

Mid-Shannon Wilderness Park Greenway

Planning Reports

Volume 2



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EIA Screening Report
Appendix 3
Ecological Impact Assessment (EclA)



**Mid-Shannon Wilderness Park Greenway: Ecological Impact
Assessment Report**



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For: CLANDILLON CIVIL CONSULTING

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1 Executive Summary

This report examines the ecological considerations of a proposed new Greenway for Co. Longford. A Greenway is a cycleway that caters for both pedestrians and cyclists in a recreational environment (TII, 2017). Longford County Council have proposed the development of the Mid-Shannon Wilderness Park Greenway, a proposed new greenway through the Bord na Móna bogs of central Longford. The aim of this project is to expand the greenway provision in County Longford and to add to and link into the growing network of greenways in Ireland in accordance with the policies and objectives set out in Project Ireland 2040, the National Cycle Policy Framework, the Longford and Roscommon County Development Plans and associated planning documents. The provision of the greenway is also central to the creation of the Mid Shannon Wilderness Park which is linked to the vision of Ireland's Hidden Heartlands.

The study area consists of a linear path around and through a number of former raised bogs that have been used by Bord na Móna for peat cutting over recent decades. A central tenet of the scheme is to make use of existing BnM industrial rail lines used by Bord na Móna as part of their peat harvesting operations which ceased in 2020.

In summary, the scheme, which is approximately 73 km long, consists of:

- 61 km of greenway along decommissioned Bord na Móna rail lines;
- 6 km of greenway along existing local roads;
- 6 km of greenway through existing cutaway bog.

Included within the 73 km are a number of spurs and side trails linking the main trail to roads, towns and to other trail networks. Works involved with this project includes track clearance, track widening, removal and stock piling of material, the laying of a new track surface, resurfacing of existing roads and the provision of signage and street furniture.

This report describes the ecological surveys carried out to facilitate the planning, design and construction of the Mid-Shannon Wilderness Park (MSWP) Greenway. Appendix 1 shows an overall map of the scheme, with more detailed mapping documents provided separately.

This proposed Greenway will generally comprise a 3m wide track, with 1m buffer strips on either side. The greenway will be constructed almost entirely within lands belonging to the Bord na Móna.

This report provides an Ecological Impact Assessment of the proposed route. In order to inform this document, a range of studies and surveys were undertaken by the authors. These include:

- Desktop Study of available resources on the ecological features, constraints and records

- A walkover survey of the route under study
- An assessment of the habitat types
- Species composition of habitats occurring within the site
- A mammal survey of the proposed route and adjacent lands
- Bat habitat survey

The results of all of the above surveys have been used to carry out an Ecological Impact Assessment of the proposed project. Arising from this, a number of impact mitigation measures have been recommended. These will assist in formulating the final design of the proposed route.

1.1 Details of Surveys Carried Out

Surveys were carried out in October 2020. Surveys were carried out at this time due to the constraints of the project schedule. The timing of the survey was suboptimal for a range of species and groups. These included flora and birds. However, sufficient data could be gathered to allow assessment of habitat types based on vegetation evident at time of survey. Dedicated breeding bird surveys could not be carried out at this time. However, any birds seen or heard were recorded and particular habitat types for specialist birds were noted. The timing was close to optimal for terrestrial mammal species.

1.2 Habitats Within Area Under Survey

A relatively limited range of habitats occurs within the immediate area under survey. By far the largest of these habitat types, in terms of surface area is cutover (or 'cutaway') bog. This comprises over 90% of the receiving environment of the proposed greenway development. However, across the very wide survey area other habitat types occur as a 'mosaic' of wetland areas. Habitat types here include remnant raised bog, scrub, wet grassland, heath and woodland. It should be noted that as peat extraction has ceased in almost all of these peatlands, further (and more complex) habitats will develop as the areas begin to naturalise. After cutover bogland, woodlands were probably the most widely occurring habitat type recorded. These are extremely varied in character and species makeup. Many former cutover bog areas have reverted to Birch-dominated bog woodland. Some cutaway bog areas have been planted by Coillte for commercial production and are dominated by non-native Spruce species.

Other habitats recorded which contain freshwater components or are dependent on water features were: wet grassland, tall-herb swamps, reed-fringes, streams and small to very substantial watercourses. The River Camlin is crossed by the route and it is also intended that a spur of the MSWP Greenway will be carried over the River Shannon into County Roscommon (approximately 360m) by an existing Bord na Móna railway bridge (Kilnacarrow Bridge).

1.3 Notable Flora

No rare, threatened or protected floral species as per the Red Data Book (Curtis and McGough, 1988) were found. No species listed in the Flora Protection Order (2015) were found to be growing within the site. No such species were recorded within the area of works. While it should be noted that the timing of works was suboptimal for floral survey, by far the greater majority of the proposed route is on highly modified habitat.

1.4 Trees and Old Woodlands

Older and long-established woodlands were also targeted by the survey. As well as this, older trees that were notable as either 'veteran' or 'champion' trees were specifically sought. Ancient and long-established woodlands are among the rarest of habitats in Ireland and are thus of great ecological and landscape significance. Veteran trees are large specimens of mature trees that offer much habitat of themselves. Champion trees are those that are taller, older or larger than other of their particular species.

The MSWP Greenway will not pass through any woodlands that may be considered to be ancient or long-established. Given the predominance of bogland here and its industrial usage, older trees are not common in this landscape. The commercial plantations here would not contain such trees. However, any mature broadleaved trees that are valuable for their habitat as well as being of aesthetic and landscape value were noted and recorded.

1.5 Notable Fauna

Signs of activity of Pine Marten were recorded in several areas. Pine Marten is a protected species that has extended its range in Ireland in recent years. Its distribution in the survey area appeared to be associated with conifer plantations. Red Squirrel has similarly expanded its range in recent times and although no activity signs of this species were recorded, it is likely to

occur within the survey area. There were some signs of activity of Badgers within the route but no setts found. Much of the area surveyed would be unsuitable habitat for badger setts.

No evidence of Otter activity was recorded and no Otter holts occur within close proximity to the proposed route. However, it is likely that this species would hold territories on the Rivers Shannon and Camlin and on the Royal Canal. Spraints and other signs of Fox were found in numerous locations throughout the survey area.

Surveys for sites suitable for bat roosts (e.g. buildings or large mature trees) were also carried out. No likely roost sites were recorded although some suitable foraging area (e.g. open water, grassland) for several bat species occurs over the area surveyed.

Food plants of the protected Marsh Fritillary butterfly were found in some areas and although no larval webs of this species were recorded, it is likely that these will occur within the area under survey.

All bird species seen and heard during surveys were recorded. The greater majority of the birds recorded were of least conservation concern (Birdwatch Ireland) but 3 no. species were 'red list' species (Golden Plover, Meadow Pipit and Peregrine Falcon), being of highest conservation concern.

1.6 Invasive Species

Some non-native invasive species were recorded within the survey area. These included Rhododendron, Cherry Laurel and Snowberry. In almost every case, these were outside the proposed route and in adjacent woodland, treeline or hedgerows.

1.7 Potential Impacts

No impacts upon any area designated for the conservation of nature are predicted. As by far the greater majority of the proposed route is on modified or built habitat, no direct impacts of any significance are predicted upon these. However, disturbance impacts of a short-term duration (during the construction phase) were described as *possible*. However, these would be negligible in significance. Some loss of habitat such as hedgerows and treelines may also occur but impact significance here will also be *Minor* Adverse at greatest and most impacts to habitats will be *Negligible*. No losses of other semi-natural habitats recorded (e.g. bog woodland, wetland habitats) are predicted. No bogland habitat of higher conservation value will occur.

No impacts are predicted on other wetland habitats such as wet grassland, marsh and reed swamps as the route will not enter these areas. Indirect impacts on some species groups are predicted as being of *minor adverse* significance before mitigation is applied. These include wetland birds.

While a number of invasive plant species occur within or adjacent to parts of the proposed route, there is negligible potential for these to have any significant negative impacts.

1.8 Proposed Mitigation

An extensive schedule of proposed mitigation measures has been drawn up to address the potential impacts predicted. This range of measures includes timing of works, avoidance of sensitive areas adjacent the proposed route and the planting of native tree species.

Invasive species identified may readily be treated following guidelines given in this report and those of statutory agencies. The drawing up of a Construction Environmental Management Plan (CEMP) to include these measures is recommended.

2 Legislation and Planning Policy

2.1 European Council Directives

2.1.1 Council Directive on the Conservation of Natural Habitats of Wild Fauna and Flora (92/43/EEC) (The Habitats Directive)

The main aim of the Directive is to promote the maintenance of biodiversity through the conservation of natural habitats and wild species listed on the Annexes of the Directive. Member States are required to take measures to maintain or restore, at favourable conservation status, biodiversity whilst taking account of economic, social, cultural requirements and regional and local characteristics.

It gives effect to site and species protection measures through establishment of the Natura 2000 network and designation of European Sites including Special Areas of Conservation (SAC) and Special Protected Areas (SPA). It also establishes a list of species (other than birds) whose habitats must be protected to secure their survival. These priority species and habitats are subject to a higher level of protection.

The Directive also requires appropriate assessment of any plan or project not directly connected with or necessary to the management of a European Site, but likely to have significant effects upon a European site, either individually or in combination with other plans or projects.

2.2 Council Directive on the Conservation of Wild Birds (2009/147/EC) (The Birds Directive)

The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It makes provisions for the maintenance of the wild bird populations across their natural range; conserves the habitats for rare or vulnerable species listed in Annex I and of migratory species through the classification of SPAs and provides protection for all wild birds.

2.3 Irish Legislation

2.3.1 The European Communities (Birds and Natural Habitats) (Amendment) Regulations 2015 (S.I. No. 355 of 2015)

The European Communities (Birds and Natural Habitats) (Amendment) Regulations provides that the following shall be construed together as one:

- Wildlife Act 1976
- Wildlife (Amendment) Acts of 2000, 2010 and 2012
- European Communities (Birds and Natural Habitats) (Restrictions of the Use of Poison Bait) Regulations 2010
- European Communities (Birds and Natural Habitats) Regulations 2011
- European Communities (Birds and Natural Habitats) (Amendment) Regulations of 2013, 2015
- Wildlife Amendment Bill 2016 (proposed legislation)

2.3.2 European Communities (Birds and Natural Habitats) Regulations 2011 to 2015

The Regulations give effect to requirements relating to the designation of protected sites under the Birds Directive and Habitats Directive. The Regulations provide for the protection and management of European Sites and place obligations on all public authorities to have regard to the requirements of the Habitats Directive beyond the realms of planning related consents issued under the Planning and Development Act 2000, as amended (the PDA). The Regulations also provide for the protection of species of European importance.

2.3.3 Wildlife Acts 1976 to 2012

The Acts provide for *inter alia* the protection of wildlife. The Acts prohibit the intentional killing, taking or injuring of certain wild birds or wild animals; or the intentional destruction, uprooting or picking of certain wild plants.

2.3.4 Wildlife Amendment Bill 2016

The purpose of the Bill is to provide for the implementation of a reconfiguration of the Raised Bog Natural Heritage Area Network arising from (i) the proposals from the Review of Raised Bog Natural Heritage Area Network published in January 2014; (ii) an assessment of the effects on

the environment of the proposals arising from the Review and, if required, any other screening for an assessment or as the case may be, assessment, including public consultation undertaken and (iii) observations or submissions received during the course of public consultation.

Taken as a whole, nature conservation legislation is of key importance in undertaking EclA for proposed development as it shapes planning policy.

2.4 Planning Policy

2.4.1 Longford County Development Plan

Longford hosts a wealth of wildlife including a range of threatened habitats and species which are protected by law and are recognised as being of local, national and EU importance.

The County Development Plan (CDP) sets out policies in relation to natural heritage and biodiversity: These consist of 23 Natural Heritage policy objectives that relate to the protection of areas of natural heritage that are protected under European and National guidelines. The plan's objective is to ensure that all developments within the county are carried out in accordance with the guidelines for assessment and implementation stated in the guidelines discussed in section 2 of this report.

The CDP also recognises the need to protect non-designated sites from inappropriate development. These include locally important natural habitats or wildlife corridors. The CDP also commits to protect and enhance important landscape features and their settings. The Council will also seek to enhance the county's biodiversity and natural heritage, including its landscape, by promoting appropriate recreational and amenity schemes.

With regard to recreation and tourism key strategic objectives of the CDP includes the Outdoor Longford strategy;

Developing the activity and adventure tourism market and building upon and developing opportunities to create 'Outdoor Longford'. Given that the activity and adventure tourism market is considered to be one of the most significant for the County, this includes opportunities that promote and facilitate development of this type and in particular cycling, walking and water sports.

With reference to the proposed Greenway the plan states:

The Corlea Project represents a first step in the development of a potential Mid Shannon Wilderness Park. Much of the land involved is in State ownership. Existing natural amenity areas

such as Lough Ree, the Shannon, the Royal Canal and the future rehabilitated bogs, all of which are in very close proximity to each other in Longford, can be combined to create the Mid Shannon Wilderness Park.

The Council also now proposes to work with Bord na Móna to consider a future use of the bogs as they are worked out and re-habilitated over the next 10/20 years. It is envisaged that portions of the bogs will be re-habilitated as natural biodiversity locations thus providing Longford with potentially large areas of natural amenity with tourism potential. This could also allow for the existing bog rail banks to be utilized as additional walking/cycling tracks through the area thus increasing the walking/cycling network through the County.

Indeed it may also be possible to link a walking/cycling route from Dublin through Longford and across the Shannon to Strokestown, Roosky via the bog rail network and bridge. This in turn would open up the potential of linking Dublin through Longford and on to the Greenway at Westport and Sligo. As Bord na Móna completes its rehabilitation work on the bogs it may be possible for existing local communities, and Longford County Council to take responsibility for portions of the cutaway bogs. This will not conflict with any future intention of Bord na Móna and its potential future use of the bogs. The amenity use of the rehabilitated bogs can be compatible with any future use for the bogs such as renewable energy projects. The potential for the development of further walking routes within the County and linking with neighbouring counties should be explored, particularly where these have a cultural or historical association e.g. the Táin Trail.

The (Draft) County Longford Heritage Plan 2019-2024 states as an objective (Obj. 5) to: ‘Support the sustainable enjoyment of Longford’s countryside, waterways and heritage’. In particular, it will: ‘Support the development of walking, cycling and waterways routes within the county’. The MSWP is later particularly referenced here.

3 Desk Study

Prior to the main fieldwork contributing to this assessment, a desktop survey of available information sources was carried out. These included:

- The National Biodiversity Data Centre Online Database
- The National Biodiversity Network Online Atlas
- The OSI Geohive Database
- The NPWS Protected Species Database and Online Mapping
- The Environmental Protection Agency Database
- The EPA Water Quality in Ireland Report
- Biology.ie

Desk research also included a review of records available through the National Biodiversity Data Centre mapping system. These included rare and protected species. Records were requested for all species appearing within the study area or immediately surrounding the study area.

Designated sites were identified using the current boundary shapefiles downloaded from the NPWS website. Records of species from within the relevant Km squares were also obtained. Habitat mapping also reviewed included the Irish Semi-Natural Grassland Surveys (ISGS), the National Survey of Native Woodland (NSNW) and Ancient woodland inventory.

4 Field Study

Field work for this survey was carried out between the 1st and the 9th of October 2020. The field survey habitat assessments were carried out according to guidelines given by the Heritage Council (2011) and the JNCC (2010). The primary purposes of the field survey was to:

- Identify habitat types within the study area
- Assess for the presence of protected species of flora and fauna
- Identify ecological and environmental constraints to the construction of this Greenway
- Identify ecological sensitivities around and within the study area.

The walkover survey considered a broad survey corridor to ensure all other important features that could be impacted by the development were considered (e.g. significant treelines and hedgerows, mammal paths, streams and other watercourses). Gross habitat mapping was carried out and was a key output of this survey (See Separate mapping document in Appendix A). The fieldwork also provided guidance for any further, more detailed surveys including further bird surveys during optimal times of the year (e.g. winter – for wetland bird species) and repeated visits to some sensitive sites. The field survey was also used to identify areas of greater environmental/ecological sensitivity. These were recorded as Ecologically Sensitive Areas (ESAs) and at this stage were flagged for further study if required. This survey also established further fieldwork requirements/limitations - e.g. where sites were not accessible

5 Stakeholder Consultation

Prior to, during and following the fieldwork assessment for the Ecological Impact Assessment, the authors undertook measures to consult with a number of bodies and known authorities as well as non-governmental and voluntary organisations. These included:

Habitats and Species

- National Parks and Wildlife Service
- Longford County Council
- Bord na Móna
- Irish Wildlife Trust

Rivers, Fisheries and Watercourses

- Inland Fisheries Ireland

Birds

- Birdwatch Ireland

Flora

- Botanical Society of the British Isles

6 General Ecology and Habitats

6.1 Introduction

The purpose of the ecology survey was to:

- Classify and map the habitats according to Fossitt (2000) and where appropriate the Habitats Directive (European Commission, 2013) classification scheme.
- Carry out an inventory of flora and fauna, particularly mammals and birds, in each section.
- Identify Ecologically Sensitive Areas in the study area
- Prepare a GIS database of habitat mapping, rare species records, invasive species and other ecological and management features.

About the authors

The survey and reporting was carried out by ecologists Billy Flynn, Ian Douglas, Usna Keating and Chris Doyle. Billy, Chris and Usna undertook the botanical and faunal assessment, Usna and Billy undertook bird and mammal surveys. Ian was responsible for the overall GIS habitat mapping. All of the team members are qualified and experienced ecologists.

6.2 Methodology

6.2.1 Desk study and consultations

Designated sites were identified using the current boundary shapefiles (SAC 07/2017, SPA 01/2017) downloaded from the NPWS website. Other online mapping reviewed included Geohive maps, aerial photography and EPA shapefile datasets¹. Habitat mapping reviewed included the Irish Semi-Natural Grassland Surveys (ISGS), the National Survey of Native Woodland (NSNW) and the Ancient and long established Woodland (NPWS shapefiles). Desk research also included review of records available through the National Biodiversity Data Centre mapping system. Consultation was made with a number of bodies and individuals which included the NPWS, Bord na Móna and Inland Fisheries.

¹ www.gis.epa.ie/Envision

6.3 Field surveys

6.3.1 Un-surveyed areas

Access to the proposed route was readily achieved in all of the areas under survey. The industrial railway network that the proposed route will follow was in use or in recent use and there was little overgrowth. The authors are satisfied that all areas required to be surveyed for the purposes of this assessment were accessed. However, if there are any variations to the proposed route, it is recommended that these be subject to further survey.

6.3.2 Habitats and flora

Habitats within the study area were mapped according to level 3 of the Heritage Council classification (Fossitt, 2000) following the Heritage Council's Best Practice Guidance (Smith et al., 2011) and the Joint Nature Conservation Committee's (JNCC) Handbook for Phase 1 Habitat Survey – a technique for environmental audit (JNCC, 2010). The Heritage Council's *A Guide to Habitats in Ireland* (Fossitt, 2000) is the standard habitat classification system used in Ireland.

Habitats were also assessed for correspondence to the Habitats Directive Annex I habitat types (European Commission, 2013). Habitats of high species diversity or rarity within the local context and sensitive habitats were classified as Ecologically Sensitive Areas (ESAs).

Habitats and flora field surveys were carried out over a number of days in October 2020. Habitats were mapped by annotating aerial photographs and OSI vector maps in the field and using GPS point. These were then digitized using QGIS 3.4 software. The full extent of the proposed greenway corridor was walked. This included an approximately 3 metre wide strip upon which the greenway will run. However, the surveyed area was between 10-20 meters and more in open areas. In most instances, areas of dense vegetation were not within the clearance corridor and are therefore not likely to be impacted upon by the proposed development. Some areas outside the immediate footprint of the greenway pathway were also surveyed these may include areas within the same habitat type or adjoining habitats including the areas of regenerating bog and surrounding fields, woodland, hedgerows and streams.

A list of vascular and other plant species was recorded from each section. Invasive plant species (where found) were recorded using a GPS. No occurrence of Third Schedule Invasive Species was recorded. These are species whose propagation and spreading is strictly controlled by regulations.

The survey was carried out in October 2020 which is late in the flowering season, therefore some early flowering plant species may have been missed. In particular, early flowering orchid species may be under recorded or the abundance of vernal species such as Bluebells or Violets may be under represented.

6.3.3 Ecological Impact Assessment Methodologies

This ecological impact assessment has been prepared in accordance with relevant legislation and best practice guidance including:

- The Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment in the UK and Ireland: terrestrial, freshwater and Coastal 2nd Edition. CIEEM (2018).
- The EPA's Draft Advice Notes on Preparing Environmental Impact Statements (EPA, 2015a).
- The EPA's Draft Revised guidelines on Information to be Contained in Environmental Impact Statements (EPA, 2015b).
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009).

Ecological features (habitats and species) were evaluated for their conservation importance according to the National Roads Authority's scheme (NRA 2009). For habitats or species, significance of effects was assessed with reference to their conservation status, abundance and distribution. Description of significant effects follows guidance outlined in the EPA Draft Revised Guidelines on the Information to be Contained in EIS (EPA, 2015b). The term 'significant effect' as used in this report follows guidance (CIEEM, 2018) and is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. In the case of designated sites, a negative significant effect would be one that undermines the conservation objectives and targets for that site. The significance of impacts on habitats was determined with reference to the value of the feature being affected and the magnitude of the impact. Impacts are considered ecologically significant at a stated geographic scale or are considered not significant.

7 Results

7.1 Designated Areas

All sites designated for the conservation of nature within 15km of the proposed works are detailed in Table 1 – Table 2.

Table 1: Designated sites with 15km of the Proposed Project Area

Site Code	Site Name	Designation	Distance from the Site
4064	Lough Ree	SPA	0.57km
4101	Ballykenny-Fisherstown Bog	SPA	1.63km
440	Lough Ree	SAC	0.57km
2202	Mount Jessop Bog	SAC	1.6km
1818	Lough Forbes Complex	SAC	1.7km
2346	Brown Bog	SAC	1.8km
448	Fortwilliam Turlough	SAC	3.4km
2349	Corbo Bog	SAC	5.4km
2348	Clooneen Bog	SAC	7.6km
1626	Annaghmore Lough (Roscommon)	SAC	13.4km
2313	Ballymore Fen	SAC	13.4km
2336	Carn Park Bog	SAC	14.9km
1444	Derry Lough	pNHA	0.01km
2103	Royal Canal	pNHA	0.01km
449	Lough Bannow	pNHA	0.14km
1819	Lough Bawn	pNHA	0.16km
440	Lough Ree	pNHA	0.57km
1818	Lough Forbes Complex	pNHA	1.7km
442	Brown Bog	pNHA	1.8km
1821	Cordara Turlough	pNHA	2.0km
447	Derrymore Bog	pNHA	2.1km
448	Fortwilliam Turlough	pNHA	3.4km
1443	Lough Slawn	pNHA	5.0km
602	Corbo Bog	pNHA	5.4km

1822	Carrickglass Demesne	pNHA	6.5km
445	Clooneen Bog	pNHA	7.6km
689	Lough Sewdy	pNHA	11.1km
608	Kilglass And Grange Loughs	pNHA	11.2km
1732	Waterstown Lake	pNHA	11.5km
1642	Lough Boderg And Lough Bofin	pNHA	12.3km
1617	Ardakillin Lough	pNHA	13.6km
676	Carn Park Bog	pNHA	14.9km
1450	Mount Jessop Bog	NHA	1.6km
1448	Forthill Bog	NHA	2.18km
605	Derrycanan Bog	NHA	9.3km
2072	Lisnarrigh Bog	NHA	9.3km
422	Aghnamona Bog	NHA	11.3km
1423	Cloonageeher Bog	NHA	11.6km
691	Rinn River	NHA	12.5km
1420	Corracramph Bog	NHA	14.1km

A total of 10 sites designated as SACs and 2 sites designated as SPAs were recorded within 15km of the proposed development. The nearest Natura designated sites were Lough Ree SAC and Lough Ree SPA, around 0.6km from the proposed route.

A total of 8 proposed National Heritage Areas (NHAs) were also recorded with 15km of the proposed development. The closest being Mount Jessop Bog 1.6km away.

A total of 20 pNHAs were found within 15km of the route. The closest of these was Derry Lough the boundary of which the route runs along its boundary at some points.

No risks to the conservation objectives of any other sites listed in table 1 are considered likely due one or more of the following:

- Lack of connectivity between the proposed development and the designated area.
- Significant buffer between the proposed works area and the designated area
- No impact or change to the management of the designated area or;
- No change to chemical or physiological condition of the designated site as a result of the proposed development.

Table 2: Lough Ree SAC & SPA Qualifying & Conservation Interests

SITE	CODE	DISTANCE TO DESIGNATED SITE	SCREENING CRITERIA
Lough Ree SPA & SAC	004064	Approximately 0.5km	No physical pathways identified
HABITAT TYPES (*DENOTES A PRIORITY HABITAT)			Habitat (Natura)
Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation			3150
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)			6210
Active raised bogs			7110
Degraded raised bogs still capable of natural regeneration			7120
Alkaline fens			7230
Limestone pavements			8240
Bog woodland			91D0
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)			91E0
Annex II Species: Common name (<i>Latin Name</i>)			Species (Natura) Code No.
Little Grebe (<i>Tachybaptus ruficollis</i>)			A004
Whooper Swan (<i>Cygnus cygnus</i>)			A038
Wigeon (<i>Anas penelope</i>)			A050
Teal (<i>Anas crecca</i>)			A025
Mallard (<i>Anas platyrhynchos</i>)			A053
Shoveler (<i>Anas clypeata</i>)			A056
Tufted Duck (<i>Aythya fuligula</i>)			A061
Common Scoter (<i>Melanitta nigra</i>)			A065
Goldeneye (<i>Bucephala clangula</i>)			A067
Coot (<i>Fulica atra</i>)			A125
Golden Plover (<i>Pluvialis apricaria</i>)			A140
Lapwing (<i>Vanellus vanellus</i>)			A142

Common Tern (<i>Sterna hirundo</i>)	A193
Wetland and Waterbirds	A999
Otter (<i>Lutra Lutra</i>)	1355

7.2 Overview of habitats and classification

An overview of the main habitats recorded is detailed below. Greenway study area and the classification applied is provided here. More detail is provided in the description of habitats within each section.

7.2.1 Conifer Plantation (WD4) and Mixed Conifer Woodland (WD3)

Fossitt (2000) describes this category as areas that support dense stands of planted conifers where the broadleaved component is less than 25% and the overriding interest is commercial timber production. The conifer plantations encountered were characterised by even-aged stands of trees that are usually planted in regular rows running adjacent to the proposed route and in the surrounds. Plantations consisted mainly of Sitka Spruce (*Picea sitchensis*), Scots Pine (*Pinus sylvestris*) Lodgepole Pine (*Pinus contorta*), Norway Spruce (*Picea abies*) and Larches (*Larix spp.*). Species diversity was generally low and single species stands are common.

Mixed Conifer Woodland as they appeared surrounding the study area was composed of mixed stands of the above species. Depending upon the density of planting and species composition these stands contained varying levels of shrub and understory plants.

The proportion of ground flora species was dependent upon the degree of light penetration and Bramble growth. In many instances, Bramble (*Rubus fruticosus agg.*) dominated the understorey and smothered all other plants with the exception of those who could climb above the thicket like Ivy (*Hedera helix*), Honeysuckle (*Lonicera periclymenum*), Hedge Bindweed (*Calystegia sepium*), Cleavers (*Galium aparine*) and Bush Vetch (*Vicia sepium*). Bent grasses (*Agostis spp.*) were noted here.

7.2.2 Mixed broadleaved/conifer woodland WD2

This general category includes woodland areas with mixed stands of broadleaved trees and conifers, where both types have a minimum cover of 25%, and a maximum of 75%. Trees contained a mixture of both native or non-native species. In general non-natives were usually conifers including Sitka Spruce (*Picea sitchensis*), Lodgepole Pine (*Pinus contorta*), Norway

Spruce (*Picea abies*) and Larches (*Larix spp.*) with the exception of the broadleaved species Beech (*Fagus sylvatica*) and Sycamore (*Acer pseudoplatanus*). The native broadleaved component usually contained Willows (*Salix Spp.*), Alder (*Alnus glutinosa*), Sessile Oak (*Quercus petraea*), Downy Birch (*Betula pubescens*), Holly (*Ilex aquifolium*), Rowan (*Sorbus aucuparia*), Elder (*Sambucus nigra*), Ash (*Fraxinus excelsior*) and Hazel (*Corylus avellana*). The mixture of these species was usually determined by seed sources, light exposure and degree of wetness. Small and immature broadleaved trees and shrubs were common in these habitat types. Understory plants varied greatly across the site depending on topography and acidity of the soil. Under conifers and where conifers had recently stood the following herb species were common; Willowherb (*Epilobium spp.*), Foxgloves (*Digitalis purpurea*) and ferns including Bracken (*Pteridium aquilinum*) and Hard Fern (*Blechnum spicant*). Climbers; Honeysuckle (*Lonicera periclymenum*) and Ivy (*Hedera helix*) were also common. In areas where broadleaved trees dominated the ground flora layer Cleavers (*Galium aparine*), Bush Vetch (*Vicia sepium*), Meadow Vetchling (*Lathyrus pratensis*), Nettle (*Urtica dioica*) and Wood Sorrel (*Oxalis acetosella*) were noted. Species diversity was likely greater than that described here but could not be fully assessed given the time of the year.

7.2.3 Scrub (WS1)

This broad category includes areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles. The canopy height is generally less than 5 metres. Scrub develops as a precursor to woodland or as a result of recent disturbance and was often found in inaccessible locations, or on abandoned or marginal land. Scrub was common throughout the study area and has developed in a number of different circumstances. Scrub dominated by bramble, gorse and willow was most common. Scrub was commonly found along the sides of the tracks between the track and areas of cutover bog. In many instances scrub was found to transition into bog woodland. Scrub often formed an impenetrable thicket and often could not be surveyed in detail. Trees in the scrub usually consisted of Willows (*Salix Spp.*), Downy Birch (*Betula pubescens*), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Gorse (*Ulex europaeus*). Climbers included Dog-rose (*Rosa canina*), Bramble (*Rubus fruticosus agg.*), Ivy (*Hedera helix*), Honeysuckle (*Lonicera periclymenum*), Hedge Bindweed (*Calystegia sepium*), Cleavers (*Galium aparine*) and Bush Vetch (*Vicia sepium*). A herb layer and grasses were generally absent or minimal.

7.2.4 Hedgerows (WL1) and Treelines (WL2)

Hedgerows are linear strips of shrubs, often with occasional trees. Some hedgerows may be overgrown or fragmented if management has been neglected, but where still considered in this category unless they have changed beyond recognition. Most hedgerows recorded during this survey were outside the study area or forming the boundary of the study areas e.g. along roadways or along the track side. Species composition varies with factors such as age, management, soils and exposure. Hedgerows usually contained plants such as Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*), Holly (*Ilex aquifolium*), Dog-rose (*Rosa canina*), Bramble (*Rubus fruticosus agg*), Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Beech (*Fagus sylvatica*), Elder (*Sambucus nigra*), Elms (*Ulmus spp.*) and Willows (*Salix spp.*). In many instances mature trees over 10 meters tall were found within hedgerows. Climbing plants such as Ivy (*Hedera helix*), Honeysuckle (*Lonicera periclymenum*), Hedge Bindweed (*Calystegia sepium*), Cleavers (*Galium aparine*) and Bush Vetch (*Vicia sepium*) were common. Many hedgerows particularly those in front of houses or that ran along roads contained non-native shrub species including Fuchsia (*Fuchsia magellanica*), Box (*Buxus sempervirens*), Snowberry (*Symphoricarpos albus*), Cotoneaster (*Cotoneaster spp.*), Leyland cypress (*Cupressus x leylandii*) and Cherry Laurel (*Prunus laurocerasus*).

Treelines were also common features in the same context as hedgerows discussed above. Treelines usually had the same characteristics as hedgerows but contained more mature trees. Treelines species included: Beech (*Fagus sylvatica*), Downy Birch (*Betula pubescens*), Horse Chestnut (*Aesculus hippocastanum*), Sycamore (*Acer pseudoplatanus*), Ash (*Fraxinus excelsior*) and Alder (*Alnus glutinosa*).

7.2.5 Mixed Broadleaved woodland (WD1)

Fossit describes this general category of woodlands as areas with 75-100% cover of broadleaved trees, and 0-25% cover of conifers. Mixed broadleaved woodland is used in situations where woodland stands cannot be classified as semi-natural or are clearly planted this may include woodlands planted hundreds of years before as is often the case in and around old estates. Beech (*Fagus sylvatica*) was a common inclusion in this habitat type along with Willows (*Salix Spp.*), Alder (*Alnus glutinosa*), Sessile Oak (*Quercus petraea*), Downy Birch (*Betula pubescens*), Holly (*Ilex aquifolium*), Rowan (*Sorbus aucuparia*), Sycamore (*Acer pseudoplatanus*), Elder (*Sambucus nigra*), Ash (*Fraxinus excelsior*) and Hazel (*Corylus avellana*) in varying quantities. The

ground layer within this habitat type was variable and often contained large numbers of sapling Ash (*Fraxinus excelsior*), Elder (*Sambucus nigra*) and Sycamore (*Acer pseudoplatanus*).

Bramble (*Rubus fruticosus agg.*) was dominant or abundant in most areas of Mixed Broadleaved woodland along Wood Speedwell (*Veronica montana*), Ivy (*Hedera helix*), Herb-Robert (*Geranium robertianum*), Bush Vetch (*Vicia sepium*), Enchanter's-nightshade (*Circaea lutetiana*), Wood Sorrel (*Oxalis acetosella*) and Bracken (*Pteridium aquilinum*).

In wet areas where streams and ditches were found or where the ground level was closer to the water level wet woodland areas occurred. Many of these areas have been classified as Wet Willow Woodland (WN6) and these are discussed in detail below. Areas of broadleaved woodland that were wet but did not fit into that category as they were not permanently waterlogged are described here:

Woodlands dominated by Willows (*Salix Spp.*), Alder (*Alnus glutinosa*) and Downy Birch (*Betula pubescens*) was commonly found in depressions bordering the site and along the edge of areas of cutover bog.. Alder (*Alnus glutinosa*) and Willow usually dominated the canopy with grasses including creeping bent (*Agrostis stolonifera*) often forming a uniform mat in the understory. Herbs included Water Mint (*Mentha aquatica*), Water forget-me-nots (*Myosotis spp.*), Meadowsweet (*Filipendula ulmaria*) and Rushes (*Juncus Spp*). Many of these areas graded into true Wet willow woodland or areas of wet grassland.

7.2.6 Wet willow-Alder-ash woodland (WN6)

According to Fossitt (2000) this broad category includes woodlands of permanently waterlogged sites that are dominated by Willows (*Salix sp.*), Alder (*Alnus glutinosa*) or Ash (*Fraxinus excelsior*), or by various combinations of some or all of these trees. It includes woodlands of lakeshores, stagnant waters and fens. Woodlands of this habitat types have a ground flora that is often 'grassy' in appearance with abundant remote Sedge (*Carex remota*) and Creeping bents (*Agrostis stolonifera*). Other common components of the field layer include Bramble (*Rubus fruticosus agg.*), Creeping Buttercup (*Ranunculus repens*), Meadowsweet (*Filipendula ulmaria*), Marsh-bedstraw (*Galium palustre*), Yellow pimpernel (*Lysimachia nemorum*) and Lady-fern (*Athyrium filix-femina*).

Surrounding the study area these woodlands were typically found around where rivers and drainage ditches were close to ground level creating permanent or near permanent flooded conditions for most of the year. Ground flora was quite typical of WN6 woodlands in places with

common components including Reed Canary-grass (*Phalaris arundinacea*), Remote Sedge (*Carex remota*), Creeping Buttercup (*Ranunculus repens*), Marsh-bedstraw (*Galium palustre*). Other species commonly occurring in this habitat included Water Mint (*Mentha aquatica*), Marsh Thistle (*Cirsium palustre*), Purple loosestrife (*Lythrum salicaria*), Wild Angelica (*Angelica sylvestris*) and Lady-fern (*Athyrium filix-femina*).

Fossitt notes that “wet willow-Alder-ash woodland (WN6) may contain links with the priority Annex I habitat Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-padion*, *Alnion incanae*, *Salicion albae*) (91E0)”.

7.2.7 Depositing lowland rivers (FW1) and Eroding upland Rivers (FW1)

Rivers within the study area were found crossing the route at a number of occasions. In most instances, aquatic vegetation was only occasional and typically species here included Fool’s Water Parsley (*Apium nodiflorum*), Reed Canary Grass (*Phalaris arundinacea*) and unbranched Bur-reed (*Sparganium emersum*) with water starwort (*Callitriche sp.*) and Duckweed (*Lemna sp.*) occurring where the flow was particularly slow.

7.2.8 Drainage ditches (FW4)

This category includes linear water bodies or wet channels that are entirely artificial in origin, and some sections of natural watercourses that have been excavated or modified to enhance drainage and control the flow of water. Drainage ditches either contained water (flowing or stagnant) or were wet enough to support wetland vegetation. Drainage ditches were common throughout the site and were usually associated with drainage of peat formations. These varied in sizes and significance. Smaller ditches contend little Fool’s Water-cress (*Apium nodiflorum*), Bramble (*Rubus fruticosus agg.*), Creeping Buttercup (*Ranunculus repens*) and Lady-fern (*Athyrium filix-femina*). Other larger drainage ditches were dominated by Duckweed (*Lemna sp.*) but also contained Hogweed (*Heracleum mantegazzianum*).

7.2.9 Dry meadow and grassy verges (GS2)

Dry meadow and grassy verges (GS2) primarily occurred on unmanaged land associated with roadside verges, paths and lands unmanaged for recreation or agriculture. This habitat type often merged between areas of recolonising bare ground, hedgerows, scrub and treelines.

These grasslands were typically overgrown, contained a high proportion of coarse grasses such as Cock's-foot (*Dactylis glomerata*), Bents (*Agrostis spp.*), False Oat-grass (*Arrhenatherum elatius*) and Purple Moor-grass (*Molinia caerulea*). The herb layer contained mainly tall growing or climbing herbs including common Hogweed (*Heracleum sphondylium*), Hedge Bindweed (*Calystegia sepium*), Bush Vetch (*Vicia sepium*) and Common Knapweed (*Centaurea nigra*). In wetter areas Bog Asphodel (*Narthecium ossifragum*) and Devil's-bit Scabious (*Succisa pratensis*) were commonly recorded.

Where disturbance was minimal or along the unkept banks of the industrial trainlines, species diversity was high in places including Silverweed (*Potentilla anserina*), St John's Wort (*Hypericum perforatum*), Selfheal (*Prunella vulgaris*), Common Bird's-foot Trefoil (*Lotus corniculatus*), Cat's-ear (*Hypochoeris radicata*). was often abundant. In wetter areas Bog Asphodel (*Narthecium ossifragum*) and Devil's-bit Scabious (*Succisa pratensis*) were commonly recorded. The dead stalks of Orchids were found in and along a number of verges. These could not be indemnified given the time of year but were likely common spotted orchids.

7.2.10 Recolonising Bare Ground

Fossit describes Recolonising bare ground ED3 as areas where bare or disturbed ground, derelict sites or artificial surfaces of tarmac, concrete or hard core have been invaded by herbaceous plants. Vegetation cover should be greater than 50% for inclusion in this category.

Recolonising bare ground was recorded throughout the study area along the trainline, at junctions on the edges of the bogs and around yards. Many of the plant species found within this habitat types were typical ruderals, or weed plants including Colt's Foot (*Tussilago farfara*), Nettle (*Urtica dioica*), Dandelion (*Taraxacum spp.*), Willow-herb (*Epilobium spp.*) and Ragwort (*Senecio spp.*). Some bare areas contained a lot of peat bog species including Heath Milkwort (*Polygala serpyllifolia*), Purple Moor-grass (*Molinia caerulea*), Cotton grasses (*Eriophorum spp.*) and Heathers (*Calluna vulgaris*) were noted in a number of areas. Species diversity in some areas of recolonising bare ground was quite high with Tormentil (*Potentilla erecta*), Silverweed (*Potentilla anserina*), St John's Wort (*Hypericum perforatum*), Yarrow (*Achillea millefolium*), Selfheal (*Prunella vulgaris*), Common Bird's-foot Trefoil (*Lotus corniculatus*) and Common Centaury (*Centaureum erythraea*). The remains of a number of Orchids were also noted these were likely Common Spotted Orchid (*Dactylorhiza fuchsii*).

7.2.11 Cutover bog (PB4)

The dominant habitat type surrounding much of the site. Cutover bogs are areas of bog where part of or most of the original mass of peat has been removed through turf cutting or other forms of peat extraction. Areas of cutover recorded were generally abandoned or exhausted cutover as little or no peat (relative to its original mass) remained. In many instances the bedrock under the original peat mass was visible. In other areas peat was seen at depths of over 2 meters. Cutover bog was generally recorded as a transitional habitat, or complex of habitats, that can include mosaics of bare peat and revegetating areas with woodland, scrub, heath, fen and or grassland communities. The nature of the recolonising vegetation was dependent on numerous factors including the frequency and extent of disturbance, hydrology, the depth of peat remaining, and the nature of the peat and the underlying substratum.

Standing water was present in drains, pools or excavated hollows. Some large areas of flooded cut over bog were recorded around the site and have begun to form complex wetland and wetland fringe habitat similar to fens, flushes and reed fringes.

To allow for a more accurate representation of this habitat type within the report Cutover Bog has been further separated into 4 categories. These categories generally follow the descriptions used in previous ecological studies carried out by Bord na Móna Ecologist. Habitats as described here have been adapted from the Bord na Móna future habitat mapping database. These have been slightly modified to better suit this report. The level of detail provided within these data bases was beyond that required for this report given that this project is not likely to significantly impact areas of recolonising cutover peat. See foot notes for corresponding habitat classifications.

Bare Cutover Bog (Bare PB4)²

Areas of recent disturbance where recolonisation has just become or has not yet taken place. Bare peat accounts for over 80% of the area.

² Classified as bare peat on the Bord na Mona future habitat mapping database

Figure 1: Bare Peat area**Emerging grassland and heath on Cutover peat (PB4 (GS4, HH1)³**

A mosaic of areas of grassland usually composed of Purple Moor-grass (*Molinia caerulea*), Rushes (*Juncus effusus*, *J. acutiflorus*, *J. articulatus*, *J. inflexus*), Sedges (*Carex Spp*) and Heathers (*Calluna vulgaris*, *Erica spp*). Tree including Willows (*Salix sp.*) and Birch Downy Birch (*Betula pubescens*) are present but only as seedlings or juvenile trees.

Figure 2: Emerging grassland and heath on Cutover peat (PB4 (GS4, HH1)

³ Classified as Bog woodland, heathland, and/or degraded raised bog communities (WN7/WS1/PB1/HH1/HH3/PF2/GS3) on the Bord na Mona future habitat mapping database

Emerging Woodland Cutover Bog (WN7, GS4, HH1)⁴

These are areas of previously open grassland, heathland type cutover bog as described above. Bog woodland species are beginning to become dominant. Trees including Willows (*Salix sp.*) and Birch Downy Birch (*Betula pubescens*) abundant but not yet dominant.

Figure 3: Emerging Woodland Cutover Bog (WN7, GS4, HH1**Bog woodland & wetland mosaic (WN7, FL, FS1, PF2, WN6)⁵**

This habitat type was commonly found within depressions over large areas of expansive cutover raised bog. These areas where complex mosaics of submerged or semi-submerged plants interspersed within open deeper water. Waters levels are likely to fluctuate greatly during the year. Willow (*Salix Spp*) commonly formed dense stands within this mix along with reed fringe species including Common Reed (*Phragmites australis*), Bulrush (*Typha latifolia*) and Reed Canary-grass (*Phalaris arundinacea*). These habitats were noted as important feeding and resting grounds for a wide range of wetland bird species.

⁴ Broadly corresponds to Bog woodland (WN7) dominated - with pockets of open habitats (PF2, GS, HH1) on the Bord na Mona future habitat mapping database

⁵ Bord na Mona future habitat mapping database

Figure 4: Bog woodland & wetland mosaic (WN7, FL, FS1, PF2, WN6)**Bog Woodland (WN7)**

This category includes woodlands of intact ombrotrophic bogs, bog margins and cutover bog. Bog woodland typically occurs on deep acid peat that is relatively well drained in the upper layers and is commonly associated with former turf cutting activity or drainage. It may also occur in areas of cutover bog where most of the peat has been removed. Downy Birch (*Betula pubescens*) and Willows (*Salix spp.*) usually dominated and often formed pure stands. In particularly well developed areas of bog woodland other trees and shrubs can including Holly (*Ilex aquifolium*), Rowan (*Sorbus aucuparia*), Scots Pine (*Pinus sylvestris*) and Oaks (*Quercus spp.*) were noted. Dwarf shrubs such as Ling (*Calluna vulgaris*) or Bilberry (*Vaccinium myrtillus*) were commonly found in the field layer of this habitat usually in association with Bracken (*Pteridium aquilinum*), Bramble (*Rubus fruticosus agg.*), Ivy (*Hedera helix*), Purple Moor-grass (*Molinia caerulea*) and Honeysuckle (*Lonicera periclymenum*).

7.2.12 Wet grassland (GS4)

Areas of wet grassland varied across the site. Significantly large areas of this habitat type were recorded surrounding the site and were associated with low intensity agriculture. These were generally dominated by Rushes (*Juncus effusus*, *J. acutiflorus*, *J. articulatus*, *J. inflexus*) and Sedges (*Carex Spp*). Grasses included Yorkshire-fog (*Holcus lanatus*) and Creeping Bent (*Agrostis stolonifera*). The herb component usually contained Creeping Buttercup (*Ranunculus repens*), Marsh Thistle (*Cirsium palustre*), Silverweed (*Potentilla anserina*), Meadowsweet (*Filipendula*

ulmaria), Water Mint (*Mentha aquatica*) and Horsetails (*Equisetum spp.*). Yellow Iris (*Iris pseudacorus*) dominated wet grassland was also recorded in a number of locations.

Table 3: Other Habitats noted around the site

Habitat Types	Fossit Code
Stone walls and other stonework	BL1
Buildings and artificial surfaces	BL3
Improved Grassland	GA1
Amenity Grassland	GA2
Dense bracken	HD1
Rich fen and flush	PF1
Ornamental/non-native shrub	WS3
Immature woodland	WS2

8 Habitats and Ecology by Route Section

To make this report more user-friendly and manageable route descriptions have been separated into 4 no. main sections based on the townlands through which the route passes. These are explained in a general north to south direction.

Table 4: Survey sections (See Appendix A for Maps)

Greenway Sections		Report Section
Section 1	Ballyloughan to Boughill	8.1
Section 2	Boughill to Derryhaun	8.2
Section 3	Derryhaun to Mosstown	8.3
Section 4	Mosstown to Gorteencalreen	8.4

For the purposes of describing the habitats and constraints along the route of the proposed Greenway each section was then further subdivided by chainages. A summary of habitats and constraints within each subsection is given in the table at the start of each section. This is followed by an overall description of the habitats and other ecological elements of each section. This section of the report should be read in conjunction with the associated habitat and ecological constraints maps document which is provided with this document. Photographs taken in each section are also provided in Appendix D.

8.1 Section 1: Ballyloughan to Boughill

Table 5: Ballyloughlan to Boughill

Map Sections	Ballyloughan to Boughill
Chainage	0000 to 10329, 0000a to 1065a, 0000b to 0890b
Map	Ballyloughan to Boughill Ecological Constraints & Habitats
General Habitat types on and surrounding the route	Buildings and artificial surfaces BL3 Improved Grassland GA1 Amenity Grassland GA2 Hedgerows WL1 Treelines WL2 Wet Grassland GS4

	<p>Bog Woodland WN7</p> <p>Cutover Bog PB4</p> <p>Lowland Depositing River FW2</p> <p>Drainage Ditches FW4</p> <p>Scrub WS1</p> <p>(Remnant) Raised bog PB1</p> <p>Emerging grassland and heath on Cutover peat PB4 (GS4, HH1)</p> <p>Emerging Woodland Cutover Bog PB4 (GS4, HH1, WN7)</p> <p>Bog woodland & wetland mosaic PB4 (WN7, FL, FS1, PF2, WN6)</p>
Ecological Constraints	<p>Large mature trees to be retained where possible</p> <p>Invasive Species (not third schedule)</p> <p>Fly-tipping</p>
Ecological Sensitivities	<p>Rivers crossed by route. Willow woodland, (remnant) raised bog, wet grassland and mixed woodland close to route but outside the Zone of Influence.</p>

This section begins on the L50011 off the N5, approximately 3km to the west of Longford town centre. A little over 1.5km of the route following this is on a minor road – a much smaller cul-de-sac laneway. The L50011 laneway is flanked by hedgerows with mature trees – predominantly Ash and Sycamore. The invasive species Snowberry was noted here also. Later, Conifer plantations and mature bog woodland and wet grassland border the route. Approximately 1.6km from the N5 the route turns west onto a bog road.

Wet grassland habitat was noted within the route and on either side Birch-dominated bog woodland habitat occurs. The route crosses over a section of recently worked cutover bog with little vegetation succession. The route then joins the Bord na Móna railway line. The habitat within the immediate route corridor here does not readily conform to habitat classification but it is broadly artificial surface and recolonising bare ground. In some areas (where the track has been longer disused) the vegetation diversity is quite high with species such as Purple Moor Grass, Colt's-foot, Yarrow, Silverweed and Self-heal. Orchids (believed to be Common Spotted Orchid) were also noted.

The route then passes through areas of cutover bog with bare peat, the edges of which having primary colonisers. The route then passes through bog woodland and scrub habitat with Birch

and Willow being the dominant species. There are then conifer plantations to the north of the route. Pine Marten spraints were noted in several locations

The route crosses over the Fallan River (a tributary of the Camlin) via a substantial bridge. The habitat either side of the route is scrub and bog woodland. The route is crossed by a local road which is carried out over the railway line by a mass concrete bridge of low bat potential. The route widens passing through a Bord na Móna railway yard before crossing an open section of cutover bog. Some raised bog potentially capable of regeneration was noted to the south of the route.

The route then turns to the north and runs adjacent to the Royal Canal from which it is separated by a thin strip of woodland comprised of mainly of Birch, Willow and Ash. The route crosses the Royal Canal via a lifting bridge before entering another section of cutover bog. The railway line is banked up high over existing bogland here and it was noted that a mosaic of habitats here include bog woodland and a range of wetland habitats with some substantial areas of open water.

The route has additional spurs that include over a kilometre of recently laid crushed stone which passes through a bog woodland and wetland mosaic as described above. Another spur runs through cutover bog with bare peat to the north and the woodland/wetland mosaic to the south. Mature Birch treelines were noted here.

On the main route, more mature scrub has developed around the railway line in places. A section of wet woodland which may correspond to the Annex I habitat type was noted to the south of and outside the proposed route. The route crosses the Ballynakill River at two locations. The river here appears to have been substantially altered here and there were large drainage ditches adjoining this.

8.2 Section 2: Boughill to Derryhaun

Table 6: Boughill to Derryhaun

Map Sections	Boughill to Derryhaun
Chainage	0000 to 13500, 0000 – 2700a, 0000b to 1120b & 0000c to 3000c, 0000d – 0460d
Map	Boughill to Derryhaun Ecological Constraints & Habitats
General Habitat types on and surrounding the	Buildings and artificial surfaces BL3 Recolonising bare ground BL ED3

route	<p>Improved Grassland GA1</p> <p>Hedgerows WL1</p> <p>Treelines WL2</p> <p>Wet Grassland GS4</p> <p>Bog Woodland WN7</p> <p>Cutover Bog PB4</p> <p>Lowland Depositing River FW2</p> <p>Drainage Ditches FW4</p> <p>Scrub WS1</p> <p>(Remnant) Raised bog PB1</p> <p>Emerging grassland and heath on Cutover peat PB4 (GS4, HH1)</p> <p>Emerging Woodland Cutover Bog PB4 (GS4, HH1, WN7)</p> <p>Bog woodland & wetland mosaic PB4 (WN7, FL, FS1, PF2, WN6)</p>
Ecological Constraints	<p>Large mature trees to be retained where possible</p> <p>Invasive Species (not third schedule)</p> <p>Rubbish</p>
Ecological Sensitivities	<p>Rivers crossed by route. Willow woodland, (remnant) raised bog, wet grassland and mixed woodland close to route but outside the Zone of Influence.</p>

This route section begins on an existing roadway – a rural cul-de-sac. The route is flanked by mature treelines and broadleaved woodland. The species of mature trees here include Ash and Hazel. The invasive species Snowberry was also noted as being present in the boundaries here. The route crosses a number of drainage ditches.

After around 1km, the route passes through open countryside with fields of agricultural grassland bounded by hedgerows and treelines with banks and drainage ditches. Some houses and yards were recorded here. One of these was noted as having potential bat roost habitat. Later, another invasive species – Cherry Laurel – was recorded in the mature high-sided roadside hedgerow.

Greenway construction works have begun for a significant portion of this section. Any vegetation has been cleared and crushed rock surface has been laid for around 3km. An area of birch-dominated bog woodland is emerging to the north of the route. The completed works

here include a new bridge over the Kilnacarrow River. The route passes alongside the edge of an extensive area of bare peat. To the west there is an extensive area of mixed conifer plantation. Species noted here were Sitka Spruce and Scots Pine. There is also some broadleaved plantation here.

A separate spur takes the proposed route along Bord na Móna railway line through mixed conifer and broadleaved woodland with several wet ditches and treelines. The railway line then crosses the River Shannon via a substantial bridge. A Kingfisher (an Annex II species) was recorded here. The route continues on a raised bank with agricultural grasses dominating before turning westward and through wet grassland and cutover bog.

The main route continues through recolonising bare ground which is flanked by mixed conifer and broadleaved woodland as well as hedgerows which separate the railway line from wet grassland to the south. The route then again passes through an extensive area of bare peatland. Later, bog woodland appears to the north of the line. An additional spur brings the route to the Bord na Móna Mount Dillon Yard and bare peat is the dominant habitat type here.

The route between this and the power station in Lanesborough is bound by mature treelines and hedgerows. Large drainage ditches flank the route also. An area of wet woodland occurs to the west of the route. The proposed route approaching the power station is a wide area of built ground (crushed rock) with variable recolonisation by herb species. A spur connecting the route to Lanesborough via the N63 at the Rathcline GAA ground was also noted in this area.

Chainage 0000e to 6013e moves along an old trainline with scrubby hedgerows separating the route from areas of cutover bog and recolonising cutover bog. Whooper Swan and Golden Plover were both recorded adjacent to the route in areas of open water and recolonising cutover bog. A number of areas of remnant raised bog were recorded north of this route section. Towards the end of this section (south of the Mount Dillon Bord na Móna Depot) a number of large drains and ditches were recorded that were likely formerly used to drain this area of bog.

8.3 Section 3: Derryhaun to Mosstown

Table 7: Derryhaun to Mosstown

Map Sections	Derryhaun to Mosstown
Chainage	0000 to 10003, 0000a to 16400a, 0000b to 0924b, 0000c to 1016c
Maps	Derryhaun to Mosstown Ecological Constraints Maps

<p>General Habitat types on and surrounding the route</p>	<p>Buildings and artificial surfaces BL3 Recolonising bare ground BL ED3 Improved Grassland GA1 Hedgerows WL1 Treelines WL2 Wet Grassland GS4 Bog Woodland WN7 Cutover Bog PB4 Lowland Depositing River FW2 Drainage Ditches FW4 Scrub WS1 (Remnant) Raised bog PB1 Emerging grassland and heath on Cutover peat PB4 (GS4, HH1) Emerging Woodland Cutover Bog PB4 (GS4, HH1, WN7) Bog woodland & wetland mosaic PB4 (WN7, FL, FS1, PF2, WN6)</p>
<p>Ecological Constraints</p>	<p>Evidence of Pine Marten & Badger activity Raptor Hunting Area</p>
<p>Ecological Sensitivities</p>	<p>Mammal habitat to be protected, , (remnant) raised bog, Invasive species occurring.</p>

This route begins at the level crossing of the Bord na Móna railway line north-east of Derryhaun Estate.

The route starts on bare peat which is quickly recolonised by calcareous grassland. The next section runs north along a raised bank, bordered by broadleaved woodland and a patch of raised bog. Multiple mammal trails were observed here along with badger faeces and a live Irish Hare. From here it runs the bog perimeter until it meets the main road. The route runs along the southern side of the R398 road towards Longford. The route is mostly bounded by agricultural grassland (including drainage ditches), residential areas and cutover bog. A consistent hedge/treeline runs along the road on both sides, occasionally broadening into woodland. Several mammal trails were found crossing the road.

The invasive species cherry laurel (*Prunus laurocerasus*), snowberries (*Symphoricarpos spp.*) and old man’s beard (*Clematis vitalba*) were found, however none of these are third schedule. This

section contained a number of excellent mature trees, ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*) and hawthorn (*Crataegus mongyna*), that should be retained where possible.

The route leaves the road at 7300a and follows the old rail line south into the bog. The area immediately surrounding the track was composed of rough grassland bordered by scrub and a willow-dominated treeline. Some patches of devil's bit scabious (*Succisa pratensis*) were found which are important to the marsh fritillary (*Euphydryas aurinia*), protected under annex II of the European Union Habitats and Species Directive, which has been recorded within 15 km of the area. Both badger (*Meles meles*) and pine marten (*Martes martes*) droppings were found in this section.

Section b branches off at 8100a and runs through agricultural grassland until it meets the canal at 0912b. A raised limestone mound with a mixed treeline runs along south of the first half of the proposed route and a field drain runs the entire way along the north side.

From the point where section b joins, the main route continues south. The rail line is predominantly grassland with a continuous border of gorse and patches of bracken. The route continues like this, passing an area of bog woodland on the east, with agricultural grassland on the west, until it meets and moves on to cutover bog at 9400a. Multiple badger faeces and mammal trails were found along this section. The route runs directly through this area of cutover bog which is lightly recolonising. One area of wet flushes with high ecological significance was observed adjacent to the track. It is recommended that the conservation of these flushes be included as a part of the bog restoration plan. Several pellets from an unidentified bird of prey were found on this strip of bog along with one instance of badger faeces. On the south side of the bog, the rail line turns to the east and continues straight until 16300a. The track is predominantly bare ground, recolonising bare ground and grassland, bordered to the north by some raised bog and bog woodland.

The track runs south along a gravelled rail line, surrounded by cutover bog. The route is bordered by bracken scrub with occasional gorse. The route ends in a wooded area, just north of the northern Corlea Bog car park.

8.4 Section 4: Mosstown to Gorteencalreen

Table 8: Mosstown to Gorteencalreen

Map Sections	Mosstown to Gorteencalreen incl Corlea Trackway
Chainages	0000 to 13300, 0000a to 3400a, 0000b to 2500b

Maps	Mosstown to Gorteencalreen Ecological Constraints Maps
General Habitat types on and surrounding the route	<p>Buildings and artificial surfaces BL3</p> <p>Improved agricultural grassland GA1</p> <p>Improved agricultural grassland/Wet grassland GA1/GS4</p> <p>Amenity Grassland GA2</p> <p>Hedgerows WL1</p> <p>Treelines WL2</p> <p>Heath HH1</p> <p>Heath/Scrub HH1/WS1</p> <p>Wet Grassland GS4</p> <p>Bog Woodland WN7</p> <p>Cutover bog/Bare peat PB4</p> <p>Eroding Upland Stream FW1</p> <p>Drainage Ditches FW4</p> <p>Drainage ditches/Eroding rivers FW4/FW1</p> <p>Scrub WS1</p> <p>(Remnant) Raised bog PB1</p> <p>Bog woodland/Mixed broadleaved woodland WN7/WD1</p> <p>Bog woodland/Scrub WN7/WS1</p> <p>Recolonising bare ground/Buildings and artificial surfaces BL3/ED3</p> <p>Buildings and artificial surfaces/Dense bracken BL3/HD1</p> <p>Conifer Plantation WD4</p> <p>Emerging grassland and heath on Cutover peat PB4 (GS4, HH1)</p> <p>Emerging Woodland Cutover Bog PB4 (GS4, HH1, WN7)/WS1</p> <p>Emerging woodland on cutover bog/Scrub</p> <p>Bog woodland & wetland mosaic PB4 (WN7, FL, FS1, PF2, WN6)</p>
Ecological Constraints	<p>Evidence of Pine Marten & Badger Activity</p> <p>Wet flush areas</p> <p>Invasive Species</p>
Ecological Sensitivities	<p>Wetland habitats to be protected, , (remnant) raised bog, Minimise disturbance to mammal habitat</p>

This section starts at the railway crossing north east of Derryhaun estate and continues north along the old rail line. This route follows the old rail line north over until it reaches an area of cutover bog where it branches off the main track and heads east, passing recolonising cutover bog before turning south. Some badger faeces and several mammal trails were observed on the initial section of calcareous grassland.

As the route turns south, there is a collection of large pools fed by a drain that continues adjacent to the path for the next few kilometres. There is some light bog rehabilitation around the ponds. The route runs through wet and rough grassland until it meets a local road. Numerous mammal trails were found here. At 2+550 the route turns back on itself and follows a drain that runs through private farmland (it should be noted that this could be a mapping error as it seems unnecessary and would be difficult to develop). The route is predominantly agricultural grassland with some light to medium scrub until it re-joins with the old rail line.

The rail line here (still in use) continues south away from the cutover bog it is bordered on both sides by deciduous woodland and mature bog woodland, both being excellent examples of these habitats.

There is also a patch of raised bog in very good condition, which should be avoided if possible. Some badger droppings and mammal trails were noted in this section. At the bottom of the route (running west) there is a large gravel path which the route follows, passing more bog woodland, raised and cutover bog until it meets a main road under a mixed treeline.

This section starts on gravel path southwest of Derryhaunmore cross and continues south. The habitat along the route is primarily rough grassland with patches of bare ground and scrub.

There is a large construction area on the west of the route at 0300 with a small area of recolonised wetland contained within. The route is initially bordered by a drainage ditch and a large area of well-established bog woodland, which can be seen from satellite photographs. Some badger droppings were found on this section.

After this it runs around the edge of recovering/recolonising cutover bog for several kilometres. Occasional scrub and mammal trails were present, with some bog woodland and broadleaved woodland at the borders of the bog. An existing gravel road runs parallel to the rail track for a large part of the middle section, at times bordered by a large spoil heap and drain.

An established reed swamp occurs where the route meets a canal at 7710, from here the route continues along the northern side of an area of cutover bog until it meets a large area of wet grassland. This wet grassland was an excellent and largely undisturbed habitat, ideal for birds,

and care should be taken during development. This area of wetland connects to the main road via a small wooded lane, featuring multiple mammal trails, which the route follows. Once it meets the main road, the route runs south for several hundred metres past broadleaved woodland, plantation and agricultural grassland.

8.5 Habitats Evaluation

Within the broader study area, a diverse range of habitats occur. However, within the proposed route corridor, a much more limited range of habitats occur. This is owing to the highly modified nature of the railway line and path/laneway/roadway proposed for development as Greenway. There are no designated conservation areas within the proposed route. The route crosses a number of watercourses from very minor ditches and streams to major rivers. Outside of the main proposed route, there is a large homogeneity to much of the surrounding habitats, being cutover bog with exposed peat. However, where extraction has ceased, these peatlands are reverting to a range of habitat types that will be of increasing habitat value, particularly where Bord na Móna rehabilitation works are ongoing.

The table below gives a detailed summary of the main habitat types found within the survey area.

Table 9: Ecological significance of habitats within the site.

Ecological feature	Fossitt code	Evaluation	Rationale
Cutover & Cutaway Bog	PB4	Moderate Local	A degraded peatland habitat type but of increasing importance as rehabilitation measures applied.
Treelines	WL2	High Local	Mature treelines some containing notable mature trees.
Hedgerows	WL1	High Local	Ecological corridor often containing notable mature trees.
Wet woodlands	WN6	High local value and regional importance	Important for a number of wetland plants but also birds, reptiles and mammals.
Broadleaved	WD1	Moderate local, low	Areas of value to local wildlife.

woodland		regional	
Lowland rivers	FW2	High Local to High Regional	Ecological corridors.
Drainage ditches	FW4	Low Local	Small areas supporting wetland vegetation some of local importance to wildlife
Wet grassland	GS4	Moderate local in general. Higher where it forms part of a mixed wetland habitat mosaics	Small areas of semi-natural habitat or part of broader wetland areas.
Reed Swamp	FS1	High Local	Important for a range of species.
Dry or Improved Grasslands	GA1	Low Local	Small areas of generally species poor dry meadow grassland and grassy verges. Often highly modified.
Recolonising bare ground	ED3	Low Local	Supports generally common vegetation
Scrub	WS1	Moderate Local	Important cover for birds. Low diversity overall
Buildings and artificial surfaces	BL3	Low Local	None or limited vegetation
Mixed Conifer Woodland	WD3	Moderate Local, Moderate Regional	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Conifer Plantation	WD4	Moderate Local	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Mixed broadleaved/conifer woodland	WD2	Moderate Local, Moderate Regional	Low to moderately good for plants and invertebrates. Commonly important for Red Squirrel and Pine

			Marten
Bog Woodland	WN7	High Local	Extensive woodland habitat. Value will increase as matures.

A detailed evaluation of the major and most ecologically significant habitats types found during the survey is given below.

8.5.1 Woodland habitats

Much of the woodland habitat in the study area is composed of conifer plantation. Conifer plantations particularly those of Sitka Spruce, Lodgepole Pine, Norway Spruce and Larches were generally much lower in overall biodiversity than other habitats within the study area. A lack of light and changes in soil pH brought about by their dense canopies and acidic needles produces sub-optimal conditions for other plant life in general. In areas where these woodlands were in thin strips and were flanked by deciduous vegetation, this would add to their overall biological value. These areas of some ecological value for birds. Signs of Pine Martens were commonly found within or close to these areas indicating that they provide at the very least some supplementary food sources for these species.

Mixed conifer woodlands with species such as Larch and Scots Pine were also recorded throughout the site. These conifer woodlands unlike the above areas generally allow more light into their understory where small trees, shrubs and ground flora was able to flourish. These areas will also naturalise with or without management.

Bog Woodland was the next most extensive woodland type occurring. This woodland type was generally dominated by Downy Birch, with few other species. Scots Pine and Willows also occurred. This is a locally important woodland type but will tend to increase in ecological importance as it matures and becomes more extensive.

It is not envisaged that any woodland type will be impacted upon by the proposed route.

Other woodland habitat types include: Scrub (WS1), Immature Woodland (WS2), Mixed Broadleaved woodland (WD1) and some Wet willow-alder-ash woodland (WN6). Areas of excellent Mixed Broadleaved woodland were rare and were noted well away from the route.

Areas of Wet willow-alder-ash woodland (WN6) were occasionally found around the site practically in all low-lying areas prone to flooding or inundation. These were in many instances

found within a mosaic of habitats including cutover bog. Floristically these areas may be the most species diverse and are likely to provide habitat to a wide range of invertebrate and bird species. These areas are generally outside the boundary of the project and should not be impacted by the proposed works.

Scrub woodland formed an important component of the woodlands within the study area. Scrub woodland here is a transitional habitat type brought on by low levels of grazing, wind blow or recolonisation of recently cleared ground. Scrub can provide an important nesting and feeding ground for birds and invertebrates and should not be cleared during the bird nesting season.

8.6 Grassland habitat types

Grasslands were generally found in areas that were mixed use, e.g. had an amenity purpose, along the fringes of woodlands and wetlands or forming thin strips along existing footpaths. Grassland habitat types recorded included Dry meadow and grassy verges (GS2), Wet Grassland (GS4) and Improved Grassland (GA1).

Wet Grassland areas tend to be among the more ecologically diverse habitats in terms of flowering plant species. Wet Grassland areas also are vulnerable to disturbance and as such should be avoided where possible. Other grassland types were generally species-poor as limited grazing pressure has led to the dominance of coarse grass species limiting overall species diversity. The exception to this is when these grasslands were found as part of a habitat mosaics like those where they were found interspersed with wetland habitats and areas of woodland such as bog woodland.

8.7 Wetland habitat types

Given the nature of the site, wetland habitats types were common, these included Lowland Depositing River (FW2), Reed and Large Sedge Swamps (FS1) and Drainage Ditches (FW4). Wetland habitats were generally recorded as being of high species diversity and in many instances formed an important semi-aquatic boundary between the reservoir and the terrestrial habitat types. Wetland habitats are also important features for a number of wintering migratory birds for which the rehabilitating peatlands provide an important refuge. Wetland areas should be avoided where possible.

8.8 Peatland habitat types

By far the greater majority of the peatland habitat types occurring would conform to the broad description given by Fossitt (2000) of Cutover bog (PB4). However, it is acknowledged that while the majority of the former raised bog that is cutover or cutaway would conform to this, there are several habitat types occurring within this that do not readily conform in this way. These include areas of remnant bog (formerly PB1), areas of wet heath (HH3) and dry siliceous heath (HH1). Also within the wider cutover bog there are areas of scrub and bog woodland (as described above) and wet ditches.

9 Ecological Impact Assessment

9.1 Introduction and Context

The impacts which may be expected from the development of the proposed route are assessed below. These possible impacts have been assessed under the CIEEM (2018) and the National Roads Authority guidelines (NRA, 2006). Criteria for assessment of duration of impacts used (EPA 2002). These provide guidance on assessing impact significance upon features of sites proposed for works. Impact significance must be given in context of their respective ecological value of the site and features under study.

The ‘ecological value’ of an area or feature therefore is defined with reference to geographical context. That is, whether it is of value locally, regionally, nationally or internationally. This is assessed by ecologists on reviewing survey outcomes. Key criteria are the presence of designated sites, the site or feature containing protected species or areas of high biodiversity. The criteria for ecological value are given in Table 10, below:

Table 10: Ecological Value Criteria

Ecological Value	Criteria
International	‘European Sites’ including Special Areas of Conservation (SAC) & Special Protection Areas (SPA). Sites that satisfy the criteria for designation as a ‘European Site’ (see Annex III of the Habitats Directive, as amended). Features essential to maintaining the coherence of the Natura 2000 Network. Sites containing ‘best examples’ of the habitat types listed in Annex I of the Habitats Directive. Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. Ramsar Sites

Ecological Value	Criteria
	<p>World Heritage Sites (Convention for the Protection of World Cultural & Natural Heritage, 1972).</p> <p>Sites hosting significant species populations under the Bonn Convention</p> <p>Sites hosting significant populations under the Berne Convention</p>
<p>National</p>	<p>Areas of Special Scientific Interest (ASSI) or Natural Heritage Area (NHA).</p> <p>National Nature Reserves (NNR).</p> <p>Marine Nature Reserves (MNR).</p> <p>Area of Outstanding Natural Beauty (AONB).</p> <p>Refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended).</p> <p>Undesignated sites fulfilling the criteria for designation as an ASSI; NNR; MNR; and/or refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended).</p> <p>Resident or regularly occurring populations (important at the national level) of the following:</p> <p>Species protected under Wildlife (Northern Ireland) Order 1985 or Wildlife Act 1976, as amended); and/or</p> <p>Species listed on the relevant Red Data list.</p> <p>Sites containing ‘viable areas’ of the habitat types listed in Annex I of the Habitats Directive.</p>
<p>Regional</p>	<p>Sites of Local Nature Conservation Importance (SLNCI).</p> <p>Areas subject to a Tree Preservation Order.</p> <p>Resident or regularly occurring populations (assessed to be important at the Regional level) of the following:</p> <p>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</p> <p>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</p> <p>Species protected under the Wildlife (Northern Ireland) Order 1985 (as amended); and/or</p>

Ecological Value	Criteria
	<p>Species listed on the relevant Red Data list.</p> <p>Sites containing areas of the habitat types listed in Annex I of the Habitats Directive that do not satisfy the criteria for valuation as of International or National importance.</p> <p>Regionally important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP), if this have been prepared.</p> <p>Sites containing semi-natural habitat types with high biodiversity in a regional context and a high degree of naturalness, or populations of species that are uncommon within the region.</p> <p>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</p>
Local	<p>Locally important populations of priority species or habitats or features of natural heritage importance identified in the Local BAP, if this has been prepared;</p> <p>Resident or regularly occurring populations (assessed to be important at the Local level) of the following:</p> <p>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</p> <p>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</p> <p>Species protected under the Wildlife (Northern Ireland) Order 1985 (as amended); and/or</p> <p>Species listed on the relevant Red Data list.</p> <p>Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;</p> <p>Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value</p>

Ecological Value	Criteria
	<p>Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;</p> <p>Sites or features containing non-native species that are of some importance in maintaining habitat links.</p>

Ecological Impact Assessment must also consider the significance of effects that may be expected arising from a proposed development. CIEEM guidelines (2018) define a significant effect as:

“an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’... or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local”.

It also states that:

“an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring”.

The criteria for assessment of significance of effects is given in the following table. It should be noted that significant effects may also include beneficial effects.

Table 11: Criteria for Assessing Significance of Effects

Impact Significance		Criteria
Significant Negative Effect	Major Adverse	Loss of, permanent damage to or adverse impact on any part of a site of international or national importance; Loss of a substantial part or key feature of a site of regional importance; Loss of favourable conservation status (FCS) of a legally protected species; Loss of or moderate damage to a population of nationally rare or scarce species.
	Moderate Adverse	Temporary disturbance to a site of international or national importance, but no permanent damage; Loss of or permanent damage to any part of a site of regional importance; Loss of a key feature of local importance; A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable; Reduction in the amount of habitat available for a nationally rare or scarce species, or species that are notable at a regional or county level.
No Significant Effect	Minor Adverse	Temporary disturbance to a site of regional value, but no permanent damage; Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation; A minor impact on legally protected species but no significant habitat loss or reduction in FCS; A minor impact on populations of nationally rare or scarce species or species that are notable at a regional or county level.

Impact Significance		Criteria
	Negligible	No impacts on sites of international, national or county importance; Temporary disturbance or damage to a small part of a feature of local importance; Loss of or damage to land of negligible nature conservation value; No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional level) species on the site or its immediate vicinity. Beneficial and adverse impacts balance such that resulting impact has no overall affect upon feature.
	Minor Beneficial	A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before or where the new habitats exceeds in area that habitats lost.
Significant Positive Effect	Moderate Beneficial	Larger new scale habitats (e.g. net gains over 1 ha in area) created leading to significant measurable gains in relation to the objectives of biodiversity action plans.
	Major Beneficial	Major gains in new habitats (net gains of at least 10 ha) of high significance for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the habitats Directive or Annex I of the Birds Directive.

The duration of impact must also be considered when assessing overall ecological impacts. Criteria for assessment of duration of impacts uses (EPA 2002), the following terms are defined when quantifying duration:

- Temporary: up to 1 year
- Short-term: from 1-7 years
- Medium-term: 7-15 years

- Long-term: 15-60 years
- Permanent: over 60 years

The likelihood of impacts should also be defined. Assessment of likelihood of impact followed CIEEM guidelines. These assesses likelihood as follows:

- Almost Certain: probability estimated at greater than 95%
- Probable or Likely: probability estimated between 50% and 95%
- Unlikely: probability estimated between 5% and 50%
- Extremely Unlikely: probability estimated at less than 5%

In the case of the development being considered, most effects may be defined as likely as much of the route is known.

The following section gives the evaluation of habitat areas encountered within the scheme. These are given per section and per habitat type. A rationale for selection is also given.

9.2 MSWP Greenway Habitat Evaluation

Within the MSWP Greenway study area a diverse range of habitats occur with some habitats providing important ecological corridors and resources for a range of plant and animal species.

The quality or sensitivity of the habitats varies due to degree of species richness, the presence or absence native and degree of degradation or the presence of notable plant or animal species.

The more valuable of these areas in terms of biodiversity are defined as Ecologically Sensitive Areas (ESAs). These are shown in the Maps and Appendix A and listed in Table 12.

Table 12: Ecologically Sensitive Areas recorded within the survey area.

id	Name	Section	Nearest Chainage Marker
1	River Crossing	Ballyloughan to Boughill	5100 - 5200
2	Remnant Raised Bog	Ballyloughan to Boughill	4950 - 5150
3	Remnant Raised Bog	Ballyloughan to Boughill	3700
4	Remnant Raised Bog	Ballyloughan to Boughill	2600
5	Remnant Raised Bog	Ballyloughan to Boughill	6400 - 6950
6	Remnant Raised Bog	Ballyloughan to Boughill	2600 - 2800
7	Wet willow ash alder woodland	Ballyloughan to Boughill	10100 - 10500
8	River Crossing	Ballyloughan to Boughill	0800 - 1100
9	River Crossing	Ballyloughan to Boughill	1500 - 1600
10	River Crossing	Ballyloughan to Boughill	5700 - 5900
11	River Crossing	Ballyloughan to Boughill	4000 - 4300
12	Remnant Raised Bog	Boughill to Derryhaun	0000a - 0100a

13	Remnant Raised Bog	Boughill to Derryhaun	1600a - 1900a
14	Remnant Raised Bog	Boughill to Derryhaun	11700 - 12500
15	Remnant Raised Bog	Boughill to Derryhaun	5250 - 5600
16	River Crossing	Boughill to Derryhaun	1950a - 2050a
17	River Crossing	Boughill to Derryhaun	0850b - 1200b
18	River Crossing	Boughill to Derryhaun	5800 - 5950
19	River Crossing	Boughill to Derryhaun	9800 - 10100
20	Remnant Raised Bog	Derryhaun to Mosstown	8200 - 8500
21	Remnant Raised Bog	Derryhaun to Mosstown	11900a
22	Remnant Raised Bog	Derryhaun to Mosstown	0500a - 0700a
23	Remnant Raised Bog	Derryhaun to Mosstown	10400a - 10800a
24	Remnant Raised Bog	Derryhaun to Mosstown	3400
25	Remnant Raised Bog	Derryhaun to Mosstown	1800
26	Remnant Raised Bog	Derryhaun to Mosstown	0100a
27	Remnant Raised Bog	Derryhaun to Mosstown	4100a
28	Remnant Raised Bog	Derryhaun to Mosstown	5300a
29	Remnant Raised Bog	Derryhaun to Mosstown	4250
30	Remnant Raised Bog	Derryhaun to Mosstown	2300a
31	Remnant Raised Bog	Derryhaun to Mosstown	5300 - 5500
32	Remnant Raised Bog	Derryhaun to Mosstown	5400 - 6100
33	Remnant Raised Bog	Derryhaun to Mosstown	6300 - 6400
34	Remnant Raised Bog	Derryhaun to Mosstown	7000 - 7600
35	Remnant Raised Bog	Derryhaun to Mosstown	3000 -3200
36	Remnant Raised Bog	Derryhaun to Mosstown	8600 - 9100
37	Remnant Raised Bog	Derryhaun to Mosstown	1600a - 1850a
38	Remnant Raised Bog	Derryhaun to Mosstown	13400a - 13600a
39	Remnant Raised Bog	Derryhaun to Mosstown	9700a - 9900a
40	Remnant Raised Bog	Derryhaun to Mosstown	10600a - 11200a
41	Remnant Raised Bog	Mosstown to Gorteencalreen	1300a -1600a
42	Remnant Raised Bog	Mosstown to Gorteencalreen	1900b - 2000b
43	Remnant Raised Bog	Mosstown to Gorteencalreen	900
44	Remnant Raised Bog	Mosstown to Gorteencalreen	9800 - 9100
45	Remnant Raised Bog	Mosstown to Gorteencalreen	9200
46	Remnant Raised Bog	Mosstown to Gorteencalreen	0100a - 0300a
47	Remnant Raised Bog	Mosstown to Gorteencalreen	5600
48	Remnant Raised Bog	Mosstown to Gorteencalreen	1100 - 1300
49	Remnant Raised Bog	Mosstown to Gorteencalreen	2750a - 3000a
50	Remnant Raised Bog	Mosstown to Gorteencalreen	5600
51	Remnant Raised Bog	Mosstown to Gorteencalreen	2300
52	Remnant Raised Bog	Mosstown to Gorteencalreen	2350 - 2750
53	Remnant Raised Bog	Mosstown to Gorteencalreen	0400 - 0500
54	Remnant Raised Bog	Mosstown to Gorteencalreen	0200 - 0350
55	River Crossing	Mosstown to Gorteencalreen	1400 - 2000

56	River Crossing	Mosstown to Gorteencalreen	3350 - 3600
57	River Crossing	Mosstown to Gorteencalreen	7600 - 7900
58	River Crossing	Mosstown to Gorteencalreen	11500 -11600

Tables 13 to 20 below summarise the conservation evaluation for habitats and conservation interests found within the MSWP Greenway study area. Remnant raised bog was found to be widespread throughout the survey area but does not occur with the proposed route area.

9.2.1 Conservation evaluation: Section 1: Ballyloughlan to Boughill

Table 13: Conservation Evaluation: Section 1: Ballyloughlan to Boughill

BALLYLOUGHAN TO BOUGHILL			
Ecological feature	Fossitt code	Evaluation	Rationale
Cutover & Cutaway Bog	PB4	Moderate Local	A degraded peatland habitat type but of increasing importance as rehabilitation measures applied.
Treelines	WL2	High Local	Mature treelines some containing notable mature trees.
Hedgerows	WL1	High Local	Ecological corridor often containing notable mature trees.
Wet woodlands	WN6	High local value and regional importance	Important for a number of wetland plants but also birds, reptiles and mammals.
Broadleaved woodland	WD1	Moderate local, low regional	Areas of value to local wildlife.
Lowland rivers	FW2	High Local to High Regional	Ecological corridors.

Drainage ditches	FW4	Low Local	Small areas supporting wetland vegetation some of local importance to wildlife
Wet grassland	GS4	Moderate local in general. Higher where it forms part of a mixed wetland habitat mosaics	Small areas of semi-natural habitat or part of broader wetland areas.
Reed Swamp	FS1	High Local	Important for a range of species.
Dry or Improved Grasslands	GA1	Low Local	Small areas of generally species poor dry meadow grassland and grassy verges. Often highly modified.
Recolonising bare ground	ED3	Low Local	Supports generally common vegetation
Scrub	WS1	Moderate Local	Important cover for birds. Low diversity overall
Buildings and artificial surfaces	BL3	Low Local	None or limited vegetation
Mixed Conifer Woodland	WD3	Moderate Local, Moderate Regional	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Conifer Plantation	WD4	Moderate Local	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Mixed broadleaved/conifer woodland	WD2	Moderate Local, Moderate Regional	Low to moderately good for plants and

			invertebrates. Commonly important for Red Squirrel and Pine Marten
Bog Woodland	WN7	High Local	Extensive woodland habitat. Value will increase as matures.

9.2.2 Conservation evaluation: Section 2: Boughill to Derryhaun

Table 14: Conservation Evaluation: Section 2: Boughill to Derryhaun

BOUGHILL TO DERRYHAUN			
Ecological feature	Fossitt code	Evaluation	Rationale
Cutover & Cutaway Bog	PB4	Moderate Local	A degraded peatland habitat type but of increasing importance as rehabilitation measures applied.
Treelines	WL2	High Local	Mature treelines some containing notable mature trees.
Hedgerows	WL1	High Local	Ecological corridor often containing notable mature trees.
Wet woodlands	WN6	High local value and regional importance	Important for a number of wetland plants but also birds, reptiles and mammals.
Broadleaved woodland	WD1	Moderate local, low regional	Areas of value to local wildlife.
Lowland rivers	FW2	High Local to High Regional	Ecological corridors.

Drainage ditches	FW4	Low Local	Small areas supporting wetland vegetation some of local importance to wildlife
Wet grassland	GS4	Moderate local in general. Higher where it forms part of a mixed wetland habitat mosaics	Small areas of semi-natural habitat or part of broader wetland areas.
Reed Swamp	FS1	High Local	Important for a range of species.
Dry or Improved Grasslands	GA1	Low Local	Small areas of generally species poor dry meadow grassland and grassy verges. Often highly modified.
Recolonising bare ground	ED3	Low Local	Supports generally common vegetation
Scrub	WS1	Moderate Local	Important cover for birds. Low diversity overall
Buildings and artificial surfaces	BL3	Low Local	None or limited vegetation
Mixed Conifer Woodland	WD3	Moderate Local, Moderate Regional	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Conifer Plantation	WD4	Moderate Local	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Mixed broadleaved/conifer woodland	WD2	Moderate Local, Moderate Regional	Low to moderately good for plants and

			invertebrates. Commonly important for Red Squirrel and Pine Marten
Bog Woodland	WN7	High Local	Extensive woodland habitat. Value will increase as matures.

9.2.3 Conservation evaluation: Section 3: Derryhaun to Mosstown

Table 15: Conservation Evaluation: Section 3: Derryhaun to Mosstown

DERRYHAUN TO MOSSTOWN			
Ecological feature	Fossitt code	Evaluation	Rationale
Cutover & Cutaway Bog	PB4	Moderate Local	A degraded peatland habitat type but of increasing importance as rehabilitation measures applied.
Treelines	WL2	High Local	Mature treelines some containing notable mature trees.
Hedgerows	WL1	High Local	Ecological corridor often containing notable mature trees.
Wet woodlands	WN6	High local value and regional importance	Important for a number of wetland plants but also birds, reptiles and mammals.
Broadleaved woodland	WD1	Moderate local, low regional	Areas of value to local wildlife.
Lowland rivers	FW2	High Local to High Regional	Ecological corridors.

Drainage ditches	FW4	Low Local	Small areas supporting wetland vegetation some of local importance to wildlife
Wet grassland	GS4	Moderate local in general. Higher where it forms part of a mixed wetland habitat mosaics	Small areas of semi-natural habitat or part of broader wetland areas.
Reed Swamp	FS1	High Local	Important for a range of species.
Dry or Improved Grasslands	GA1	Low Local	Small areas of generally species poor dry meadow grassland and grassy verges. Often highly modified.
Recolonising bare ground	ED3	Low Local	Supports generally common vegetation
Scrub	WS1	Moderate Local	Important cover for birds. Low diversity overall
Buildings and artificial surfaces	BL3	Low Local	None or limited vegetation
Mixed Conifer Woodland	WD3	Moderate Local, Moderate Regional	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Conifer Plantation	WD4	Moderate Local	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Mixed broadleaved/conifer woodland	WD2	Moderate Local, Moderate Regional	Low to moderately good for plants and

			invertebrates. Commonly important for Red Squirrel and Pine Marten
Bog Woodland	WN7	High Local	Extensive woodland habitat. Value will increase as matures.

9.2.4 Conservation evaluation: Section 4: Mosstown to Gorteencalree

Table 16: Conservation evaluation: Section 4. Mosstown to Gorteencalree

MOSSTOWN TO GORTEENCALREE			
Ecological feature	Fossitt code	Evaluation	Rationale
Cutover & Cutaway Bog	PB4	Moderate Local	A degraded peatland habitat type but of increasing importance as rehabilitation measures applied.
Treelines	WL2	High Local	Mature treelines some containing notable mature trees.
Hedgerows	WL1	High Local	Ecological corridor often containing notable mature trees.
Wet woodlands	WN6	High local value and regional importance	Important for a number of wetland plants but also birds, reptiles and mammals.
Broadleaved woodland	WD1	Moderate local, low regional	Areas of value to local wildlife.
Lowland rivers	FW2	High Local to High Regional	Ecological corridors.

Drainage ditches	FW4	Low Local	Small areas supporting wetland vegetation some of local importance to wildlife
Wet grassland	GS4	Moderate local in general. Higher where it forms part of a mixed wetland habitat mosaics	Small areas of semi-natural habitat or part of broader wetland areas.
Reed Swamp	FS1	High Local	Important for a range of species.
Dry or Improved Grasslands	GA1	Low Local	Small areas of generally species poor dry meadow grassland and grassy verges. Often highly modified.
Recolonising bare ground	ED3	Low Local	Supports generally common vegetation
Scrub	WS1	Moderate Local	Important cover for birds. Low diversity overall
Buildings and artificial surfaces	BL3	Low Local	None or limited vegetation
Mixed Conifer Woodland	WD3	Moderate Local, Moderate Regional	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Conifer Plantation	WD4	Moderate Local	No significance for plants and invertebrates but important for Red Squirrel and Pine Marten
Mixed broadleaved/conifer woodland	WD2	Moderate Local, Moderate Regional	Low to moderately good for plants and

			invertebrates. Commonly important for Red Squirrel and Pine Marten
Bog Woodland	WN7	High Local	Extensive woodland habitat. Value will increase as matures.

9.3 Greenway Impact Assessment

The potential impacts on the ecological features identified for each of the proposed route sections are given in the following tables.

9.3.1 Impact Assessment: Section 1: Ballyloughan to Boughill

Table 17: Impact Assessment: Section 1: Ballyloughan to Boughill

BALLYLOUGHAN TO BOUGHILL				
Ecological feature	Evaluation	Nature of Impact	Significance	Duration & Likelihood
Cutover & Cutaway Bog (including PB4 subtypes)	Moderate Local	Loss of habitat	Negligible	Permanent/Likely
Treelines	High Local	No impact predicted	None	None
Hedgerows	High Local	No impact predicted	None	None
Lowland rivers	High Local to High Regional	Works may cause temporary pollution	Minor adverse	Temporary/ Unlikely
Drainage ditches	Low Local	Works may cause temporary pollution	Negligible	Temporary/ Unlikely
Wet grassland	Moderate local in	Loss of habitat		

	general. Higher where it forms part of a mixed wetland habitat mosaics		Negligible	Permanent/ Possible
Dry or Improved Grasslands	Low Local	No impact predicted	None	None
Recolonising bare ground	Low Local	Loss of habitat	Negligible	Permanent/Likely
Scrub	Moderate Local	No impact predicted	None	None
Buildings and artificial surfaces	Low Local	No impact predicted	None	None
Bog Woodland	High Local	No impact predicted	None	None

9.3.2 Impact Assessment: Section 2: Boughill to Derryhaun

Table 18: Impact Assessment: Section 2.Boughill to Derryhaun

BOUGHILL TO DERRYHAUN				
Ecological feature	Evaluation	Nature of Impact	Significance	Duration & Likelihood
Cutover & Cutaway Bog (including PB4 subtypes)	Moderate Local	Loss of habitat	Negligible	Permanent/Likely
Treelines	High Local	No impact predicted	None	None
Hedgerows	High Local	No impact predicted	None	None

Wet woodlands	High local value and regional importance	No impact predicted	None	None
Lowland rivers	High Local to High Regional	High Local to High Regional	Works may cause temporary pollution	Minor adverse
Drainage ditches	Low Local	Works may cause temporary pollution	Negligible	Temporary/ Unlikely
Wet grassland	Moderate local in general. Higher where it forms part of a mixed wetland habitat mosaics	Loss of habitat	Negligible	Permanent/ Possible
Reed Swamp	High Local	No impact predicted	None	None
Dry or Improved Grasslands	Low Local	No impact predicted	None	None
Recolonising bare ground	Low Local	Loss of habitat	Negligible	Permanent/Likely
Scrub	Moderate Local	Loss of habitat	Negligible	Permanent/ Possible
Buildings and artificial surfaces	Low Local	No impact predicted	None	None

Conifer Plantation	Moderate Local	No impact predicted	None	None
Bog Woodland	High Local	No impact predicted	None	None

9.3.3 Impact Assessment: Section 3: Derryhaun to Mosstown

Table 19: Impact Assessment: Section 3: Derryhaun to Mosstown

DERRYHAUN TO MOSSTOWN				
Ecological feature	Evaluation	Nature of Impact	Significance	Duration & Likelihood
Cutover & Cutaway Bog	Moderate Local	Loss of habitat	Negligible	Permanent/ Possible
Treelines	High Local	No impact predicted	None	None
Hedgerows	High Local	No impact predicted	None	None
Wet woodlands	High local value and regional importance	No impact predicted	None	None
Drainage ditches	Low Local	Works may cause temporary pollution	Negligible	Temporary/ Unlikely
Dry or Improved Grasslands	Low Local	Loss of habitat	Negligible	Permanent/ Possible
Recolonising bare ground	Low Local	Loss of habitat	Negligible	Permanent/ Possible

Scrub	Moderate Local	Loss of habitat	Negligible	Permanent/ Possible
Buildings and artificial surfaces	Low Local	No impact predicted	None	None
Conifer Plantation	Moderate Local	No impact predicted	None	None
Bog Woodland	High Local	No impact predicted	None	None

9.3.4 Impact Assessment: Section 4. Mosstown to Gorteencalree

Table 20: Impact Assessment: Section 4: Mosstown to Gorteencalree

MOSSTOWN TO GORTEENCALREE				
Ecological feature	Evaluation	Nature of Impact	Significance	Duration & Likelihood
Cutover & Cutaway Bog (including PB4 subtypes)	Moderate Local	Loss of habitat	Negligible	Permanent/Likely
Treelines	High Local	High Local	No impact predicted	None
Hedgerows	High Local	High Local	No impact predicted	None
Wet woodlands	High local value and regional importance	No impact predicted	None	None
Lowland rivers	High Local to High Regional	High Local to High Regional	Works may cause temporary pollution	Minor adverse

Drainage ditches	Low Local	Low Local	Works may cause temporary pollution	Negligible
Wet grassland	Moderate local in general. Higher where it forms part of a mixed wetland habitat mosaics	No impact predicted	None	None
Dry or Improved Grasslands	Low Local	Loss of habitat	Minor adverse	Permanent / Possible
Recolonising bare ground	Low Local	Loss of habitat	Negligible	Permanent/Likely
Scrub	Moderate Local	Loss of habitat	Negligible	Permanent/Possible
Buildings and artificial surfaces	Low Local	No impact predicted	None	None
Conifer Plantation	Moderate Local	No impact predicted	None	None
Mixed broadleaved/conifer woodland	Moderate Local, Moderate Regional	No impact predicted	None	None
Bog Woodland	High Local	No impact predicted	None	None

10 Discussion of Impact Assessment

10.1 Impact on Habitats

Impacts upon habitats types within which the greenway corridor will be constructed are considered to be *Minor Adverse* or lesser significance, given the conservation value of the habitat types which are likely to be impacted upon by the proposed construction and operation of the greenway. The only habitat types for which impacts of *Minor Adverse* significance are predicted are Lowland (Depositing) Rivers (FW2) and Hedgerow habitat. Impacts of *Minor Adverse* significance are predicted as being possible but *Unlikely* in probability for the watercourses crossed by the proposed route. Here, the construction phase may result in some pollution to the watercourses. This would be of *Temporary* duration.

Some impact of *Minor Adverse* significance is predicted as being *possible* on agricultural lands in Section 3 (Derryhaun to Mosstown) if the route is to be directed through improved agricultural grassland here. This would result in loss of habitat here that would be of *Permanent* duration. However, It is yet to be confirmed whether this route option through agricultural lands is to be pursued.

The nature of impact on Cutover and Cutaway Bog will be loss of habitat where some sections will be converted to Greenway surface. This will be a *Permanent* impact, as this habitat type will be lost here and that is predicted as being *likely*. However, it should be noted that this habitat type is highly modified and is also extremely widespread in the survey area. Therefore the significance of this impact is considered as *Negligible*.

Impacts of *Negligible* significance are also predicted on Drainage Ditches which may also be impacted upon by construction activities resulting in impacts of *Temporary* duration. However, as with the larger watercourses, such impacts are considered unlikely. Impacts to Wet Grassland are also predicted as being *Possible*. However, as a very small proportion of the route (estimated < 250m) will cross this habitat type, any loss of this habitat would be of *Negligible* significance.

Also predicted as being of *Negligible* significance are any impacts on Scrub or Recolonising Bare Ground habitat types. The former will only require clearance from an estimated less than 200m of the route and where recorded it was largely species-poor, being comprised mostly of Gorse and Bramble. If cleared outside the bird nesting season (March-August inclusive), no impacts of significance are predicted. The latter is typically species-poor and is generally highly modified in

character. Recolonising Bare Ground makes up a large proportion of the substrate of the existing railway line and this will be substantially altered due to works. However, this would not result in any significant loss of biodiversity given the nature of this habitat type.

Some impact of *Negligible* significance is predicted as being *possible* on agricultural grassland habitat in Section 3 (Derryhaun to Mosstown) if the route is to be directed through improved agricultural grassland here.

Impacts on more ecologically valuable peatland habitats including Heath (HH) and Bog Woodland (WN7) have not been predicted as likely. This is due to the location of the proposed Greenway route on existing track and laneway/road as well as adherence to good works practices during the construction phase.

The overall impact significance of the proposed development upon these habitats (taken as a whole) can therefore be considered to be *Minor Adverse* or lower. Measures to mitigate these impacts are given in the following section.

11 Impact Mitigation

Mitigation measures to address the potential impacts as detailed above on the ecological features of each of the proposed route sections are given in the following tables.

11.1 Mitigation Measures Section 1: Ballyloughan to Boughill

Table 21: Mitigation Measures Section 1: Ballyloughan to Boughill

BALLYLOUGHAN TO BOUGHILL		
Ecological feature	Nature of Impact	Recommended Mitigation Measures
Cutover & Cutaway Bog (including PB4 subtypes)	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Good works practices to be maintained - Topsoil salvage to be carried out where appropriate
Lowland rivers	Works may cause temporary pollution	<ul style="list-style-type: none"> -Best practice methodologies to be followed for watercourse crossings - No in-stream works to be carried out -Works to be carried out under ecologist supervision - Works practices in riparian areas to be strictly controlled
Drainage ditches	Works may cause temporary pollution	<ul style="list-style-type: none"> -Best practice methodologies to be followed for watercourse crossings -Works to be carried out under ecologist supervision
Wet grassland	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Good works practices to be maintained - Topsoil salvage to be carried out where appropriate
Recolonising bare ground	Loss of habitat	<ul style="list-style-type: none"> - Topsoil salvage to be carried out where appropriate

11.2 Mitigation Measures Section 2: Boughill to Derryhaun

Table 22: Mitigation Measures Section 2: Boughill to Derryhaun

BOUGHILL TO DERRYHAUN		
Ecological feature	Nature of Impact	Recommended Mitigation Measures
Cutover & Cutaway Bog (including PB4 subtypes)	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Good works practices to be maintained - Topsoil salvage to be carried out where appropriate
Lowland rivers	Works may cause temporary pollution	<ul style="list-style-type: none"> -Best practice methodologies to be followed for watercourse crossings - No in-stream works to be carried out -Works to be carried out under ecologist supervision - Works practices in riparian areas to be strictly controlled
Drainage ditches	Works may cause temporary pollution	<ul style="list-style-type: none"> -Best practice methodologies to be followed for watercourse crossings -Works to be carried out under ecologist supervision
Wet grassland	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Good works practices to be maintained - Topsoil salvage to be carried out where appropriate
Recolonising bare ground	Loss of habitat	<ul style="list-style-type: none"> - Topsoil salvage to be carried out where appropriate
Scrub	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Any clearance to take place outside the bird nesting season

11.3 Mitigation Measures Section 3: Derryhaun to Mosstown

Table 23: Mitigation Measures Section 3: Derryhaun to Mosstown

DERRYHAUN TO MOSSTOWN		
Ecological feature	Nature of Impact	Recommended Mitigation Measures
Cutover & Cutaway Bog	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Good works practices to be maintained - Topsoil salvage to be carried out where appropriate
Hedgerows	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be limited - Any clearance to take place outside the bird nesting season - Hedgerows to be replaced with linear habitat along Greenway
Drainage ditches	Works may cause temporary pollution	<ul style="list-style-type: none"> -Best practice methodologies to be followed for watercourse crossings -Works to be carried out under ecologist supervision
Dry or Improved Grasslands	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Topsoil salvage may be carried out and appropriately seeded following initial site clearance works.
Recolonising bare ground	Loss of habitat	<ul style="list-style-type: none"> - Topsoil salvage to be carried out where appropriate
Scrub	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Any clearance to take place outside the bird nesting season

11.4 Mitigation Measures Section 4: Mosstown to Gorteencalree

Table 24: Mitigation Measures Section 4: Mosstown to Gorteencalree

MOSSTOWN TO GORTEENCALREE		
Ecological feature	Nature of Impact	Recommended Mitigation Measures
Cutover & Cutaway Bog (including PB4 subtypes)	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Good works practices to be maintained - Topsoil salvage to be carried out where appropriate
Lowland rivers	High Local to High Regional	<ul style="list-style-type: none"> -Best practice methodologies to be followed for watercourse crossings - No in-stream works to be carried out -Works to be carried out under ecologist supervision - Works practices in riparian areas to be strictly controlled
Drainage ditches	Low Local	<ul style="list-style-type: none"> -Best practice methodologies to be followed for watercourse crossings -Works to be carried out under ecologist supervision
Recolonising bare ground	Loss of habitat	<ul style="list-style-type: none"> - Topsoil salvage to be carried out where appropriate
Scrub	Loss of habitat	<ul style="list-style-type: none"> - Area of works to be strictly delineated - Any clearance to take place outside the bird nesting season

Impacts on fauna and other ecological receptors are given in the following section.

12 Impacts and Mitigation: Fauna & other Species Groups

12.1 Badgers

It is essential that the construction and operation of the Greenway does not lead to the disturbance to the natural function, home range or feeding patterns of local Badgers populations.

Badgers and their refugia are protected under the Wildlife (Amendment) Act 2000 and the Wildlife Act 1976 and by European legislation. Possible Badger activity was recorded within and surrounding the proposed route at a number of locations. This survey identified Badger scats, possible tracks and possible signs of foraging. No Badger setts or potential Badger setts were found within or immediately surrounding the study area.

12.1.1 Potential Impacts upon Badger Population

As the Greenway is generally following existing train lines, roads and paths the risk of territory splitting *Negligible*. In addition no Badger setts were recorded during the survey making direct impact also *Negligible*.

12.1.2 Mitigation for Badgers

As no impacts to any Badger population were concluded no mitigation measures are required.

12.2 Bats

All bat species are protected by law in Ireland under the Bonn Convention (1992), the Bern Convention (1982) the EU 'Habitats' Directive (92/43/EC; transposed into Irish law by S.I. No. 94 of 1997) and the Wildlife Acts 1976 and 2000. Lesser Horseshoe Bats are listed as Annex II species of the Habitats Directive (afforded special protection). All other Irish bat species are listed in Annex IV (general protection) of this Directive.

A survey of all potential bat roosting habitats was undertaken. Such habitat areas include buildings, old stone walls, bridges and mature trees. The Greenway route and its surroundings offer a wide range of landscape features that could provide feeding and some roosting opportunities for bats. Feeding and foraging habitats include rivers, lakes, woodlands, hedgerows, and wet grasslands. No potential bat roosts were recorded within the footprint of

the Greenway route. No mature trees or building that could possibly serve as Bat roosting sites were noted as requiring removal for the construction of the Greenway.

A tree survey for bat potential was carried out along the proposed Greenway route. Mature specimen trees and mature Ivy growth surrounding the proposed route were common. All mature trees should be retained where possible across the route not only for bats but also for their overall habitat and amenity value. If any mature or Ivy covered trees as recorded within the study areas and must be removed, they will firstly require a dedicated bat survey.

12.2.1 Impacts upon Bat Populations

The proposed Greenway may be predicted as having some *minor adverse* impacts upon bat populations during the construction phase due to the loss of some trees and scrub. This may cause minor impacts to feeding opportunities for local bat populations. All clearance works are due to take place during hibernation (November to March) and therefore direct impacts from clearing and constructions works should be *Negligible*.

Most of the vegetation within the boundary of the site shall be maintained along the Greenway and as the linear nature of the corridor is to be maintained, impacts to Bats due to clearance should be *minor adverse*. Minor short-term reduction in the abundance of prey species may also exist due to the removal of vegetation.

It is understood that the Greenway is not proposed to be lit. Lighting can severely impact on bat roosting behaviour, foraging behaviour and commuting behaviour with knock-on effects on accessing feeding areas. Many species of bats forage along dark corridors like rivers and hedgerows and are known to stay clear of well-lit areas. If the Greenway or bridges are inappropriately lit, this can impact upon bats' home ranges. Bat vision is an important sense during dusk and dawn as bats begin to move to and from the roosting sites. Excessive luminance particularly around roosting sites can lead to bats being disorientated and can also lead to abandonment of roosts. Lighting can also impact feeding behaviour as prey species are drawn towards lights leading to a localised decrease in prey populations as most bat species will avoid well-lit areas.

12.2.2 Mitigation of Impacts upon Bat Populations

The proposed measures are intended to minimise the significance of impacts of the construction and operation of the Greenway on bats that use the route area and surrounds for feeding and connectivity through the landscape.

Minimising unnecessary removal of vegetation as well as expanding the extent of natural habitat in some areas would reduce the impact of the development on bats. Installation of bat boxes on selected trees, bridges or other appropriate areas would have a positive influence on bat species.

Mature trees within the boundary and particularly those close to the clearance area have been recorded as they many contain bat roosts. Where a tree marked as a mature specimen cannot be retained, trees must be felled in an appropriate and sensitive manner in accordance with NRA guidelines (2005) for the treatment of bats. Such tree-felling will be supervised by an ecologist where required. Recorded tree roosts are generally excluded/felled during March to April or Sept to November in order to minimise potential impacts. An acceptable mitigation measure is for mature specimen trees, with bat habitat potential, to be felled and left for 24 hours to allow any bats to escape before being cut up or removed.

Where lights in non-built up areas are required to be installed these should conform to the following specifications:

- Lights should face down or be masked to avoid light hitting potential roosting areas.
- Lights should work on sensors
- Low Pressure Sodium (SOX) or High Pressure Sodium (SON) lighting should be used where possible
- Avoid lights that emit high levels of ultraviolet light or Metal Halide & Mercury vapour lights.
- Place shields or masking over the top and lights to focus light away from roosts on navigation paths.
- Use Internal and external louvres to reduce light spillage.

12.3 Impacts on Protected Invertebrates

No protected invertebrate species were recorded during surveys. However, the plant Devil's-Bit Scabious (*Succisa pratensis*) was commonly found to occur in several areas along the banks and verges surrounding the Greenway route. This is the food plant of the Marsh Fritillary butterfly

(*Euphydryis aurinia*). This European Habitats Directive Annex II species is the only insect in Ireland that is designated as Annex II, with it being a qualified interest for fourteen Special Areas of Conservation (SAC) in Ireland.

In Ireland, the species relies solely on Devil's-Bit Scabious as its larval food plant. This is a plant of damp ground and often occurs in stands (mosaics) within areas of damp and wet grassland. Marsh Fritillary deposit eggs on the underside of *Succisa* leaves in mid-May, with the caterpillars then moving towards the base of the plant on hatching. A web is spun in which the larvae live gregariously and feed. The webs increase in size throughout the summer and are at their most conspicuous between August and October, which is the appropriate time of year to carry out larval web searches.

There were no larval webs found during the ecology surveys as these were either absent or inconspicuous at time of survey. It is reasonable to assume that this species may be widespread in some of the areas of wet grassland and regenerating bog habitat surrounding the route.

12.3.1 Impacts on Marsh Fritillary

Marsh Fritillary is thought to be widespread in Ireland. However, there is a paucity of information on its distribution, known sites and long-term monitoring of same. A database of findings from a national butterfly survey is held by the NBDC. The populations of this species are thought to fluctuate considerably (www.npws.ie). Colonies require a sufficient area of habitat so that the species can survive natural changes to habitats and the effects of parasites. Individual sites are thought to exist as part of a network of neighbouring sites that are used periodically as conditions permit. If there is suitable habitat over a sufficient area, colonies may persist for many years. Removal of the food plant and the habitats suitable for same could therefore result in moderate negative impacts for a long-term duration.

Significant amounts of Devil's-Bit Scabious were noted within the area which will be cleared and resurfaced to accommodate the construction of the Greenway. The number of plants within the Zone of Influence of works was however minor compared to the amount noted within the surrounding landscape. Therefore, possible impacts to Marsh Fritillary are considered *Minor adverse*.

12.3.2 Mitigation of Impacts on Marsh Fritillary

Mitigation by avoidance of suitable habitat for this species is recommended. Construction works should aim to avoid impacting the area surrounding the footprint of the route where possible. Machinery and equipment should be stored on existing areas of bare peat to avoid impacts to heavily vegetated areas. Mitigation by designing new habitat areas within the footprint of the Greenway project may be readily achieved. This could serve not only to expand on existing habitat patches but also to create 'stepping stone' habitat areas along the verges to facilitate colonisation. It was noted that much fallow wet grassland and recolonising bare ground exists surrounding the proposed route. These areas would be highly suitable for the planting/seeding of Devil's Bit Scabious.

12.4 Trees and other vegetation

12.4.1 Trees

The route for the proposed Greenway was often surrounded by woodland and scrub. As much of the route and surroundings is former cutover bog much of the woodland areas as young (1 – 50 years) with scrub a major component of the mixture. Mature trees were generally only recorded along roads and within boundaries hedges. Conifer plantation was also common recorded surrounding the route. The Greenway route's trees and woodlands provide a variety of ecosystem services including shelter and feeding opportunities for birds, bats and other mammals. Providing deadwood for invertebrates and organic matter. Additionally, they add to the overall character of the Greenway for users by creating a sense of enclosure and age that add to the overall aesthetic appeal of the Greenway.

12.4.2 Impacts to Trees

The overall impact upon tree species is considered *Negligible* as most of the works take place along existing trackway and roads. Any trees that are likely to be removed will be young (under 25 years old) and of low ecological significance. The indirect impacts of tree removal include the losses of nest and roosting opportunities for birds and possibly bats in the longer term. Losses of food sources through decreases in seed, nut and berry volumes and in invertebrates that are food sources for insectivorous mammals and birds. This impact is considered *minor adverse*.

12.4.3 Mitigation of Impacts to Trees

Maps indicate the location of specimen trees identified during this survey. These are trees of an exceptional age or aesthetic beauty, offer potential roosting opportunities for bats or birds, or exceptional feeding opportunities for birds or mammals. Site operatives and site managers involved in clearance works should be made familiar with the location of trees within the vicinity of their works areas and be able to identify species even if no leaves are present at the time of clearance.

In instances where specimen trees are on or near the clearance area works should aim to go around these trees where possible. If this is not possible trees should be pruned to allow track clearance while maintaining tree growth. Pruning with hand tools would be necessary, as removal of branches with diggers or other machinery can cause cracking in branches, leading to subsequent rot and tree death.

To help mitigate the losses of overall tree numbers, saplings found along the clearance route should be carefully lifted and transplanted into areas of low tree cover. This will help offset the overall loss of trees and help create greater woodland cover. To prevent losses of biodiversity associated with tree clearance, cut logs from removed trees should be left along the embankments locally, to support communities of detritivores (worms, millipedes, wood lice and other invertebrates), fungi and lichen species.

12.4.4 Scrub

Scrub was a common habitat feature of the greenway route. Areas of scrub containing thickets of Hawthorn, Blackthorn as well as Bramble, Willow, Bracken and Gorse are of high importance for nesting, foraging and resting by birds and mammals. Care should also be taken to maintain areas of this habitat along the route. Scrub also protects young trees like Oaks and Ash that may eventually become forest champions. Where possible the track should go around areas of Scrub. If this is not feasible scrub should be cleared under the supervision of an ecologist.

12.4.5 Open grassland areas

Some areas of open grassland including wet grassland offer high potential for biodiversity, particularly pollinating species including moths, butterflies and bees. Impacts to grasslands is considered *minor adverse*.

Pollinators require pollen from a diverse range of plants species including trees, shrubs and flowers. Pollinators such as butterflies require foods to satisfy both their caterpillar and butterfly lifecycle, while all pollinators require foraging and resting habitat. The use of native species meadow seed mixes would be ideal for landscaping where grassland is planned to be maintained.

12.5 Invasive Species

Ireland is a signatory to a number of international treaties and conventions, including the Convention on Biological Diversity. Such treaties and conventions require the Irish Government to address issues of invasive alien species. This has been implemented through national legislation via the Wildlife Acts 1976 and 2000 (as amended) and further regulated through the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477).

Articles 49 and 50 of these latter regulations sets out the legal implications associated with alien invasive species and Schedule 3 of the regulations lists non-native species subject to the restrictions of Articles 49 and 50.

Under Article 49 and 50 of these Regulations it is an offence to:

- Plant, disperse, allow dispersal or cause the spread of invasive species.
- Keep the plants in possession for the purpose of sale, breeding, reproduction, propagation, distribution, introduction or release.
- Keep anything from which the plant can be reproduced, or propagated from, without a granted licence.
- Keep any vector material - including infested soil, seeds or plant fragments from a contaminated site contaminated site, for the purposes of breeding, distribution, introduction or release.

It is important to note that if an invasive species, listed in Schedule 3 of the 2011 Regulations, has been positively identified on a works site it is not an option to do nothing i.e. action of some form must be taken to address the invasive species in order to comply with environmental legislation (the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477)).

Only one location was noted where a Schedule 3 species was positivity identified. A single stand of Japanese Knotweed (*Fallopia japonica*) was noted on the side of the road near the Corlea

Visitors centre. This stand is likely outside the study area for this project but should be noted to the council for treatment.

A number of other non- Schedule 3 invasive species were recorded around the site including Cheery Laurel and Snowberry. While it is not required by the legislation to remove these species, they can have detrimental impacts to our native flora and should be removed where possible.

12.5.1 Impacts from Invasive Species

Given the minor extent of invasive species impacts from invasive species within the Greenway corridor are considered *Negligible*.

12.5.2 Mitigation of Invasive Species (where applicable)

Japanese Knotweed: Herbicide treatment of Japanese Knotweed should begin at the start of the growing season where possible. Further treatment in the coming years will still be required to ensure stands are totally eradicated. Stands of JKW should be identified on the ground with bunting and signage.

JKW can be easily spread through the transportation of material containing fragments of stems or the movement of soil containing roots or rhizomes. As such all clearance works undertaken near stands of Knotweed stands must be strictly controlled. All site operatives should be informed of the presences of Knotweed if working within the vicinity of a stand. Stands should be clearly marked with signage and bunting.

Other invasive species: Other invasive species were recorded on site included Cherry Laurel and Snowberry. Neither of these species are listed on Schedule 3 of articles 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477)) but best practise dictates that these should be removed where possible.

Best practice permits that efforts should be made to ensure that the spread of these species is prevented. This is facilitated by ensuring minimal movement of soil containing these plant species or their seeds on site.

12.6 Amphibians and Reptiles

The entire proposed route was surveyed for the presence and breeding habitats of Common Frog (*Rana temporaria*), Smooth Newt (*Lissotriton vulgaris*) and Common (or Viviparous) Lizard

(*Zootoca vivipara*). Suitable feeding and breeding habitats for all three species was abundant throughout the study area. Much suitable feeding habitat for the Common Frog occurs surrounding the survey area, including grassland, woodland and scrub. Breeding habitats for this species included pools, drainage ditches (particularly within areas of recolonising bare peat) and wet grassland and marsh areas. More limited habitat for Smooth Newts was found but there is still significant habitat area for this species surrounding the proposed route corridor. Suitable habitat for the Common Lizard exists in the tussocky fallow grassland, bogs and stony areas.

12.6.1 Potential Impacts on Amphibians and Reptiles

Impacts on these species groups might arise from habitat loss. Specifically, the loss of feeding areas and breeding habitats may be predicted. Habitat suitability for these species was far greater in the areas surrounding the proposed Greenway than within its footprint. *Minor Adverse* impacts are therefore predicted.

12.6.2 Mitigation of Potential Impacts on Amphibians and Reptiles

The primary means of mitigation for these species groups will be by avoidance. Works should avoid all suitable breeding habitats for amphibious species (e.g. pools, wet ditches and wet grasslands). The timing of works will also be important in mitigating potential impacts. No areas of still water – including seasonal pools – shall be entered between December and May, unless inspected by an ecologist and cleared to do so. Clearance of feeding and other refuge areas such as wet grasslands is to be minimised. Over-wintering habitat areas such as log-piles or fallen trees are not to be cleared during winter months unless cleared by the onsite ecologist. Compensatory refugia may readily be created within or on the edge of woodland areas by the piling up of fallen/felled trees or limbs. The construction should aim to minimise disturbance to the surrounding landscape to reduce impacts to these species.

12.7 Otters

Otters, along with their breeding and resting places, are protected under the provisions of the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive, which is transposed into Irish law in the European Communities (Natural Habitats) Regulations (S.I. 94 of

1997), as amended.

Otters are also listed as requiring strict protection in Appendix II of the Berne Convention on the Conservation of European Wildlife and Natural Habitats and are included in the Convention on International Trade of Endangered Species (CITES). As such, if any signs of Otters are found during clearing or track construction mitigation measures outlined below should still be applied. No signs of Otters including spraints, feeding remains and potential holt sites were recorded during this survey. It is likely that Otters reside within the Royal Canal which the route crosses and may also be present within a number of rivers and stream which the route passes over.

12.7.1 Impacts to Otters

The clearance of bankside vegetation and habitat can have negative impacts on Otters. In the short-term, this could result in an immediate impact of moderate to high significance on populations in these areas. However, these impacts are extremely unlikely as no major works are likely to take place on the banks of any of the river crossings or on the canal. Potential impacts to Otters as a result of the proposed Greenway construction are considered *negligible*. No major changes to any water courses or the removal of any drains, culverts or river channels are predicted at this time meaning impacts to Otters are unlikely to be significant overall. Any such works on rivers within the study areas will require consultation with Inland Fisheries Ireland.

12.7.2 Mitigation of Potential Impacts upon Otter populations

Mitigation measures are adapted from the NRA guidelines on Otter protection (2005).

Working hours should avoid dawn and dusk in order to avoid noise disturbance.

The impacts on Otter populations may also be mitigated against by the provision of constructed measures as necessary. These include underpasses and culverts positioned and designed to allow Otter access at different flow conditions. Culverts where required should be installed as box culverts to allow easy passage for Otter and other mammals like Badgers. This access should be above normal flood levels.

12.8 Birds

The Birds Directive (2009/147/EC) and the Habitats Directive (92/43/EEC) provide legal protection for all bird species, selected habitats and the wider environment in the EU. The

Wildlife Act 1976 (Revised, Updated to 20 December 2018) confirms in Section 22, (5), that it is an offence for a person to intentionally kill or to injure a protected wild bird or to intentionally to destroy, injure or mutilate the eggs or nest of a protected wild bird.

A bird survey was undertaken as part of this investigation. Birds associated with scrub, deciduous and coniferous woodland and scrub are noted. Species included, among others, a number of both resident and migratory species. Species among others, included tit, finch, warbler, thrush, corvid, hirundine, and raptor species. Numerous species associated with the water and wetlands were also identified. A number of red listed bird species were recorded including Peregrine Falcon and Golden Plover along with a number of Duck species.

12.8.1 Impacts

It is plausible that works outside of the breeding season, associated with tree clearance, mulching, chainsaw activities, movement of track machines and other vehicles, excavation works, and other human activities will cause a level of noise, vibration and visual disturbance to birds. However no habitats essential for any of these red-listed bird species is likely to be impacted as a result of the proposed works. In addition given the scale of the landscape within which works will take place impacts of the nature described above are likely to be *minor adverse*. A possible impact of a Greenway project may be the opening up of bird nesting, roosting or foraging habitat to predators. However, as the route of the proposed Greenway is almost entirely extant and open along the Bord na Móna railway line, no additional impacts in this regard are predicted.

12.8.2 Mitigation Mitigation of Potential Impacts on Bird Species

Given the dense terrain and difficulty associated with surveying scrub vegetation for nesting birds, it is advised for all clearance works to be conducted outside of the bird breeding season. Minor clearance, though discouraged, could be permitted if small patches due to be cleared, were surveyed by experienced bird surveyors, during the bird nesting season. Local area clearance should be conducted within 24 hours of bird surveys during the breeding season if no active nests were identified. These surveys could be done for essential works, and the surveys would identify whether any nesting is occurring and whether such nesting interferes with planned works.

Disturbance caused to woodland and scrub associated birds will include a loss of available habitat, where the footprint of works takes place. Therefore, best efforts to retain habitat, and trees, where possible, and minimise disturbance, should be made. Installation of nest boxes tailored for different species should be considered as a form of compensatory mitigation for some of these species. Nest box installation and placement should form part of the landscape masterplan plan.

12.9 Red Squirrel

No evidence of Red Squirrels including eaten pine cones, Dreys or caches were recorded within or surrounding the study area. Red Squirrels were, up until very recently rare in Ireland due to the prevalence of the none native Grey Squirrel. It is believed that the resurgence in Pine Marten numbers has led to the return of the Red Squirrel as Pine Martens are known to predate upon the Grey Squirrel. This in turn has reduced the disease pressure of Squirrel Pox that was the actual main driver in the reduction in Red Squirrels numbers.

The red squirrel is protected in the under the Irish Wildlife Act (1976) and Wildlife (Amendment) Act (2000), and the Bern Convention Appendix III.

12.9.1 Impacts on Red Squirrels

Negligible impacts to Red Squirrel feeding and migration opportunities may incur as a result of the proposed clearance works and subsequent Greenway operation.

12.9.2 Mitigation for Red Squirrels

No Red Squirrels were noted within or surrounding the proposed Greenway route. As such, no mitigation is required. Nesting boxes could be installed on tree surrounding the Greenway route to make the area more enticing for Red Squirrels.

12.10 Pine Marten

12.10.1 Impacts on Pine Marten

Overall impacts upon Pine Marten population are considered *Negligible*. As with the Red Squirrel, impacts to Pine Martens are mainly associated with the loss of trees particularly mature deciduous trees and conifers. As no large areas of either type of trees are required to be

removed as part of proposed works No impact as a result of the construction or operation phase of the Greenway are considered likely.

12.10.2 Mitigation for Pine Marten

No mature conifer or broadleaved trees or area of woodland are due to be cleared as part of this project. Mitigation is therefore not required to control any impacts. Site management could consider installing nesting boxes within areas of woodland to improve the habitat suitability for Pine Marten locally.

13 Conclusion

Ecological surveys were carried out within the proposed route of the MSWP Greenway. These were completed outside the optimal time for habitats and botanical assessment of the route and adjacent areas. Surveys included mammal, bird, bat, habitat and invasive species surveys. An extensive desktop survey was carried out which used available data from suitable sources which included online databases (e.g. National Parks and Wildlife Service and National Biodiversity Data Centre) and previous surveys including Bord na Mona Longford Bog Habitat Surveys. Consultation was carried out with statutory bodies such as National Parks and Wildlife Service and Longford County Council.

A wide range of habitats were recorded during survey. These ranged from woodlands, grasslands and areas of wetland. The most significant area overall was areas of recolonising bare peat. This ranged from bare peat to sparse early colonising grass and herb species to closed canopy mature bog woodland. Another significant habitat types was areas of waterlogged recolonising bare peat: These provided a mosaic habitat of open water and wetland habitats that were noted as important for birds at the site.

Relative to the size of the landscape within which it is to be located, the footprint of the Greenway is small. The route generally follows existing roads and train lines, some of which are still in operation. As such, the route generally occurs on recolonising artificial surfaces or bare peat. Therefore the ecological impact of the route on habitats is extremely low.

A number of areas were described in the habitat survey as Environmentally Sensitive Areas (ESAs), being of greater sensitivity due to the habitats or species occurring here. These included rivers, areas of wet willow woodland but mostly were areas of remnant raised bog. These areas were almost entirely outside the zone of influence of works or could be easily avoided where required.

Two protected mammal species were found to occur within the area. These were Badger and Pine Marten. Habitat areas suitable for these species were noted surrounding the route but not within the zone of influence of the Greenway.

A survey of bat habitat over the route found relatively few potential bat roost habitat areas. This is partly due to the scarcity of buildings within the area under survey but also the species of trees here (mostly conifers, willow and birch) and the scarcity of buildings and mature trees. A

number of measures have been described to mitigate against any impacts on bat populations while any tree-felling or clearance is being carried out.

All birds seen and heard during surveys were recorded. The greater majority of these were species typical of farmland, woodland and hedgerows. Exceptions to this would be the wetland specialists and raptors. Most of the birds recorded are of lower conservation concern but exceptions to this included Peregrine Falcon and Golden Plover (birds of highest conservation concern).

A detailed series of mitigation measures has been drawn up to address the potential impacts. These include the limiting of works areas, protection of mature trees and the timing of works. The drawing up of a Construction Environmental Management Plan (CEMP) is recommended for the construction phase of the project.

In addition to these, a wide range of measures have been described which will enhance existing habitats. For example, the planting of native trees to benefit birds and other species, the planting of food plants for a protected butterfly species and the management of grassland areas for the benefit of pollinators. This range of measures, suitably implemented, should result in an overall increase in the diversity of habitats and species along the Greenway route.

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Appendix A: Maps (provided as a separate document)

Appendix B: Ecological Constraints

Appendix B.1:Mammals

Number	Note	X Coordinate (ITM)	Y Coordinate (ITM)	Route Section	Surveyors	Treatment
1	Badger Scat	606450.2	764862	Derryhaun to Mosstown	Usna K and Chris D	Notes
2	High Bat Potential	602749.4	773244	Boughill to Derryhaun	Billy F and Ian D	To be protected
3	Mammal trails	608603.8	773142	Ballyloughan to Boughill	Billy F and Ian D	Notes
4	Mammal trails	605035.7	773359	Ballyloughan to Boughill	Billy F and Ian D	Notes
5	Mammal trails	608320.7	773081	Ballyloughan to Boughill	Billy F and Ian D	Notes
6	Mammal Trails	605447.6	763293	Derryhaun to Mosstown	Usna K and Chris D	Notes
7	Mammal Trails	609689.6	766506	Derryhaun to Mosstown	Usna K and Chris D	Notes
8	Mammal Trails	609259.7	766951	Derryhaun to Mosstown	Usna K and Chris D	Notes
9	Mammal Trails	609246.3	766959	Derryhaun to Mosstown	Usna K and Chris D	Notes
10	Mammal Trails	608936.2	760210	Mosstown to Gorteencalreen	Usna K and Chris D	Notes
11	Mammal Trails	608889.1	760223	Mosstown to Gorteencalreen	Usna K and Chris D	Notes
12	Pine Marten Scat	609194.3	773003	Ballyloughan to Boughill	Billy F and Ian D	Notes

Appendix B.2: Invasive Species

Number	Note	X Coordinate (ITM)	Y Coordinate (ITM)	Surveyors	Treatment	Number
1	Large Snowberry stand	610596.231	772976	Ballyloughan to Boughill	Billy F and Ian D	To be removed where possible
2	old man's beard	606814.1	773405	Ballyloughan to Boughill	Billy F and Ian D	To be removed where possible
3	Snowberry	610623.47	772941	Ballyloughan to Boughill	Billy F and Ian D	To be removed where possible
4	Snowberry	603676.282	772475	Boughill to Derryhaun	Billy F and Ian D	To be removed where possible
5	Japanese knotweed	610330.153	762879	Mosstown to Gorteencalreen	Usna K and Chris D	Notes



Appendix B.3: Trees



Number	Note	X Coordinate (ITM)	Y Coordinate (ITM)	Surveyors	Treatment	Number	Number
1	Mature Birch treeline	604102.639	773882	Ballyloughan to Boughill	Billy F and Ian D	To be retained where possible	To be retained where possible
2	Mature Oak	608716.111	773072	Ballyloughan to Boughill	Billy F and Ian D	To be retained where possible	To be retained where possible
3	Mature Scots Pine treeline	610560.121	773293	Ballyloughan to Boughill	Billy F and Ian D	To be retained where possible	To be retained where possible
4	Mature Sycamore	610556.616	773237	Ballyloughan to Boughill	Billy F and Ian D	To be retained where possible	To be retained where possible
5	Mature Sycamore	610563.522	773247	Ballyloughan to Boughill	Billy F and Ian D	To be retained where possible	To be retained where possible
6	Mature treeline	610576.35	772996	Ballyloughan to Boughill	Billy F and Ian D	To be retained where possible	To be retained where possible
7	Mature Ash	602627.722	773189	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
8	Mature Ash	603714.846	772448	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
9	Mature Ash	603753.648	772430	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
10	Mature Birch	603580.213	769145	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
11	Mature Hazel	603732.81	772437	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
12	Mature Hollys	600929.881	772477	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
13	Mature Hollys	600929.881	772477	Boughill to	Billy F and Ian	To be retained	To be retained



Number	Note	X Coordinate (ITM)	Y Coordinate (ITM)	Surveyors	Treatment	Number	Number
				Derryhaun	D	where possible	where possible
14	Mature Rowan	603589.964	769141	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
15	Mature Scots Pine	602601.427	773147	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
16	Mature Crab Apple	601405.012	770669	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
17	Mature Crab Apple	601418.296	770712	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
18	Mature Ash	602061.545	769453	Boughill to Derryhaun	Billy F and Ian D	To be retained where possible	To be retained where possible
19	Mature Ash	606761.938	765075	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
20	Mature Beech	607376.276	765454	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
21	Mature Beech	607121.841	765286	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
22	Mature Beech	606732.61	765057	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
23	Mature Hawthorn	608399.251	766160	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
24	Mature Hawthorn Treeline	607828.985	765712	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
25	Mature Sycamore	608713.139	766763	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
26	Mature Treeline	607660.41	765626	Derryhaun to Mosstown	Usna K and Chris D	To be retained where possible	To be retained where possible
27	Mature Treeline	606704.065	765025	Derryhaun to	Usna K and	To be retained	To be retained



Number	Note	X Coordinate (ITM)	Y Coordinate (ITM)	Surveyors	Treatment	Number	Number
				Mosstown	Chris D	where possible	where possible
28	Mature Scots Pine treeline	608731.018	761656	Mosstown to Gorteencalreen	Usna K and Chris D	To be retained where possible	To be retained where possible



Appendix C: Site Photos



Ballyloughan to Boughill	
Small road at the northern most point of the study area	Large hedge dominated by snowberry
	



Ballyloughan to Boughill	
Area of wet grassland with Devils-bit Scabious	Former roadway turning into wet grassland
	



Ballyloughan to Boughill	
Recently laid crushed rock surface from Chainage 0000a chainage 1065a	Wetland Mosaic habitat with swans west of chainage 200a
	


Ballyloughan to Boughill	
Track on Bare Peat around chainage 200b	Bare Peat and recolonising bare peat near chainage 9200
	



Section: Boughill to Derryhaun	
Route Crosses the Shannon at	Recently laid crushed rock surface from Chainage 2000 to 3600
	



Section: Boughill to Derryhaun	
Recently laid crushed rock surface from Chainage 2000 to 3600	Recolonising peat and emerging Bog woodland
	

Section: Boughill to Derryhaun	
<p>Bridge near Lanesborough. Precast concrete construction. No bat potential</p>	<p>Bridge near Lanesborough. Precast concrete construction. No bat potential</p>
	

Section: Boughill to Derryhaun	
<p>Partial path exists, parralel to wetland area, on section of planned route.</p>	<p>Route to pass through area of dense mature woodland. Care should be taken to retain specimen trees.</p>
	

Section: Boughill to Derryhaun	
Train track outside Laneborough. Showing recolonising built ground	Train track outside Laneborough. Showing recolonising built ground
	

Section: Boughill to Derryhaun	
Large well vegetated drain at chainage 5100	Large well vegetated drain at chainage 5100
	



Derryhaun to Mosstown	
Area of emerging Bog woodland	Recolonisation of the trackway
	



Derryhaun to Mosstown	
Recolonised trackway surrounded by bare peat	A drain along a face of raised peat
	



Mosstown to Gorteencalreen	
Existing track within the Corlea trackway	Existing track within the Corlea trackway
	

Mosstown to Gorteencalreen	
Bare Peat with emerging bod woodland and wetland mosaic behind: Corlea Trackway	Area of remnant raised bog: Corlea trackway
	

Mosstown to Gorteencalreen	
Existing trackway around chainage 3100a	Existing trackway around chainage 3100a
	

Mosstown to Gorteencalreen	
<p>Dying back stand of Japanese Knotweed on the road leading towards the Corlea Trackway visitors centre. It is unclear at this time if this section of roadway is within the study area.</p>	<p>Previously cut area with characterises of raised bog at chainage 0700a</p>
	

Mosstown to Gorteencalreen	
Excellent mature bog woodland at chainage 0700a	Previously cut area with characterises of raised bog at chainage 0700a
	

Mosstown to Gorteencalreen	
Scrub on the edge of an area of remnant raised bog at chainage 1300a	Area of remnant raised bog at chainage 1300a
	

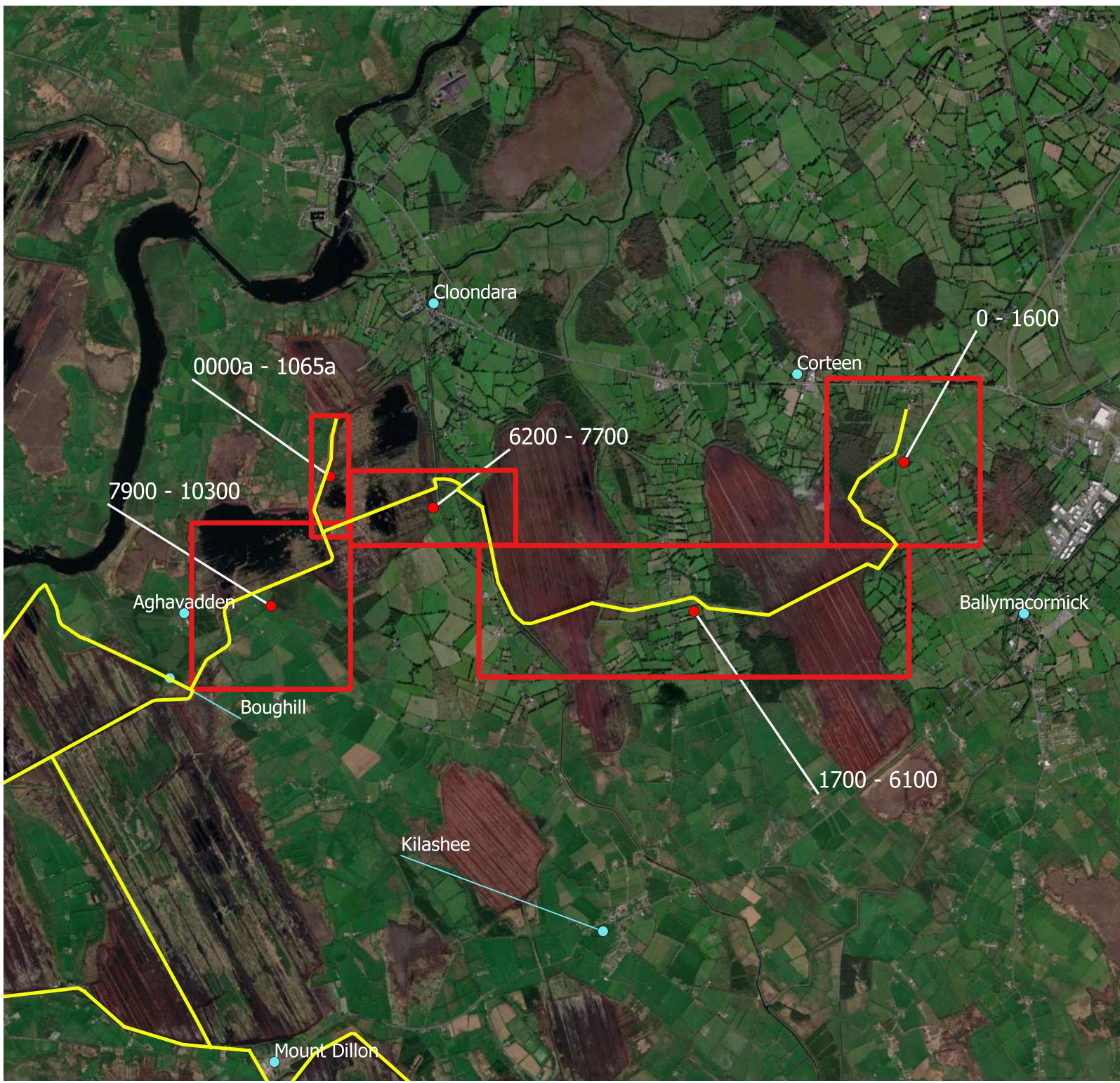
Overview of Chainage Sections

Ballyloughan to Boughill

CLIENT: Clandillon Civil Consulting

Legend

- Proposed Route
- Ballyloughan to Boughill Sections



Prepared by: Ian Douglas
Date: 24/06/2021
Version number: 2
Job Reference: Longford Greenway
Base Map: Bing Aerial 2019

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Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

Date:
21/06/21

Job:
Longford
Greenway

Base Map:
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2019

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Clandillon Civil
Consulting

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be removed where possible

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog

- Emerging woodland on cutover bog/Scrub
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



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- Boughill to Derryhaun Chainage
 - Water Courses
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- To be removed where possible
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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
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Ecological Constraints

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Boughill to Derryhaun: Ecological Constraints & Habitats



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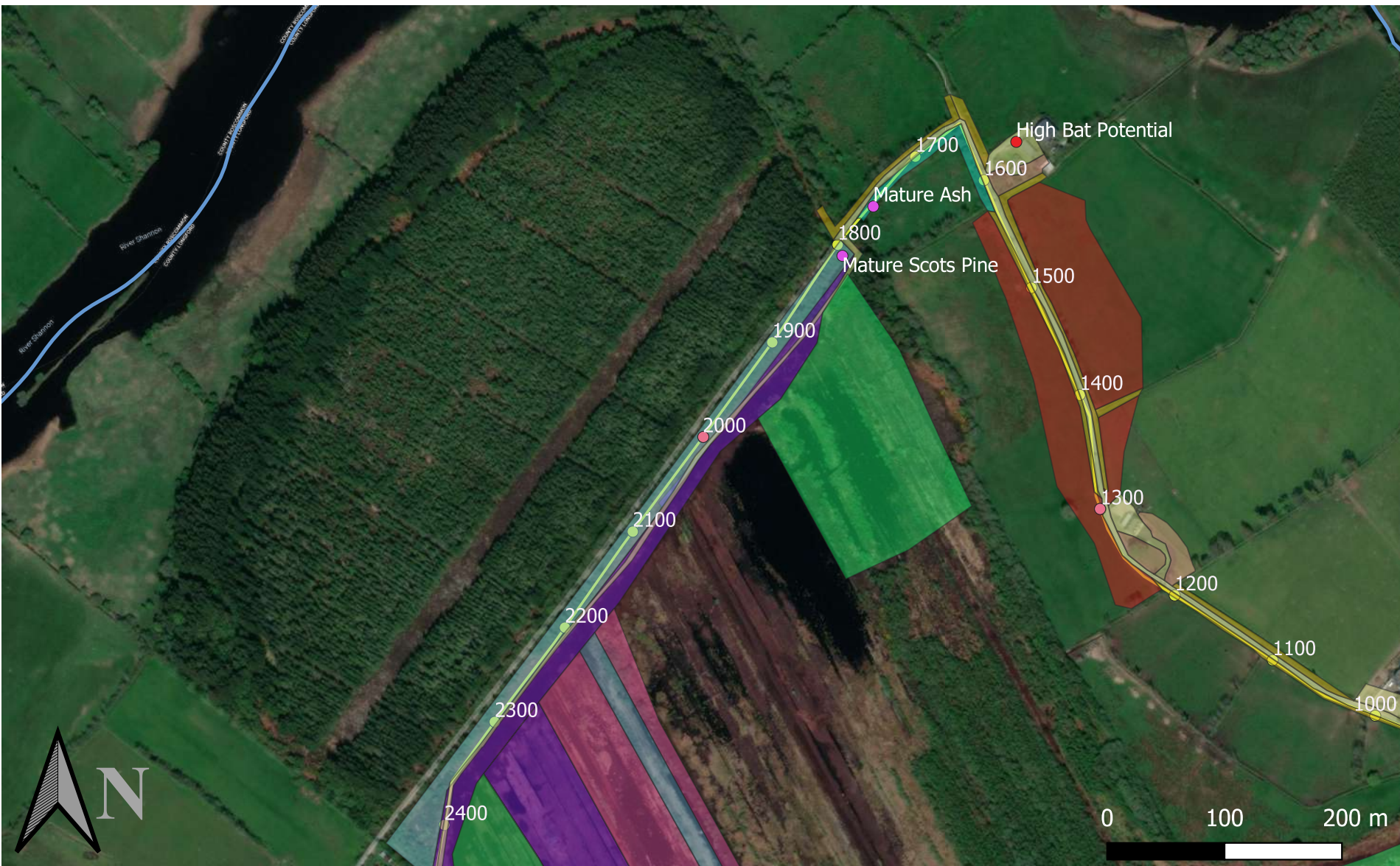
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Boughill to Derryhaun: Ecological Constraints & Habitats



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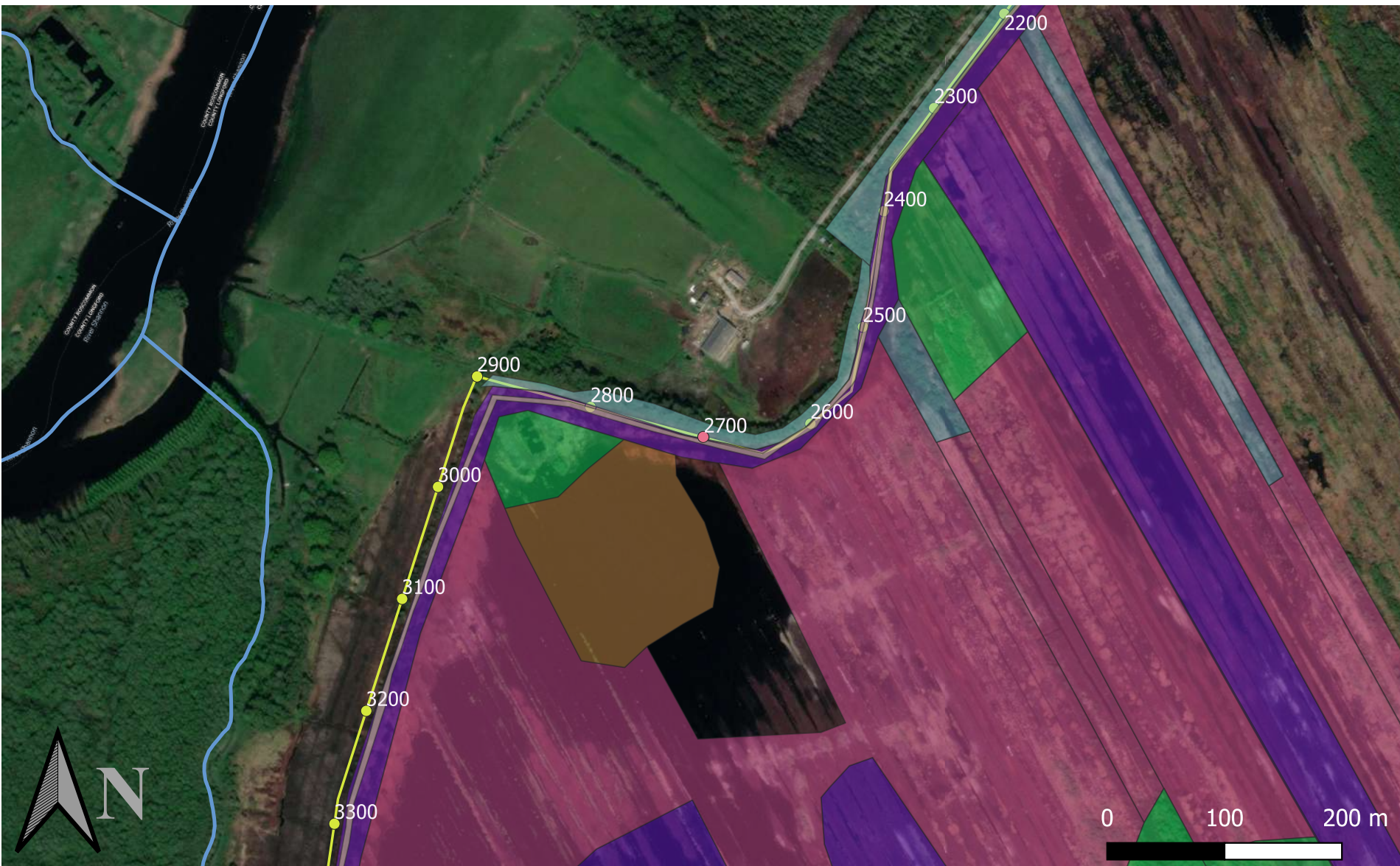
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Boughill to Derryhaun

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Boughill to Derryhaun habitats

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- Bog woodland & wetland mosaic
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Boughill to Derryhaun: Ecological Constraints & Habitats



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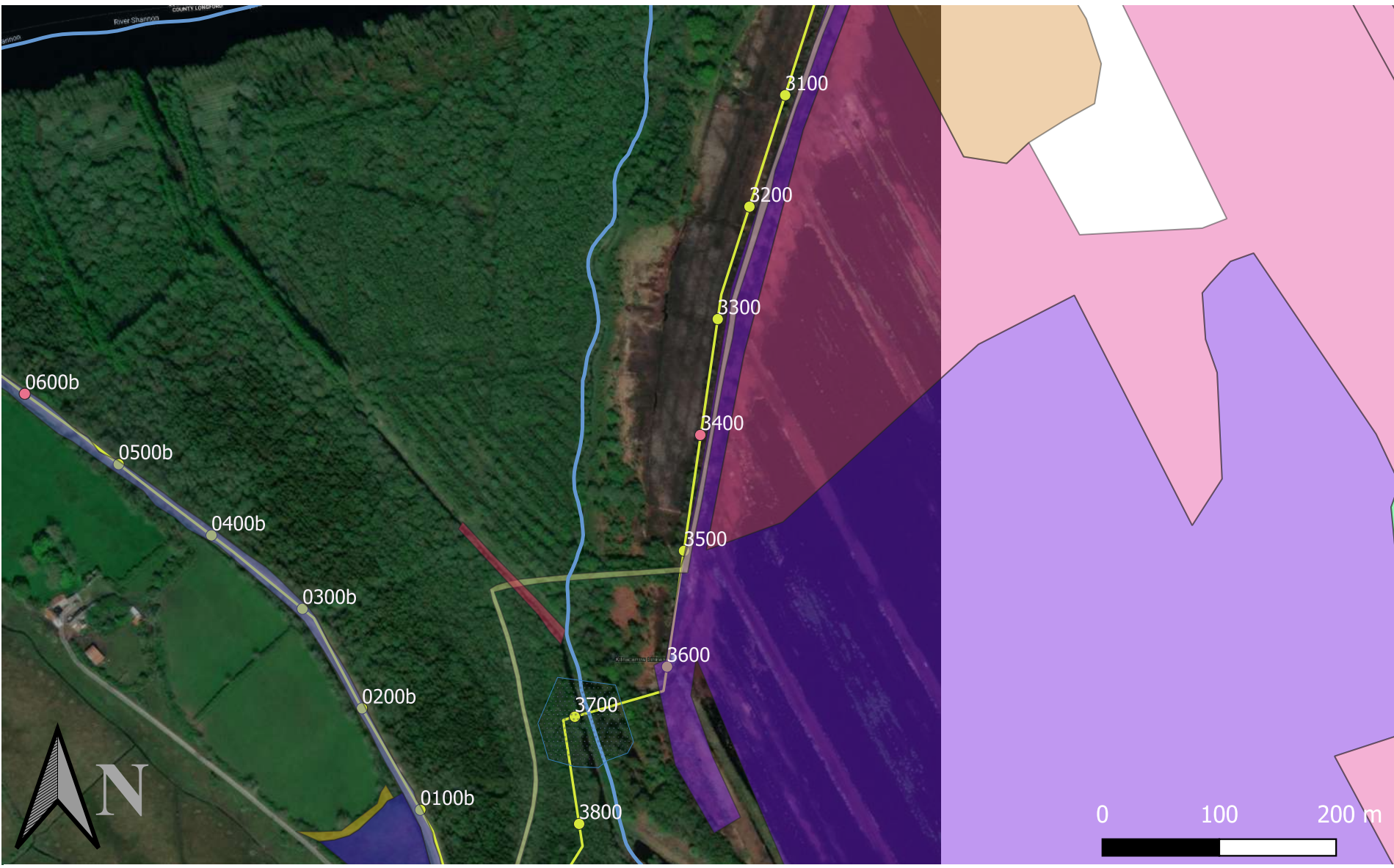
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

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- Wet grassland

Boughill to Derryhaun: Ecological Constraints & Habitats



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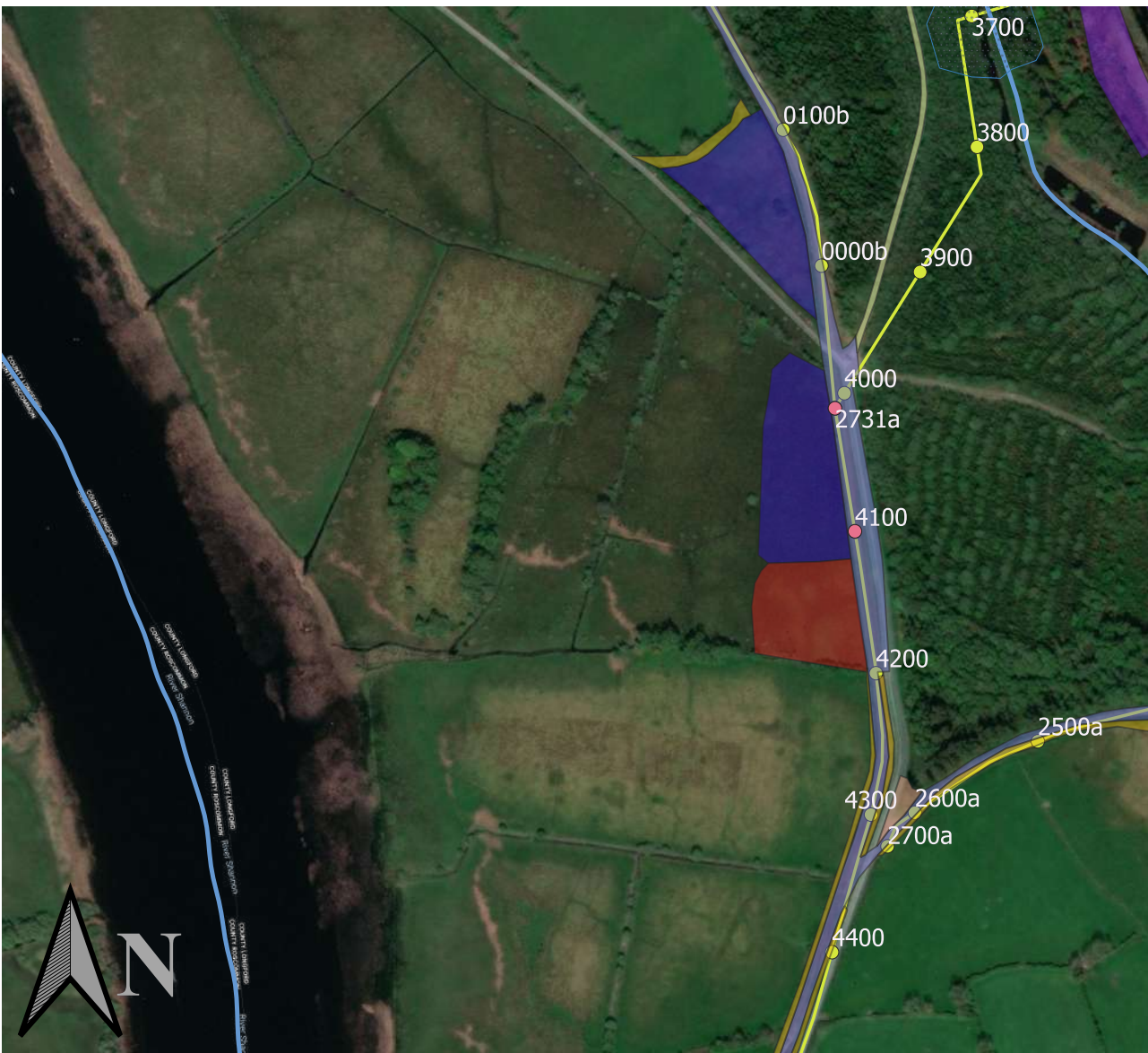
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Boughill to Derryhaun: Ecological Constraints & Habitats



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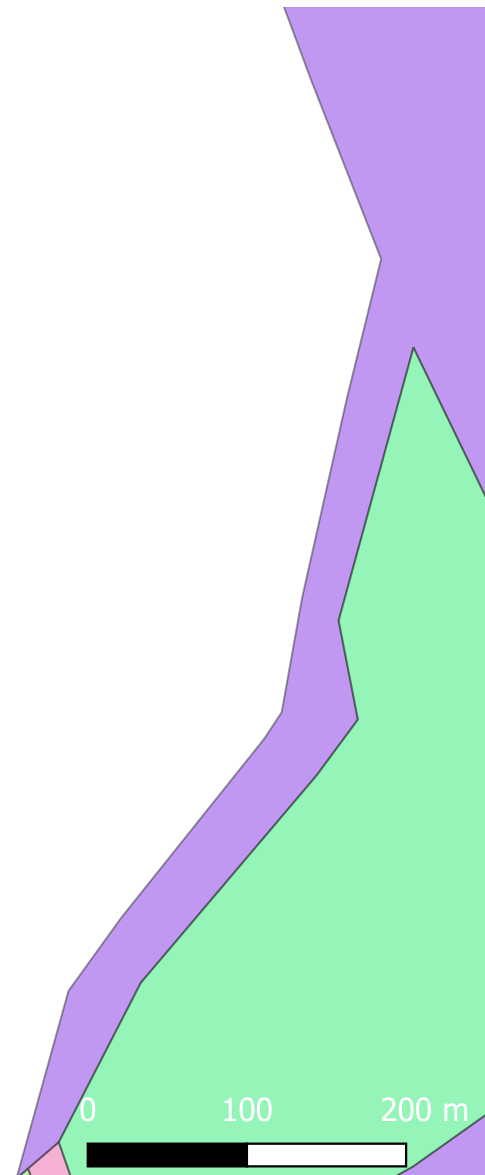
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- To be retained where possible

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 - Emerging woodland on cutover bog
 - Heath

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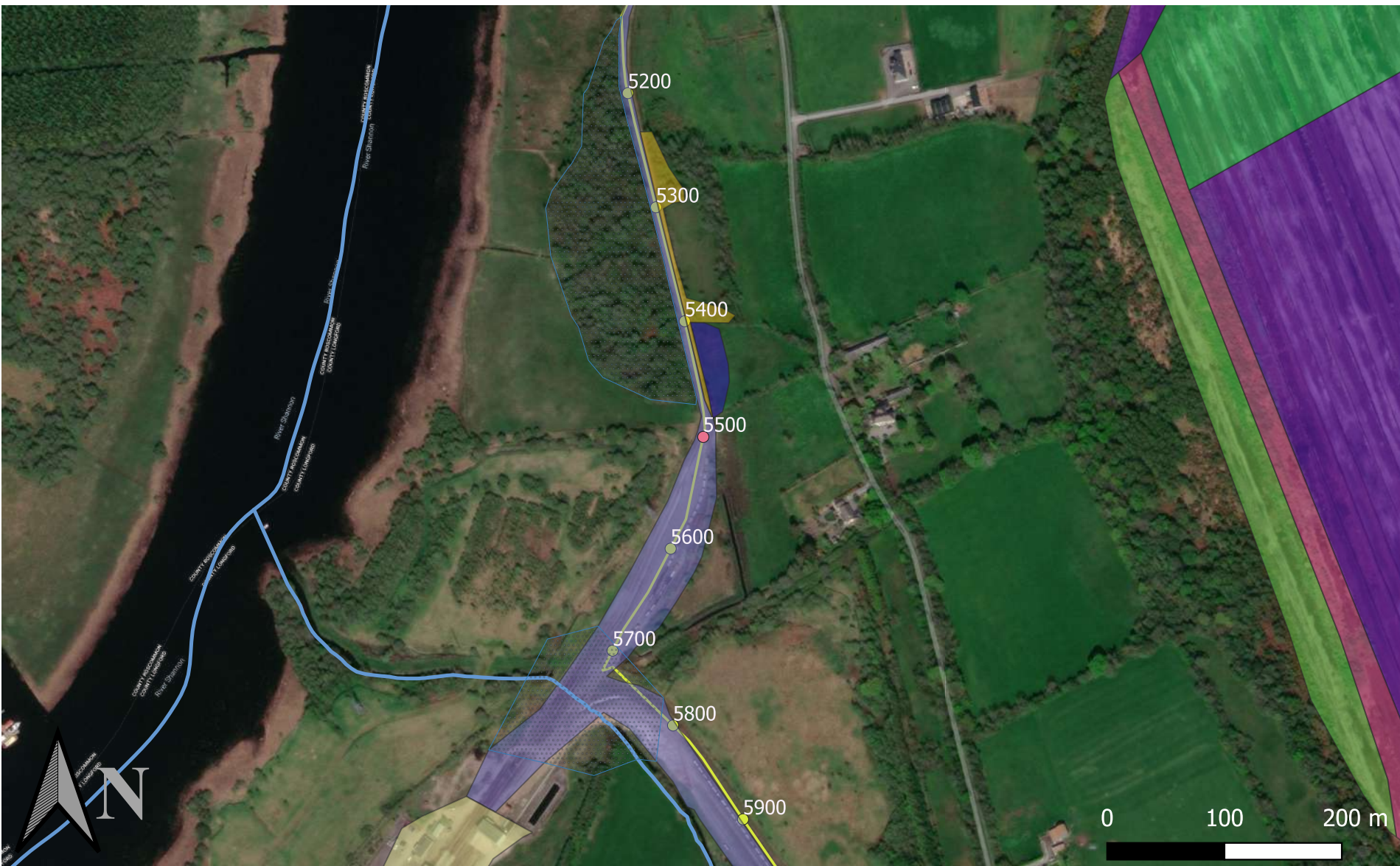
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Boughill to Derryhaun

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Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

■ Bog woodland & wetland mosaic

■ Conifer plantation

■ Cutover bog/Bare peat

■ Emerging grassland and heath on cutover peat

■ Recolonising bare ground/Buildings and artificial surfaces

■ Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Ecological Constraints

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- Boughill to Derryhaun Chainage
 - ▨ Ecologically Sensitive Areas
 - Water Courses
- Ecological Constraints**
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- Boughill to Derryhaun habitats**
- ▨ Conifer plantation
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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun: Ecological Constraints & Habitats



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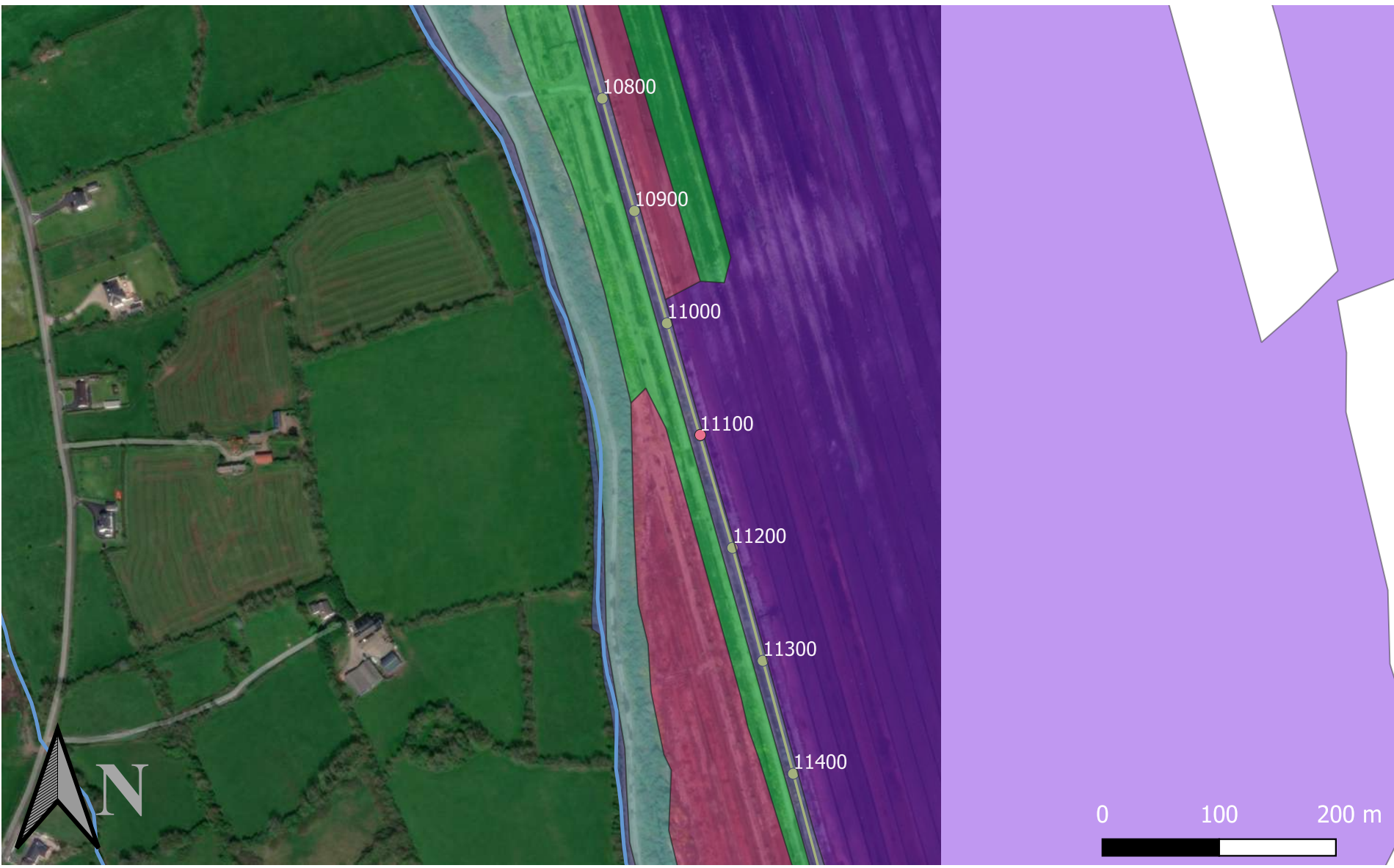
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Boughill to Derryhaun: Ecological Constraints & Habitats



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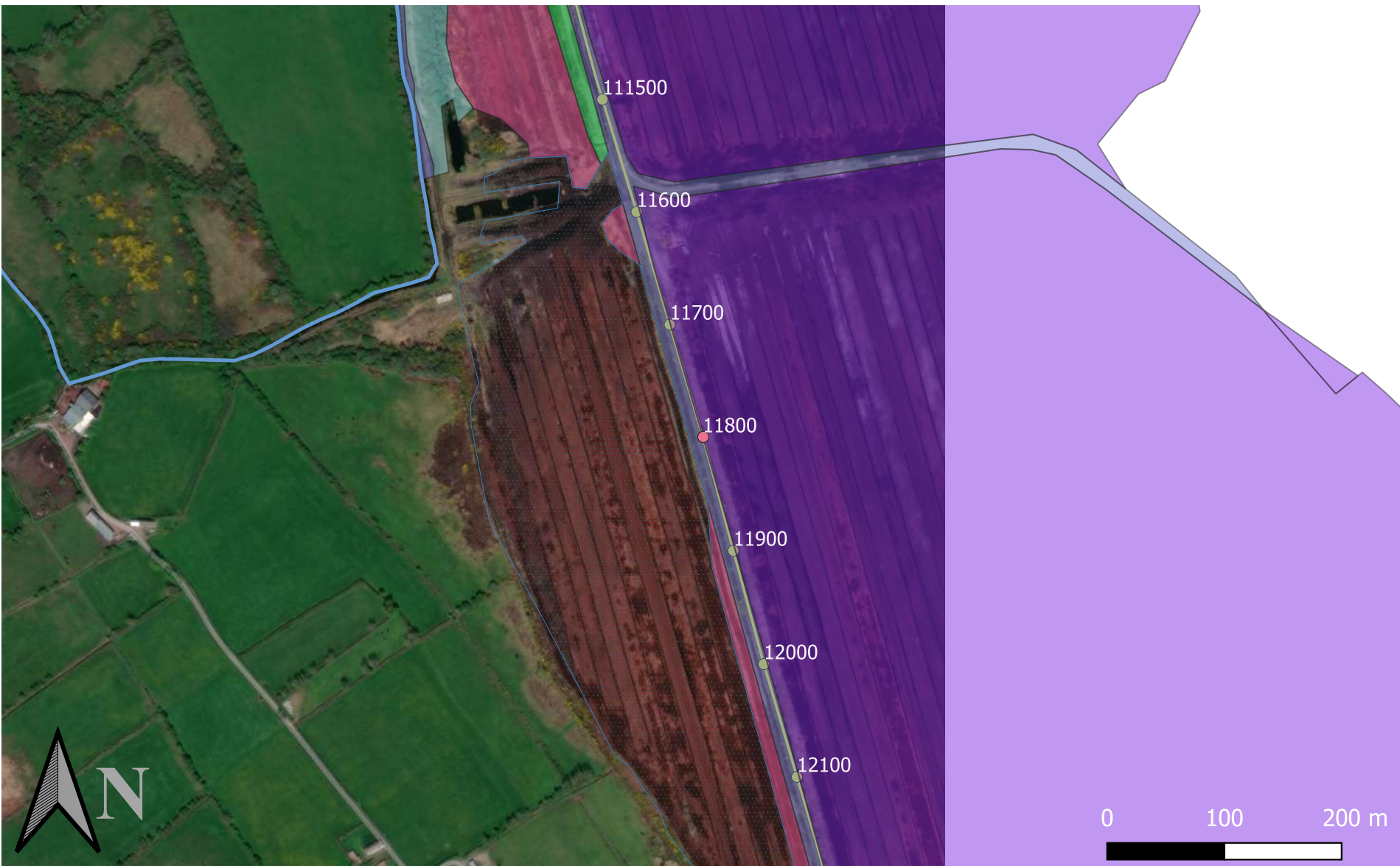
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Boughill to Derryhaun: Ecological Constraints & Habitats



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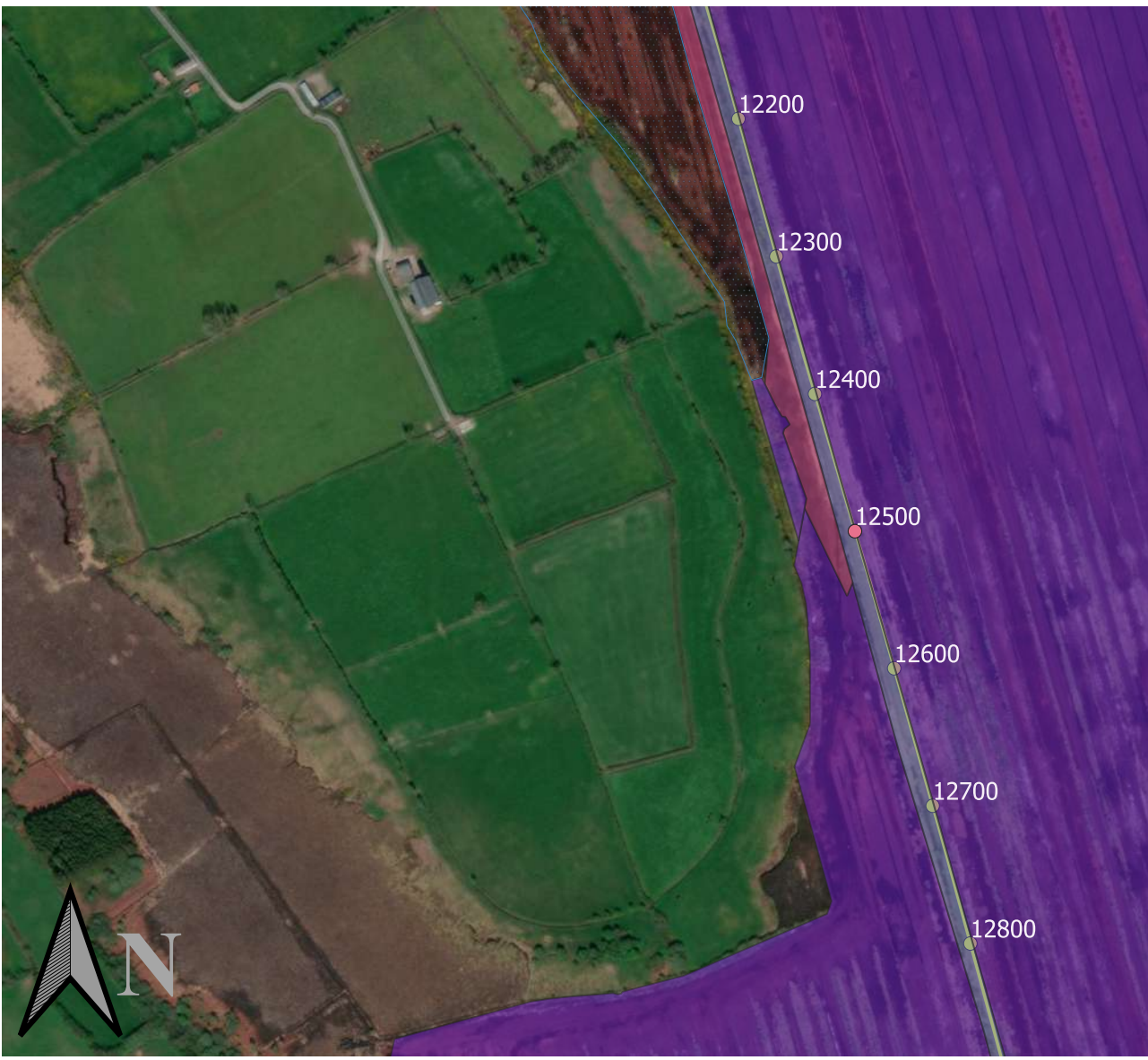
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Boughill to Derryhaun: Ecological Constraints & Habitats



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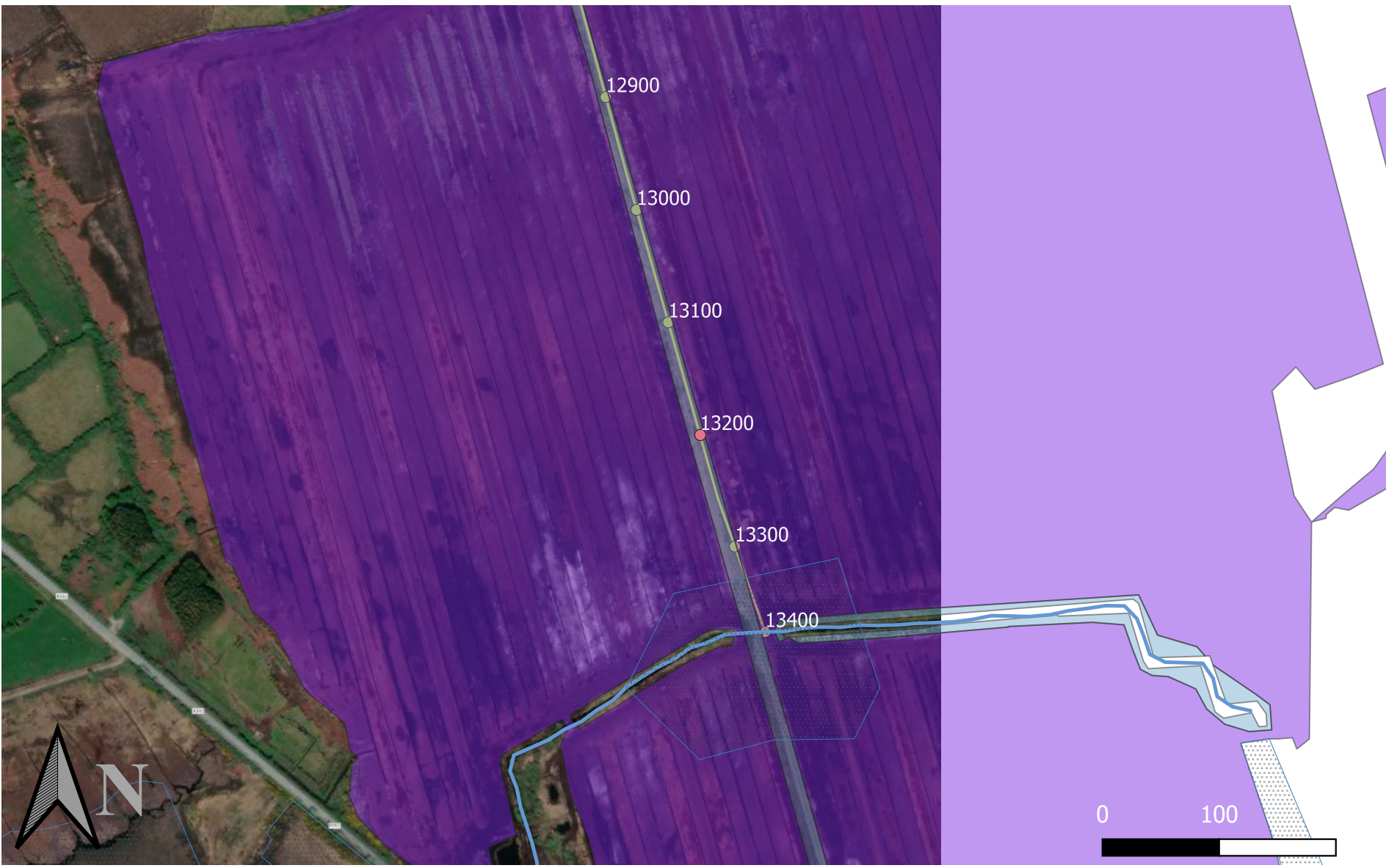
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- Water Courses
- Boughill to Derryhaun Chainage
- Cutover bog/Bare peat
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Ecologically Sensitive Areas

Boughill to Derryhaun habitats



Prepared by:
Ian Douglas

Date:
21/06/21

Job:
Longford
Greenway

Base Map:
Bing Maps Aerial
2019

Client:
Clandillon Civil
Consulting

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be removed where possible

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog

- Emerging woodland on cutover bog/Scrub
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



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Ian Douglas

Date:
21/06/21

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Bog woodland & wetland mosaic
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

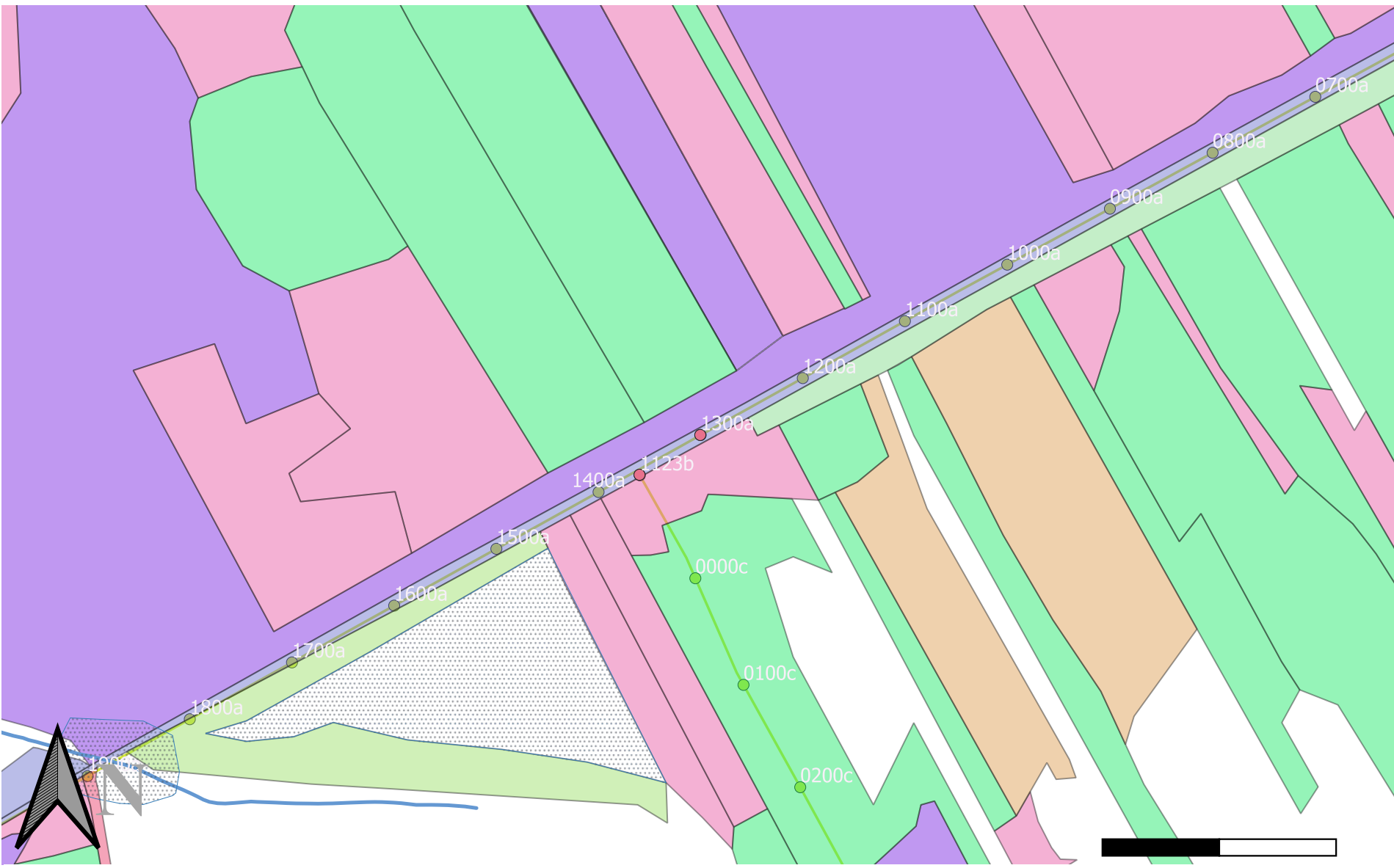
Date:
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Cutover bog/Bare peat
- Drainage ditches

- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Recolonising bare ground/Buildings and artificial surfaces

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
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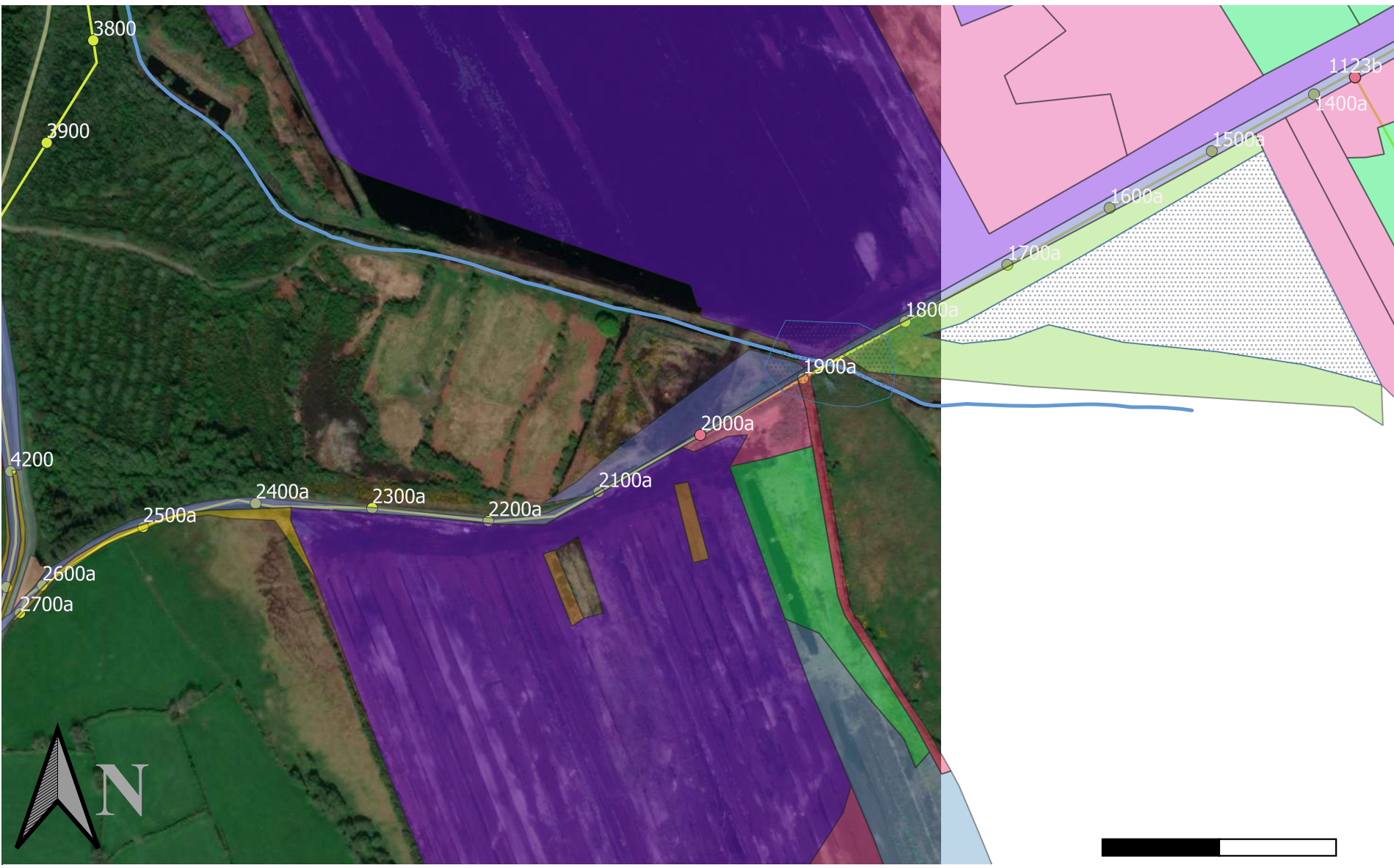
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Clandillon Civil
Consulting

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Drainage ditches
- Emerging woodland on cutover bog
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Emerging grassland and heath on cutover peat

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

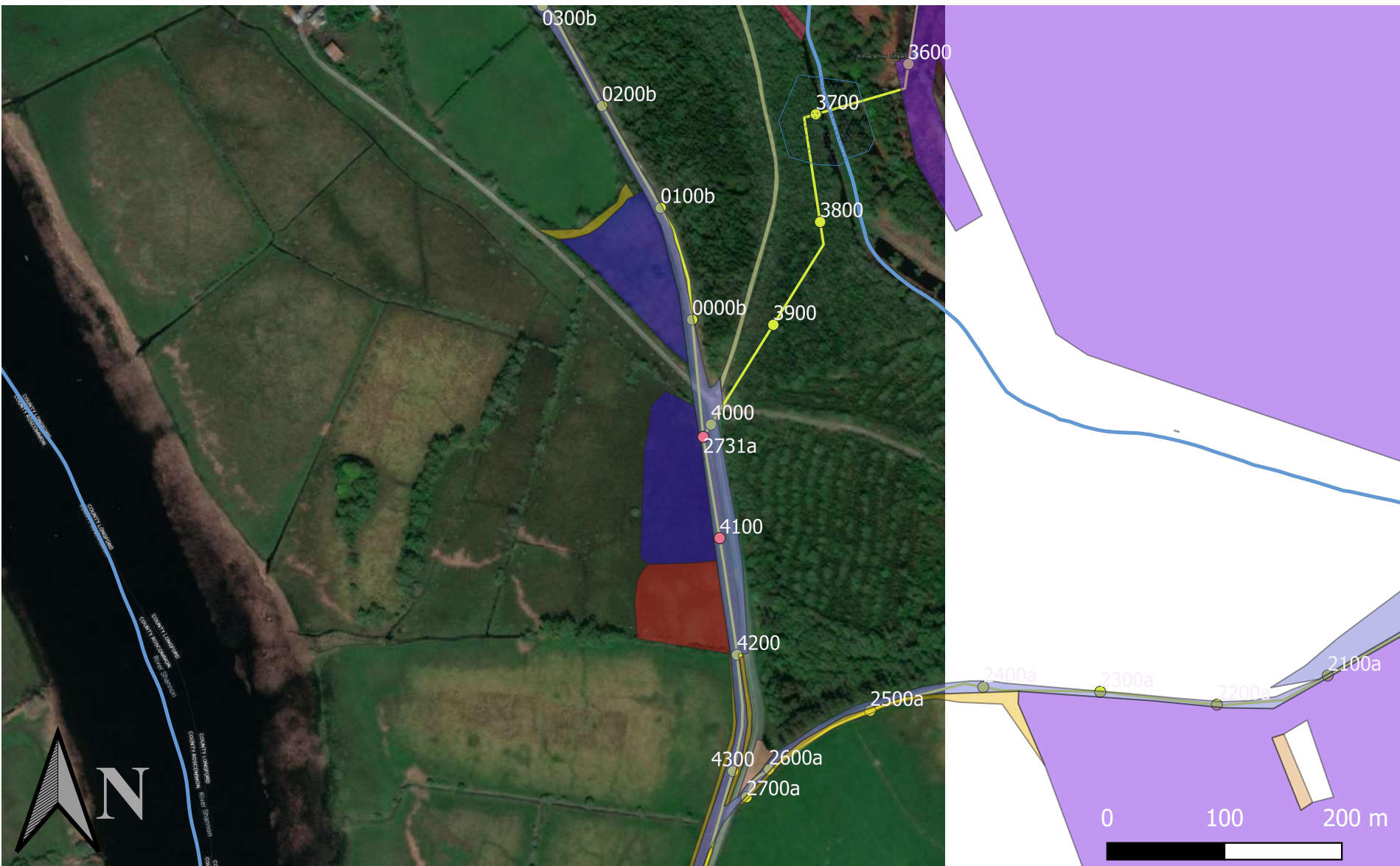
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland & wetland mosaic
- Buildings and artificial surfaces
- Cutover bog/Bare peat

- Drainage ditches
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland

Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
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- Emerging grassland and heath on cutover peat
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

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- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Cutover bog/Bare peat
- Drainage ditches

- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
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- Recolonising bare ground/Buildings and artificial surfaces

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

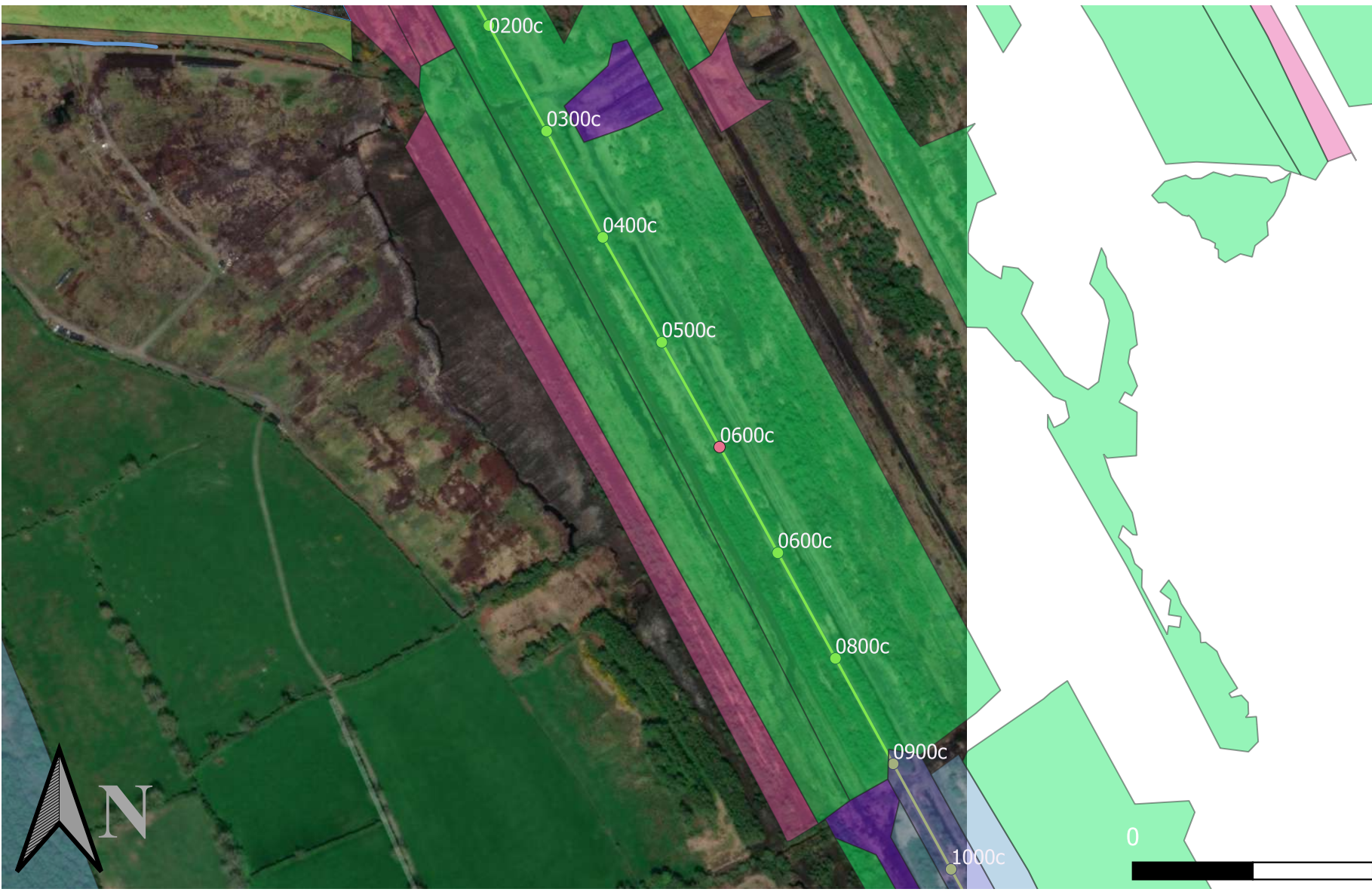
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Cutover bog/Bare peat

- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
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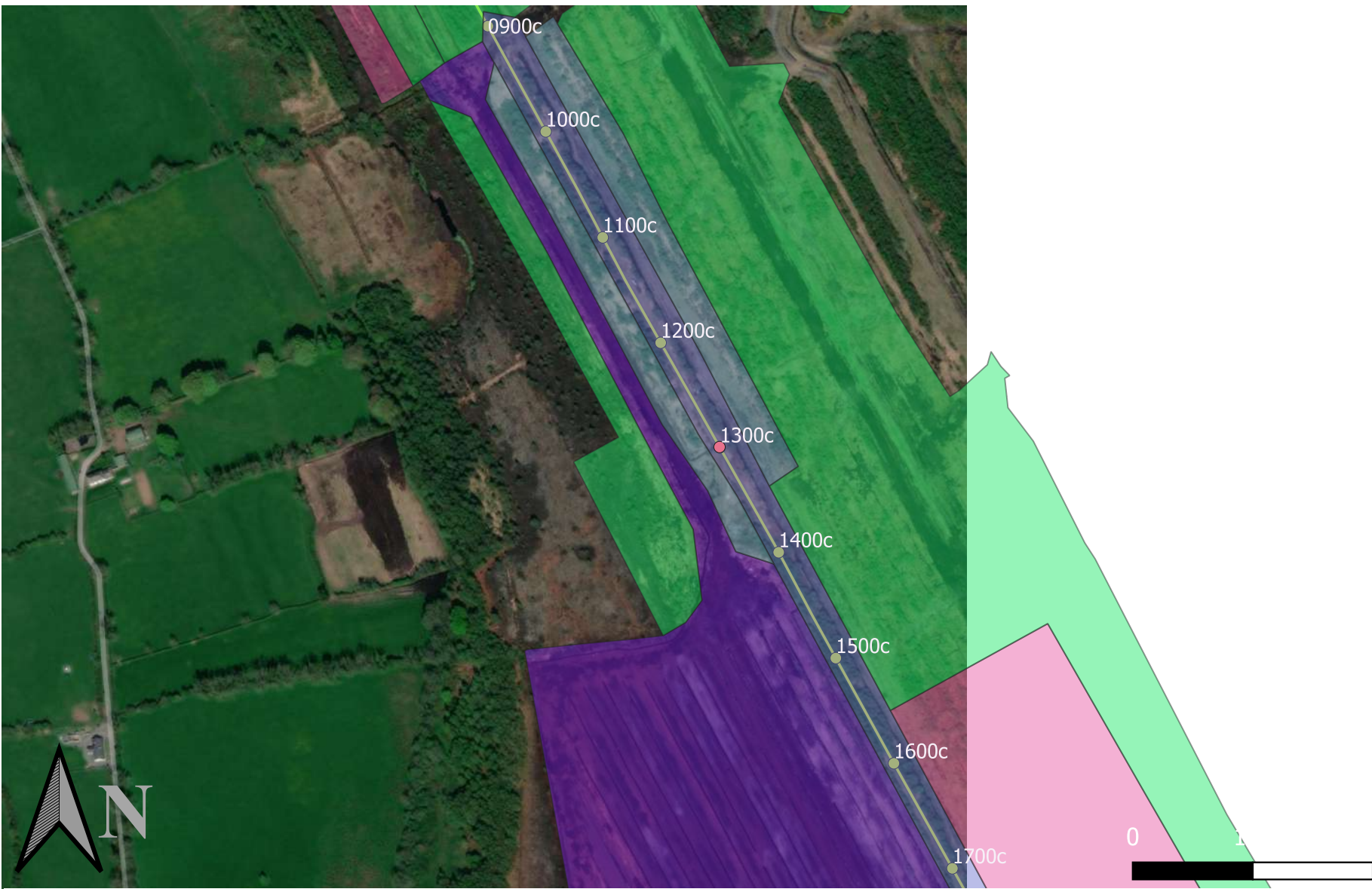
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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

■ Cutover bog/Bare peat

■ Emerging grassland and heath on cutover peat

■ Emerging woodland on cutover bog

■ Recolonising bare ground/Buildings and artificial surfaces

■ Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

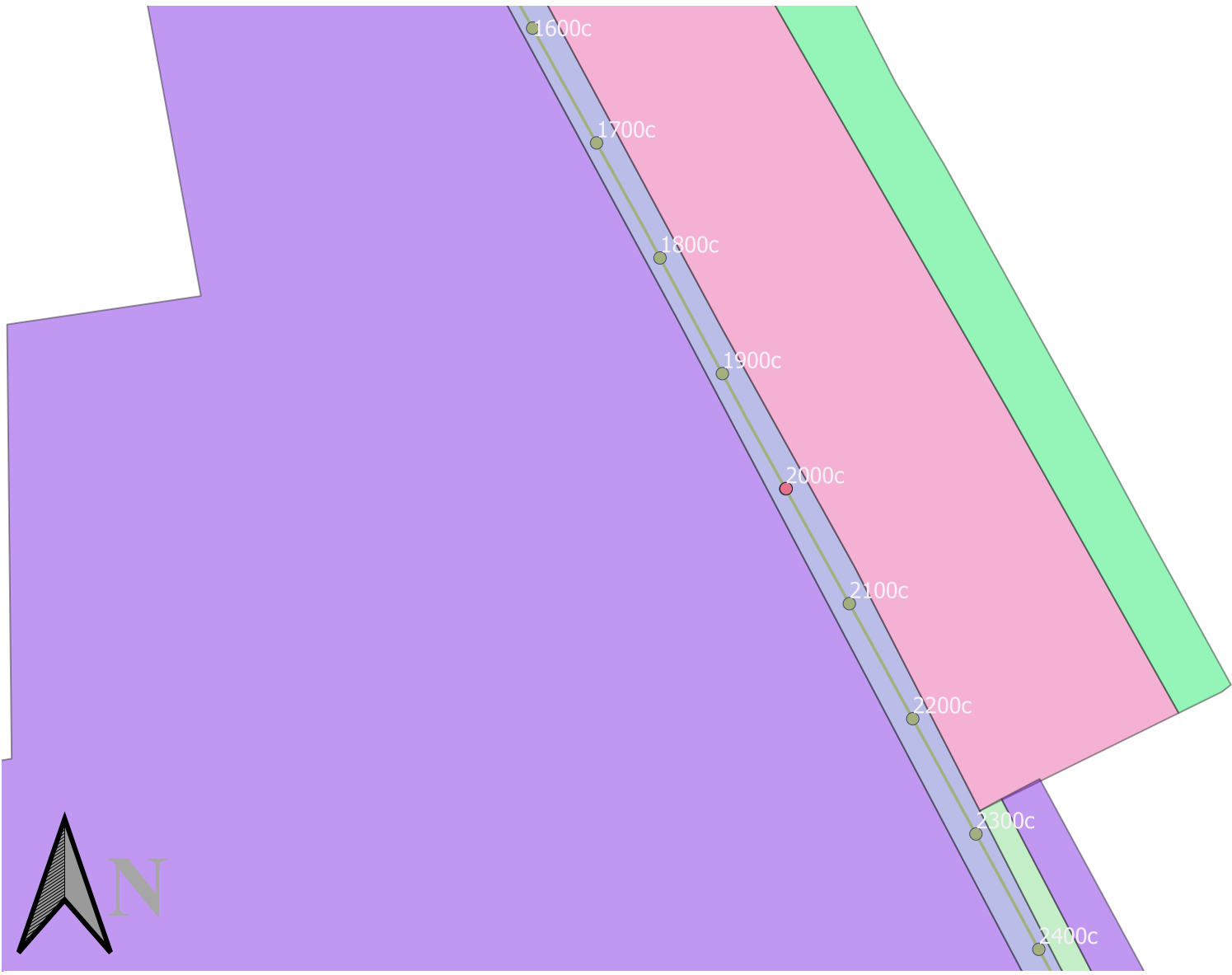
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Recolonising bare ground/Buildings and artificial surfaces



Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

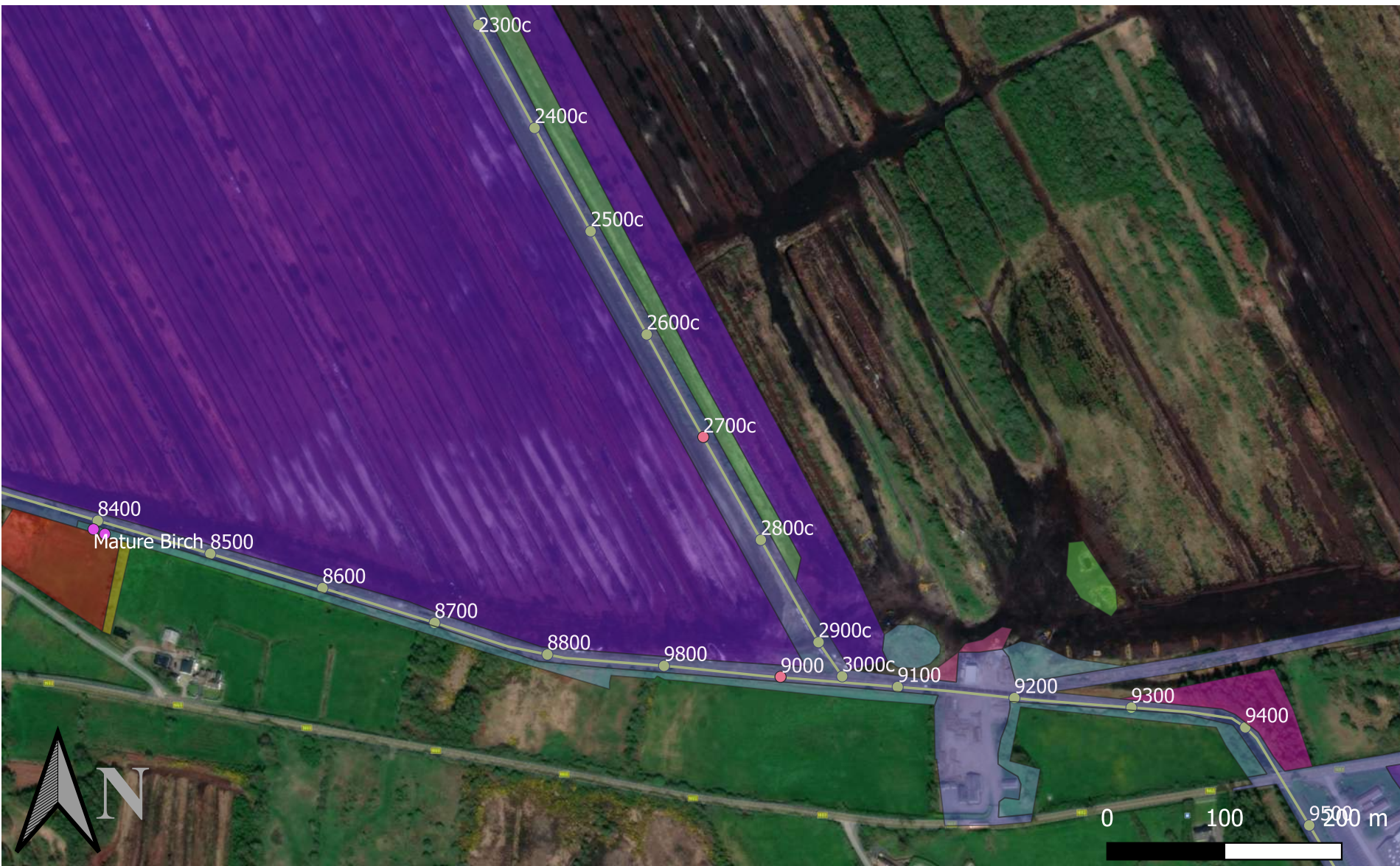
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Conifer plantation
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog/Scrub

- Heath
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Heath
- Hedgerows

- Improved agricultural grassland
- Mixed broadleaved woodland/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Treelines

Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Hedgerows
- Improved agricultural grassland

- Mixed broadleaved woodland/Scrub

- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Treelines



Prepared by:
Ian Douglas

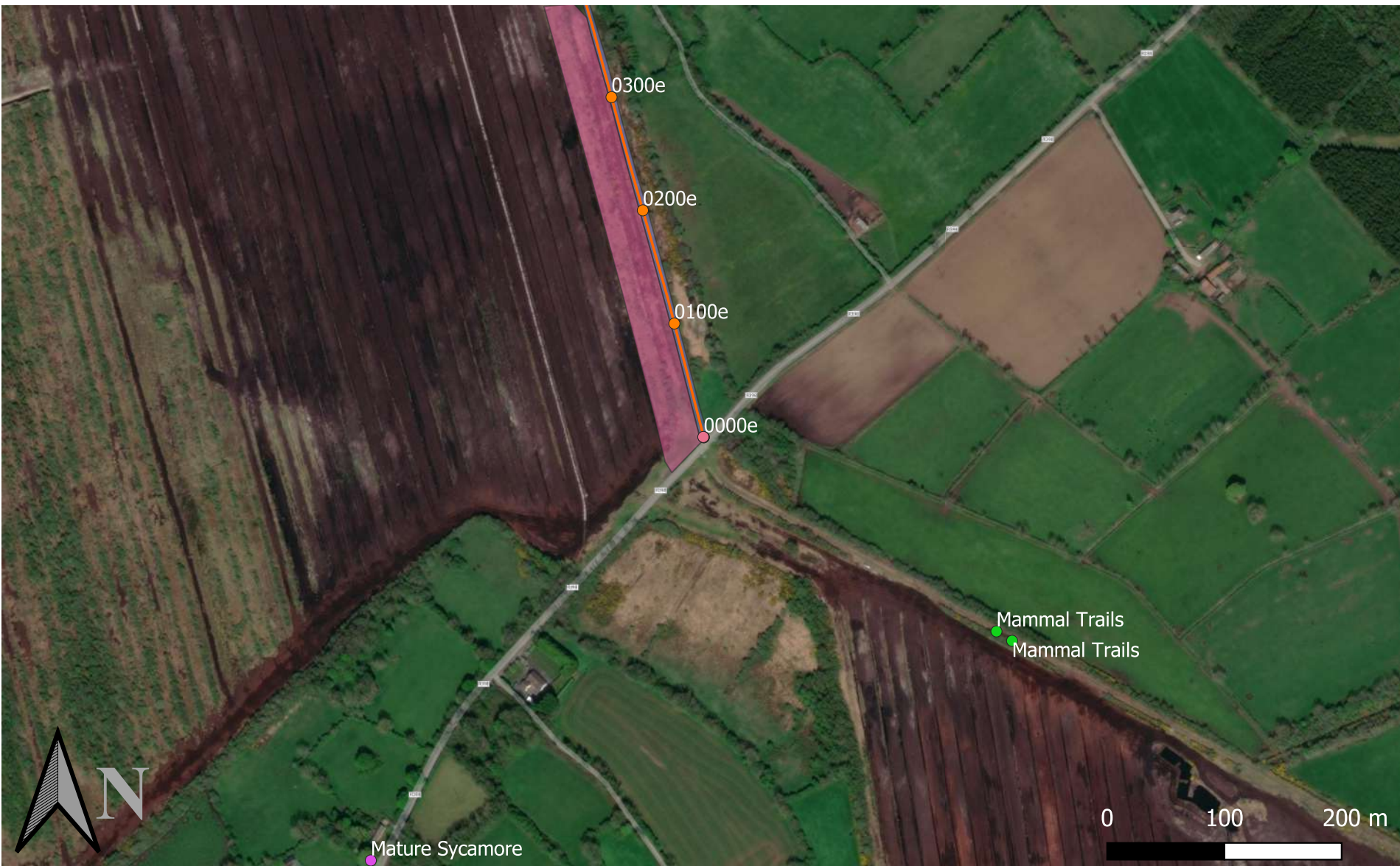
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Ecological Constraints

- To be retained where possible

- Recolonising bare ground/Buildings and artificial surfaces

● Notes

Boughill to Derryhaun habitats

- Emerging grassland and heath on cutover peat



Prepared by:
Ian Douglas

Date:
21/06/21

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Longford Greenway

Base Map:
Bing Maps Aerial 2019

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Boughill to Derryhaun habitats

Cutover bog/Bare peat

Emerging grassland and heath on cutover peat

Recolonising bare ground/Buildings and artificial surfaces

Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

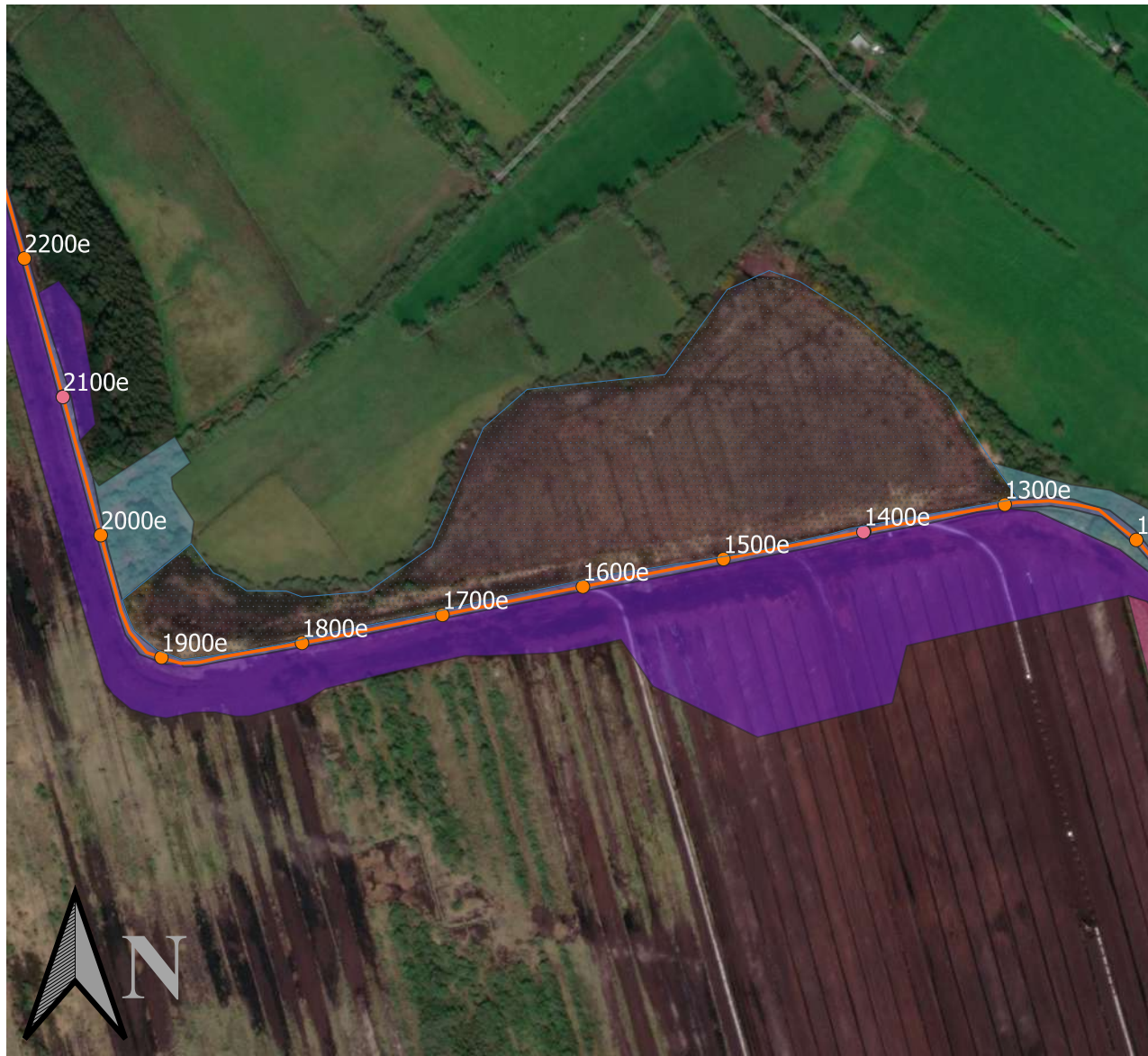
Date:
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Greenway

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Ecologically Sensitive Areas

Water Courses

Boughill to Derryhaun habitats

Cutover bog/Bare peat

Emerging grassland and heath on cutover peat

Recolonising bare ground/Buildings and artificial surfaces

Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
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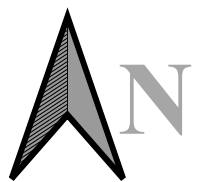
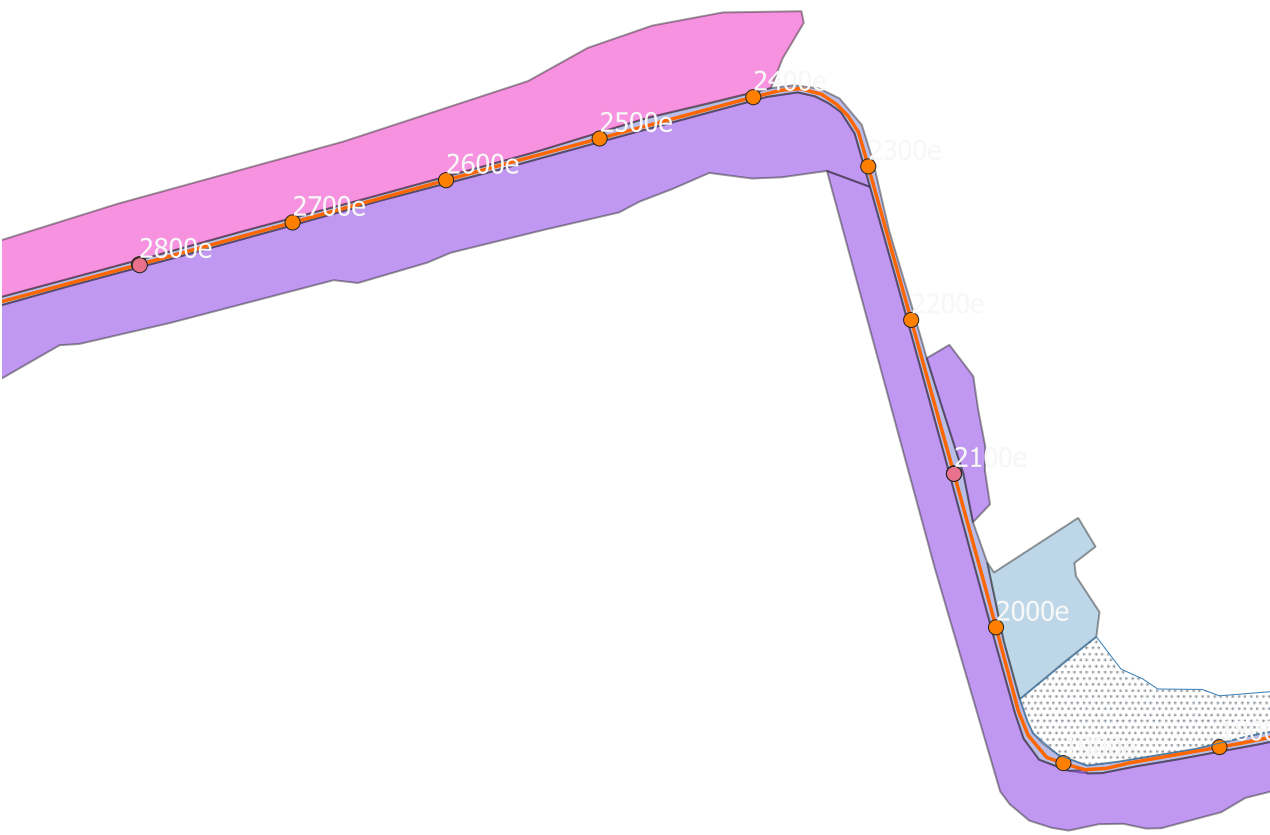
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- Boughill to Derryhaun habitats**
-  Ecologically Sensitive Areas
 -  Conifer plantation
 -  Cutover bog/Bare peat
 -  Recolonising bare ground/Buildings and artificial surfaces
 -  Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
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- | | | |
|------------------------------|---------------------------------------|--|
| Ecologically Sensitive Areas | Boughill to Derryhaun habitats | Emerging grassland and heath on cutover peat |
| Water Courses | Conifer plantation | Recolonising bare ground/Buildings and artificial surfaces |
| | Cutover bog/Bare peat | Scrub |

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

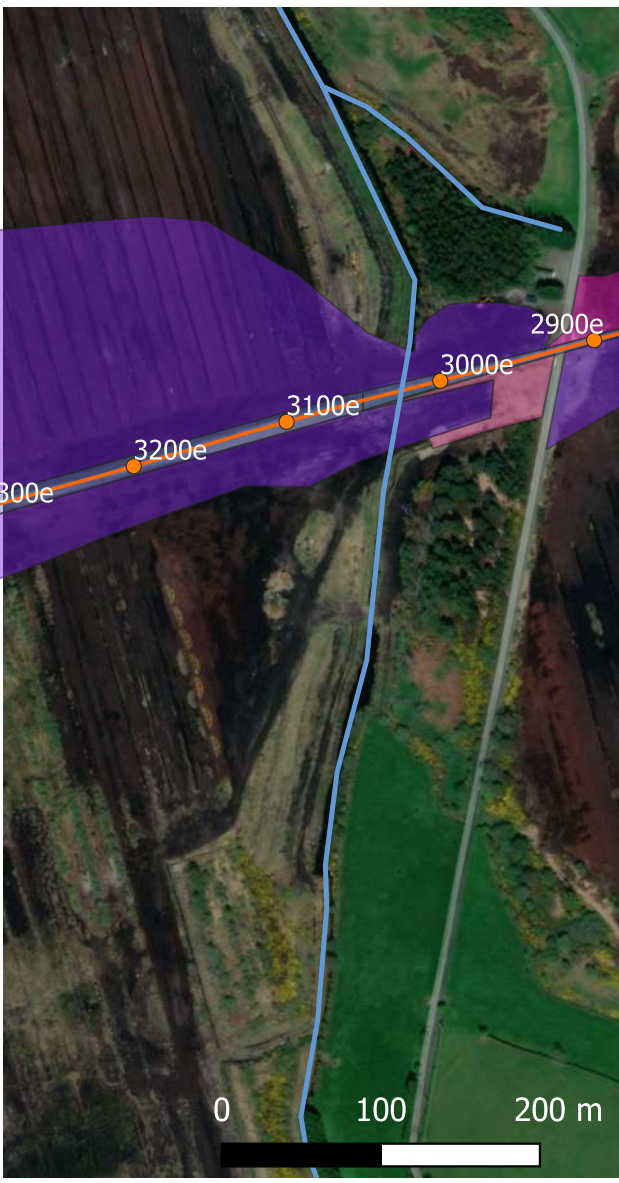
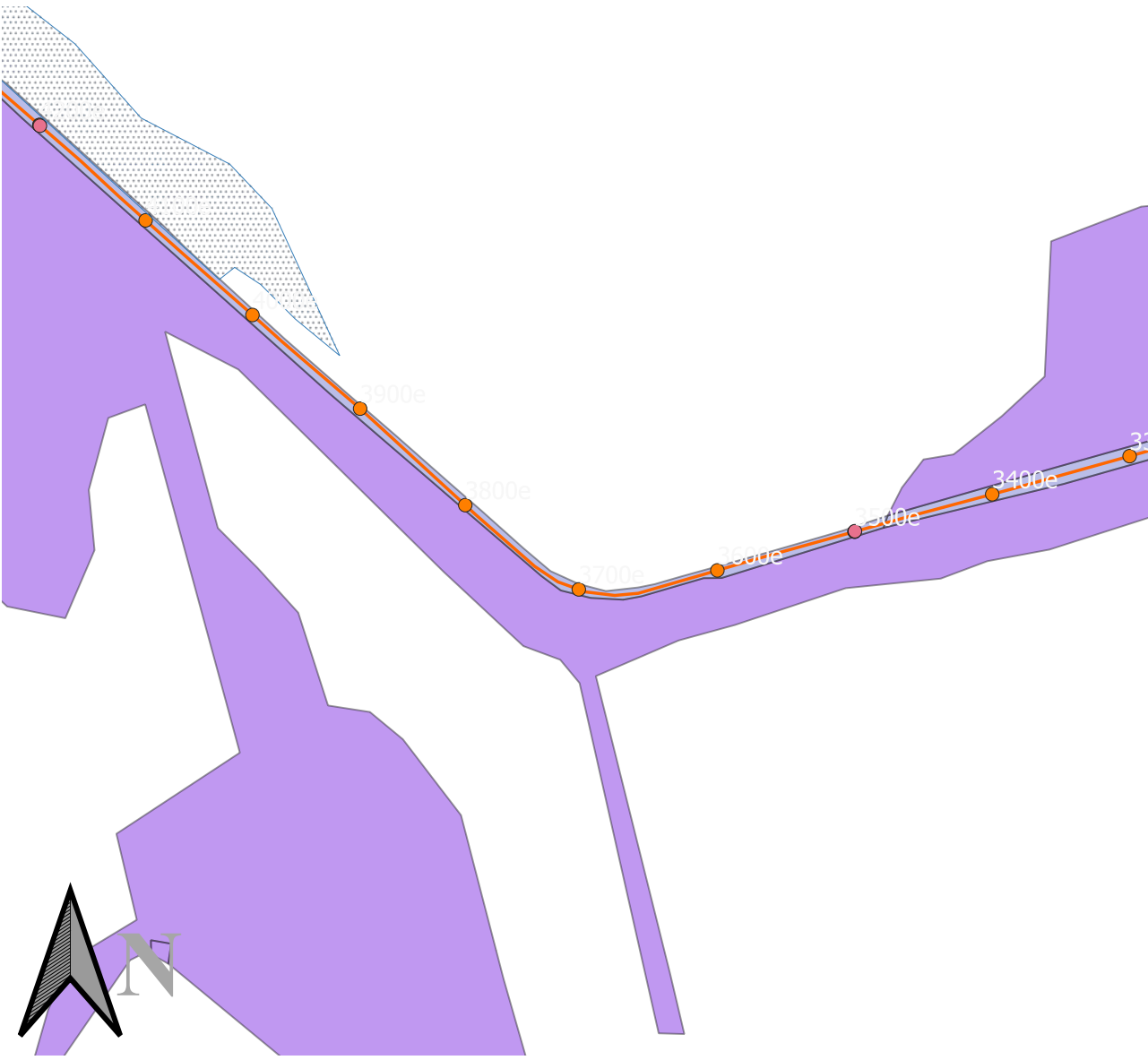
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- Ecologically Sensitive Areas
- Water Courses
- Boughill to Derryhaun habitats**
- Conifer plantation
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Recolonising bare ground/Buildings and artificial surfaces

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
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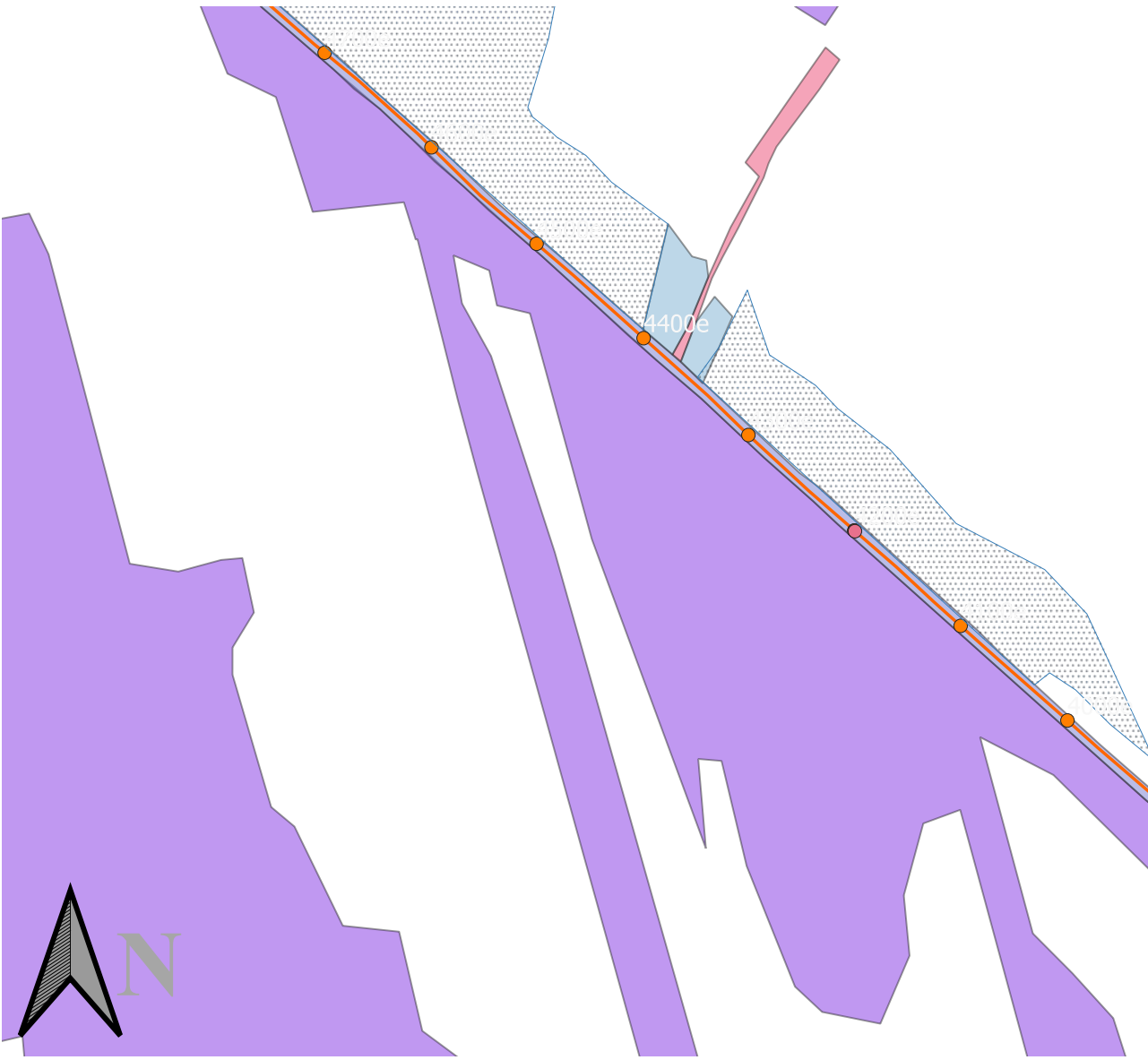
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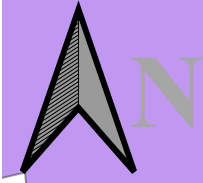
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Clandillon Civil
Consulting

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- Ecologically Sensitive Areas
- Drainage ditches
- Scrub
- Cutover bog/Bare peat
- Recolonising bare ground/Buildings and artificial surfaces

Boughill to Derryhaun habitats





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Date:
21/06/21

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- | | | |
|-------------------------------|---------------------------------------|--|
| Ecologically Sensitive Areas | Boughill to Derryhaun habitats | Mixed broadleaved woodland/Scrub |
| Ecological Constraints | Conifer plantation | Recolonising bare ground/Buildings and artificial surfaces |
| Notes | Cutover bog/Bare peat | Scrub |
| | Drainage ditches | |

Boughill to Derryhaun: Ecological Constraints & Habitats



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Greenway

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- Notes

Boughill to Derryhaun habitats

- Bog woodland
- Conifer plantation
- Cutover bog/Bare peat
- Drainage ditches
- Emerging grassland and heath on cutover peat

- Heath
- Mixed broadleaved woodland/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub

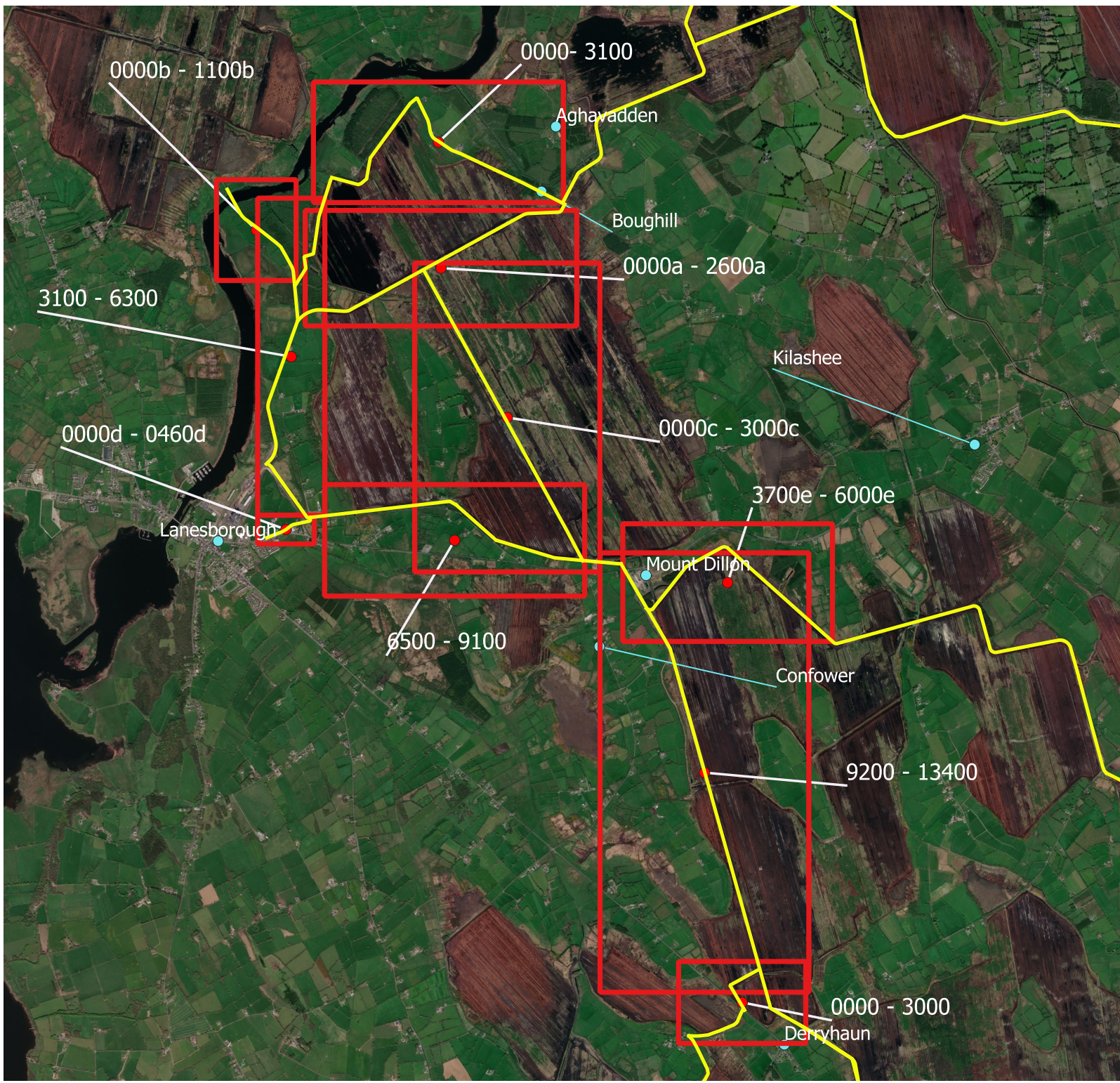
Overview of Chainage Sections

Boughill to Derryhaun

CLIENT: Clandillon Civil Consulting

Legend

- Proposed Route
- Boughill to Derryhaun Sections



Prepared by: Ian Douglas
Date: 24/06/2021
Version number: 2
Job Reference: Longford Greenway
Base Map: Bing Aerial 2019

Disclaimer: This map has been prepared in accordance with the scope of services described in the contract or agreement between Flynn Furney Environmental Consultants and the Client. Any findings only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client.

Boughill to Derryhaun: Ecological Constraints & Habitats



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Ian Douglas

Date:
21/06/21

Job:
Longford
Greenway

Base Map:
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Clandillon Civil
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be removed where possible

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog

- Emerging woodland on cutover bog/Scrub
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub



Prepared by:
Ian Douglas

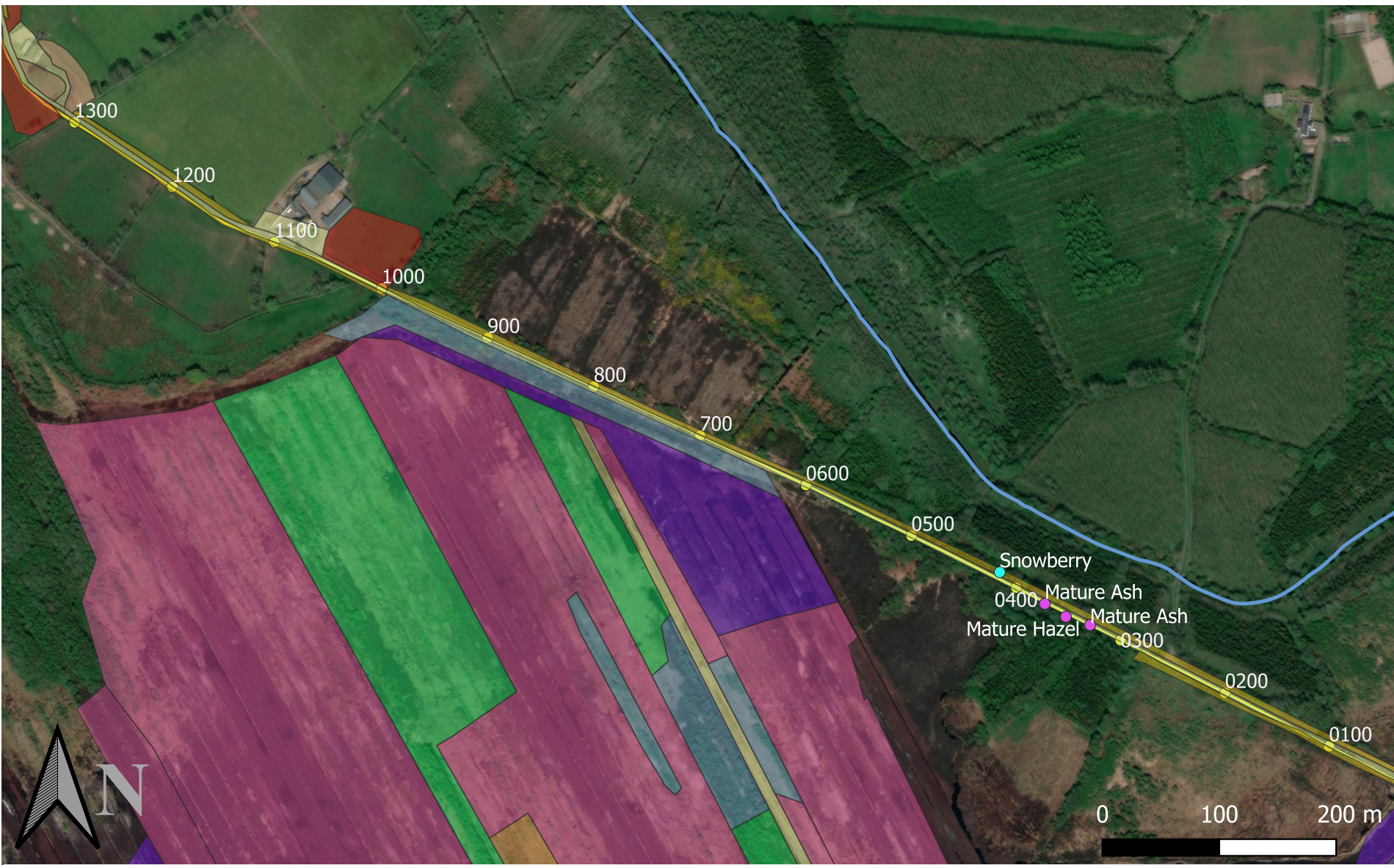
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be removed where possible
- To be retained where possible

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland & wetland mosaic
- Buildings and artificial surfaces
- Cutover bog/Bare peat
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- Hedgerows
- Improved agricultural grassland
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- Scrub



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be protected
- To be retained where possible

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat

- Emerging woodland on cutover bog
- Hedgerows
- Improved agricultural grassland
- Scrub
- Treelines



Prepared by:
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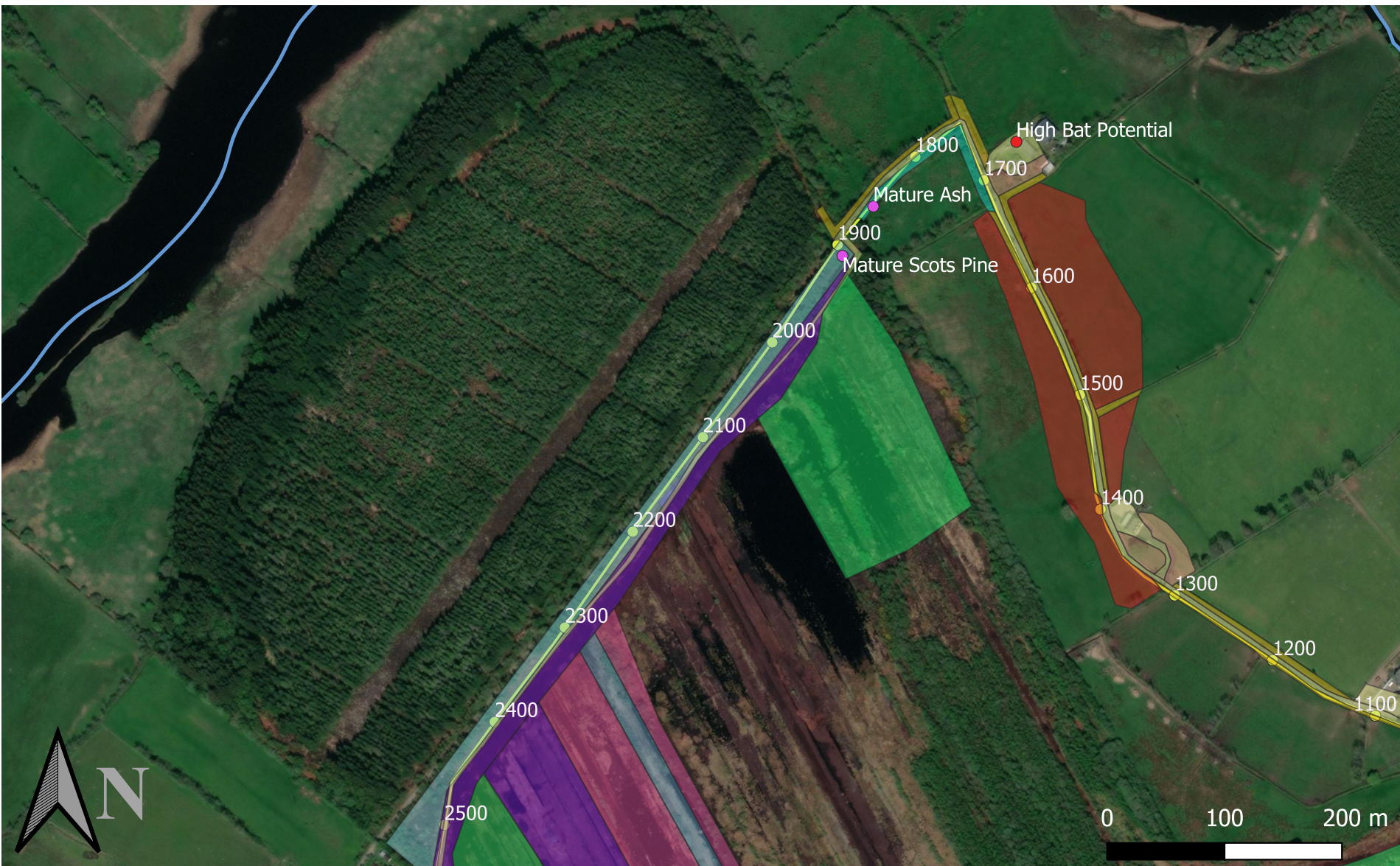
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be protected
- To be retained where possible

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland
- Buildings and artificial surfaces
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- Hedgerows
- Improved agricultural grassland
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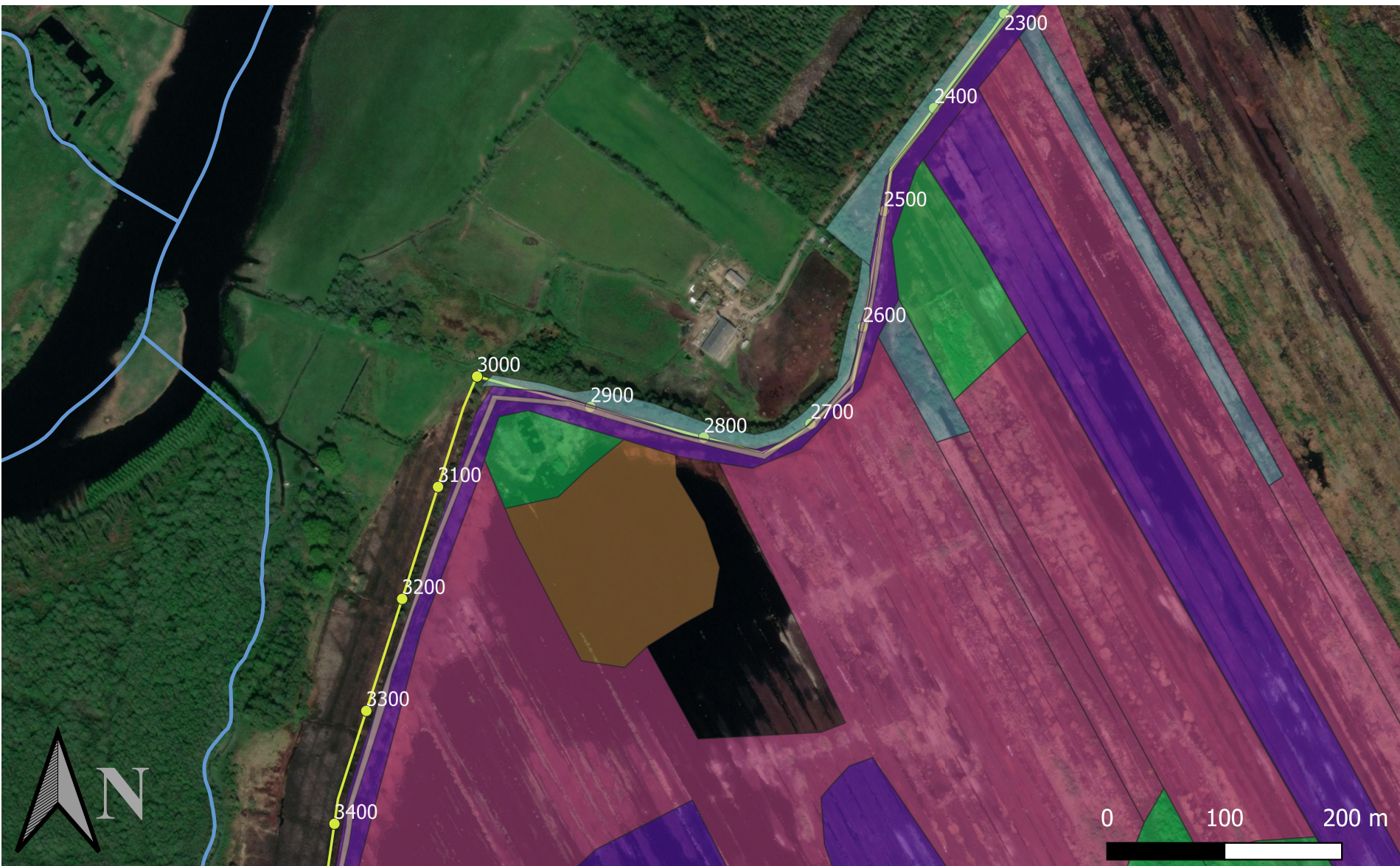
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland
- Bog woodland & wetland mosaic
- Buildings and artificial surfaces

- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Scrub



Prepared by:
Ian Douglas

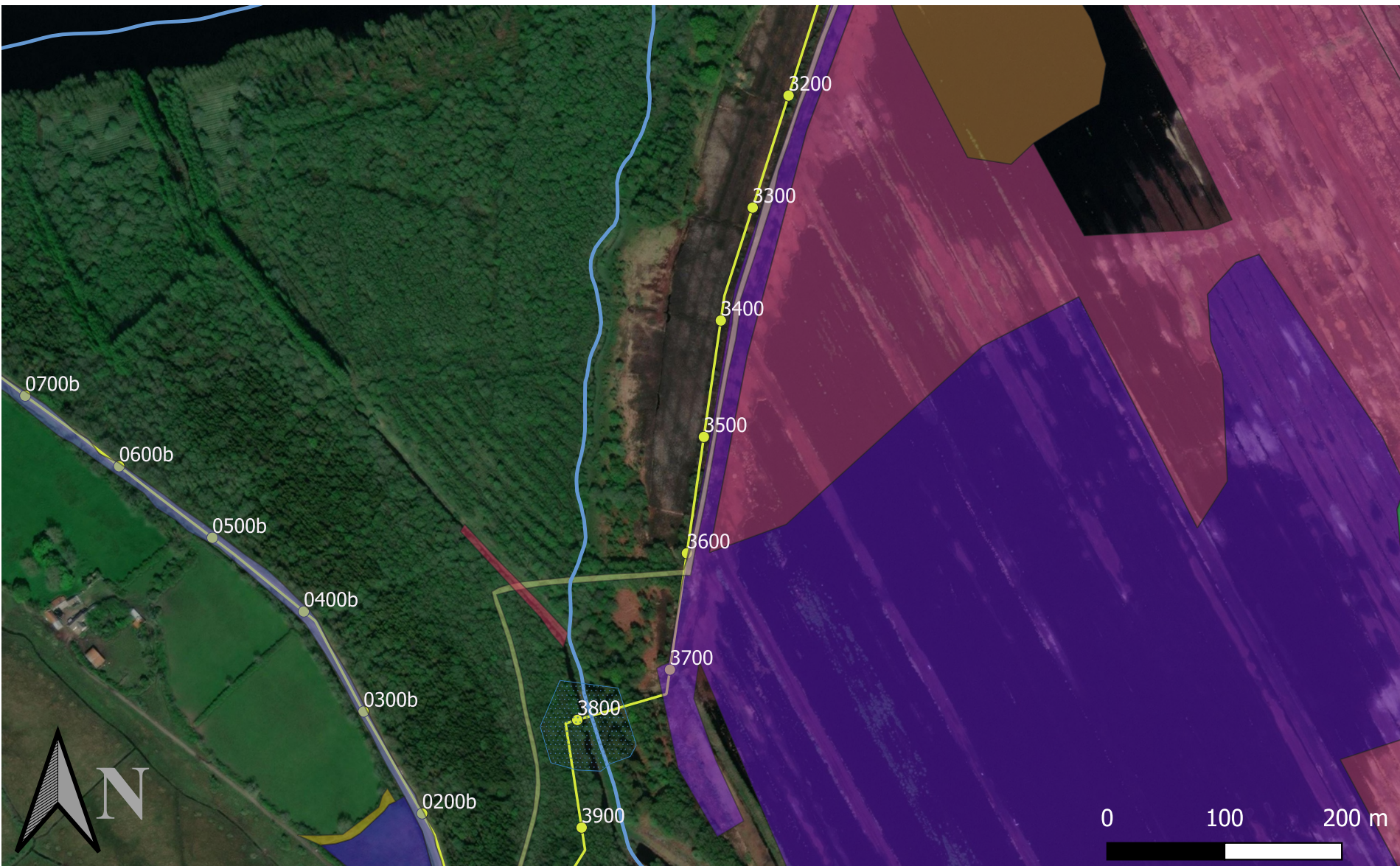
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
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- Recolonising bare ground/Buildings and artificial surfaces
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Boughill to Derryhaun habitats

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- Boughill to Derryhaun**
- Boughill to Derryhaun Chainage
 - Ecologically Sensitive Areas
 - Water Courses
- Ecological Constraints**
- To be retained where possible

- Boughill to Derryhaun habitats**
- Cutover bog/Bare peat
 - Drainage ditches
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 - Heath

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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

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Ecological Constraints

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Boughill to Derryhaun habitats

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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

■ Bog woodland & wetland mosaic

■ Conifer plantation

■ Cutover bog/Bare peat

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Boughill to Derryhaun: Ecological Constraints & Habitats



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Ecological Constraints

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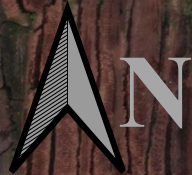
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
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Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

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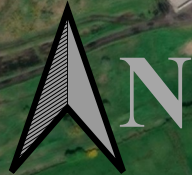
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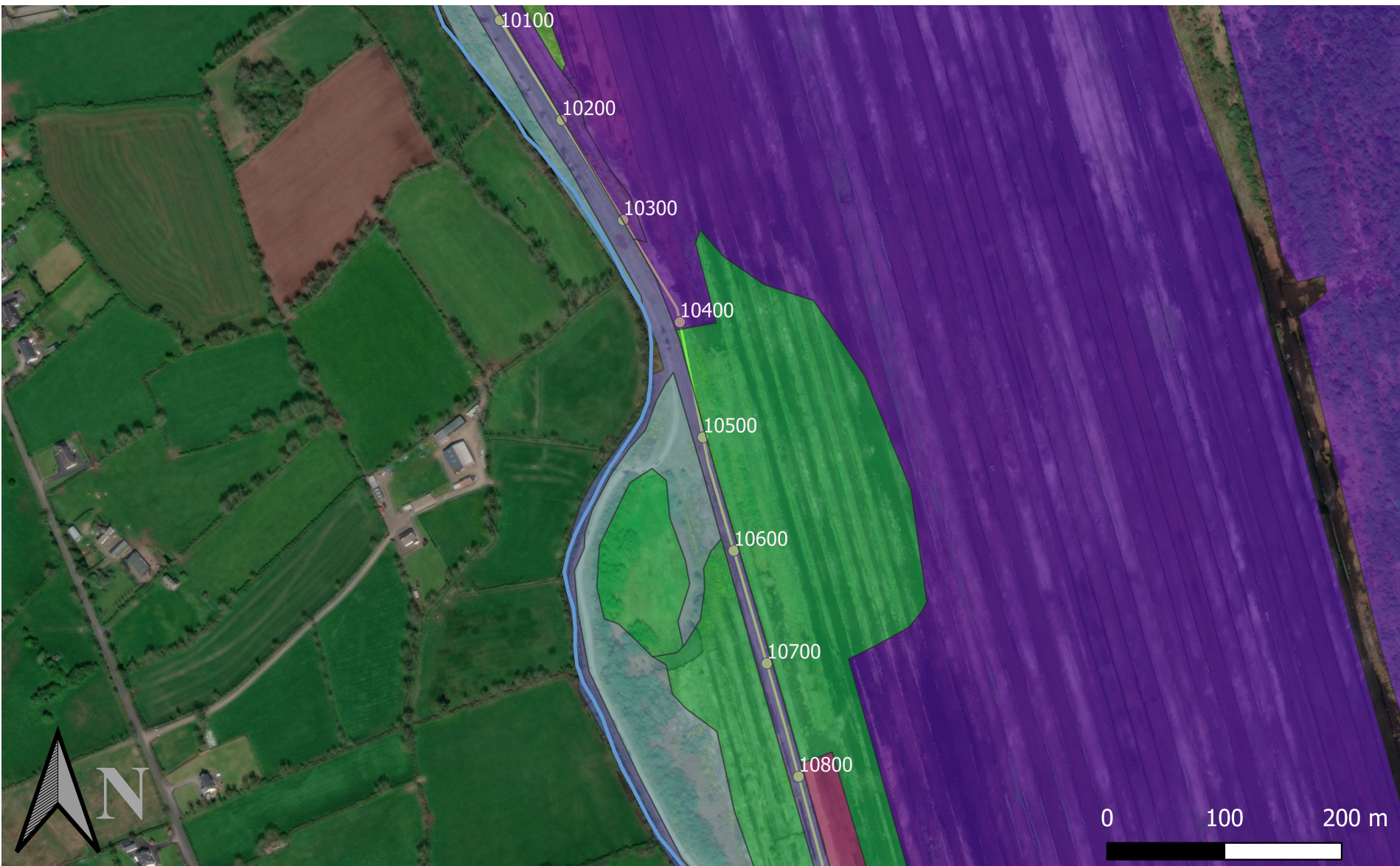
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Boughill to Derryhaun

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- Water Courses

Boughill to Derryhaun habitats

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- Heath
- Recolonising bare ground/Buildings and artificial surfaces



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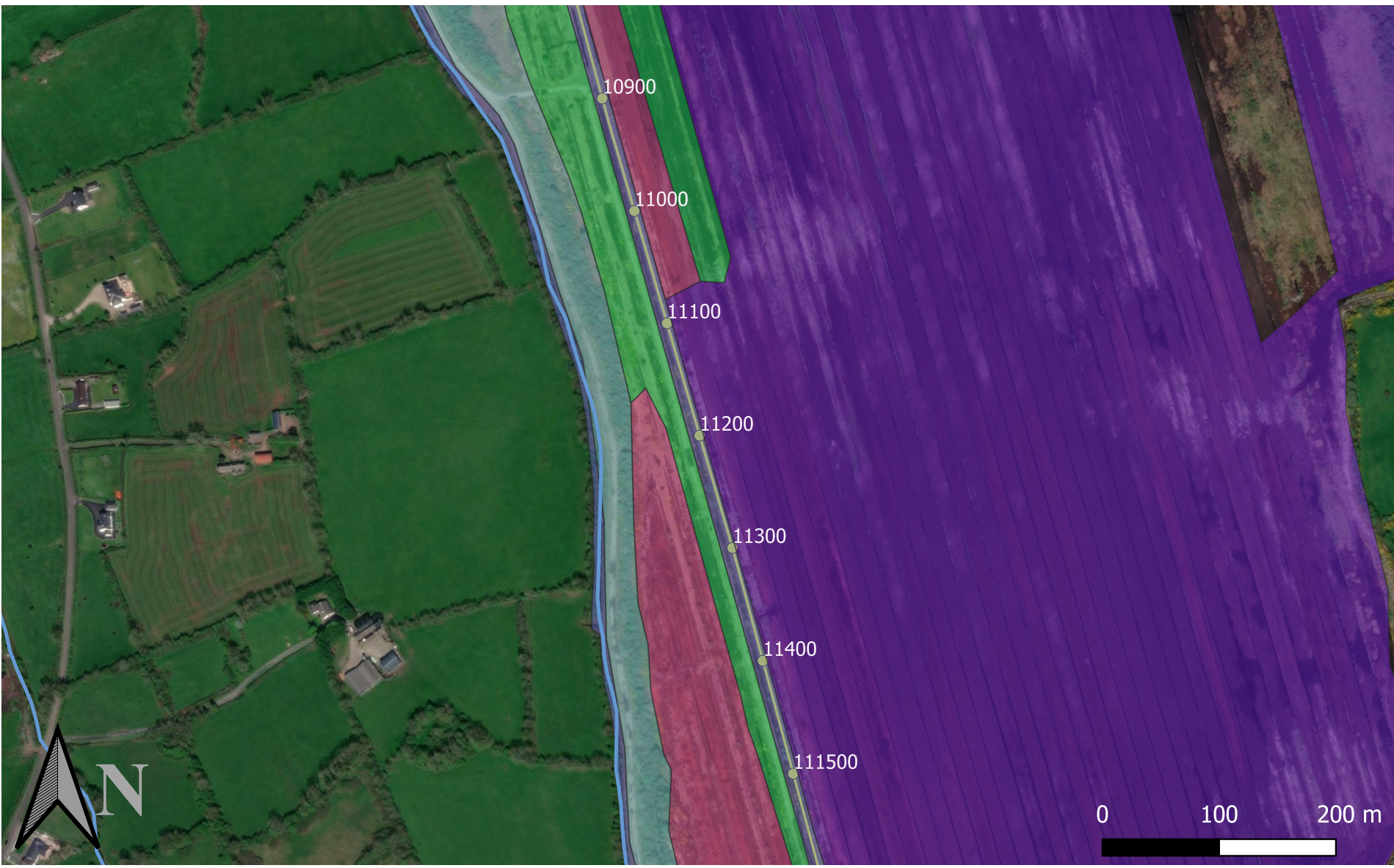
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Boughill to Derryhaun

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Boughill to Derryhaun habitats

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- ▨ Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- ▨ Bog woodland
- ▨ Cutover bog/Bare peat
- ▨ Emerging grassland and heath on cutover peat

- ▨ Emerging woodland on cutover bog
- ▨ Recolonising bare ground/Buildings and artificial surfaces



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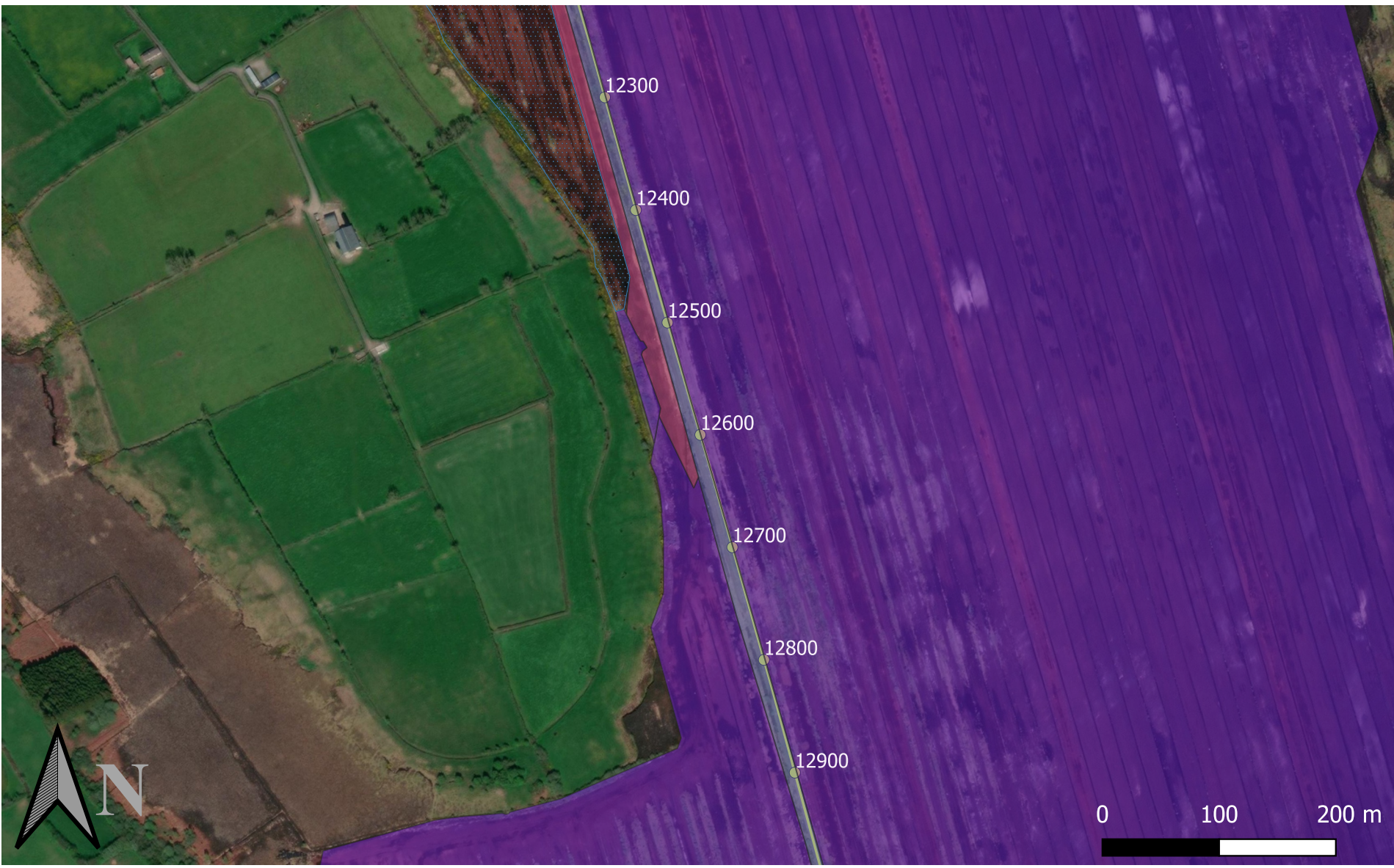
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- ▨ Ecologically Sensitive Areas

Boughill to Derryhaun habitats

- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat

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Boughill to Derryhaun: Ecological Constraints & Habitats



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- | | | |
|----------------------------------|---------------------------------------|--|
| Boughill to Derryhaun | — Water Courses | Recolonising bare ground/Buildings and artificial surfaces |
| ● Boughill to Derryhaun Chainage | Boughill to Derryhaun habitats | Scrub |
| Ecologically Sensitive Areas | Cutover bog/Bare peat | |



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be removed where possible

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog

- Emerging woodland on cutover bog/Scrub
- Hedgerows
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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

▨ Ecologically Sensitive Areas

Boughill to Derryhaun habitats

▨ Bog woodland & wetland mosaic

▨ Buildings and artificial surfaces

▨ Cutover bog/Bare peat

▨ Emerging grassland and heath on cutover peat

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Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
- Bog woodland/Scrub
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- Drainage ditches

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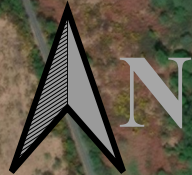
Boughill to Derryhaun

- Boughill to Derryhaun Chainage
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- Water Courses

Boughill to Derryhaun habitats

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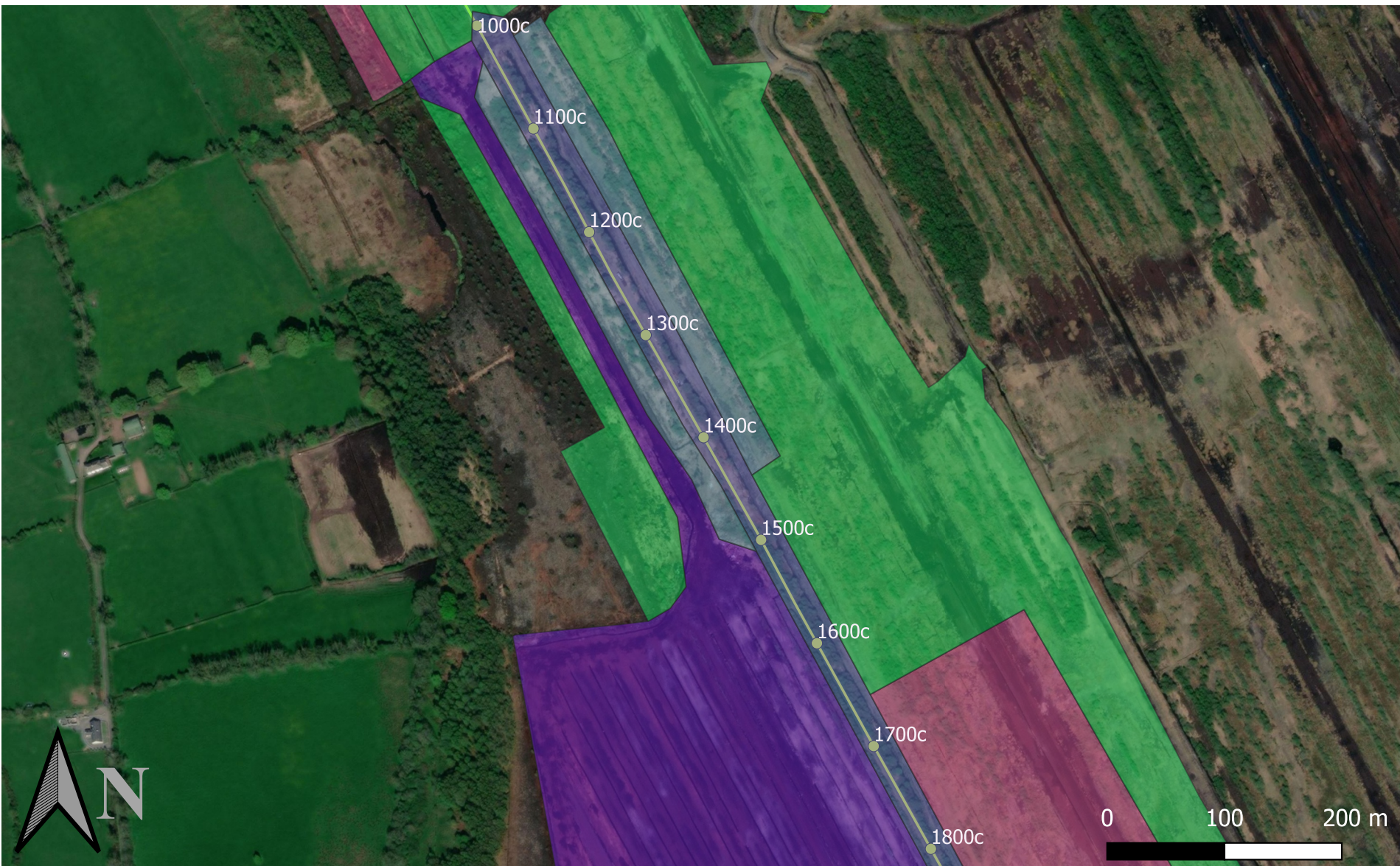
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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

■ Cutover bog/Bare peat

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■ Scrub



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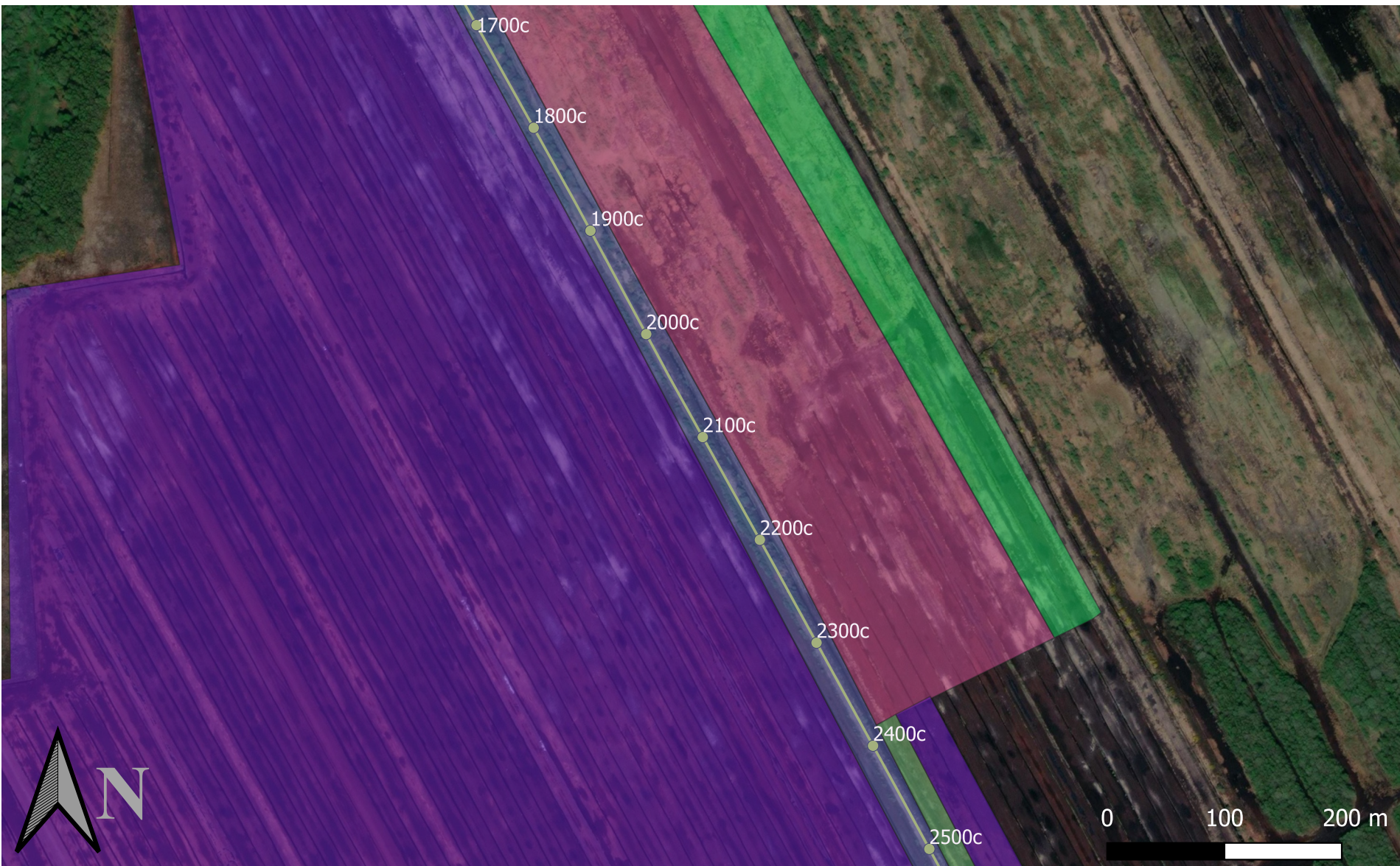
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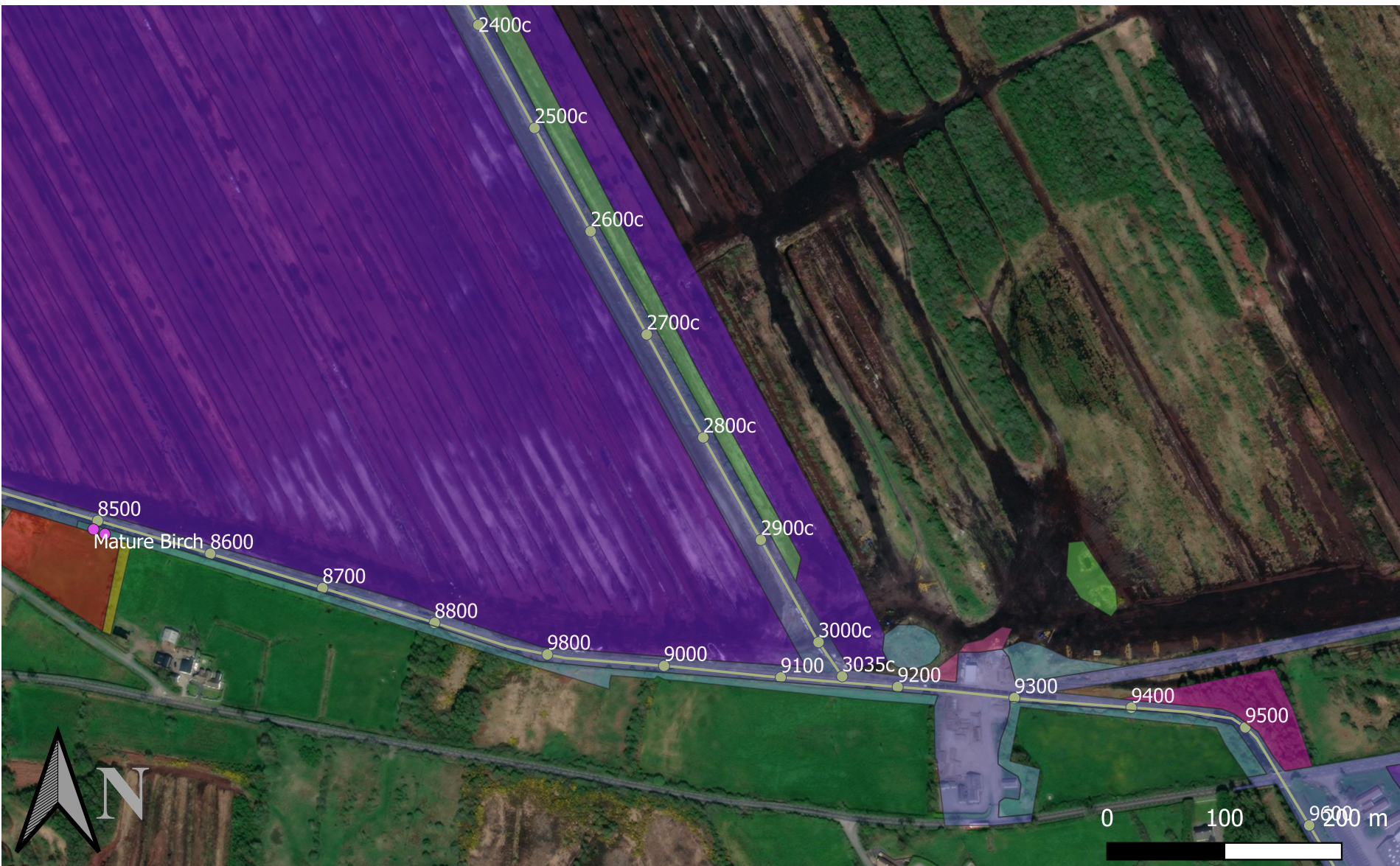
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Conifer plantation
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
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- Heath
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- Bog woodland & wetland mosaic
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Boughill to Derryhaun: Ecological Constraints & Habitats



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- Water Courses

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- Buildings and artificial surfaces
- Hedgerows
- Improved agricultural grassland

- Mixed broadleaved woodland/Scrub

- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Treelines

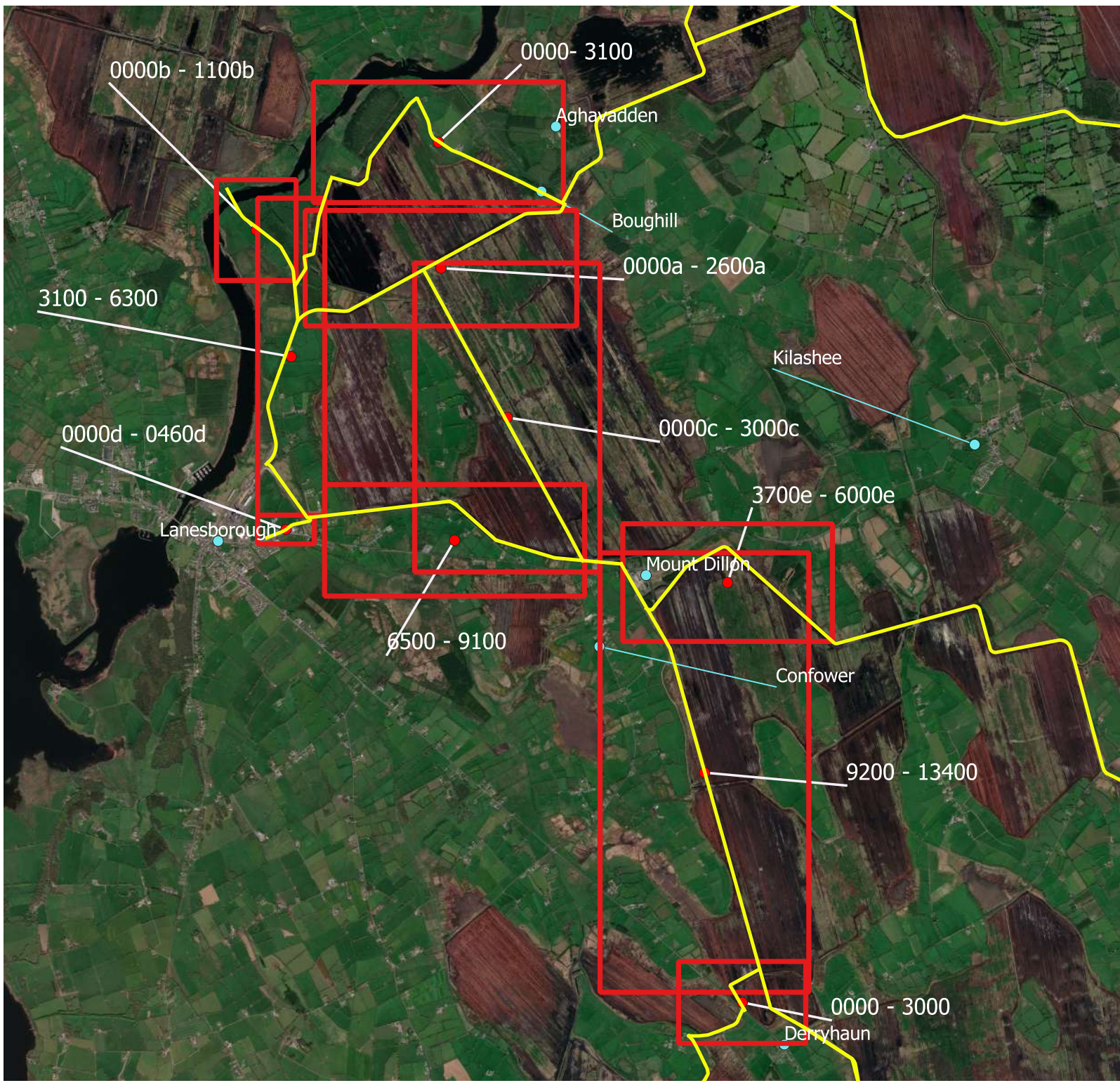
Overview of Chainage Sections

Boughill to Derryhaun

CLIENT: Clandillon Civil Consulting

Legend

- Proposed Route
- Boughill to Derryhaun Sections



Prepared by: Ian Douglas
Date: 24/06/2021
Version number: 2
Job Reference: Longford Greenway
Base Map: Bing Aerial 2019

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Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

Date:
21/06/21

Job:
Longford
Greenway

Base Map:
Bing Maps Aerial
2019

Client:
Clandillon Civil
Consulting

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be removed where possible

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog

- Emerging woodland on cutover bog/Scrub
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub



Prepared by:
Ian Douglas

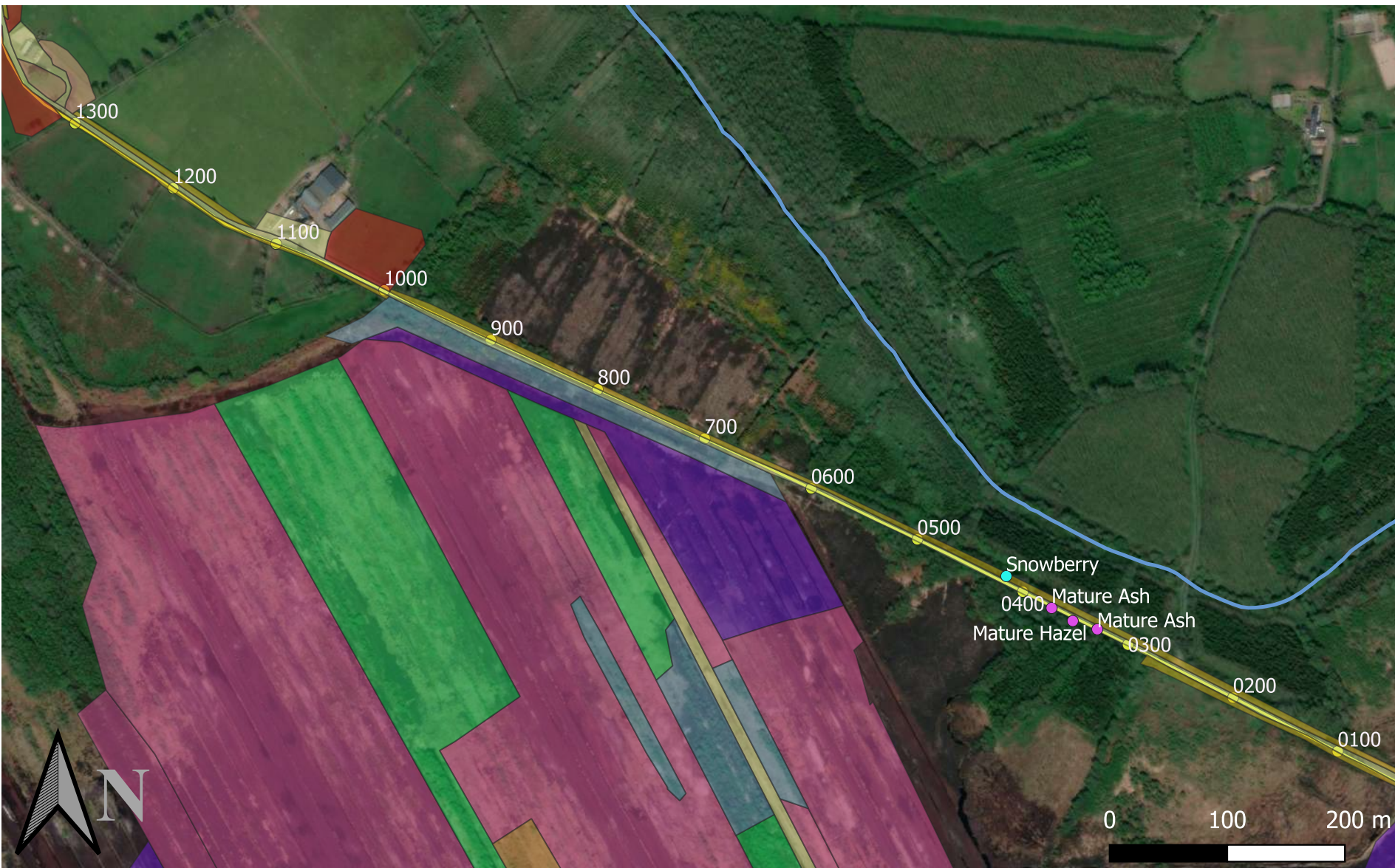
Date:
21/06/21

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Consulting

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- Boughill to Derryhaun**
- Boughill to Derryhaun Chainage
 - Water Courses
- Ecological Constraints**
- To be removed where possible
 - To be retained where possible

- Boughill to Derryhaun habitats**
- Amenity grassland
 - Bog woodland & wetland mosaic
 - Buildings and artificial surfaces
 - Cutover bog/Bare peat
 - Emerging grassland and heath on cutover peat

- Emerging woodland on cutover bog
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be protected
- To be retained where possible

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat

- Emerging woodland on cutover bog
- Hedgerows
- Improved agricultural grassland
- Scrub
- Treelines



Prepared by:
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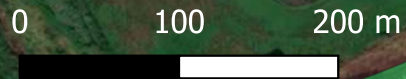
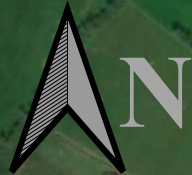
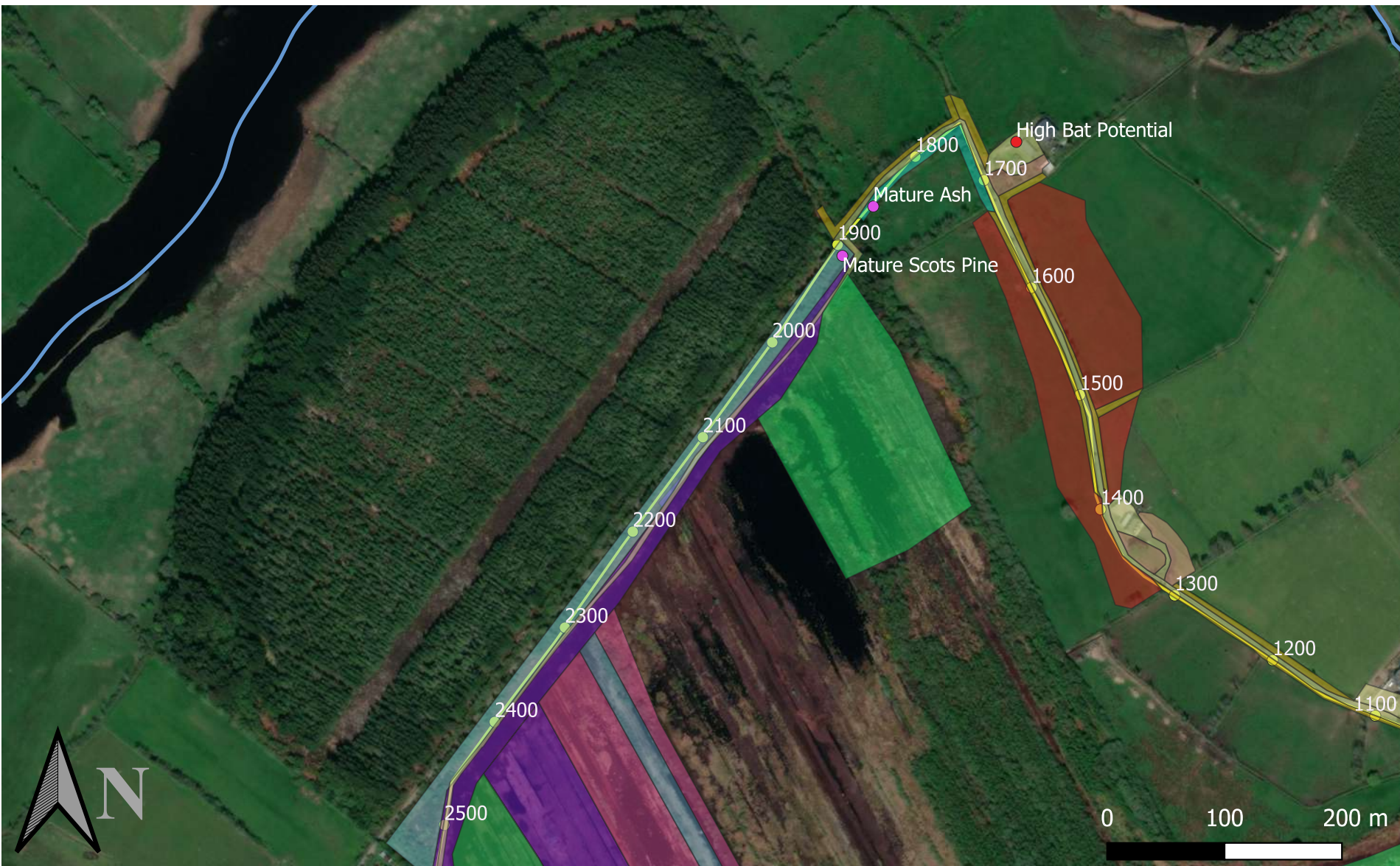
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be protected
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Boughill to Derryhaun habitats

- Amenity grassland
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- Emerging woodland on cutover bog
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- Improved agricultural grassland
- Scrub
- Treelines

Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
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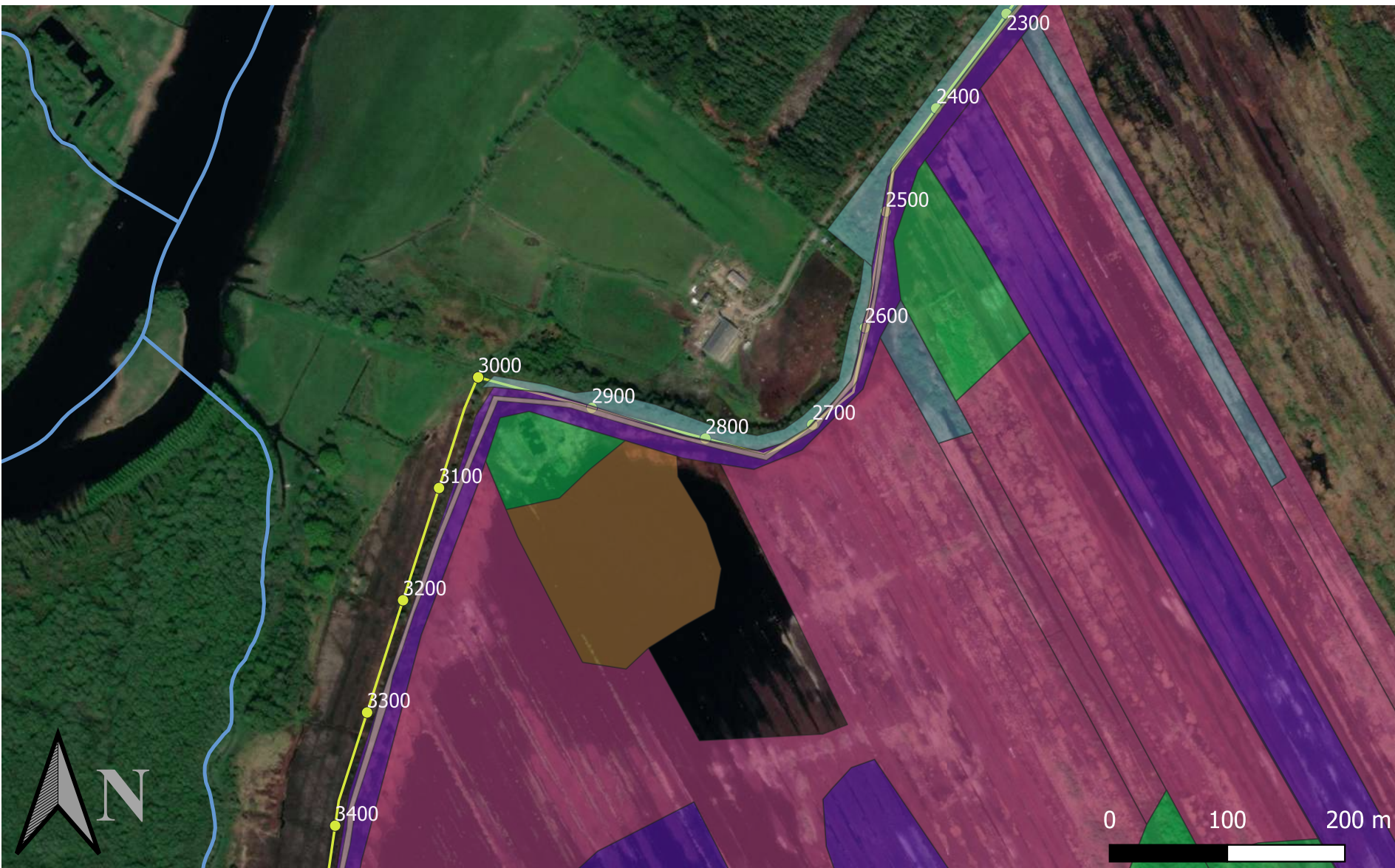
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland
- Bog woodland & wetland mosaic
- Buildings and artificial surfaces
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Prepared by:
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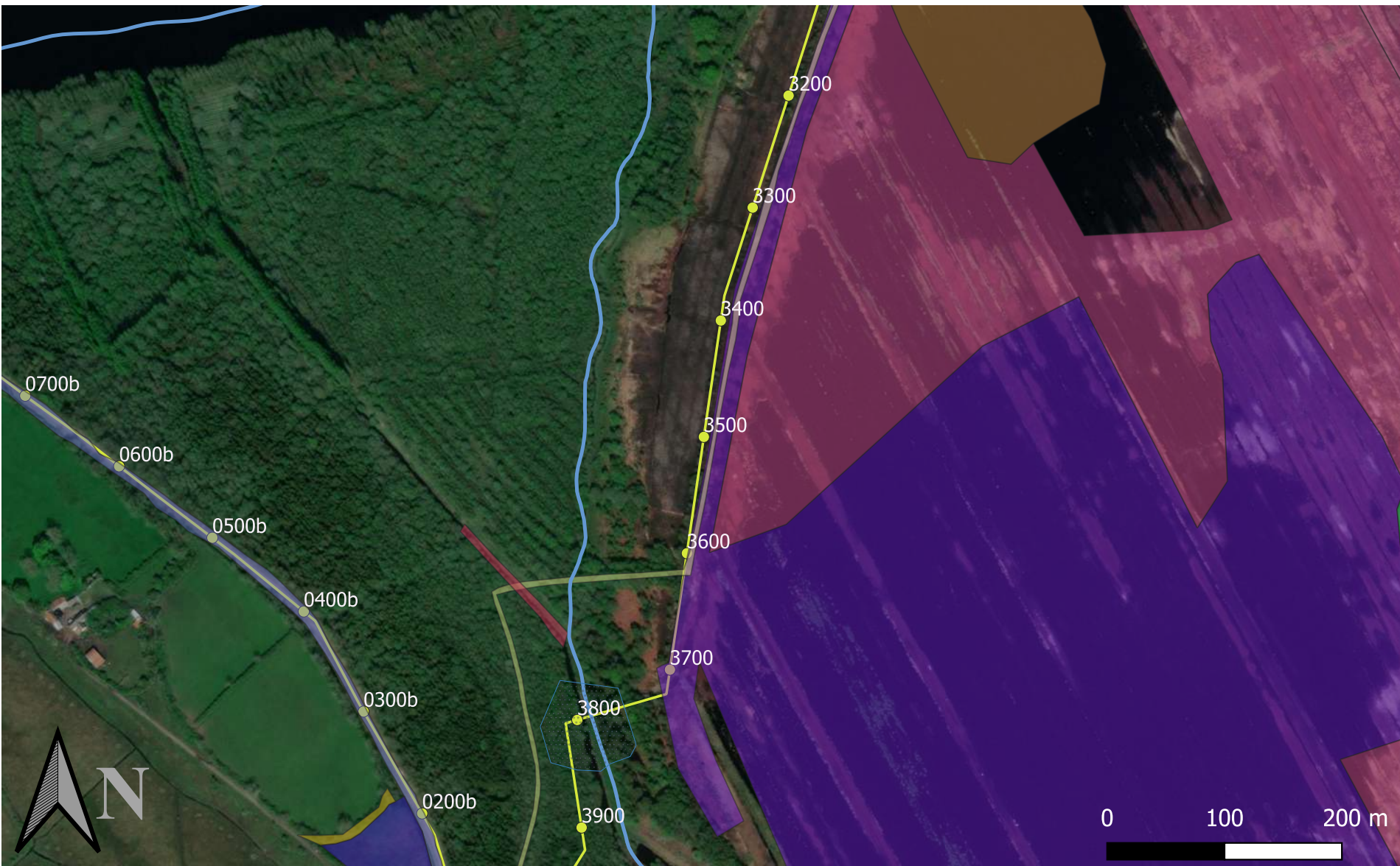
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
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- Cutover bog/Bare peat
- Drainage ditches

- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland



Prepared by:
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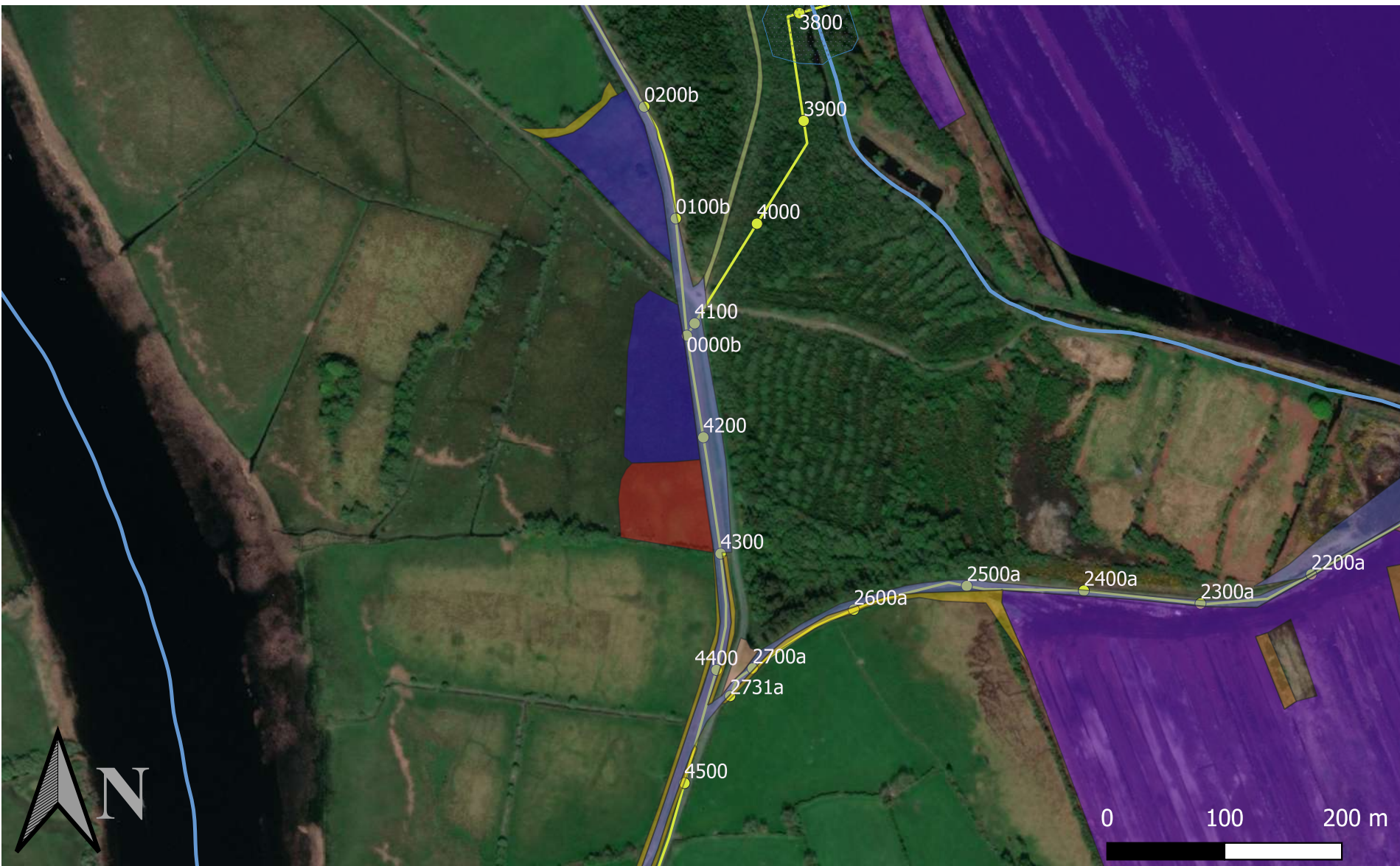
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Boughill to Derryhaun

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- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland & wetland mosaic
- Buildings and artificial surfaces
- Cutover bog/Bare peat

- Emerging grassland and heath on cutover peat
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland



Prepared by:
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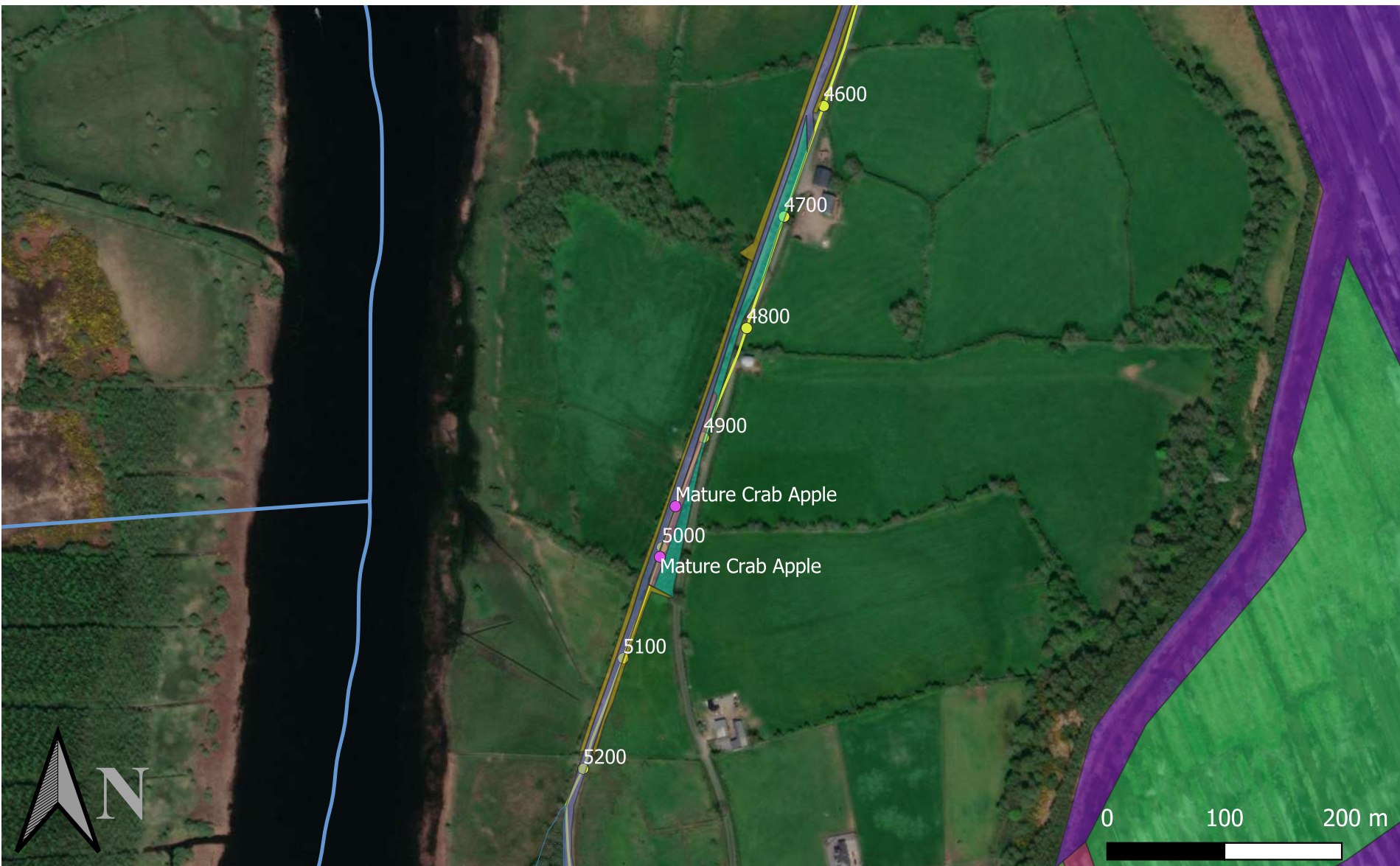
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- Boughill to Derryhaun**
- Boughill to Derryhaun Chainage
 - Ecologically Sensitive Areas
 - Water Courses
- Ecological Constraints**
- To be retained where possible

- Boughill to Derryhaun habitats**
- Cutover bog/Bare peat
 - Drainage ditches
 - Emerging grassland and heath on cutover peat
 - Emerging woodland on cutover bog
 - Heath

- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Treelines



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Boughill to Derryhaun

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- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
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- Recolonising bare ground/Buildings and artificial surfaces
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Heath
- Hedgerows

- Improved agricultural grassland
- Mixed broadleaved woodland/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Treelines

Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Heath

- Hedgerows
- Improved agricultural grassland
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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

■ Bog woodland & wetland mosaic

■ Conifer plantation

■ Cutover bog/Bare peat

■ Emerging grassland and heath on cutover peat

■ Recolonising bare ground/Buildings and artificial surfaces

■ Scrub

Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Ecological Constraints

● To be retained where possible

Boughill to Derryhaun habitats

■ Conifer plantation

■ Cutover bog/Bare peat

■ Emerging grassland and heath on cutover peat

■ Emerging woodland on cutover bog/Scrub

■ Hedgerows

■ Improved agricultural grassland

■ Recolonising bare ground/Buildings and artificial surfaces

■ Scrub

Mature Birch ● Mature Rowan ●



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Conifer plantation
- Cutover bog/Bare peat
- Drainage ditches
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog/Scrub

- Heath
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland
- Conifer plantation
- Cutover bog/Bare peat
- Drainage ditches

- Heath
- Mixed broadleaved woodland/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
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Prepared by:
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Date:
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat

- Emerging woodland on cutover bog
- Heath
- Recolonising bare ground/Buildings and artificial surfaces



Prepared by:
Ian Douglas

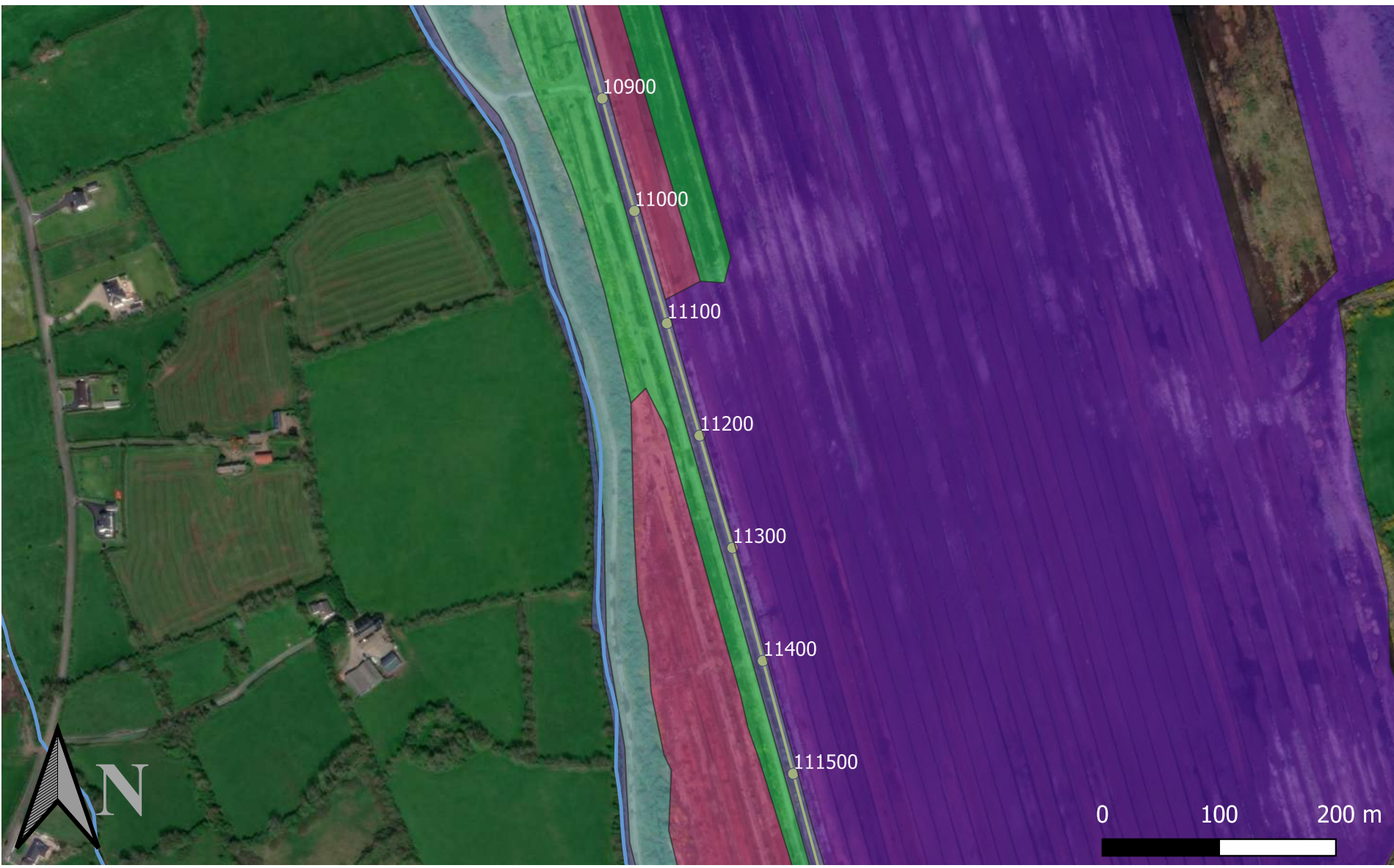
Date:
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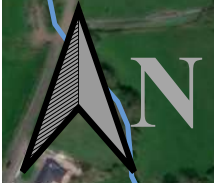
Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland
- Cutover bog/Bare peat

- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Recolonising bare ground/Buildings and artificial surfaces





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Boughill to Derryhaun

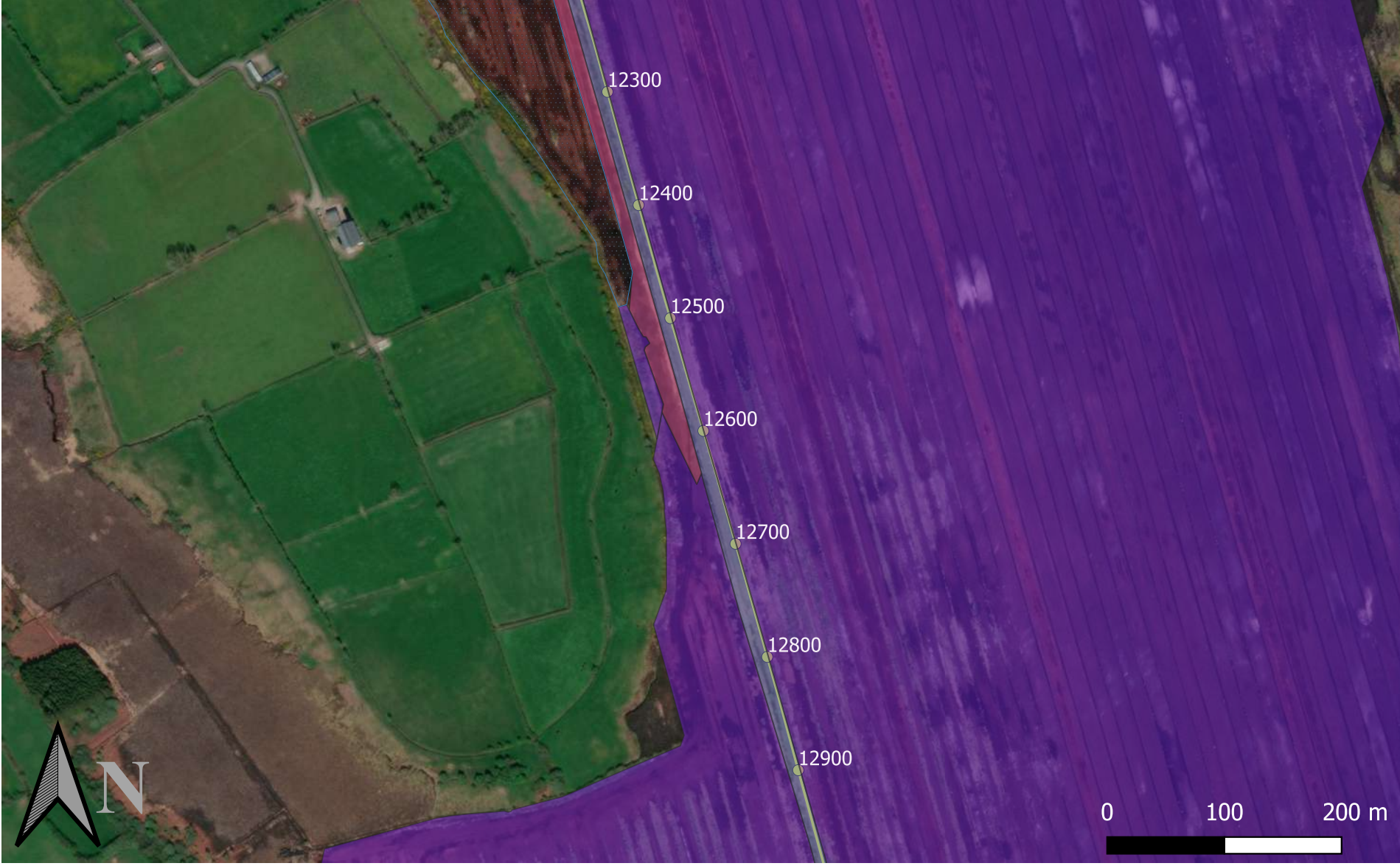
- Boughill to Derryhaun Chainage
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- Bog woodland
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Boughill to Derryhaun: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- ▨ Ecologically Sensitive Areas

Boughill to Derryhaun habitats

- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat

- Recolonising bare ground/Buildings and artificial surfaces



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas

Water Courses

Boughill to Derryhaun habitats

Cutover bog/Bare peat

Recolonising bare ground/Buildings and artificial surfaces

Scrub



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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Ecological Constraints

- To be removed where possible

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog

- Emerging woodland on cutover bog/Scrub
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Boughill to Derryhaun: Ecological Constraints & Habitats



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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

▨ Ecologically Sensitive Areas

Boughill to Derryhaun habitats

▨ Bog woodland & wetland mosaic

▨ Buildings and artificial surfaces

▨ Cutover bog/Bare peat

▨ Emerging grassland and heath on cutover peat

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▨ Hedgerows

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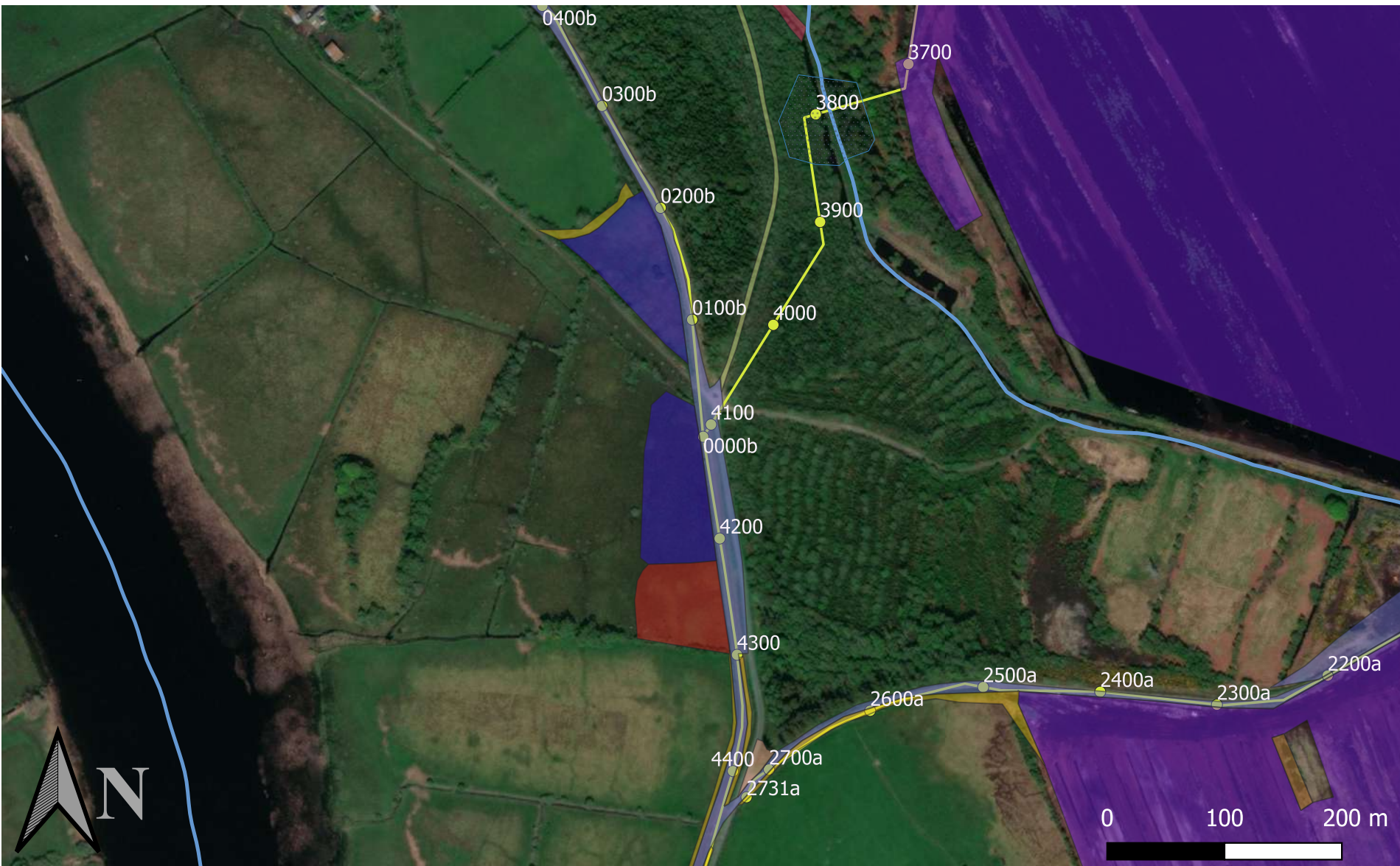
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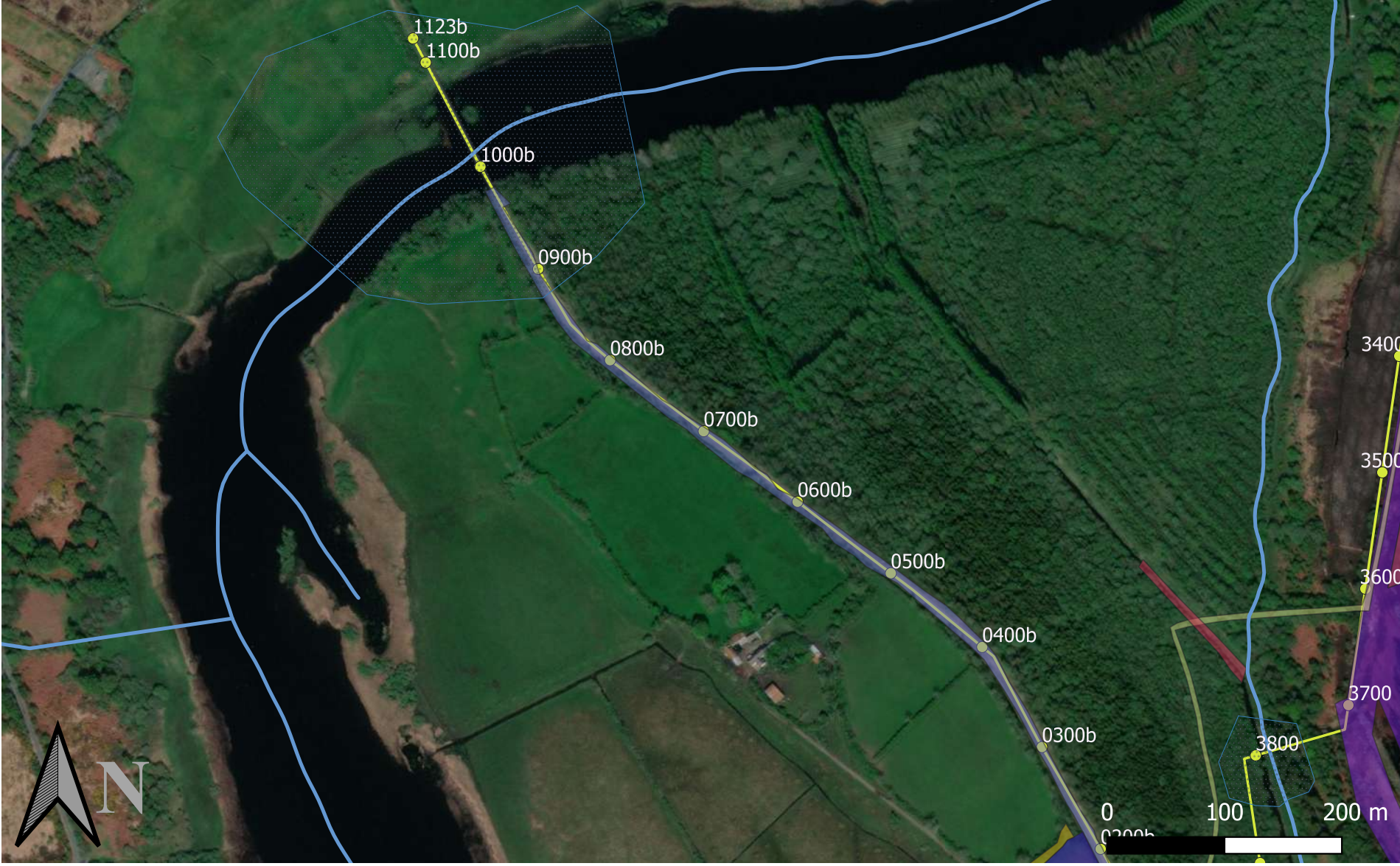
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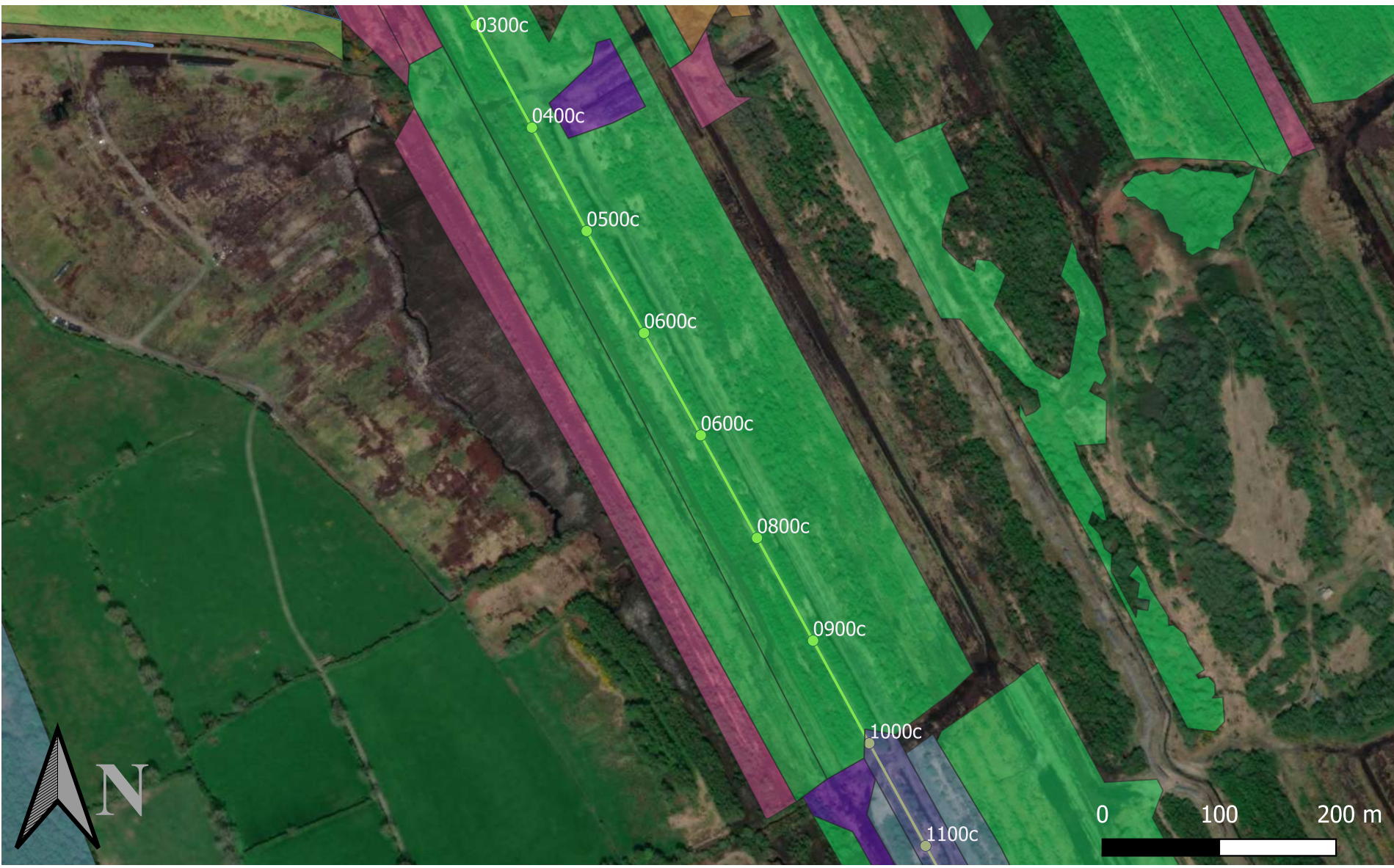
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Base Map:
Bing Maps Aerial 2019

Client:
Clandillon Civil Consulting

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Cutover bog/Bare peat

- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub



Prepared by:
Ian Douglas

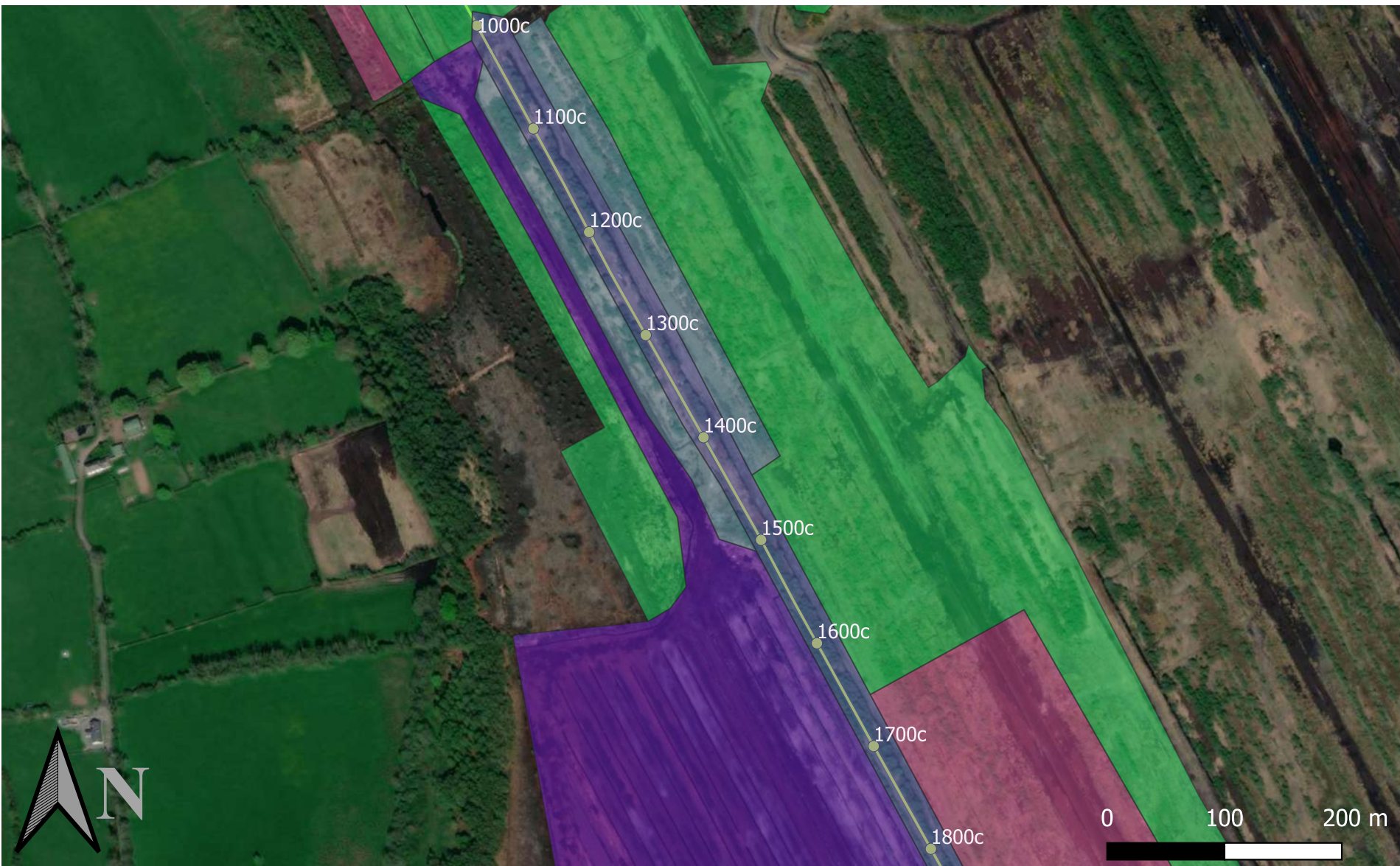
Date:
21/06/21

Job:
**Longford
Greenway**

Base Map:
**Bing Maps Aerial
2019**

Client:
**Clandillon Civil
Consulting**

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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

■ Cutover bog/Bare peat

■ Emerging grassland and heath on cutover peat

■ Emerging woodland on cutover bog

■ Recolonising bare ground/Buildings and artificial surfaces

■ Scrub



Prepared by:
Ian Douglas

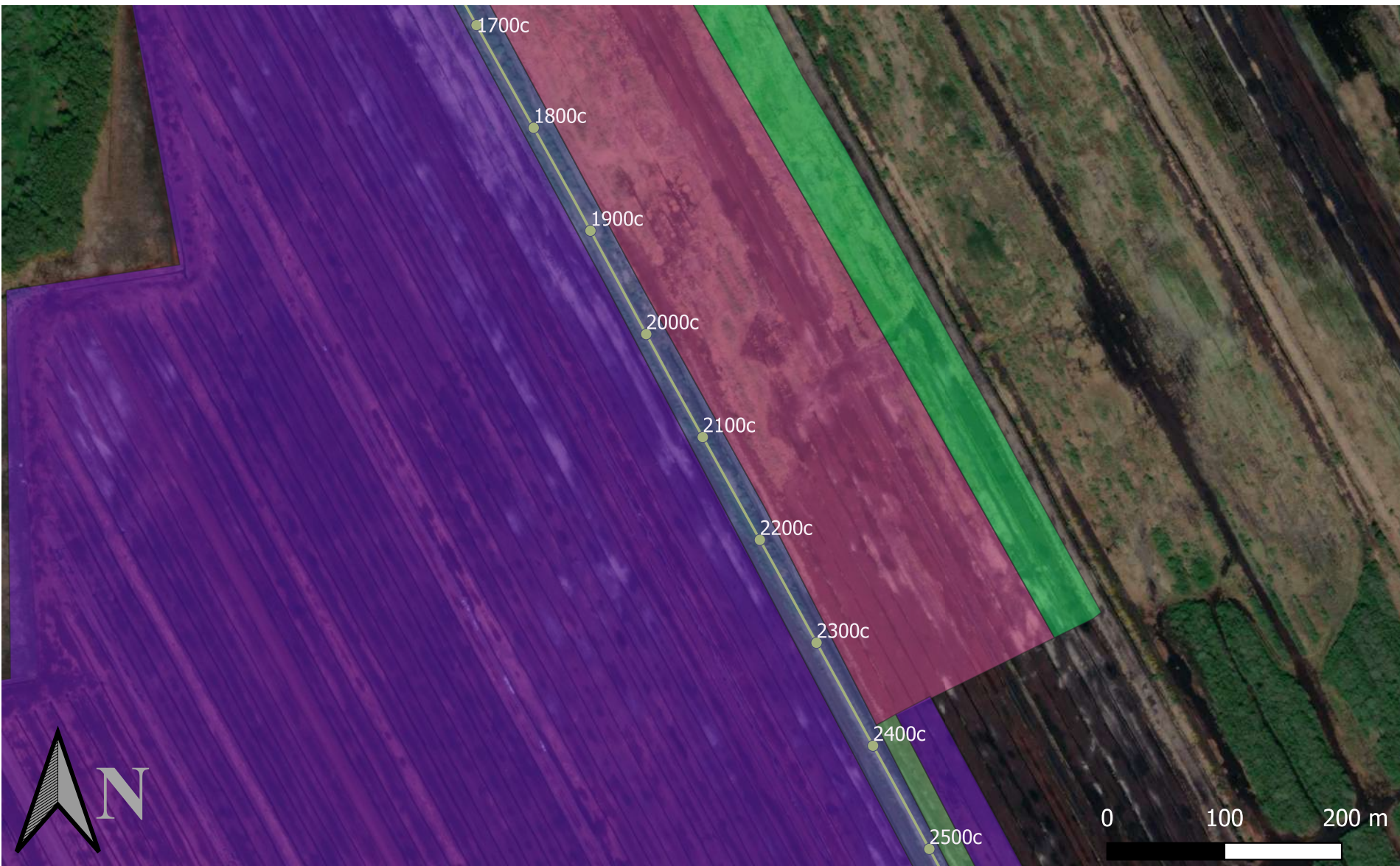
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Boughill to Derryhaun

● Boughill to Derryhaun Chainage

Boughill to Derryhaun habitats

■ Cutover bog/Bare peat

■ Emerging grassland and heath on cutover peat

■ Emerging woodland on cutover bog

■ Emerging woodland on cutover bog/Scrub

■ Recolonising bare ground/Buildings and artificial surfaces



Prepared by:
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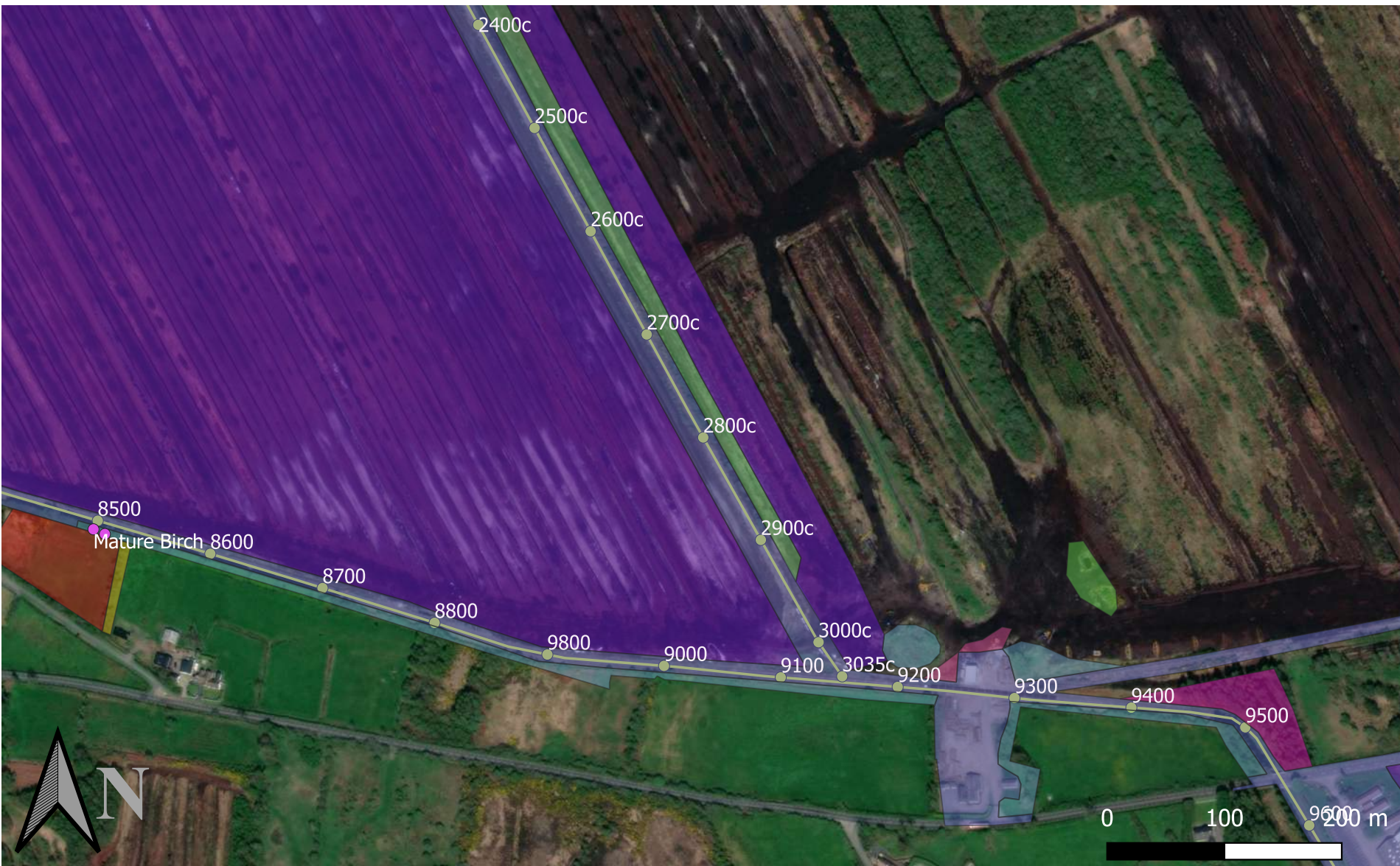
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Conifer plantation
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Emerging woodland on cutover bog/Scrub

- Heath
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub



Prepared by:
Ian Douglas

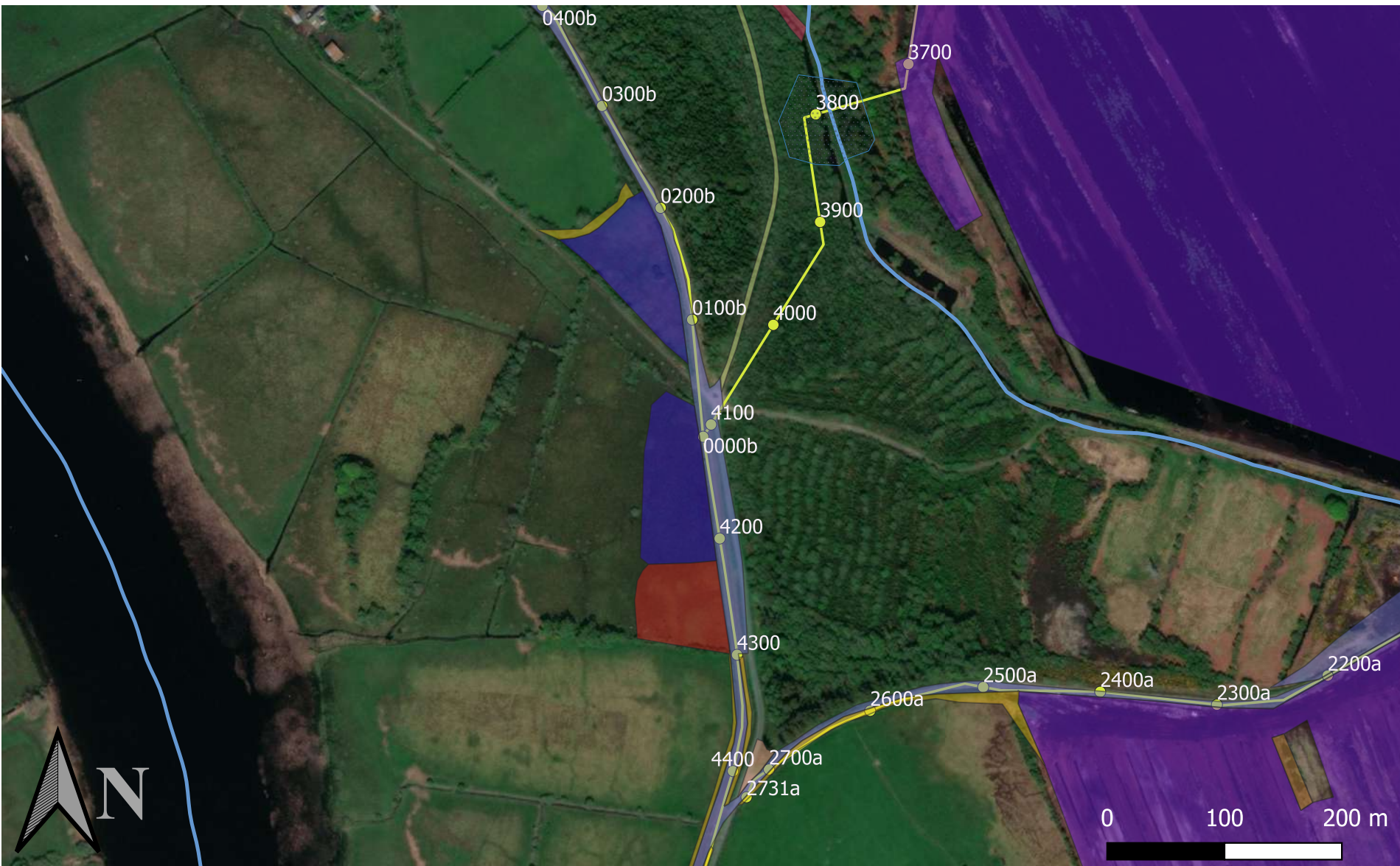
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Amenity grassland
- Bog woodland & wetland mosaic
- Buildings and artificial surfaces
- Cutover bog/Bare peat

- Drainage ditches
- Hedgerows
- Improved agricultural grassland
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland



Prepared by:
Ian Douglas

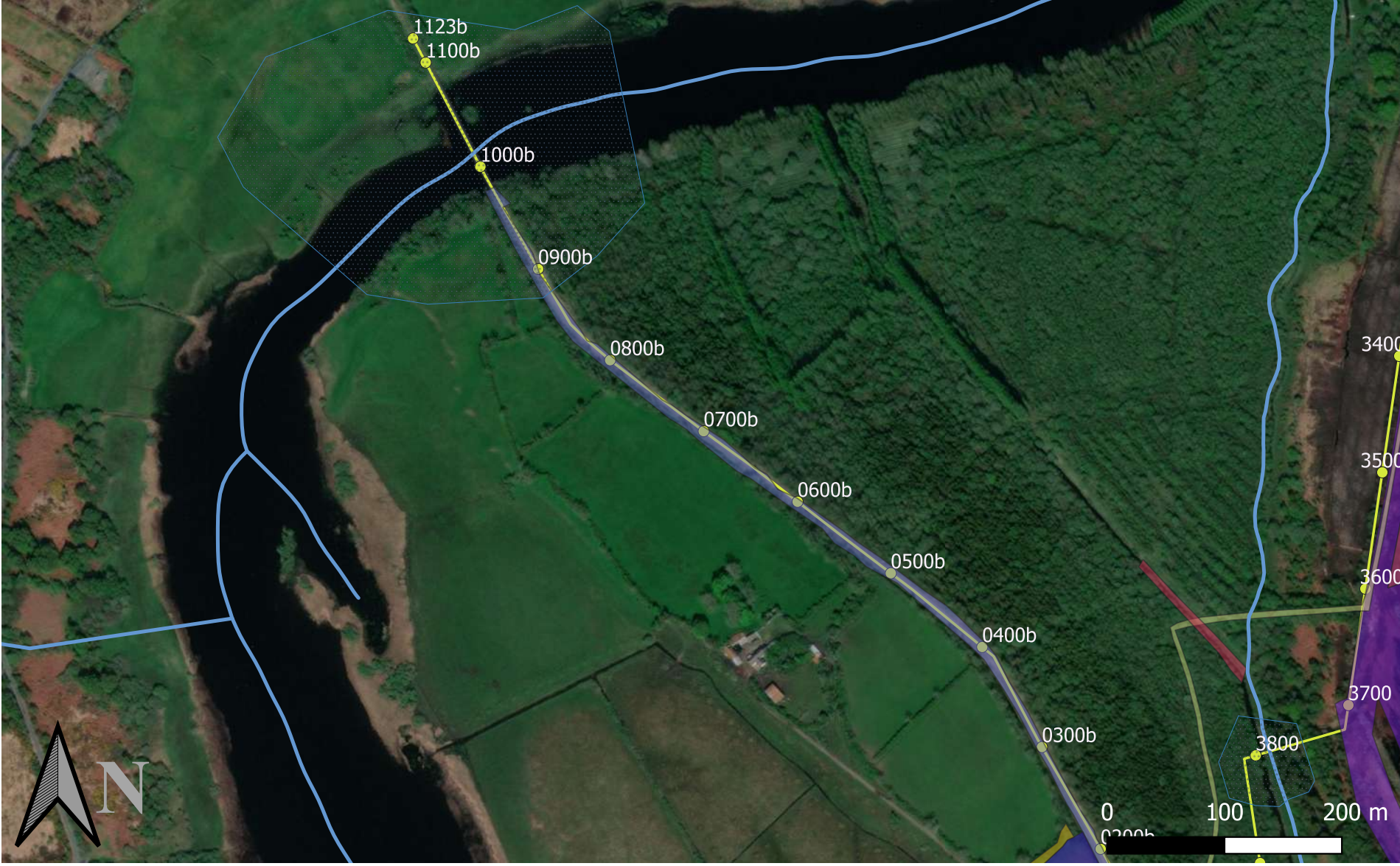
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Ecologically Sensitive Areas
- Water Courses

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Drainage ditches

- Emerging grassland and heath on cutover peat
- Hedgerows
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland



Prepared by:
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Date:
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Greenway

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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Ecological Constraints

- To be retained where possible

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging grassland and heath on cutover peat
- Heath
- Hedgerows

- Improved agricultural grassland
- Mixed broadleaved woodland/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Treelines



Prepared by:
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Date:
21/06/21

Job:
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Client:
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Boughill to Derryhaun

- Boughill to Derryhaun Chainage
- Water Courses

Boughill to Derryhaun habitats

- Buildings and artificial surfaces
- Hedgerows
- Improved agricultural grassland

Boughill to Derryhaun habitats

- Mixed broadleaved woodland/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Treelines

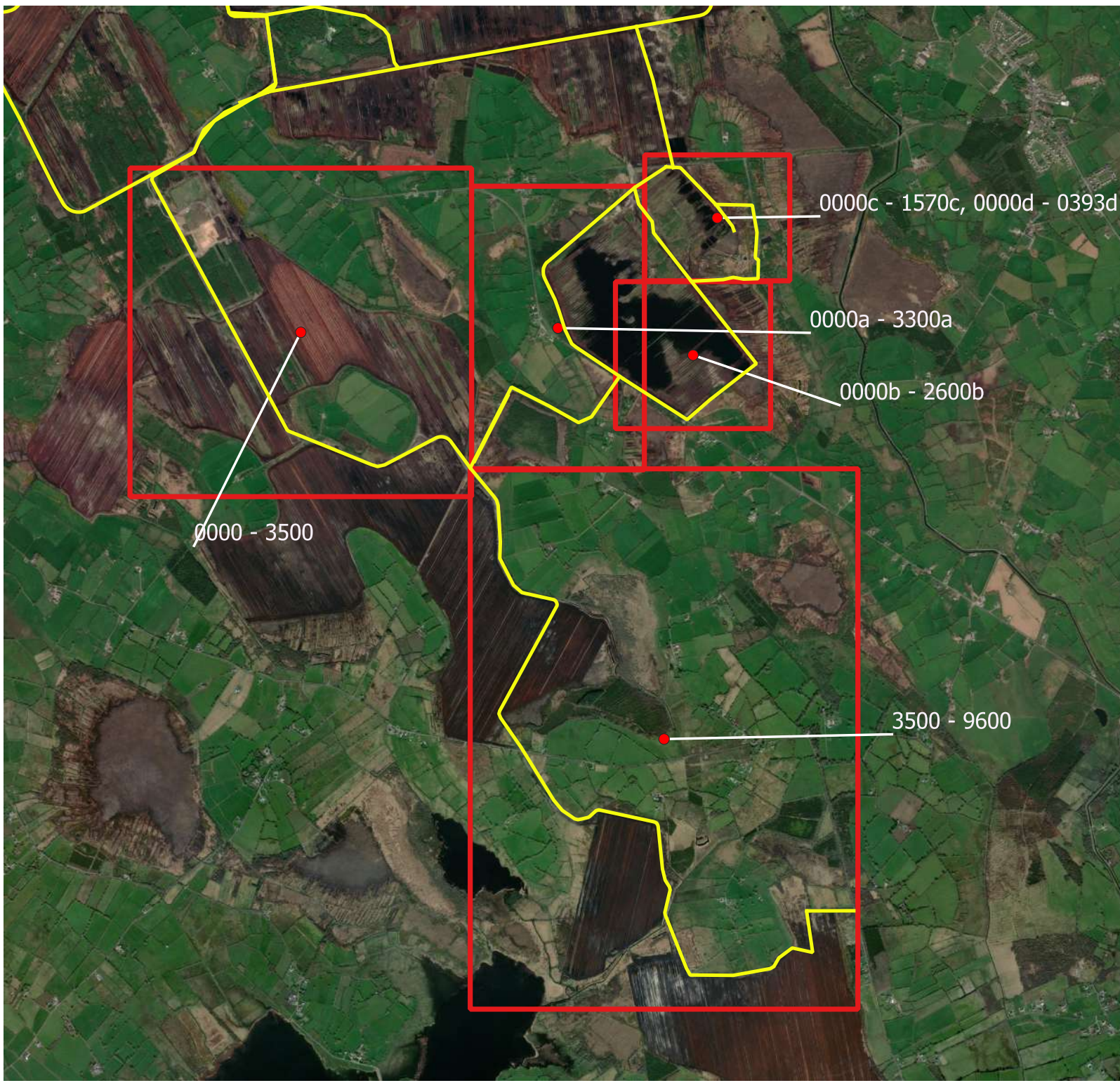
Overview of Chainage Sections

Mosstown to Gortencalreen

CLIENT: Clandillon Civil Consulting

Legend

- Proposed Route
- Mosstown to Gortencalreen Sections



Prepared by: Ian Douglas
Date: 24/06/2021
Version number: 2
Job Reference: Longford Greenway
Base Map: Bing Aerial 2019

Disclaimer: This map has been prepared in accordance with the scope of services described in the contract or agreement between Flynn Furney Environmental Consultants and the Client. Any findings only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client.



Prepared by:
Ian Douglas

Date:
12/11/20

Job:
Longford
Greenway

Base Map:
Bing Maps Aerial
2019

Client:
Clandillon Civil
Consulting

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Mosstown to Gorteenalreen: Ecological Constraints & Habitats



Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Heath
- Remnant Raised Bog
- Possible degraded raised bog/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Wet grassland
- Ecologically Sensitive Areas



Prepared by:
Ian Douglas

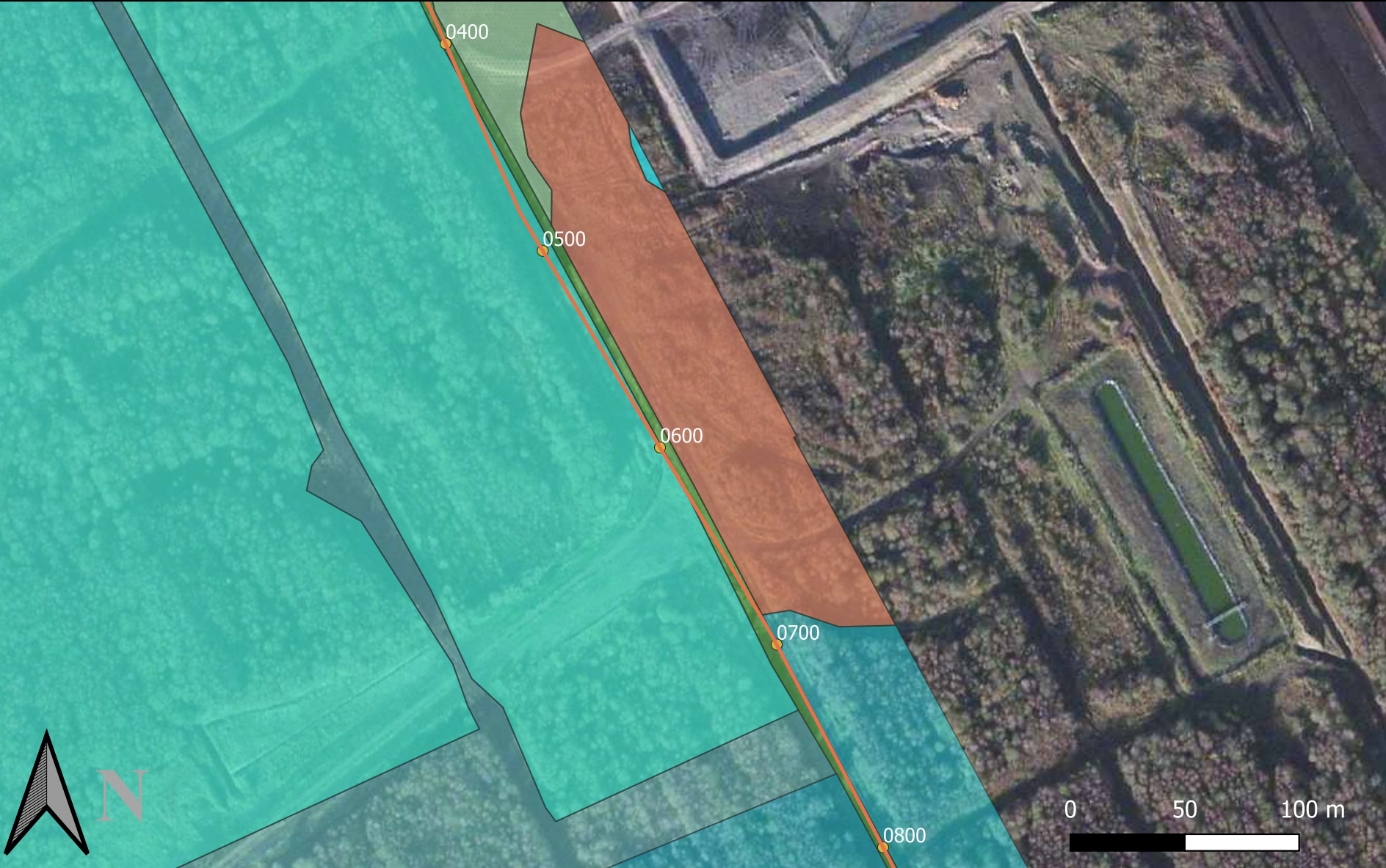
Date:
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Bog woodland
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Remnant Raised Bog
- Recolonising bare ground/Buildings and artificial surfaces
- Scrub
- Ecologically Sensitive Areas



Prepared by:
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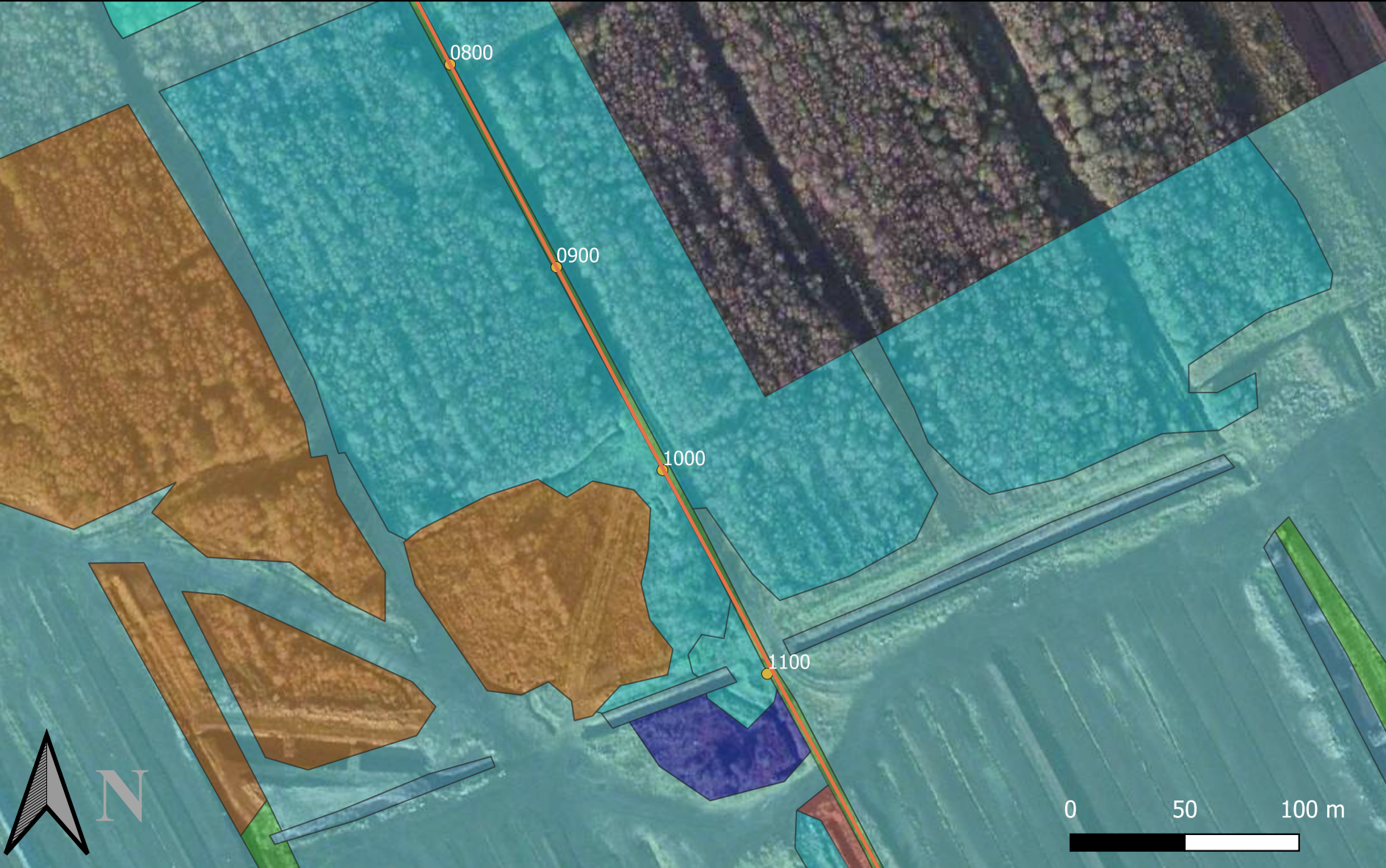
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Legend

- Mosstown to Gorteenalreen Route
 - Mosstown to Gorteenalreen chainage
 - Conifer plantation
 - Cutover bog/Bare peat
 - Drainage ditches
 - Emerging woodland on cutover bog
 - Emerging woodland on cutover bog/Scrub
 - Heath
 - Recolonising bare ground/Buildings and artificial surfaces
- Habitat Types**
- Bog woodland

Mosstown to Gorteencalreen: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

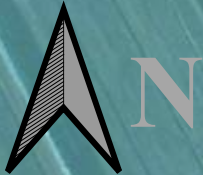
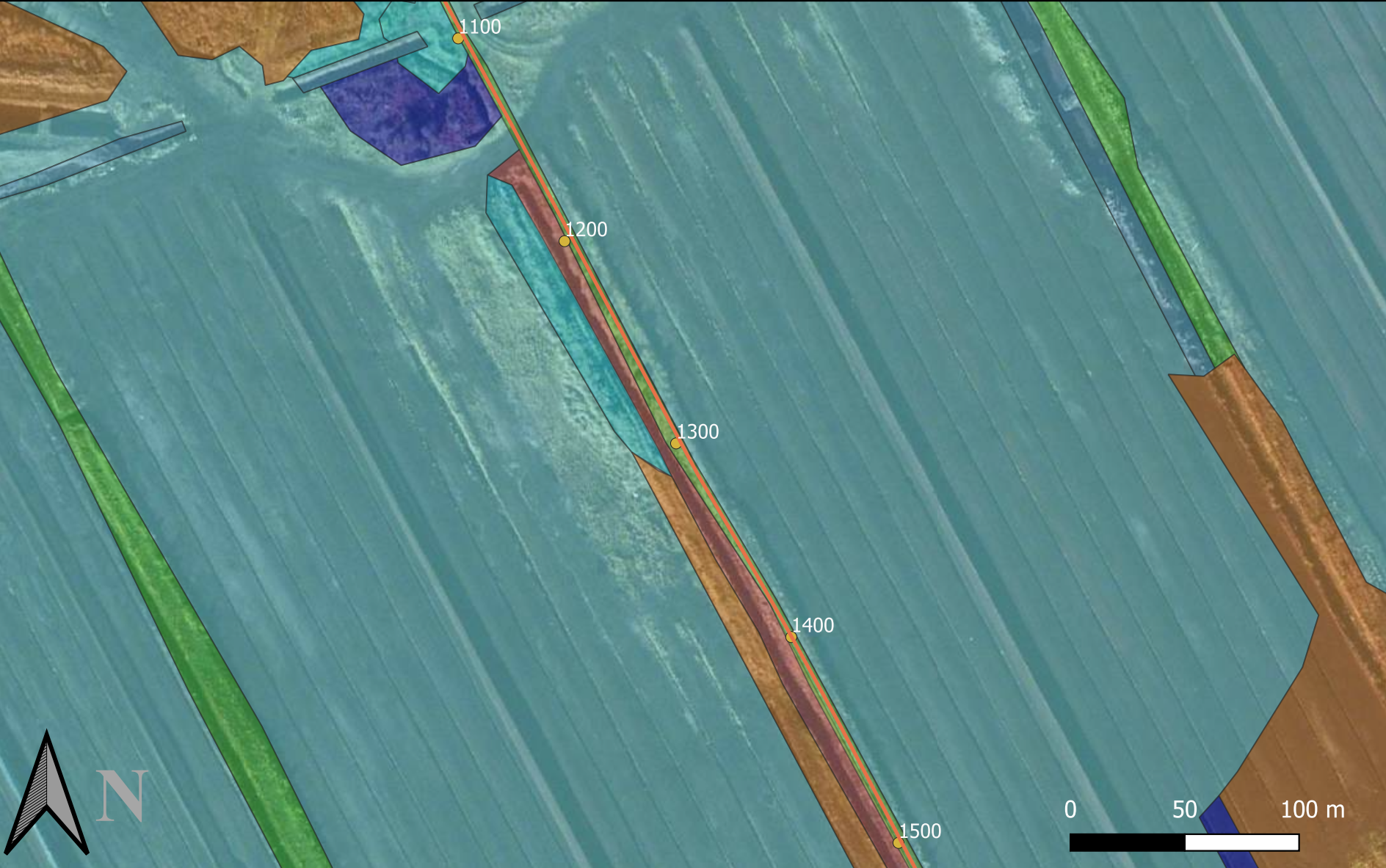
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Legend

- Mosstown to Gorteencalreen Route
- Mosstown to Gorteencalreen chainage
- Cutover bog/Bare peat
- Drainage ditches
- Recolonising bare ground/Buildings and artificial surfaces
- Habitat Types**
- Conifer plantation
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Heath

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

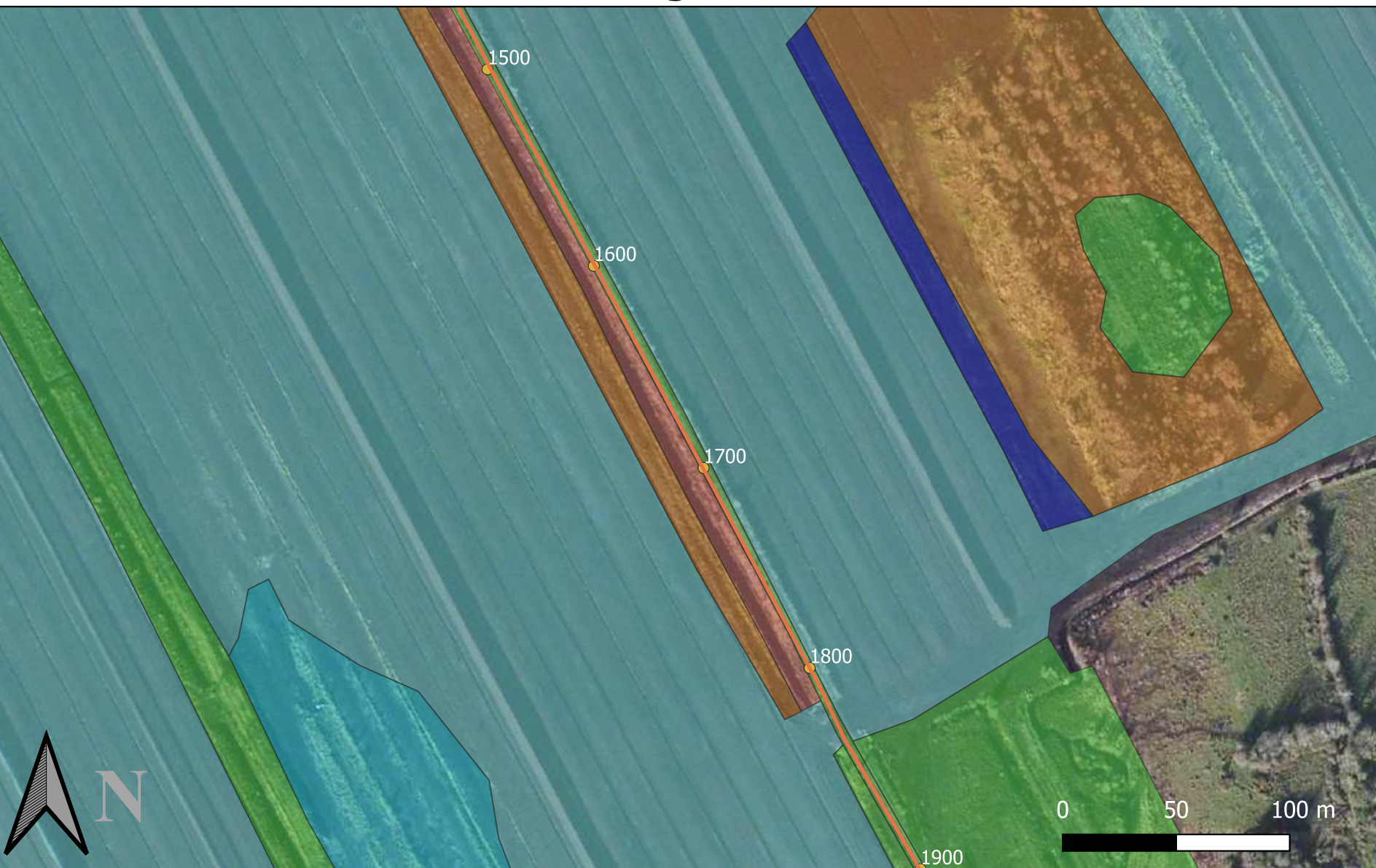
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Heath
- Conifer plantation
- Recolonising bare ground/Buildings and artificial surfaces

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



Prepared by:
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland/Scrub
- Heath
- Recolonising bare ground/Buildings and artificial surfaces
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Wet grassland

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Bog woodland/Scrub
- Heath
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gorteenalreen Route
 - Mosstown to Gorteenalreen chainage
 - Emerging woodland on cutover bog
 - Recolonising bare ground/Buildings and artificial surfaces
 - Wet grassland
 - Ecologically Sensitive Areas
- Habitat Types**
- Cutover bog/Bare peat



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Legend

- | | | |
|--------------------------------------|---|--|
| — Mosstown to Gorteenalreen Route | ■ Drainage ditches/Eroding rivers | ■ Remnant Raised Bog/Bog woodland |
| ● Mosstown to Gorteenalreen chainage | ■ Emerging woodland on cutover bog | ■ Recolonising bare ground/Buildings and artificial surfaces |
| Habitat Types | ■ Emerging woodland on cutover bog/Scrub | ■ Wet grassland |
| ■ Bog woodland & wetland mosaic | ■ Heath | ■ Ecologically Sensitive Areas |
| ■ Cutover bog/Bare peat | ■ Improved agricultural grassland/Wet grassland | — Water Course |
| | ■ Remnant Raised Bog | |



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— Mosstown to Gorteenalreen Route
● Mosstown to Gorteenalreen chainage

Habitat Types

■ Bog woodland & wetland mosaic

■ Cutover bog/Bare peat

■ Drainage ditches/Eroding rivers

■ Emerging woodland on cutover bog/Scrub

■ Heath

■ Improved agricultural grassland/Wet grassland

Legend

■ Remnant Raised Bog/Bog woodland

■ Recolonising bare ground/Buildings and artificial surfaces

■ Ecologically Sensitive Areas

— Water Course



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types
 - Cutover bog/Bare peat
- Drainage ditches/Eroding rivers
- Improved agricultural grassland/Wet grassland
- Recolonising bare ground/Buildings and artificial surfaces
- Water Course



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage

Habitat Types

- Bog woodland/Mixed broadleaved woodland

- Cutover bog/Bare peat
- Drainage ditches/Eroding rivers
- Improved agricultural grassland/Wet grassland
- Recolonising bare ground/Buildings and artificial surfaces

Ecological Constraints

- Notes
- Water Course



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Legend

- | | | |
|---|--|-------------------------------|
| — Mosstown to Gorteenalreen Route | □ Cutover bog/Bare peat | Ecological Constraints |
| ● Mosstown to Gorteenalreen chainage | □ Drainage ditches/Eroding rivers | |
| Habitat Types | □ Recolonising bare ground/Buildings and artificial surfaces | ● Notes |
| □ Bog woodland/Mixed broadleaved woodland | | — Water Course |

Mosstown to Gortencalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gortencalreen Route
- Mosstown to Gortencalreen chainage
- Remnant Raised Bog
- Recolonising bare ground/Buildings and artificial surfaces
- Ecologically Sensitive Areas

Habitat Types

- Cutover bog/Bare peat



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Ecologically Sensitive Areas
- Cutover bog/Bare peat
- Emerging woodland on cutover bog/Scrub
- Remnant Raised Bog
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland



Prepared by:
Ian Douglas

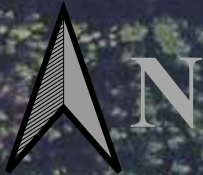
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Cutover bog/Bare peat
- Emerging woodland on cutover bog/Scrub
- Remnant Raised Bog
- Recolonising bare ground/Buildings and artificial surfaces
- Wet grassland
- Bog woodland & wetland mosaic
- Ecologically Sensitive Areas

Habitat Types



Prepared by:
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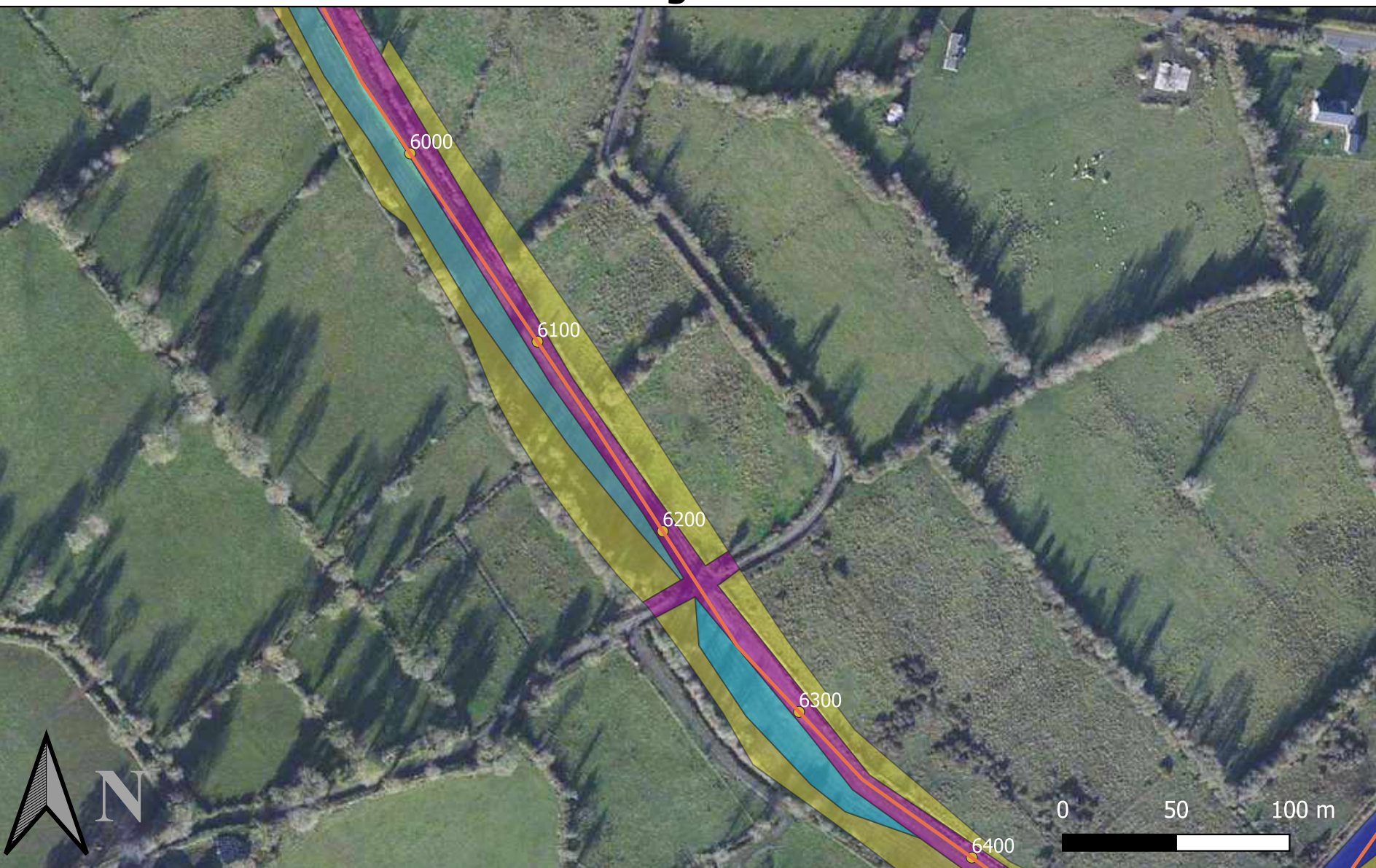
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Legend

- Mosstown to Gorteenalreen Route
- Wet grassland
- Mosstown to Gorteenalreen chainage
- Cutover bog/Bare peat
- Emerging woodland on cutover bog

Habitat Types

- Bog woodland & wetland mosaic



Prepared by:
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**Longford
Greenway**

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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Bog woodland & wetland mosaic
- Bog woodland/Mixed broadleaved woodland
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Wet grassland



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Bog woodland/Mixed broadleaved woodland
- Heath
- Bog woodland & wetland mosaic

Habitat Types

- Bog woodland & wetland mosaic



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types
 - Bog woodland & wetland mosaic
 - Bog woodland/Mixed broadleaved woodland
 - Heath
 - Improved agricultural grassland
- Water Course
- Drainage ditches



Prepared by:
Ian Douglas

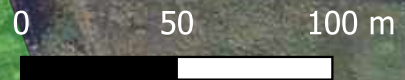
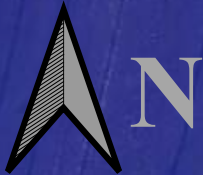
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland & wetland mosaic
- Bog woodland/Mixed broadleaved woodland
- Cutover bog/Bare peat
- Drainage ditches
- Heath
- Improved agricultural grassland
- Scrub
- Wet grassland
- Ecologically Sensitive Areas
- Water Course



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Legend

- | | | |
|--|---|--------------------------------|
| — Mosstown to Gorteenalreen Route | □ Cutover bog/Bare peat | □ Scrub |
| ● Mosstown to Gorteenalreen chainage | □ Drainage ditches | □ Wet grassland |
| Habitat Types | □ Heath | □ Ecologically Sensitive Areas |
| □ Bog woodland & wetland mosaic | □ Improved agricultural grassland/Wet grassland | — Water Course |
| □ Recolonising bare ground/Buildings and artificial surfaces | | |



Prepared by:
Ian Douglas

Date:
12/11/20

Job:
Longford Greenway

Base Map:
Bing Maps Aerial 2019

Client:
Clandillon Civil Consulting

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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Remnant Raised Bog
- Ecologically Sensitive Areas

Habitat Types

- Cutover bog/Bare peat

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Emerging woodland on cutover bog/Scrub
- Mixed conifer woodland
- Remnant Raised Bog
- Wet grassland/Scrub
- Drainage ditches
- Ecologically Sensitive Areas



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Legend

- Mosstown to Gorteenalreen Route
- Drainage ditches
- Remnant Raised Bog
- Mosstown to Gorteenalreen chainage
- Emerging woodland on cutover bog/Scrub
- Treelines
- Habitat Types**
- Buildings and artificial surfaces
- Hedgerows
- Wet grassland/Scrub
- Improved agricultural grassland
- Ecologically Sensitive Areas
- Mixed conifer woodland

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



Prepared by:
Ian Douglas

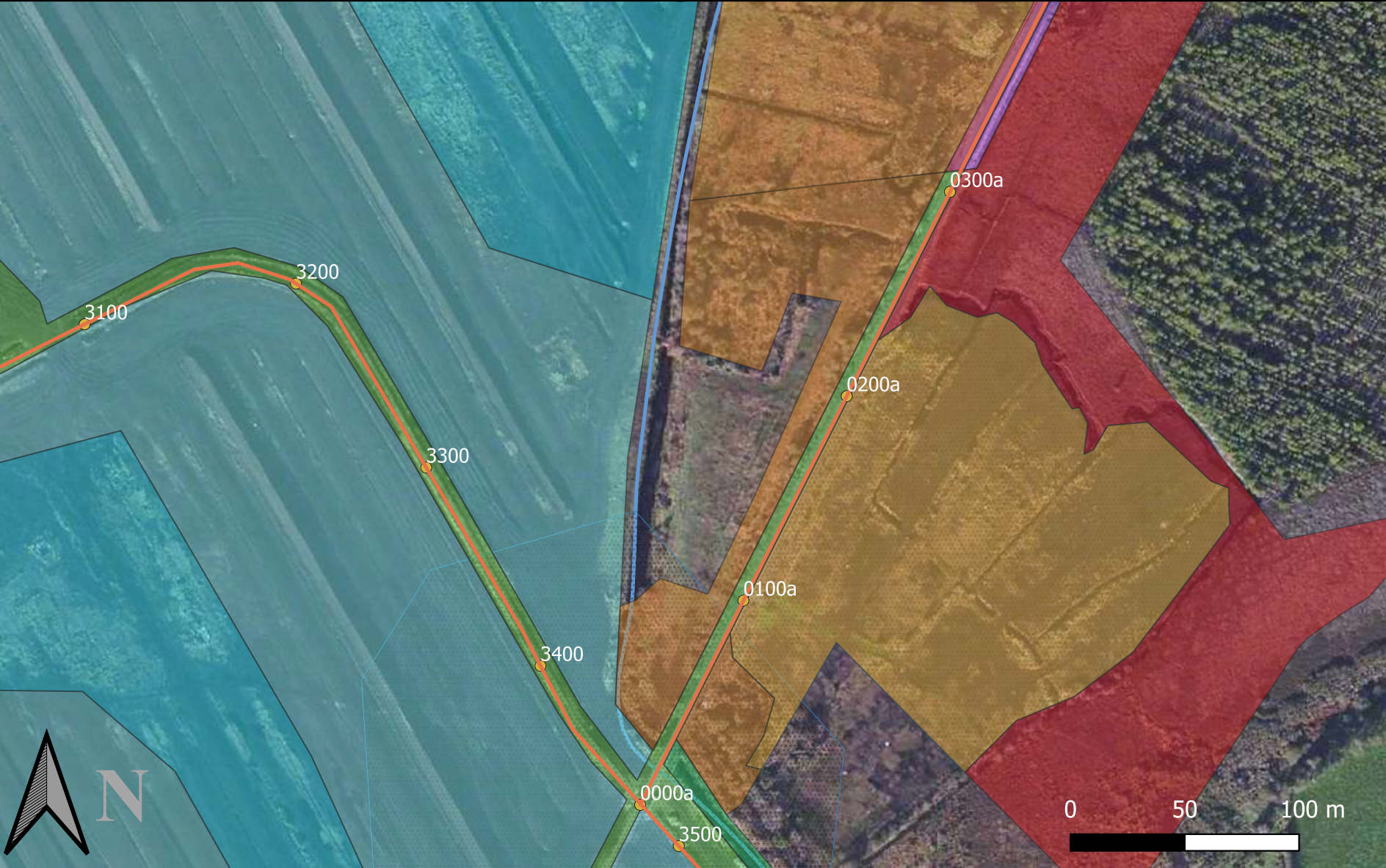
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Legend

- | | | |
|--------------------------------------|--|--|
| — Mosstown to Gorteenalreen Route | — Drainage ditches/Eroding rivers | — Remnant Raised Bog/Bog woodland |
| ● Mosstown to Gorteenalreen chainage | — Emerging woodland on cutover bog | — Recolonising bare ground/Buildings and artificial surfaces |
| Habitat Types | — Emerging woodland on cutover bog/Scrub | — Ecologically Sensitive Areas |
| — Buildings and artificial surfaces | — Hedgerows/Scrub | — Water Course |
| — Cutover bog/Bare peat | — Remnant Raised Bog | |



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Legend

- | | | |
|--------------------------------------|--|--|
| — Mosstown to Gortencalreen Route | Emerging woodland on cutover bog | Recolonising bare ground/Buildings and artificial surfaces |
| ● Mosstown to Gortencalreen chainage | Emerging woodland on cutover bog/Scrub | Ecological Constraints |
| Habitat Types | Hedgerows/Scrub | ● To be retained where possible |
| Emerging woodland | Remnant Raised Bog/Bog woodland | — Water Course |
| Buildings and artificial surfaces | Remnant Raised Bog/Heath | |



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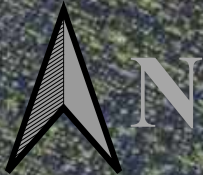
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Bog woodland/Mixed broadleaved woodland
- Improved agricultural grassland/Wet grassland
- Remnant Raised Bog
- Remnant Raised Bog/Bog woodland
- Remnant Raised Bog/Heath
- Emerging grassland and heath on cutover bog
- Ecologically Sensitive Areas

Habitat Types

- Bog woodland

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland
- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Improved agricultural grassland/Wet grassland
- Remnant Raised Bog
- Recolonising bare ground/Buildings and artificial surfaces
- Emerging grassland and heath on cutover bog
- Ecologically Sensitive Areas

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Ecologically Sensitive Areas

Habitat Types

Bog woodland

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Bog woodland & wetland mosaic
- Cutover bog/Bare peat
- Emerging woodland on cutover bog/Scrub
- Emerging woodland on cutover bog
- Bog woodland



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Legend

- | | | |
|------------------------------------|--|--|
| Mosstown to Gorteenalreen Route | Conifer plantation | Remnant Raised Bog |
| Mosstown to Gorteenalreen chainage | Cutover bog/Bare peat | Recolonising bare ground/Buildings and artificial surfaces |
| Habitat Types | Drainage ditches | Ecologically Sensitive Areas |
| Bog woodland & wetland mosaic | Emerging woodland on cutover bog | |
| | Emerging woodland on cutover bog/Scrub | |



Prepared by:
Ian Douglas

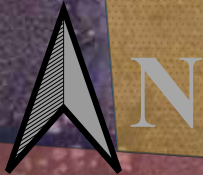
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Legend

- Mosstown to Gorteenalreen Route
 - Mosstown to Gorteenalreen chainage
 - Ecologically Sensitive Areas
- Habitat Types**
- Bog woodland/Mixed broadleaved woodland
 - Buildings and artificial surfaces/Dense bracken
 - Conifer plantation
 - Cutover bog/Bare peat
 - Emerging woodland on cutover bog
 - Emerging woodland on cutover bog/Scrub
 - Heath/Scrub
 - Remnant Raised Bog
 - Recolonising bare ground/Buildings and artificial surfaces



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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Heath
- Heath/Scrub
- Recolonising bare ground/Buildings and artificial surfaces
- Bog woodland/Mixed broadleaved woodland
- Buildings and artificial surfaces



Prepared by:
Ian Douglas

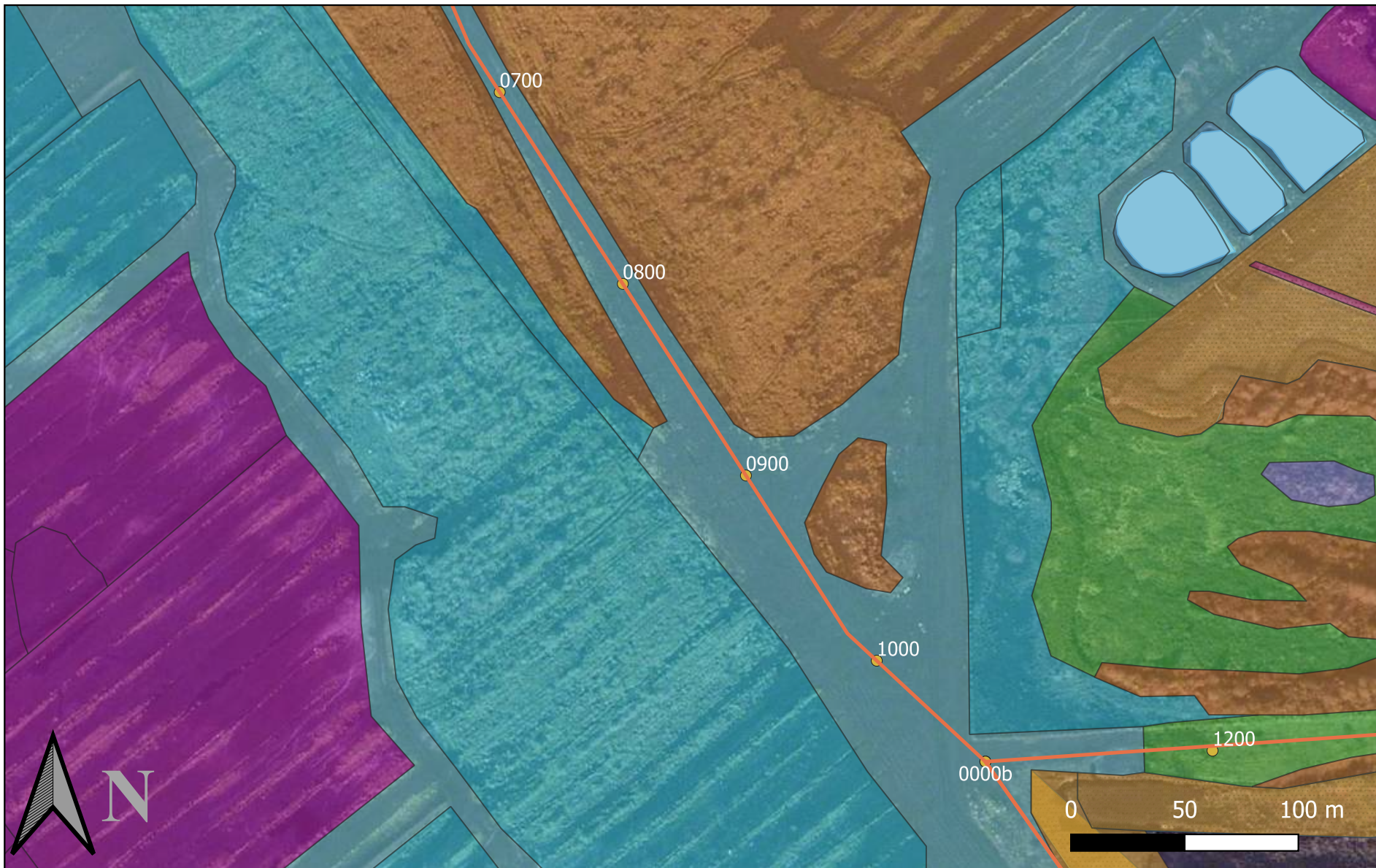
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Legend

- | | | |
|------------------------------------|--|------------------------------|
| Mosstown to Gorteenalreen Route | Cutover bog/Bare peat | Heath/Scrub |
| Mosstown to Gorteenalreen chainage | Drainage ditches | Remnant Raised Bog |
| Habitat Types | Emerging woodland on cutover bog | Ecologically Sensitive Areas |
| Bog woodland & wetland mosaic | Emerging woodland on cutover bog/Scrub | Lakes |
| Buildings and artificial surfaces | Heath | |

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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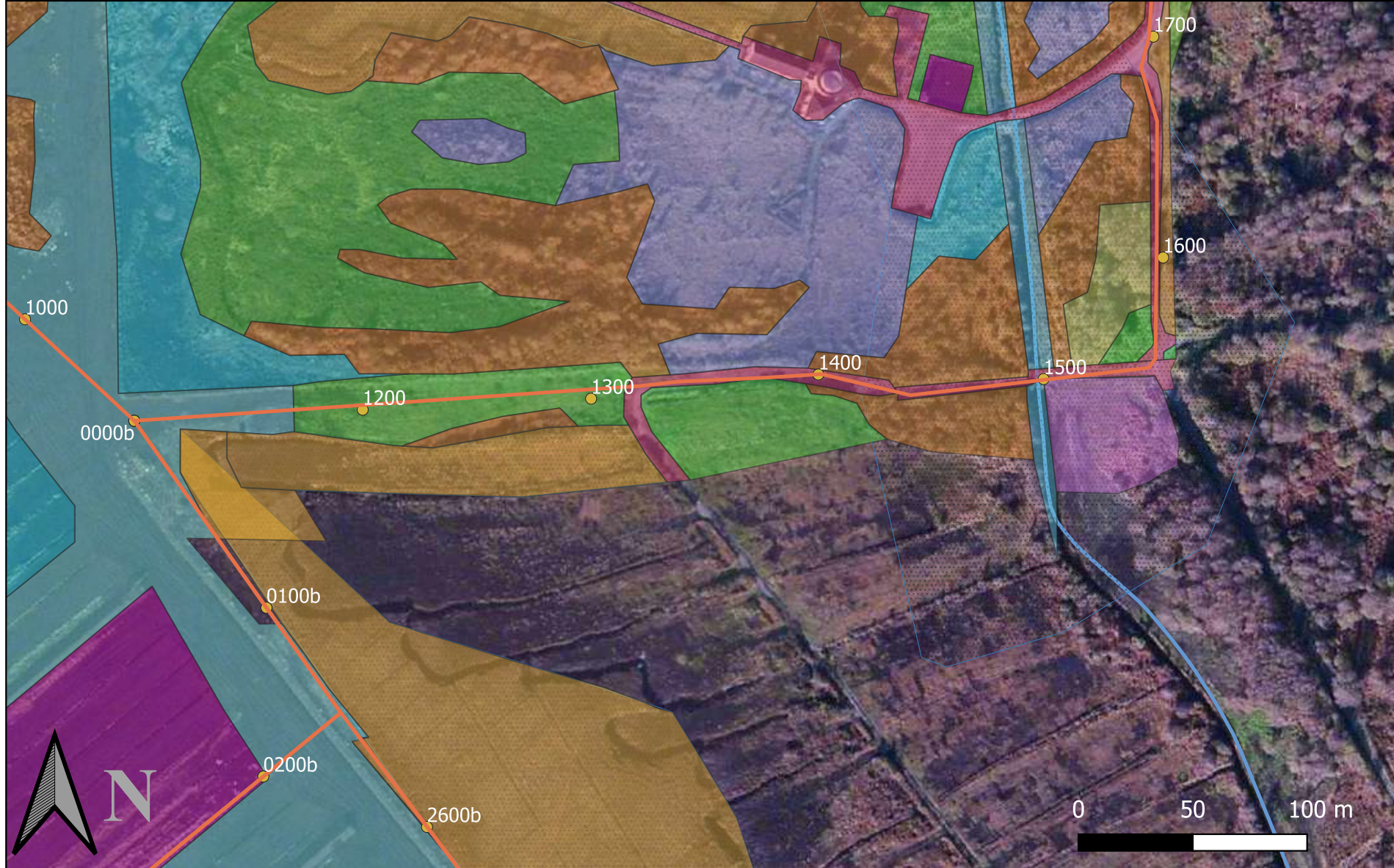
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland & wetland mosaic
- Bog woodland/Mixed broadleaved woodland
- Bog woodland/Scrub
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Drainage ditches
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Heath
- Heath/Scrub
- Remnant Raised Bog
- Scrub
- Ecologically Sensitive Areas
- Water Course



Prepared by:
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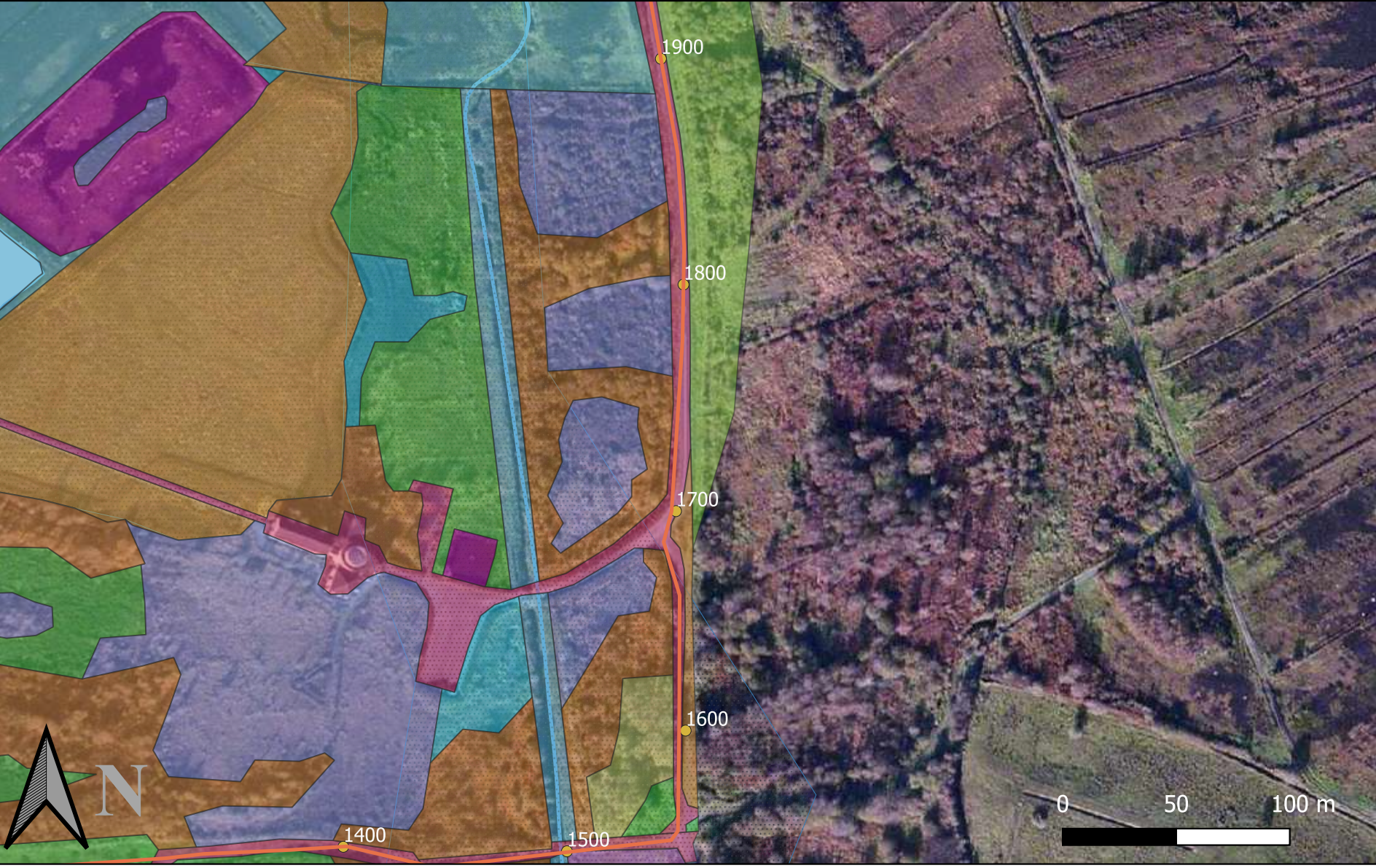
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Mosstown to Gorteenalreen: Ecological Constraints & Habitats



Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland & wetland mosaic
- Bog woodland/Mixed broadleaved woodland
- Bog woodland/Scrub
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Drainage ditches
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Heath
- Heath/Scrub
- Remnant Raised Bog
- Scrub
- Ecologically Sensitive Areas
- Lakes
- Water Course



Prepared by:
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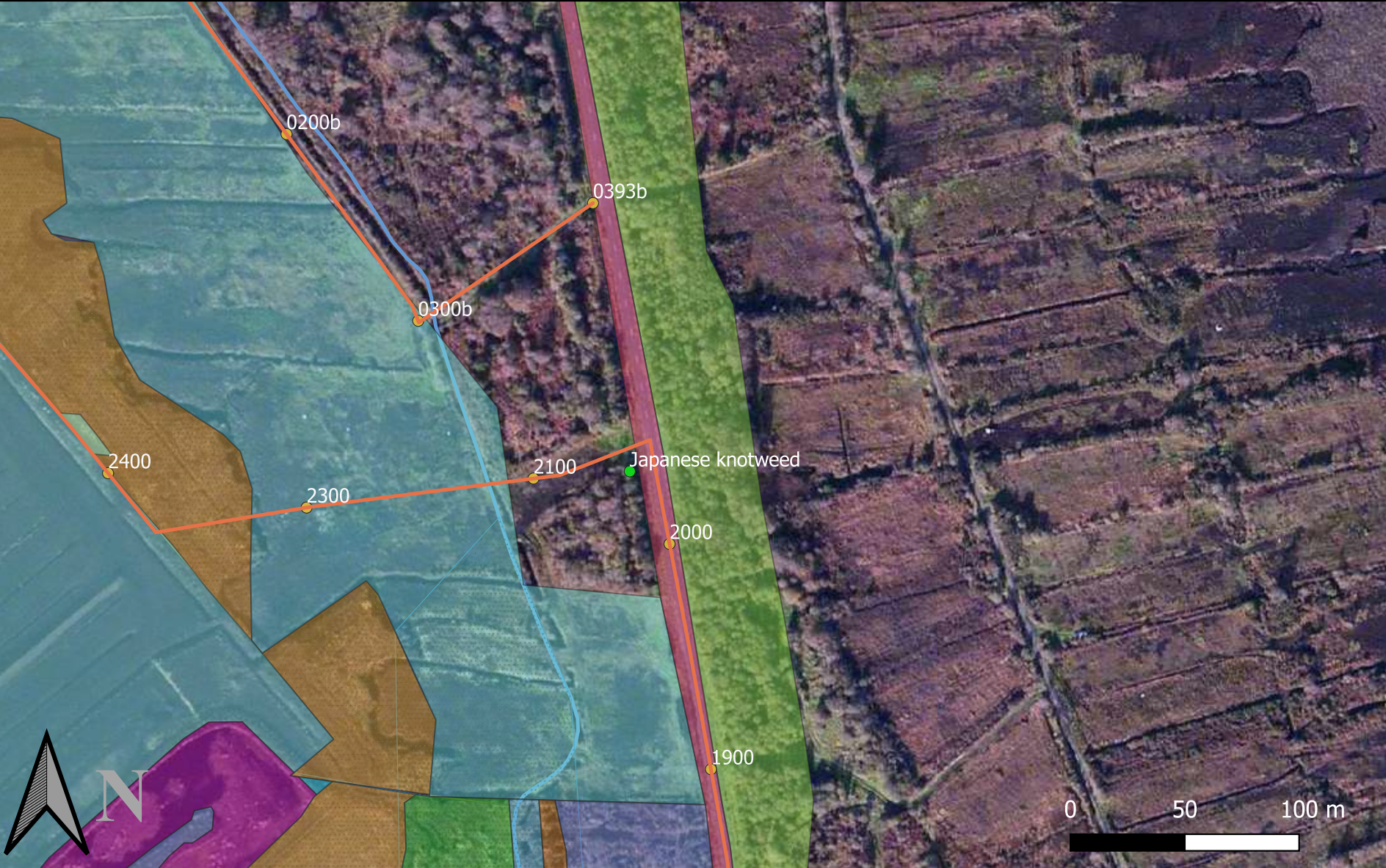
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Legend

- | | | |
|--------------------------------------|--|--------------------------------|
| — Mosstown to Gorteenalreen Route | □ Cutover bog/Bare peat | □ Remnant Raised Bog |
| ● Mosstown to Gorteenalreen chainage | □ Drainage ditches | Ecological Constraints |
| Habitat Types | □ Emerging woodland on cutover bog | ● Notes |
| □ Bog woodland & wetland mosaic | □ Emerging woodland on cutover bog/Scrub | □ Ecologically Sensitive Areas |
| □ Bog woodland/Scrub | □ Heath | — Water Course |
| □ Buildings and artificial surfaces | □ Heath/Scrub | |

Mosstown to Gortencalreen: Ecological Constraints & Habitats



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Legend

- | | | |
|--------------------------------------|--|--|
| — Mosstown to Gortencalreen Route | ■ Buildings and artificial surfaces | ■ Recolonising bare ground/Buildings and artificial surfaces |
| ● Mosstown to Gortencalreen chainage | ■ Cutover bog/Bare peat | Ecological Constraints |
| Habitat Types | ■ Emerging woodland on cutover bog | ● Notes |
| ■ Bog woodland & wetland mosaic | ■ Emerging woodland on cutover bog/Scrub | ■ Ecologically Sensitive Areas |
| ■ Bog woodland/Scrub | ■ Remnant Raised Bog | — Water Course |



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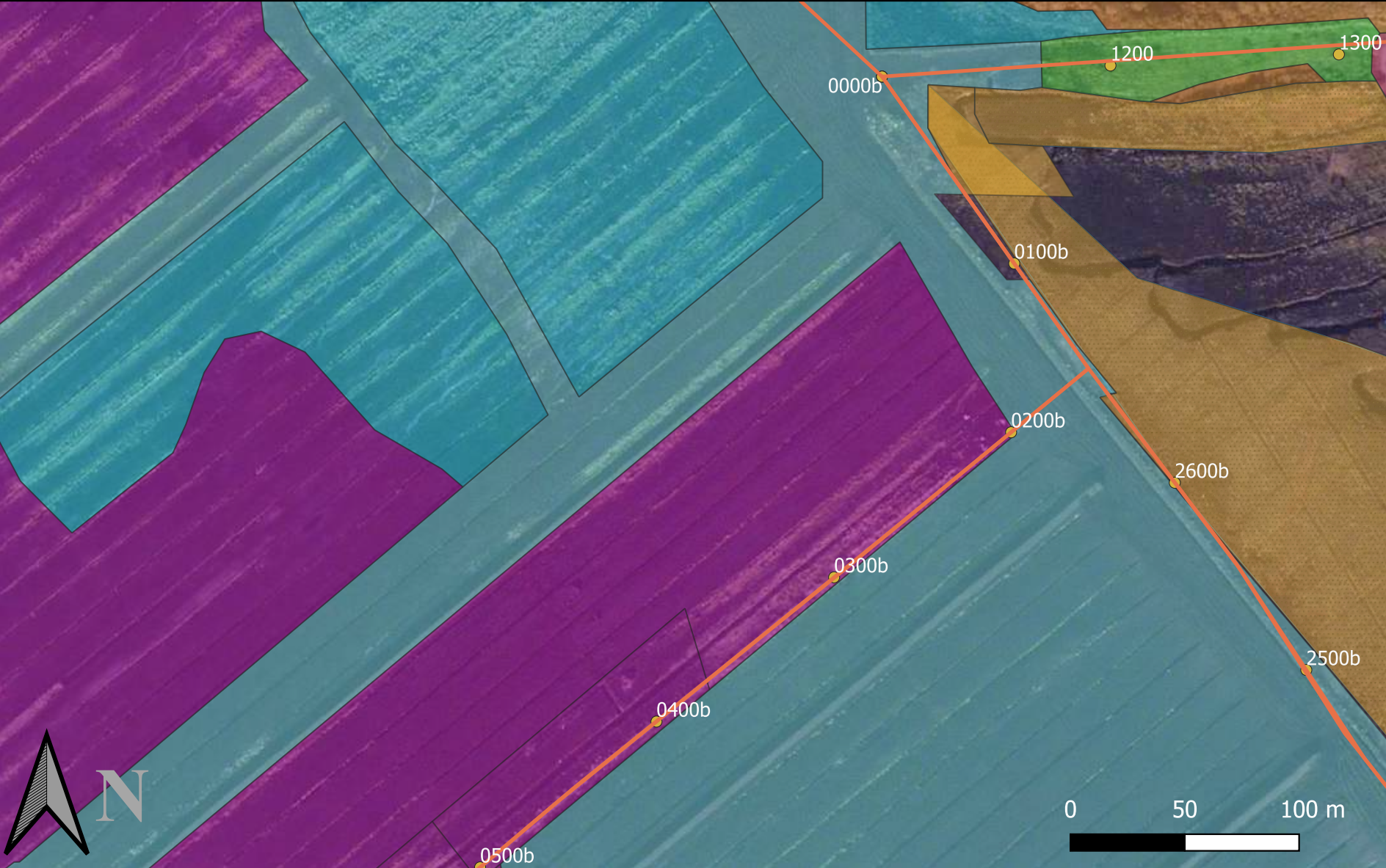
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland & wetland mosaic
- Buildings and artificial surfaces
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Emerging woodland on cutover bog/Scrub
- Heath
- Remnant Raised Bog
- Ecologically Sensitive Areas



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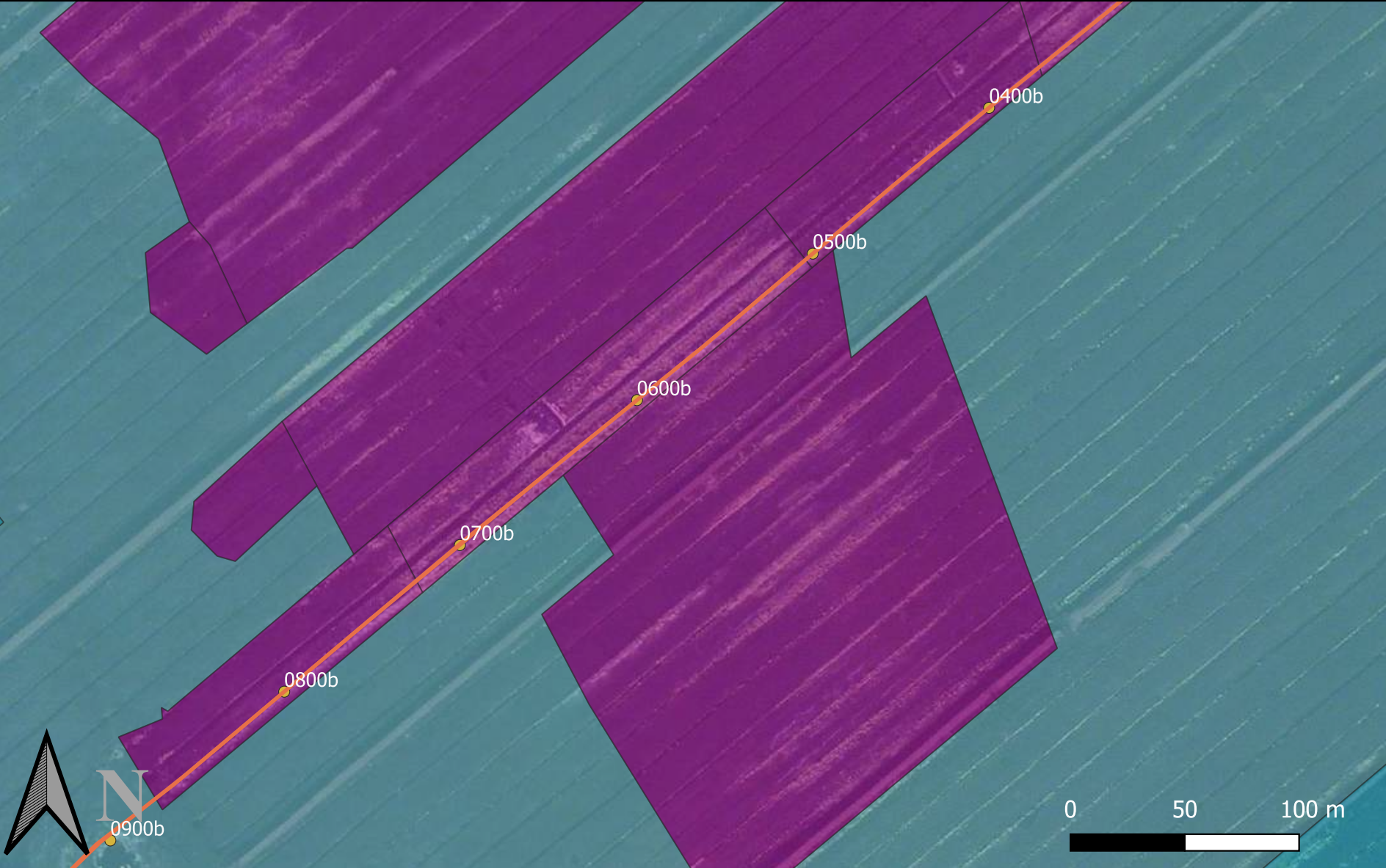
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Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Cutover bog/Bare peat
- Emerging woodland on cutover bog

Habitat Types

- Bog woodland & wetland mosaic



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Legend

- | | | |
|------------------------------------|---|--|
| Mosstown to Gortencalreen Route | Bog woodland/Scrub | Recolonising bare ground/Buildings and artificial surfaces |
| Mosstown to Gortencalreen chainage | Cutover bog/Bare peat | Emerging grassland and heath on cutover bog |
| Habitat Types | Emerging woodland on cutover bog | Ecologically Sensitive Areas |
| Bog woodland & wetland mosaic | Improved agricultural grassland/Wet grassland | |
| | Remnant Raised Bog | |



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Mosstown to Gorteenalreen: Ecological Constraints & Habitats



Legend

- Mosstown to Gorteenalreen Route
 - Mosstown to Gorteenalreen chainage
 - Cutover bog/Bare peat
 - Emerging woodland on cutover bog
 - Recolonising bare ground/Buildings and artificial surfaces
 - Ecologically Sensitive Areas
- Habitat Types**
- Bog woodland/Scrub



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Mosstown to Gorteenalreen: Ecological Constraints & Habitats



Legend

- Mosstown to Gorteenalreen Route
- Mosstown to Gorteenalreen chainage
- Habitat Types**
- Bog woodland & wetland mosaic
- Bog woodland/Scrub
- Cutover bog/Bare peat
- Emerging woodland on cutover bog
- Remnant Raised Bog
- Recolonising bare ground/Buildings and artificial surfaces
- Ecologically Sensitive Areas

Mosstown to Gorteenalreen: Ecological Constraints & Habitats



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Legend

- Mosstown to Gorteenalreen Route
 - Mosstown to Gorteenalreen chainage
 - Emerging woodland on cutover bog
 - Remnant Raised Bog
 - Ecologically Sensitive Areas
 - Water Course
- Habitat Types**
- Cutover bog/Bare peat



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Legend

- | | | |
|--------------------------------------|--|--------------------------------|
| — Mosstown to Gorteenalreen Route | □ Cutover bog/Bare peat | □ Remnant Raised Bog |
| ● Mosstown to Gorteenalreen chainage | □ Drainage ditches | □ Scrub |
| Habitat Types | □ Emerging woodland on cutover bog | □ Ecologically Sensitive Areas |
| □ Bog woodland & wetland mosaic | □ Emerging woodland on cutover bog/Scrub | — Water Course |
| □ Buildings and artificial surfaces | □ Heath | |