary
- Conservation Status**
- Local Biodiversity Action Plan Habitat
- Scottish Biodiversity List Priority Habitat
- NVC**
- M23 *Juncus effusus/ acutiflorus- Galium palustre* rush-pasture
- M6 *Carex echinata- Sphagnum recurvum auriculatum* mire
- MG10 *Holcus lanatus- Juncus effusus* rush-pasture
- MG9 *Holcus lanatus- Deschampsia cespitosa* grassland
- S10 *Equisetum fluviatile* swamp
- U4 *Festuca ovina- Agrostis capillaris- Galium saxatile* grassland
- W18 *Pinus sylvestris* Woodland
- W23 *Ulex europaeus - Rubus fruticosus* scrub

Do not scale this map

**Client**  
Kintore Hydrogen Limited

**Project**  
Kintore Hydrogen Plant

**Title**  
National Vegetation Classification Results 1 of 2

|                                      |                      |                            |
|--------------------------------------|----------------------|----------------------------|
| <b>Status</b>                        |                      |                            |
| Final                                |                      |                            |
| <b>Drawing No.</b><br>376782-QGIS013 | <b>Revision</b><br>- | <b>Date</b><br>01 Aug 2024 |
| <b>Drawn</b><br>MM                   | <b>Checked</b><br>GN | <b>Approved</b><br>JEP     |

**Scale**  
1:2,000 @ A3

| Rev | Date | Amendment | Initials |
|-----|------|-----------|----------|
| -   | -    | -         | -        |

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**Legend**

- Site Boundary
- Conservation Status
- SBL
- NVC
- M23 *Juncus effusus/acutiflorus* – *Galium paulustre* rush-pasture
- W6 *Alnus glutinosa* – *Urtica dioica* woodland

Do not scale this map

**Client**  
Kintore Hydrogen Limited

**Project**  
Kintore Hydrogen Plant

**Title**  
National Vegetation Classification Results 2 of 2

**Status**  
Final

|                                      |                      |                            |
|--------------------------------------|----------------------|----------------------------|
| <b>Drawing No.</b><br>376782-QGIS013 | <b>Revision</b><br>- | <b>Date</b><br>01 Aug 2024 |
| <b>Drawn</b><br>MM                   | <b>Checked</b><br>GN | <b>Approved</b><br>JEP     |

**Scale**  
1:2,000 @ A3

| Rev | Date | Amendment | Initials |
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| -   | -    |           | -        |

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## B PHOTOGRAPHIC RECORD



**Photo 1: U4 Acid grassland on raised knoll.**



**Photo 2: Bog asphodel dominated M6.**



**Photo 3: M6 with locally dominant bottle sedge surrounded by rush dominated M6.**



**Photo 4: Lesser butterfly-orchid in M6.**



**Photo 5: Downy birch sapling subject to deer browsing.**



**Photo 6: Water channels flowing through M6.**



**Photo 7: M23 in east of site.**



**Photo 8: Monkeyflower present within M23.**



**Photo 9: M23 in west of site.**



**Photo 10: S10 swamp.**



**Photo 11: W6 Alder woodland.**

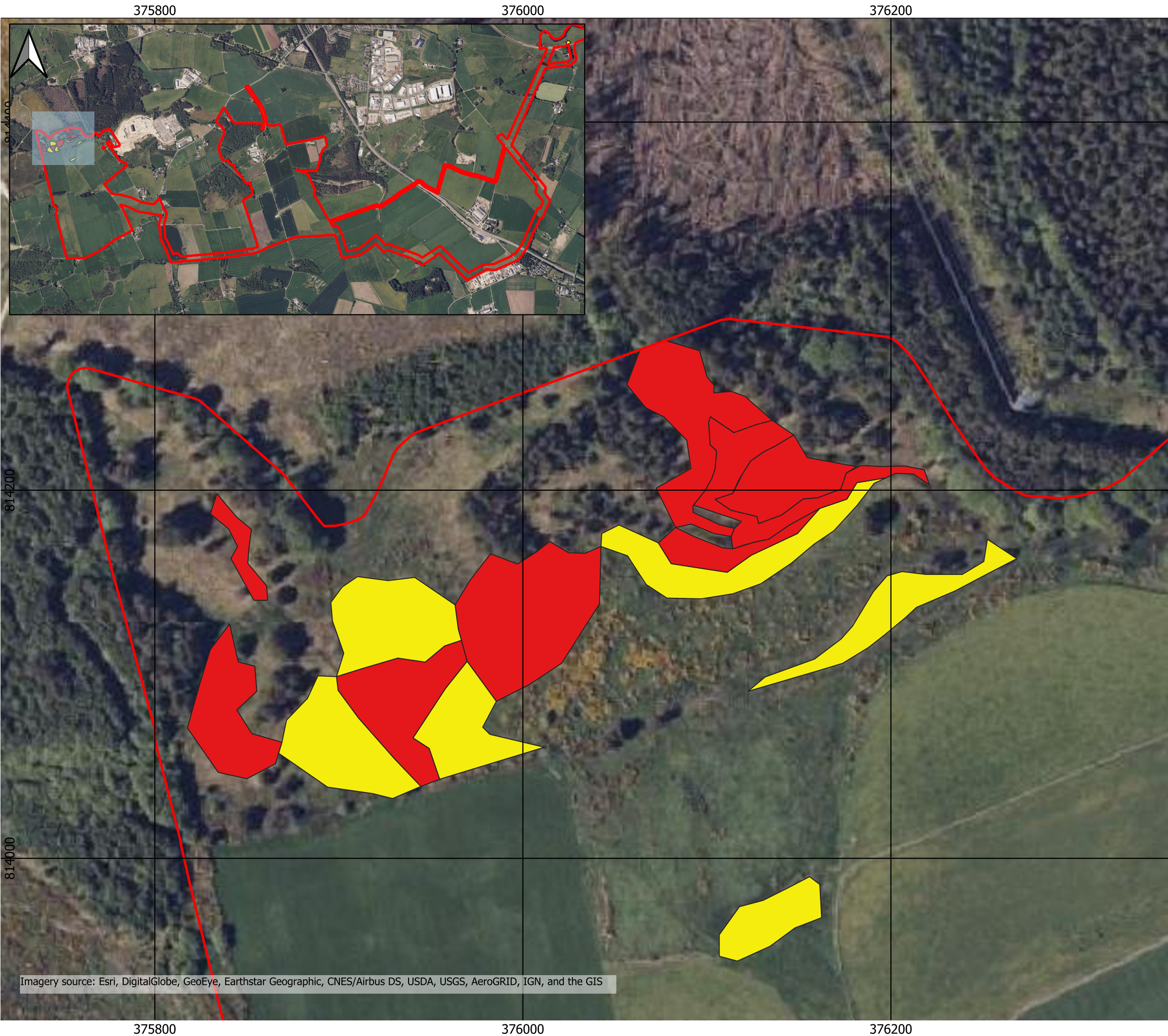


**Photo 12: INNS Himalayan balsam in Alder woodland.**



**Photo 13: W18 with sedge and grass dominant field layer.**

# **C      GWDTE PLAN**



**Legend**

- Site Boundary
- GWDTE Status**
- Highly Dependent
- Moderately Dependent

Do not scale this map

**Client**  
Kintore Hydrogen Limited

**Project**  
Kintore Hydrogen Plant

**Title**  
GWDTE Results 1 of 2

**Status**  
Final

|                                      |                      |                            |
|--------------------------------------|----------------------|----------------------------|
| <b>Drawing No.</b><br>376782-QGIS014 | <b>Revision</b><br>- | <b>Date</b><br>01 Aug 2024 |
| <b>Drawn</b><br>MM                   | <b>Checked</b><br>GN | <b>Approved</b><br>JEP     |

**Scale**  
1:2,000 @ A3

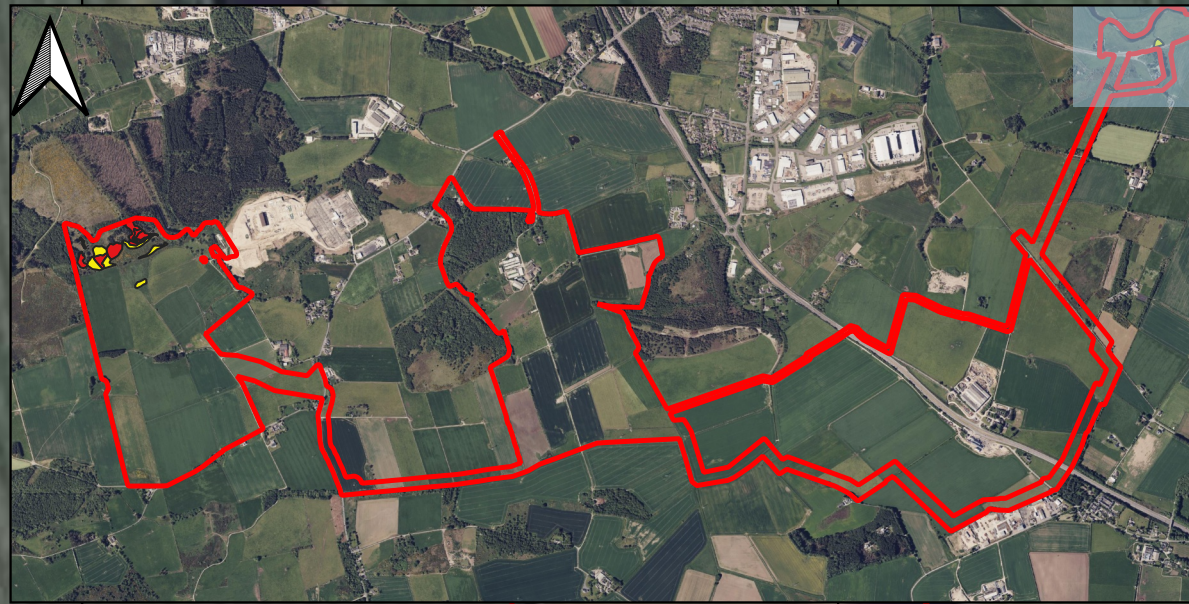
| Rev | Date | Amendment | Initials |
|-----|------|-----------|----------|
| -   | -    | -         | -        |



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380800 381000 381200 381400



815200




815200

815000

815000

380800 381000 381200 381400

**Legend**

-  Site Boundary
- GWDTE Status
-  Highly Dependent
-  Moderatly Dependent

Do not scale this map

**Client**  
Kintore Hydrogen Limited

**Project**  
Kintore Hydrogen Plant

**Title**  
GWDTE Results 2 of 2

|                    |                 |                 |
|--------------------|-----------------|-----------------|
| <b>Status</b>      |                 |                 |
| Final              |                 |                 |
| <b>Drawing No.</b> | <b>Revision</b> | <b>Date</b>     |
| 376782-QGIS014     | -               | 01 Aug 2024     |
| <b>Drawn</b>       | <b>Checked</b>  | <b>Approved</b> |
| MM                 | GN              | JEP             |

**Scale**  
1:2,000 @ A3

| Rev | Date | Amendment | Initials |
|-----|------|-----------|----------|
| -   | -    | -         | -        |

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