nationalgrid

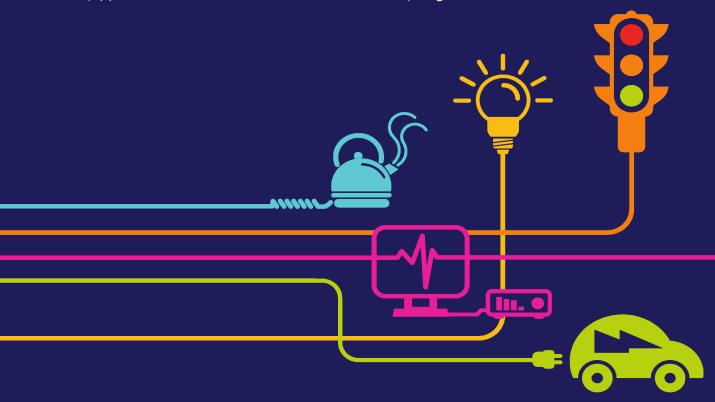
5.9.2.3

Phase 1 Habitat Report

Chapter 9 – Appendix 3

National Grid (North Wales Connection Project)

Regulation 5(2)(a) including (l) and (m) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



nationalgrid

North Wales Connection Project

Volume 5

Document 5.9.2.3 Appendix 9.3 Phase 1 Habitat Report

National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

Final September 2018

Page intentionally blank

Document Control					
Document	Document Properties				
Organisatio	on	AECOM			
Author		Chris Sutton, Lisa Rigby			
Approved by		Nicola Lewis			
Title		Appendix 9.3 Phase 1 Habitat Report			
Document Reference		Document 5.9.2.3			
Version His	story				
Date	Version	Status	Description/Changes		
September 2018	Rev A	Final	Final for submission		

Page intentionally blank

Contents

1	Introduction	1
1.1	Introduction	1
2	Legislation and Planning Policy	4
2.1	Legislation	4
2.2	Planning Policy	6
3	Methodology	9
3.1	Desk Study	9
3.2	Field Survey	11
3.3	Assumptions and Limitations	13
4	Results	15
4.1	DEsk Study results	15
4.2	Field Surveys Baseline Summary	34
4.3	Section A Wylfa to Rhosgoch	46
4.4	Section B Rhosgoch to Llandyfrydog	47
4.5	Section C Llandyfrydog to B5110 North of Talwrn	48
4.6	Section D B5110 North of Talwrn to the Ceint	49
4.7	Section E Ceint to the Afon Braint	50
4.8	Section F Afon Braint to Pentir	51
5	Conclusion	53
6	References	54
App	endix A: Cofnod Data Search Records	57
Арр	endix B: Target Notes	60

FIGURES	
Figure 1	Phase 1 Survey Results
Figure 2	Notable Plant Species Data Search
Figure 3	Data Search Records and Incidental Sightings of Invasive Non Native Species

Page intentionally blank

1 Introduction

1.1 INTRODUCTION

Description of the Proposed Development

- 1.1.1 The Proposed Development would provide a new 400 kilovolt (kV) connection between the existing substations at Wylfa and Pentir and includes the following principal components:
 - extention to the existing substation at Wylfa;
 - sections of new 400 kV overhead line between Wylfa Substation and Braint Tunnel Head House (THH) and Cable Sealing End Compound (CSEC) on Anglesey including modifications to parts of the existing 400 kV overhead line between Wylfa and Pentir;
 - Braint THH and CSEC on Anglesey;
 - tunnel between Braint THH and Tŷ Fodol THH;
 - Tŷ Fodol THH and CSEC in Gwynedd;
 - new section of 400 kV overhead line between Tŷ Fodol THH/CSEC and Pentir Substation;
 - extension to the existing substation at Pentir; and
 - temporary construction compounds, access tracks, construction working areas, localised widening of the public highway and third party works that are required to construct the infrastructure listed above.
- 1.1.2 The Proposed Development has been split into six sections (A F), see Figure 1.
- 1.1.3 A full description of the Proposed Development is provided in Chapter 3, Description of the Proposed Development (**Document 5.3**) and Chapter 4, Construction, Operation, Maintenance and Decommissioning of the Proposed Development (**Document 5.4**).

Introduction to the Report

- 1.1.4 A desk study and a Phase 1 Habitat survey were undertaken in relation to the Proposed Development.
- 1.1.5 The survey area and area for which the results are presented in this report is defined as the Order Limits plus a 50 m buffer (hereafter referred to as the survey area) between Wylfa and Pentir. Initially a larger survey area was included in the assessment however this was refined due to the evolution of the design. The results gathered in the wider area were used to inform other ecology surveys conducted as part of the Proposed Development.
- 1.1.6 The Proposed Development passes through a variety of habitat types although the predominant current land use within the survey area is agriculture, (refer to Table 4.9, section 4.2 for habitat areas). The Proposed Development also passes through and in the vicinity of a number of sites designated for their nature conservation value and would also pass beneath the Menai Strait.
- 1.1.7 This report details the baseline information collated for terrestrial and freshwater habitats present within the study area. Information on marine habitats present in the study area is provided in the following documents: Appendix 9.16 Intertidal Report (**Document 5.9.2.16**) and Appendix 9.17 Subtidal Report (**Document 5.9.2.17**).

Objectives

- 1.1.8 The Phase 1 Habitat survey was carried out to identify whether there are known or potential ecological receptors (nature conservation designations, and protected and notable habitats and species including invasive non-native species) that may constrain or influence the design, construction and operation of the Proposed Development. The approach applied when undertaking this Phase 1 Habitat survey accords with the Guidelines for Preliminary Ecological Appraisal published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref 1). The Phase 1 Habitat report also addresses relevant wildlife legislation and planning policy as summarised in section 2.
- 1.1.9 In order to meet the objectives, a desk study and a Phase 1 Habitat survey were undertaken by appropriately experienced ecologists.
- 1.1.10 The desk study was carried out to identify nature conservation designations, and protected and notable habitats and species potentially relevant to the Proposed Development using existing relevant ecological data.

1.1.11 The purpose of the Phase 1 Habitat survey and report are to:

- review existing ecological data to identify any sites designated for nature conservation (international, national or local) within the Order Limits and up to a 2 km buffer from the Order Limits, hereafter referred to as the study area;
- identify and categorise all habitats present within the survey area;
- carry out a basic appraisal of the potential of the habitats recorded to support protected or notable species of fauna and flora;
- provide maps showing the habitat types and locations within the survey area (Figure 1);
- use the information to inform the Ecological Impact Assessment (EcIA) set out in Chapter 9, Ecology and Nature Conservation (Document 5.9) to determine whether notable habitats could be affected by the Proposed Development; and
- inform the Biodiversity Mitigation Strategy (**Document 7.7**) for the Proposed Development.

2 Legislation and Planning Policy

2.1 **LEGISLATION**

2.1.1 Several different acts of legislation and regulations refer to the protection of wildlife. Legislation relevant to plants and habitats is outlined below.

The Conservation of Habitats & Species Regulations 2017

- 2.1.2 The Conservation of Habitats and Species Regulations 2017 (referred to as the 'Habitats Regulations') consolidates all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law and came into force on 30 October 1994.
- 2.1.3 The Habitats Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European sites.
- 2.1.4 The objective of the Habitats Regulations is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. They lay down rules for the protection, management and exploitation of such habitats and species.

The Countryside and Rights of Way Act 2000

- 2.1.5 The Countryside and Rights of Way Act 2000 applies to England and Wales only. Part III of the Act deals specifically with wildlife protection and nature conservation.
- 2.1.6 The Act places a duty on Government Departments and the Welsh Government to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.
- 2.1.7 Schedule 12 of the Act amends the species provisions of The Wildlife and Countryside Act 1981 (as amended), strengthening the legal protection for

threatened species. The provisions make certain offences 'arrestable', include an offence of reckless disturbance, confer greater powers to police and wildlife inspectors for entering premises and enable heavier penalties on conviction of wildlife offences.

Wildlife and Countryside Act 1981 (as amended)

- 2.1.8 The Wildlife and Countryside Act 1981 (as amended) is the primary legislation which protects animals, plants and habitats in the UK. The legislation covers four areas:
 - wildlife protection, including protection of wild birds, their eggs and nests, protection of other animals and protection of plants;
 - nature conservation (designation of protected sites), countryside and National Parks;
 - Public Rights of Way (PRoW); and
 - miscellaneous provisions.
- 2.1.9 Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) lists a number of plants which are afforded the following protections:
 - Part 1(a) of the Act makes it an offence to intentionally pick, uproot or destroy listed plants;
 - Part 1(b) of the Act makes it an offence to intentionally uproot any wild plant not included in Schedule 8 without authorisation;
 - Part 2(a) makes it an offence to sell, offer or expose for sale, or possess or transport for the purpose of sale, any listed plant (live, dead, part or derivative); and
 - Part 2(b) makes it an offence to advertise listed plants for buying or selling.

The Hedgerow Regulations 1997

2.1.10 The Hedgerow Regulations 1997 are intended to protect Important countryside hedgerows from destruction or damage. Hedgerows are assessed against a number of criteria in relation to their archaeology and history, wildlife and landscape, from which it is determined whether a hedgerow is 'important'. 2.1.11 Further details regarding The Hedgerow Regulations 1997 are provided within Appendix 9.5 Hedgerow Report (**Document 5.9.2.5**).

Environment (Wales) Act, 2016

- 2.1.12 Section 6 of the Environment (Wales) Act 2016 places a duty on public authorities to 'seek to maintain and enhance biodiversity' so far as it is consistent with the proper exercise of those functions. In doing so, public authorities must also seek to 'promote the resilience of ecosystems'. the duty replaces the section 40 duty in the Natural Environment and Rural Communities Act 2006 (NERC Act, 2006), in relation to Wales, and applies to those authorities that fell within the previous duty (Ref 2)
- 2.1.13 To assist in complying with this duty, public authorities must have regard to relevant evidence provided in the State of Natural Resources Report and any relevant area statement for an area in which the authority exercises functions, as well as having regard to the list of living organisms and habitats published under Section 7 of the Act (which replaces the section 42 list provided in the NERC Act 2006) (Ref 2).
- 2.1.14 Under this Act, Welsh Ministers will publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales. A number of plants and habitats are currently listed under Section 7 of the Act. This list is currently under review by the Welsh Government in consultation with National Resources Wales (NRW).

2.2 PLANNING POLICY

National Policy

- 2.2.1 Government planning policy and guidance throughout the UK required local planning authorities to take account of the conservation of notable and protected habitats and species when determining planning or development consent applications.
- 2.2.2 In Wales this is implemented through Planning Policy Wales Edition 9, November 2016, supplemented by a series of Technical Advice Notes (TANs) (Ref 3) which sets out the land use planning policies of the Welsh Government. Consultation is currently being held on the draft Planning Policy Wales Edition 10 which was issued in February 2018; the consultation period ended in May 2018.
- 2.2.3 Chapter 5 of PPW (9) sets out the Welsh Government's objectives for the natural heritage of Wales which includes the safeguarding of protected

species. It states that 'the presence of a species protected under European or UK legislation is a material consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat'. It also states that 'an ecological survey to confirm whether a protected species is present and an assessment of the likely impact of the development on a protected species may be required in order to inform the planning decision'.

2.2.4 Further information on the detail of Planning Policy Wales is provided in Chapter 9, Ecology and Nature Conservation (**Document 5.9**).

Local Policy

- 2.2.5 There are a number of local planning policies set out in the Anglesey and Gwynedd Joint Local Development Plan 2017 (Ref 4) that relate to ecology and nature conservation which in combination with other planning policies will guide local authority expectations in relation to the Proposed Development:
 - Strategic Policy PS 19 related to conserving and enhancing the natural environment;
 - Policy AMG 4 relates to coastal protection;
 - Policy AMG 5 relates to the protection and enhancement of local biodiversity; and
 - Policy AMG 6 relates to protecting sites of regional or local significance.

Biodiversity Policy

- 2.2.6 As a result of devolution and new country-level and international drivers and requirements, much of the work previously carried out by the UK Biodiversity Action Plan (BAP) is now focused at a country-level rather than a UK-level. The UK BAP was succeeded by the 'UK Post-2010 Biodiversity Framework' in July 2012. The UK list of priority species and habitats, however, remains an important reference source and has been used to help draw up statutory lists of priorities in England, Scotland, Wales and Northern Ireland. In Wales the current lists are those under Section 7 of the Environment (Wales) Act 2016.
- 2.2.7 The national strategy for biodiversity is delivered at local-level via Local Biodiversity Action Plans (LBAPs). Species and habitats of local conservation concern or value are included in the LBAP and an action plan

is created for each species and certain habitat types. The LBAPs relevant to the study area for the Proposed Development are the Anglesey LBAP published by Isle of Anglesey County Council (IACC) and the Natur Gwynedd LBAP for Gwynedd developed by a partnership of organisations and individuals.

2.2.8 The Wales Biodiversity Partnership (WBP) brings together key members from the public, private and voluntary sectors to promote and monitor biodiversity and ecosystem action in Wales. WBP provides a leadership role and an expert steer on priorities for action on biodiversity and ecosystems in Wales. The WBP Steering Group has now formally disbanded and the biodiversity action work programme taken on by the Wales Biodiversity Strategy Board (WBSB) and the WBP working groups.

3 Methodology

3.1 DESK STUDY

- 3.1.1 The desk study incorporated a review of all internationally, nationally and locally statutory designated sites for nature conservation located within the study area.
- 3.1.2 It also included a review of non-statutory designated County Wildlife Sites (CWS)¹. CWS are important at the local level and have evolved in partnership with the regional Wildlife Trusts and are similar to Sites of Interest for Nature Conservation (SINC). CWSs are of substantial local nature conservation value and in some cases the quality of habitat may be equal to that found on a Site of Special Scientific Interest (SSSI) but may not meet the national criteria for selection as a SSSI which receive statutory protection.
- 3.1.3 In accordance with Bat Conservation Trust (BCT) recommendations, Special Areas of Conservation (SACs) designated because of a known bat population were included in a search of up to 10 km buffer from the Order Limits.
- 3.1.4 Ecological data for the study area were requested and gathered from the following sources; data provided by these sources is presented within this report and other ecology reports produced for the Proposed Development:
 - Isle of Anglesey Council (IACC);
 - Gwynedd Council;
 - Natural Resources Wales (NRW);
 - Royal Society for the Protection of Birds (RSBP);
 - British Trust for Ornithology (BTO);

North Wales Connection Project

-

¹ In Anglesey and Gwynedd Joint Local Development Plan, these non-statutory sites are called Wildlife Sites; the term County Wildlife Site (CWS) and candidate CWS (cCWS) has been used in this report.

- Joint Nature Conservation Committee (JNCC) Seabird Monitoring Programme;
- Wildfowl and Wetlands Trust (WWT) website;
- Greenland white-fronted goose (*Anser albifrons flavirostris*) website;
- the regional raptor study group representative/rare bird recorder;
- chough (*Pyrrhocorax pyrrhocorax*) data from the Cross and Stratford Welsh Chough Project;
- Aerial photography (Google Earth);
- third party data from Horizon;
- marine groups, including fisheries interests;
- Clwyd Badger Group (which covers Anglesey and Gwynedd);
- Red Squirrel Trust Wales (RSTW);
- Aerial photography (Google Earth);
- LANDMAP;
- hedgerow maps 1901 County Series Ordnance Survey (OS) maps and Tithe maps;
- Welsh Government;
- Joint Nature Conservation Committee (JNCC) online database
- Multi-Agency Geographic Information for the Countryside (MAGIC) website: and
- Cofnod, the local environmental records centre for North Wales.
- 3.1.5 Protected and notable habitats and species data include those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); Schedules 2 and 4 of The Conservation of Habitat and Species Regulations 2017; and Priority Species and Habitats listed under Section 7 of the Environment (Wales) Act 2016.
- 3.1.6 Protected and notable habitats and species record data (including notable plant records) was requested from Cofnod, the local environmental record centre in February 2018. This provided an update to the previous record

- requests carried out in November 2016 and May 2015. Notable plant species records are presented on Figure 2.
- 3.1.7 Records of invasive non-native controlled weed species were also collated; such species are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and as species of EU concern within the EU Invasive Alien Species Regulation 2014. Data search records and incidental field observations of invasive non-native species are presented on Figure 3 and the Cofnod records are detailed in Appendix A.
- 3.1.8 Prior to undertaking the Phase 1 Habitat survey, aerial photography, 1:10,000 OS Vector Map Local, 1:1,250 OS Mastermap and emapsite were examined to attempt to identify all waterbodies, drainage ditches and ponds within 250 m of the Order Limits. This process could not guarantee to definitively identify all watercourses/waterbodies present, but was the best that could be achieved within the limits of available data

3.2 FIELD SURVEY

- 3.2.1 The field survey comprised a Phase 1 Habitat survey from which an appraisal was made of the potential suitability of the habitats present to support protected and notable species. The Phase 1 Habitat survey was undertaken during the following periods: September to mid-November 2015 and April to July 2016. In addition, the Phase 1 Habitat survey was groundtruthed in July and August 2017 where access was available at that time to ensure data remained accurate. Some areas were surveyed outside these periods as access to land parcels became available, including during 2018.
- 3.2.2 The survey area for the field surveys comprised land inside the Order Limits and a 50 m buffer from these limits. Surveyors predetermined a preferred route to follow when on site which was modified where necessary based upon the presence of barriers encountered e.g. hedgerows, fences and watercourses.

Phase 1 Habitat Survey

3.2.3 The Phase 1 Habitat survey was undertaken in accordance with the standard survey method. Phase 1 Habitat survey is a standard method of environmental audit and involved categorising different habitat types and habitat features within the survey area and recording these using standard Phase 1 Habitat survey codes as described in the Handbook for Phase 1 habitat survey: A technique for Environmental Audit (Ref 5). Particular

- attention was paid to any ecologically sensitive areas that might be affected by the proposals.
- 3.2.4 Phase 1 Habitat survey target notes (TN) were made with the aim to increase the value of the habitat maps by providing supplementary information on sites and or/features of interest, information on habitats too small to map and areas requiring further survey. A list of TNs can be found in Appendix B. TNs included within this list are those captured at the time of the survey and subsequent surveys, for example a National Vegetation Classification (NVC) survey, have been undertaken to target the areas/feature of interest.
- 3.2.5 Those areas not assessed during the field survey, were classified and mapped using a combination of on-line aerial photography and existing Phase 1 Habitat maps which had been produced by Countryside Council for Wales (CCW) (now known as NRW).

Appraisal of potential suitability of habitats to support protected and notable species

- 3.2.6 Where relevant ecological receptors were identified within close proximity to the surveyors preferred survey route, the standard Phase 1 Habitat survey method was "extended" to record target notes on protected, notable and invasive non-native species and the position of these are shown on the Phase 1 Habitat maps (Figure 1), or areas were taken forward for consideration for targeted NVC or protected species surveys. This took in to account direct sightings of individuals, evidence of presence through their activities (e.g. droppings, prints, hairs and pathways) and habitat suitability. Features suitable for supporting protected species such as ponds for breeding great crested newt (*Triturus cristatus*) were also noted where identified.
- 3.2.7 A note was made of visible instances of invasive non-native plant species including Japanese knotweed (*Fallopia japonica*) and Indian balsam (*Impatiens glandulifera*). Observations of invasive non-native species made during the Phase 1 Habitat survey and during other ecology surveys conducted for the Proposed Development are presented on Figure 3.

Geographic Information Systems

3.2.8 Phase 1 Habitat data including TNs was recorded straight onto electronic tablets in the field using the Collector app from Esri to capture the data, where possible. This is a customised WebMap with the ability to add and edit features.

3.2.9 A set of GIS feature classes was created in ArcGIS desktop for the different habitat categories, including domains which list the different subcategories of habitats. The geodatabase was then uploaded to a secure account in ArcGIS Online, where it was used to author the WebMap which was used as the foundation for the customised App for Collector.

3.3 ASSUMPTIONS AND LIMITATIONS

- 3.3.1 The aim of a desk study is to help characterise the baseline context of a proposed development and provide valuable background information that would not be captured by a Phase 1 Habitat survey alone. Information obtained during the course of the desk study was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitats or species does not necessarily mean that the habitats or species do not occur in a study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of a proposed development.
- 3.3.2 The detail and accuracy of the desk study records rely on those provided to Cofnod from a variety of sources. The results of the updated desk study undertaken in February 2018 have been considered for the baseline assessment. The latest desk study search was conducted on the Proposed Development layout which now covers a smaller area resulting in some records being excluded that had previously been considered. The search also uses the latest priority and conservation lists which has also resulted in some further additions and exclusions of certain plant species.
- 3.3.3 Half of the records received from Cofnod for notable plant species over 18 years old, therefore there is a possibility that they are no longer present at these locations due to changes in land use and habitat management.
- 3.3.4 The Phase 1 Habitat survey areas undertaken in 2015 commenced at the end of September and continued until mid-November, which although falling within the survey season, these are not optimal months which are generally considered to be late April/early May. As a consequence particular plant species may not have been apparent although it was a particularly mild autumn). Ideally, woodlands are best surveyed in spring, grasslands in midsummer, heathlands in autumn and open waters between mid-June and the end of September. Populations of annual plant species may also fluctuate markedly between years dependent on the growing conditions present in any given season. Surveys in 2016 and 2017 were conducted during optimal months. Habitats were groundtruthed in July and August 2017 where access was available at that time to ensure data remained accurate.

- 3.3.5 In areas where access was restricted, wherever possible these land parcels were surveyed from roads, footpaths and other public rights of way and therefore detailed habitat descriptions, typical and notable plant species lists and suitability to support protected or notable species was not assigned to every habitat or feature present.
- 3.3.6 In some instances, livestock and in particular, beef cattle restricted the accessibility of particular land parcels which, on particular occasions, were avoided/evacuated for health and safety reasons, therefore potentially limiting the accuracy of the data recorded. In these instances, data was obtained from adjacent fields and with the use of binoculars where possible.
- 3.3.7 Despite the above limitations, the information gathered during the surveys has facilitated a robust evaluation of the dominant habitats within the survey area and the likely use of habitats by protected and notable species. Sufficient data was obtained to provide recommendations for further surveys and to highlight key areas in which to focus those surveys.

4 Results

4.1 DESK STUDY RESULTS

Important Ecological Features (Designated Sites)

- 4.1.1 Tables 4.1 to 4.6 summarise the international, national and local nature conservation designations located within the study area for each of the Sections A F.
- 4.1.2 The location of these designated sites are shown on Figure 9.1, Statutory Designated Sites (**Document 5.9.1.1**), Figure 9.2, Statutory Designated Sites in the Wider Area (**Document 5.9.1.2**), Figure 9.3, Non-Statutory Designated Sites (**Document 5.9.1.3**) and Figure 9.4, Non-Statutory Designated Sites County Wildlife Sites (**Document 5.9.1.4**), and further information on each site is provided in Appendix 9.2 Designated Sites Information (**Document 5.9.2.2**). Appendix 9.2 also provides information on designated sites in the wider area (outside the study area) where relevant to the ecological assessment.
- 4.1.3 Sites designated for purposes other than ecology, e.g. geological Sites of Special Scientific Interest have not been included as these are not relevant to ecology; these are discussed in Chapter 11, Geology, Hydrogeology and Ground Conditions (**Document 5.11**).

4.1.4 Abbreviations for Designated Sites in Table

CWS	Country Wildlife Site	Non-Statutory
cCWS	Candidate County Wildlife Site	Non-Statutory
LNR	Local Nature Reserve	Statutory
NNR	National Nature Reserve	Statutory
NWWT	North Wales Wildlife Trust	Non-Statutory
SAC	Special Area of Conservation	Statutory
cSAC	Candidate Special Area of Conservation	Statutory
SPA	Special Protection Area	Statutory
SSSI	Site of Special Scientific Interest	Statutory

Table 4.1 Designations located within study area – Section A			
Statutory Sites	Reason for Designation	Closest Point to Order Limits	
North Anglesey Marine/Gogledd Mon Forol cSAC	Recognised as an area with persistent high densities of harbour porpoise (<i>Phocoena phocoena</i>). The area included within the site covers important summer habitat for porpoises, which was identified as part of the top 10% persistent high density areas for the summer seasons within the UK.	224 m north	
Cemlyn Bay SAC	Tidal lagoon enclosed by a shingle ridge with saltmarsh communities occurring around the lagoon. Colonies of common tern (<i>Sterna hirundo</i>), Arctic tern (<i>Sterna paradisaea</i>) and sandwich tern (<i>Sterna sandvicensis</i>) breed on low islands in the main lagoon.	1.42 km west	
Anglesey Terns/Morwenoliaid Ynys Môn SPA	During the breeding season the area regularly supports: Roseate tern (<i>Sterna dougallii</i>), common tern, Arctic tern and sandwich tern.	224 m north	
Tre'r Gof SSSI	Selected in particular as a representative example of rich-fen habitat in north-west Wales. The fen has developed in a basin above Cemaes Bay and consists of a mosaic of rich-fen and associated communities.	32 m north-east	
Llyn Hafodol and Cors Clegyrog SSSI	Two wetland basins principally of lowland mire habitat types.	276 m south-west	
Cae Gwyn SSSI	Two wetland areas, separated by an area of heathland with outcropping rock.	1.09 km south-west	
Salbri SSSI	Acidic basin mire which remains waterlogged throughout the year. Various species of bog moss (<i>Sphagnum</i> spp.) and other bryophytes are present.	1.40 km south-west	

Table 4.1 Designations located within study area – Section A			
Cemlyn Bay SSSI	Tidal lagoon enclosed by a shingle ridge with saltmarsh communities occurring around the lagoon. Colonies of common, arctic and sandwich terns which breed on low islands in the main lagoon.	1.42 km west	
Trwyn Yr Wylfa/Wylfa Head Local Nature Reserve (LNR)	Mixture of coastal grassland and heath.	266 m north	
Non-Statutory Sites	Name of Site	Closest Point to Order Limits	
County Wildlife	Arfordir Mynydd y Wylfa - Trwyn Penrhyn	266 m north	
Sites	Cors Cromlech	449 m south-west	
	Afon Wygyr	714 m north-east	
	Trwyn Pencarreg	761 m south-west	
	Rhostir Mynydd Mechell	940 m south-west	
	Arfordir Trwyn y Buarth - Porth Wen	1.86 km north-east	
Cemlyn NWWT	Coastal habitat with a large lagoon, separated from the sea by a naturally created shingle ridge. The site hosts a large and internationally important seabird colony.	1.65 km west	

Table 4.1 Designations located within study area – Section A			
Ancient Woodland	There are six sites of ancient semi natural woodland and five sites of restored ancient woodland within the study area of Section A.	The closest site is ancient semi natural woodland which lies within 5 m of the Order Limits	

Table 4.2 Designations located within study area – Section B			
Statutory Sites	Reason for Designation	Closest Point to Order Limits	
Llyn Alaw SSSI	Considerable ornithological interest especially for overwintering wildfowl and large flocks of waders in autumn.	470 m south	
Non-Statutory Sites	Name of Site	Closest Point to Order Limits	
Coed Cae Mawr CWS	Broadleaved woodland with smaller areas of dry and species-rich marshy grassland. This site is valuable for bird life as woodland is scarce in this part of Anglesey.	355 m south	
Ancient Woodland	There are five sites of ancient semi natural woodland and one site of restored ancient woodland within the study area of Section B.	The closest site is ancient semi natural woodland which lies within 380 m of the Order Limits.	

Table 4.3 Designations located within study area – Section C			
Statutory Sites	Reason for Designation	Closest Point to Order Limits	
Corsydd Môn a Llyn/Anglesey and Llyn Fens Ramsar	An internationally important assemblage of base-rich fens comprised of six component sites, supporting a range of associated floral and faunal rarities.	Within the Order Limits – small sections only	
Corsydd Mon/Anglesey Fens SAC	Hard oligo-mesotrophic waters with benthic vegetation of stonewort (<i>Chara</i> spp.). The site supports the second-largest area of calcareous fens in the UK.	Within the Order Limits – small sections only	
Cors Erddreiniog SSSI	A large calcareous valley mire of national importance. Three fen basins interconnected by the drainage system.	Within the Order Limits – small sections only	
Cors Erddreiniog NNR	The largest of the Anglesey fens supporting a variety of rare plant species including orchids.	Within the Order Limits – small sections only	
Tyddyn Y Waen SSSI	Selected for its biological interest, in particular as an example of fen meadow habitat with associated soligenous mire.	914 m north-east	
Craig Wen/Cors Castell SSSI	Lowland acidic heathland habitat and base rich fen. Extensive areas of fen and small areas of limestone grassland are also present.	1.74 km east	
Cors Goch SSSI	Nationally important valley mire developed in a hollow in Carboniferous Limestone.	1.86 km north-east	

Table 4.3 Designations located within study area – Section C			
Cors Goch NNR	Anglesey's most complete fen basin and is primarily base rich fen sitting within a shallow valley fed with lime rich water from the surrounding land via several springs and upwelling's.	1.86 km north-east	
Non-Statutory Sites	Name of Site	Closest Point to Order Limits	
County Wildlife Site	Maen Eryr	Adjacent to Order Limits	
	Prysan/Galchfaen/Fagwyr Fawr	583 m north-east	
	Coed Cefn-Du	825 m north-east	
	Mynydd Bodafon	846 m east	
	Graigfryn	922 m north-east	
	Coed Bodafon-y-Glyn	1.14 km north-east	
	Rhostir Ponciau	1.60 km north-east	
	Gors Frigan	1.79 km north-east	
	Llyn Llwyn-Crwn a Sgarp Caerhos Lligwy	1.82 km north-east	
	Chwarel Frigan	1.93 km east	

Table 4.3 Designations located within study area – Section C			
Cors Goch NWWT	Cors Goch is Anglesey's most complete fen basin. A mosaic of habitats are present including limestone grassland, acid grasslands and heath lands, meadows, pasture, woodland and scrub which support a wide variety of flora and fauna species. This designated site forms part of the Anglesey Fens SAC/Anglesey and Llyn Fens Ramsar.	1.3 km north-east	
Ancient Woodland	There are seven sites of ancient semi natural woodland, 13 sites of restored ancient woodland and one plantation on ancient woodland site within the study area of Section C.	The closest site is restored ancient woodland which falls within the Order Limits.	

Table 4.4 Designations located within study area - Section D				
Statutory Sites	Reason for Designation	Closest Point to Order Limits		
Caeau Talwrn SSSI	Areas of interest for neutral grassland and mire vegetation.	25 m east (several split sites)		
Cors Y Farl SSSI	A range of different vegetation communities including fen meadow, acidic and base-rich flushes and willow thickets dominated by grey willow (Salix cinerea)	362 m east		
Cors Bodelio SSSI	A nationally important calcareous mire with a range of rich-fen vegetation communities that now overlie a body of fen peat.	1.17 km south-east		
Gwenfro and Rhos Y Gad SSSI	Selected primarily as an example of a rich-fen habitat, which supports certain nationally uncommon vegetation types	1.95 km north-east		
Cors Bodelio NNR	A large rich fen system which is part of a suite of wetlands designated for their unusual and diverse vegetation.	1.23 km east		
Nant Y Pandy (The Dingle) LNR	A wooded valley dominated by sessile oak (<i>Quercus petraea</i>), ash (<i>Fraxinus excelsior</i>) and wild cherry (<i>Prunus avium</i>) with bluebells (<i>Hyacinthoides non-scripta</i>) and wood anemones (<i>Anemone nemorosa</i>) present in the ground flora.	1.8 km west		
Non-Statutory Sites	Name of Site	Closest Point to Order Limits		
County Wildlife Sites	Gorchudden Gylched (Gylched Covert)	Within the Order Limits		
	Tir Pori Talwrn	151 m east		
	Clegyrdy Bach/Neuadd Wen/Ty'n Beudy	226 m east		

Table 4.4 Designations located within study area - Section D				
	Cors Tregarnedd Fawr	698 m south-west		
	Y Dingle	1.84 km west		
Ancient Woodland	There are seven sites of ancient semi natural woodland, three sites of restored ancient woodland and one area of plantation on ancient woodland within the study area of Section D	The closest site is plantation on ancient woodland which lies within 370 m of the Order Limits.		

Table 4.5 Designations located within study area – Section E				
Non-Statutory Sites				
Cors Bod-Ynys CWS	A large area of marshy grassland in a shallow depression with a small wet woodland and scattered scrub. Important for its ornithological interest.	1.37 km north		
Ancient Woodland	There are five sites of ancient semi natural woodland, one site of restored ancient woodland within the study area of Section E.	The closest site is ancient semi natural woodland which lies within 248 m of the Order Limits.		

Table 4.6 Designations located within study area – Section F				
Statutory Sites	Reason for Designation	Closest Point to Order Limits		
Y Fenai a Bae Conwy/Menai Strait and Conwy Bay SAC	Sandbanks slightly covered by sea water all the time. Mudflats and sandflats not covered by seawater at low tide. Rocky reefs colonised by a diverse array of animals, including large sponges. The mixed sediment shores are highly productive that are rich in animal and plant species. These shores include a nationally important biotope that is rare in the UK.	Within the Order Limits – tunnel section only		
Coedydd Afon Menai SSSI	Ivy-oak/ash Hedera helix – Quercus/Fraxinus type woodland.	707 m north-east		
Glannau Porthaethwy SSSI	Extends along 4 km of the shore of Menai Bridge/Porthaethwy in the Menai Strait, and has been selected for its marine biological features; has the most extensive sheltered rock shore in the area between Bardsey Island and Great Orme's Head and supports diverse marine plant and animal communities.	1.41 km north-east		
Non-Statutory Sites	Name of Site	Closest Point to Order Limits		
County Wildlife Site	Coed Ty'n-llwyn (Candidate), Vaynol Park woodlands and lake (Candidate), Coed Rhos-fawr (Candidate), Coed Nant y Garth, Coed Pont Ladi-wen, Parc Nant-y-garth (Candidate), Fodol Ganol (Candidate), Pentir Substation (Candidate).	Within the Order Limits		
	There are a further 20 CWS and 23 cCWS located between the Order Limits and 2 km from the Order Limits of Section F.	Within 2 km of the Order Limits		

Table 4.6 Designations located within study area – Section F					
Ancient Woodland	There are 31 sites of ancient semi natural woodland, 63 restored ancient woodland sites, 45 plantations on ancient woodland, plus five ancient woodland sites of an unknown category within the study area of Section F.	24 sites fall within the Order Limits (16 of these fall within the Order Limits above the tunnel)			

Important Ecological Features (Habitats)

- 4.1.5 Important ecological habitats identified during the desk study and the Phase 1 Habitat survey are listed in Table 4.7.
- 4.1.6 Notable marine habitats have also been included in this table for completeness; refer to Appendix 9.16 Intertidal Report (**Document 5.9.2.16**) and Appendix 9.17 Subtidal Report (**Document 5.9.2.17**) for detailed information on marine habitats.

Table 4.7 Important ecological features (notable habitats) within the survey area (Sections A - F, includes other infrastructure components (e.g. THH/CSEC) that are present within the Sections)

Feature	Environment (Wales) Act 2016	Local BAP (*)	Section					
			Α	В	С	D	Е	F
Rivers/Streams	✓	A & G	>	\	\	✓	>	✓
Standing Water (Lakes and ponds)	√	A & G	✓	✓	√	✓	✓	✓
Lowland Mixed Broadleaved Woodland (this includes Ancient Woodland)	√	A	√	>	√	√	√	√
Parkland/Scattered Trees	✓	A & G	✓	✓	✓	✓	✓	✓
Lowland Meadows (Unimproved Neutral Grassland)	✓	A ² & G			√	√		✓
Semi-improved Neutral Grassland	√	G ³	✓	✓	✓	✓	✓	✓
Unimproved Acid Grassland	√	G						✓

² Tentatively fits with Flower-Rich Road Verges LBAP

³ The LBAP only applies to species-rich examples of semi-improved grassland and therefore may not be present in all sections.

Table 4.7 Important ecological features (notable habitats) within the survey area (Sections A - F, includes other infrastructure components (e.g. THH/CSEC) that are present within the Sections)

Feature	Environment (Wales) Act 2016	Local BAP (*)	Section					
		B/(I ()	A	В	С	D	Е	F
Semi-improved Acid Grassland	√	G			>			
Rhos Pasture (Purple moor-grass (<i>Molinia</i> caerulea) and rush pasture)	√	G	~		>		√	√
Inland Rock (Rock Outcrops)	✓		√					
Acid Dry Dwarf Shrub Heath (Lowland)	√	А						✓
Swamp	✓	G				✓	✓	
Valley Mire	✓	A & G			✓			
Hedgerows	✓	G	✓	✓	✓	✓	✓	✓
Cloddiau and Ancient/Important Hedgerows		A & G	✓	✓	✓	✓	✓	✓
Estuarine rocky habitats	✓							✓
Coastal saltmarsh	✓	G						✓
Intertidal mudflats (including Annex I mudflats not covered by seawater at low tide)	√	G						✓
Subtidal sands and gravels	✓							✓
Tide swept channels (including Annex 1 rocky reefs)	√							√
(*) Anglesey (A) and/or Gwynedd (G) LBAP								

Notable Plant Species

4.1.7 Notable flowering plant, fern and lichen species identified during the desk study are summarised in Table 4.8 and are shown on Figure 2. Where more than one record of a species was provided, details of the latest recorded date has been presented in Table 4.8.

Table 4.8 Notable flowering plant, fern and lichen species within the Order Limits plus 50 m buffer							
Species	Scientific name	Date of Record (Latest)	Status*	Within Order Limits	Within 50 m buffer	Ref Numbers on Figure 2	
Flowering Plants							
Bluebell	Hyacinthoides non-scripta	2012	WCA8, LBAP[ANG]	✓	✓	1; 6; 16	
Hoary ragwort	Senecio erucifolius	1999	LBAP[GWY]	✓		2	
Water mint	Mentha aquatica	1999	LBAP[ANG]	✓	✓	3; 8; 15; 18	
Stinking hellebore	Helleborus foetidus	1999	RD2(UK)NS, RD2(UK)S	√		4	
Lesser pond- sedge	Carex acutiformis	1991	LBAP[GWY]	✓	✓	7; 13; 17	
Marsh stitchwort	Stellaria palustris	1980	RD1(UK)VU, RD1(Wales)VU, S7		✓	9	
Lesser tussock- sedge	Carex diandra	1980	RD1(UK)NT, LBAP[GWY]		✓	10	
Blunt-flowered rush	Juncus subnodulosus	1991	LBAP[GWY]		√	11; 14	

Table 4.8 Notable flowering plant, fern and lichen species within the Order Limits plus 50 m buffer							
Species	Scientific name	Date of Record (Latest)	Status*	Within Order Limits	Within 50 m buffer	Ref Numbers on Figure 2	
Lesser water- plantain	Baldellia ranunculoides	2009	RD1(UK)NT, LBAP[GWY]	✓		12	
Yellow rattle	Rhinanthus minor	2008	LBAP[ANG]		✓	19; 20	
Smooth tare	Vicia tetrasperma	2008	LBAP[GWY]		✓	21	
Flattened meadow-grass	Poa compressa	2007	LBAP[GWY]	✓		22	
Broad-leaved helleborine	Epipactis helleborine	2006	LBAP[GWY]	✓		23	
Spurge laurel	Daphne laureola	2012	LBAP[GWY]	✓		24	
Small pondweed	Potamogeton berchtoldii	2013	LBAP[GWY]	✓		26	
Downy hemp- nettle	Galeopsis segetum	1975	RD1(UK)EX, RD1(Wales)EX, S7	✓		27	
Ferns	•	_					
Polypody	Polypodium vulgare	2013	RD1(Wales)VU	✓		5	
Lichen							

Table 4.8 Notable flowering plant, fern and lichen species within the Order Limits plus 50 m buffer							
Species	Scientific name	Date of Record (Latest)	Status*	Within Order Limits	Within 50 m buffer	Ref Numbers on Figure 2	
Parmotrema perlatum	Parmotrema perlatum	1997	RD1(Wales)LC, S7	✓		25	

*WCA8 - Wildlife & Countryside Act 1981 Schedule 8; LBAP[ANG] – LBAP Anglesey; LBAP[GWY] – LBAP Gwynedd; RD1(UK)/RD2(UK) – Red Data Book 1/2: VU - vulnerable, NS - nationally scarce, S - scarce, NT - nationally threatened, LC - locally common, EX - extinct; S7 - Section 7 of the Environment (Wales) Act 2016

4.2 FIELD SURVEYS BASELINE SUMMARY

Habitat Overview within the Survey Area

- 4.2.1 The following is a summary of the habitats identified within the survey area during the Phase 1 Habitat survey. The survey area contained a variety of habitats typical of rural pastoral farmland. These were largely characterised by improved grassland grazed by cattle and sheep, although some small areas of arable land are also present.
- 4.2.2 Field boundaries were typically formed by fences, hedgerows, dry stone walls and cloddiau (dry stone outers with compacted earth, or earth/rubble cores).
- 4.2.3 Semi-natural vegetation included grassland types such as semi-improved, marshy (including fen habitat), neutral and acid grassland. Scrub was mostly scattered and fragmented and interspersed with improved grasslands.
- 4.2.4 Heathland habitat was rare and confined to one known location within the survey area. Occasionally, the remnants of the heathland habitats and a number of characteristic species were identified on the boundaries of improved fields and within hedgerows and cloddiau indicating a previously much more widespread occurrence of heathland habitat prior to conversion to intensive agriculture.
- 4.2.5 Extensive tree cover was generally uncommon, particularly within the north of the survey area, although woodland habitat was more extensive within southern areas. Areas of ancient semi-natural woodland, including restored examples, were present along the Menai Strait and within Vaynol Park, and small pockets were also located throughout the survey area. Plantation woodlands were also more frequent in the southern part of the survey area, particularly on the mainland.
- 4.2.6 Watercourses, drains and ponds were scattered throughout the survey area. More extensive areas included Cors Erddreiniog SSSI/NNR (also within the Anglesey Fens SAC and Anglesey and Llyn Fens Ramsar). Larger water bodies present outside of, but close to, the survey area, included Llyn Alaw SSSI and Cefni Reservoir.
- 4.2.7 The Menai Strait between Anglesey and Gwynedd encompasses a diverse array of intertidal and subtidal habitats. Many of the biotopes present represented SAC Annex 1 and Section 7 of the Environment (Wales) Act 2016 habitats, including hard substrata reefs, sheltered muddy gravels and

tidal swept channels. Refer to Appendix 9.16 Intertidal Report (**Document 5.9.2.16**) and Appendix 9.17 Subtidal Report (**Document 5.9.2.17**) for detailed information on marine habitats.

General Habitat Descriptions

4.2.8 The following general habitat descriptions are grouped and presented in terms of the general habitat categories used for Phase 1 Habitat survey (Ref 5). The total area/length of these habitat types in the Order Limits and within the survey area are provided in Table 4.9.

A Woodland and Scrub

- 4.2.9 Woodland is defined as vegetation dominated by trees more than 5 m high when mature, forming a distinct, although sometimes open, canopy, where the cover of trees is over 30%.
- 4.2.10 Scrub is seral or climax vegetation dominated by locally native shrubs, usually less than 5 m tall, occasionally with a few scattered trees.

Broadleaved Semi-Natural Woodland

4.2.11 Broadleaved semi-natural woodland is classified as broadleaved stands which do not obviously originate from planting and has less than 10% conifer in the canopy. Broadleaved semi-natural woodland was found within all sections of the survey area and was predominantly found in Section D (for example at Gylched Covert) and Section F around the Menai Strait and smaller parcels around the Pentir Substation. Extensive areas of this habitat type were uncommon in the other sections.

Broadleaved Plantation Woodland

4.2.12 Obviously planted woodland of any age which has 10% or less conifer in the canopy is included in this category. Section F had the largest proportion of this habitat type and was largely found around Pentir Substation. Section A also had two parcels, one to the south of Wylfa Substation and one to the north of Llanfechell. Small, isolated parcels of broadleaved plantation woodland were also present within Sections B, D and E.

Coniferous Plantation Woodland

4.2.13 Obviously planted woodland of any age which has 10% or less broadleaved in the canopy is included in this category. Coniferous plantation woodland was uncommon through much of the survey area and was only found within Sections A and F. Section F had the largest proportion of this habitat, found predominantly to the south of the Menai Strait and to the west of Pentir Substation.

Mixed Semi-natural Woodland

4.2.14 Mixed semi-natural woodlands can be taken as those which have between 10-90% of either broadleaved or coniferous species in the canopy although, it should be noted since some woodlands were observed from distance, it was not always possible to determine the exact proportions of coniferous or broadleaved species. Small stands of this habitat were present within all sections apart from Section D. Section F had the largest area of this habitat type forming Vaynol Park woodlands and other smaller parcels in this section.

Mixed Plantation Woodland

4.2.15 Obviously planted woodland of any age which has between 10-90% of either broadleaved or coniferous species in the canopy is included in this category. Mixed plantation woodland was present in small stands within Sections A, E and F. Sections A and F had the largest areas of this habitat type around the Wylfa and Pentir Substations respectively.

Dense/Continuous Scrub

4.2.16 This habitat type included dense stands of native shrubs less than 5 m in height. Frequently recorded species included bramble (*Rubus fruticosus*), gorse (*Ulex europaeus*), and species of willow (*Salix* sp), hawthorn and blackthorn. Stands of the latter two species are included in this category irrespective of height. Small patches of this habitat were found in all sections of the survey area, predominantly in Section F.

Scattered Scrub

4.2.17 Characteristics of this habitat are as described for the dense/continuous scrub but without forming dense/continuous stands. Scattered scrub was found in Sections A, B, D and E, and was most predominant in Sections A and E, comprising largely of small isolated patches or linear strips within improved grassland fields.

Broadleaved Parkland/Scattered Trees

4.2.18 This category is used where tree cover is less than 30%. Individual trees or lines of trees would also be included in this category. Scattered trees were found throughout the survey area in all sections, sometimes associated with avenues and hedgerows.

B Grassland and Marsh

Unimproved Acid Grassland

4.2.19 Unimproved acid grassland habitat was rare within the survey area and was restricted to a small area in Section F located south-east of Pentir Substation. The dominant grasses recorded were matgrass (*Nardus stricta*), sheep's fescue (*Festuca ovina*), heath grass (*Danthonia decumbens*) and common bent grass (*Agrostis capillaris*), with some large patches of green-ribbed sedge (*Carex binervis*).

Semi-improved Acid Grassland

- 4.2.20 Semi-improved acid grasslands were uncommon within the survey area and restricted to a small area in Section C only. Semi-improved acid grasslands are often distinguished from improved habitats by a wider variety of herbs and grasses some of which are characteristic of acid conditions such as wavy-hair grass (*Deschampsia flexuosa*), sheep's fescue (*Festuca ovina*), heath rush (*Juncus squarrosus*) and heath bedstraw (*Galium saxatile*).
- 4.2.21 The following species were recorded to the south of the Anglesey Fens SAC: velvet bent grass (*Agrostis canina*), sheep's fescue, sharp-flowered rush (*Juncus acutiflorus*), bird's-foot trefoil (*Lotus corniculatus*), heath woodrush (*Luzula multiflora*) and purple moor-grass (*Molinia caerula*).

Unimproved Neutral Grassland

4.2.22 Areas of unimproved neutral grassland were uncommon within the survey area and restricted to a small number of land parcels on the border of Sections C and D, and in Section F. Species diversity was high as these areas have been unaffected by intensive agricultural practices. Species recorded in Section C/D included common bent-grass, smooth meadow-grass (*Poa pratensis*), crested dog's-tail (*Cynosurus crsitatus*) and bird's-foot trefoil (*Lotus corniculatus*). Species recorded in Section F included false oat-grass (*Arrhenatherum elatius*), common knapweed (*Centaurea nigra*) and bird's-foot trefoil.

Semi-improved Neutral Grassland

- 4.2.23 Semi-improved grasslands were typical of those areas of pasture which appeared less intensively grazed than the improved swards. Semi-improved grasslands were often distinguished from improved and poor semi-improved habitats by a wider variety of herbs and grasses.
- 4.2.24 Species often included perennial rye-grass, crested-dog's-tail, Yorkshire fog (Holcus lanatus), smooth meadow grass (Poa pratensis), creeping soft grass (Holcus mollis) and common bent (Agrostis capillaris). Herbaceous

species included white clover, red clover (*Trifolium pratense*), common knapweed (*Centaurea nigra*), greater plantain, mouse-ear chickweed (*Cerastium fontanum*), daisy, broad-leaved dock and meadow buttercup, common sorrel (*Rumex acetosa*), bush vetch (*Vicia sepium*), and tufted vetch (*Vicia cracca*). Semi-improved neutral grassland was found within all sections across the survey area and was most frequently found in Sections A, C and F.

Improved Grassland

- 4.2.25 This was the dominant habitat found in all sections of the survey area and was largely characterised by pasture fields grazed by cattle (primarily beef) and sheep. Swards mostly comprised a limited range of species typical of heavily grazed pastures such as perennial rye-grass (*Lolium perenne*), crested-dog's-tail (*Cynosurus cristatus*) and Yorkshire fog with commonly occurring herbaceous species including white clover (*Trifolium repens*), greater plantain (*Plantago major*), daisy (*Bellis perennis*), broad-leaved dock (*Rumex obtusifolius*) and meadow buttercup (*Ranunculus acris*).
- 4.2.26 Waxcap grassland fungi *Hygrocybe* species were also recorded by surveyors within certain parcels of this habitat.

Marshy Grassland

- 4.2.27 Marshy grasslands were often present at the base of shallow gradients within those improved or semi-improved fields with poor drainage. As many fields were observed from distance, typically, this habitat was classified by communities with greater 25% cover of rush species (*Juncus* sp.). Other species characteristic of this habitat included meadowsweet (*Filipendula ulmaria*), marsh thistle (*Cirsium palustre*), tufted hair-grass (*Deschampsia cespitosa*), creeping buttercup (*Ranunculus repens*) and great willowherb (*Epilobium hirsutum*). Other areas included fragmented compartments inaccessible to livestock. Marshy grassland was present throughout all sections of the survey area, generally comprising relatively small areas within improved grassland fields, it was most dominant in Sections C and F.
- 4.2.28 An area of marshy grassland at Cae Canol-dydd in Section C was noted as being species rich and was subsequently surveyed as part of the NVC surveys in 2017 and 2018.

Poor Semi-improved Neutral Grassland

4.2.29 The characteristics of this habitat are similar to those found in semiimproved neutral grassland although the diversity of herbaceous species is much more restricted. Poor semi-improved grassland was found within all sections of the survey area, and was most commonly found in Section A.

C Tall Herb and Fern

Continuous Bracken

4.2.30 Areas dominated by bracken (*Pteridium aquilinum*) in continuous stands. This habitat type was only found in the northern parts of the survey area with one small patch being present each within Sections A and B only.

Scattered Bracken

4.2.31 Areas with scattered patches of bracken were only found within Section F, within the Order Limits south of the woodland ravine area at Coed Nant y Garth CWS.

Tall Ruderal

4.2.32 Tall ruderal habitats were often present along roadside verges, as isolated stands within fields and as herbaceous layers bordering other habitats such as woodlands. Species typically recorded within this habitat type included common nettle (*Urtica dioica*), broad-leaved dock (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*) and rosebay willowherb (*Chamerion angustifolium*). Tall ruderal habitats were found within all sections of the survey area, most commonly in Sections A and E.

D Heathland

Acid Dry Dwarf Shrub Heath

4.2.33 A rare habitat within the Order Limits with currently only one example recorded within Section F close to Pentir Substation. This habitat was characterised by the presence of over 25% cover of western gorse (*Ulex gallii*). Bell heather (*Calluna cinerea*) was also present within this area. Scattered boulders were present in this habitat.

E Mire

Fen/Valley Mire

4.2.34 Valley Mire was confined to one location within Cors Erddreiniog SSSI/NNR and Anglesey Fens SAC/Anglesey and Llyn Fens Ramsar. It should be noted however that while the general area within the designated site has been classified as this habitat type, the calcareous is known to support a variety of other habitat types including three fen basins interconnected by the drainage system. A carboniferous limestone escarpment, bearing limestone grassland and a hazel woodland, lies along the eastern side of the main basin. From its foot emerges base-rich springs, associated with which is a rich flora of black bog rush (*Schoenus nigricans*), narrow-leaved marsh orchid (*Dactylorhiza traunsteineri*), fly orchid (*Ophrys insectifera*), and

columbine (*Aquilegia vulgaris*). This orchid-rich vegetation type, found at a few sites in Anglesey and Lleyn, is not found anywhere else in Great Britain. The mire is also likely to support smaller areas of heathland habitats but due to the inaccessibility of certain parts of the mire, it was not possible to fully classify all habitat types and their extents. A small area of this habitat type was found in the Order Limits of Section C.

4.2.35 Fen habitat was also present within Caeau Talwrn SSSI which contains a complex mosaic of semi-natural grassland and mire vegetation, parts of this designated site fall within the survey area but not within the Order Limits. Fen habitat was also noted to be present in Section A, within Tre'r Gof SSSI but not within the Order Limits, and Cae Canol-dydd in Section C/D as a result of further surveys following the Phase 1.

F Swamp, Marginal and Inundation

Swamp

4.2.36 Swamp habitat was uncommon and restricted to two small stands of reed canary grass (*Phalaris arundinacea*) in the survey area of Sections D and F, these fell outside the Order Limits.

G Open Water

Standing Water

- 4.2.37 Standing water was present in all sections of the survey area, mainly in the form of ponds and water-filled ditches of which a number were further classified as either eutrophic (nutrient rich) or mesotrophic (moderate dissolved nutrients). Since some of the waterbodies were observed from distance, it was not always possible to determine the physical characteristics, trophic state or typical plant species present. Those plant species that were frequently recorded however included duckweed species (Lemna sp), watercress (Nasturtium officinale), spearwort (Ranunculus flammula), water crowfoot (Ranunculus aquatilis) and a species of bulrush (Typha sp).
- 4.2.38 Larger waterbodies including lakes and reservoirs were found in the study area including Llyn Alaw in Section B and Cefni Reservoir in Section C.

Running Water

4.2.39 Running water was present in all sections of the survey area in the form of streams and rivers. There are several main rivers within the study area that run through the Proposed Development, these include the River Erddreiniog

in Section C and River Braint in Section F; several tributaries of main rivers also flow through the survey area.

I Rock Exposure and Waste

Other Rock Exposure

4.2.40 Can include both natural and artificial exposed rock surfaces where these are entirely lacking vegetation cover. Examples of this habitat type were located in Section A.

Artificial - Quarry

4.2.41 Just one quarry intersected the survey area, but was situated beyond the Order Limits partially within the 50 m buffer. This quarry was located within Coed Nant-y-garth in Section F and is used for the extraction of stone.

J Miscellaneous

Arable

4.2.42 The majority of agricultural land was pastoral rather than arable, however small areas of arable habitat were found in Sections A, B, C, D and F, with Section C having the largest area of arable habitat.

Amenity Grassland

4.2.43 Amenity grasslands were those intensively managed and regularly mown grasslands that comprised lawns, playing fields and parks. Typical species included perennial rye-grass and Yorkshire fog and annual meadow-grass (*Poa annua*) with herbs such as daisy, white clover, red clover, dandelion, mouse-ear chickweed and ribwort plantain. Amenity grassland was recorded throughout the survey area, and was present most extensively in Section F.

Ephemeral/short Perennial

4.2.44 This habitat was characterised by short, patchy associations of plants typical of derelict urban sites. Species typically comprised a mixture of low growing-species such as broad-leaved plantain, white, clover, colt's-foot (*Tussilago farfara*) and black medick (*Medicago lupulina*). Ephemeral/short perennial habitat was recorded only within Section E.

Intact Native Species-Rich Hedge

4.2.45 Species-rich hedgerows were defined as those with at least five structural species woody species native to the UK. Due to the timing of the surveys, basal herbaceous flora was not used as an indicator of richness as many species would not have been apparent. These hedgerows were a common

feature of field boundaries and often present as hedgebanks and less frequently as cloddiau. Commonly occurring structural species included hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinose*), ash and elder (*Sambucus nigra*). Intact native species-rich hedgerows were present within all section of the survey area, with Sections C, D and F having the highest concentration.

Intact Species-Poor Hedge

4.2.46 This classification of hedgerow was defined as those with less than five structural woody species. These hedgerows were a common feature of field boundaries throughout Sections A, B, C, and E. These were also present to a lesser extent within Sections D and the northern and southern extents of Section F.

Defunct Native Species-Rich Hedge

4.2.47 This classification of hedgerow was defined where gaps are present and the hedgerow is no longer stock proof with five or more woody structural species. Gaps within these were often infilled with tall ruderal species and/or bracken. These hedgerows were uncommon throughout the survey area and only present at a small number of locations within Sections A, B, C, D and F.

<u>Defunct Species-Poor Hedge</u>

4.2.48 This classification of hedgerow was defined where gaps are present and the hedgerow is no longer stock proof with less than five woody structural species. Gaps within these were often infilled with tall ruderal species and/or bracken. Although present within all sections, this type of hedgerow was generally uncommon throughout the survey area and was most dominant in Section B.

Native Species-Rich Hedge with Trees

4.2.49 The classification of this type of hedgerow can be taken as those with one or more trees present within a particular section. Commonly occurring tree species included ash and English oak (*Quercus robur*) of varying ages. As with the other classifications of species-rich hedgerow, basal herbaceous flora was not used as an indicator of richness as many species would not have been apparent. Tree species were also included the structural diversity and therefore contributed to the 'richness' of the hedgerow. These hedgerows are present in all sections and were most frequently recorded in Sections C and D.

Species-Poor Hedge with Trees

4.2.50 These have the same characteristics as the native species-rich hedge with trees but with less than five woody structural species. This hedgerow type was present in all sections and was common throughout the survey area.

Other Miscellaneous Habitats

- 4.2.51 The Phase 1 Habitat survey also records other miscellaneous habitats such as 'built-up areas' which includes caravan parks and buildings, and areas of 'bare ground'. Whilst these 'habitats' do not contribute to the ecological value of an area they have been included for completeness as part of the Phase 1 Habitat survey.
- 4.2.52 Other linear habitats such as walls, dry ditches and earth banks have also been included in the habitat calculations in Table 4.9.

Habitat Areas

4.2.53 A summary of the approximate area or length of each habitat within the Order Limits and the survey area is shown in Table 4.9. The percentage contribution of each of the area habitats in the Order Limits and in the survey area is also provided. The linear habitats have been excluded from the percentage contribution calculations.

Table 4.9 Habitat areas and lengths and percentage contribution of each habitat type to the Order Limits and survey area

Habitat type	Phase 1 code	Area (ha)/length (km) (Order Limits)	% contribution to Order Limits (area only)	Area (ha)/length (km) (survey area)	% contribution to survey area (area only)
Broadleaved Semi- natural Woodland	A1.1.1	49.65 ha	7.4	75.94 ha	6.1
Broadleaved Plantation Woodland	A1.1.2	2.51 ha	0.4	5.40 ha	0.4
Coniferous Plantation Woodland	A1.2.2	8.82 ha	1.3	9.50 ha	0.8
Mixed Semi- natural Woodland	A1.3.1	8.52 ha	1.3	13.66 ha	1.1

Table 4.9 Habitat areas and lengths and percentage contribution of each habitat type to the Order Limits and survey area Habitat type Phase 1 Area % Area % (ha)/length (ha)/length contribution contribution code (km) (Order to Order (km) (survey to survey Limits) Limits (area area (area area) only) only) Mixed Plantation A1.3.2 7.61 ha 1.1 12.23 ha 1.0 Woodland Dense/Continuous A2.1 2.94 ha 0.4 8.29 ha 0.7 Scrub A2.2 Scattered Scrub 1.98 ha and 0.3 6.72 ha + 0.5 7.78 km 11.51 km Broadleaved A3.1 N/A N/A 0.28 km 0.30 km Parkland/Scattered Trees **Unimproved Acid** B1.1 0.07 ha 0.01 0.33 ha 0.03 Grassland Semi-improved B1.2 0.51 ha 80.0 0.90 ha 0.1 Acid Grassland Unimproved B2.1 0.11 ha 0.02 0.11 ha 0 Neutral Grassland 12.82 ha Semi-improved B2.2 1.9 28.79 ha 2.3 **Neutral Grassland Improved B4** 458.86 ha 68.7 867.84 ha 70.0 Grassland 5.14 **B**5 34.31 ha 59.41 ha 4.8 Marshy Grassland Poor Semi-3.84 B6 25.64 ha 48.29 ha 3.9 improved Neutral Grassland Continuous C1.1 0.27 ha 0.04 0.64 ha 0.1 Bracken Scattered Bracken C1.2 0.81 ha 0.1 1.03 ha 0.1

0.3

3.03 ha

0.2

Tall Ruderal

C3.1

1.86 ha

Table 4.9 Habitat areas and lengths and percentage contribution of each habitat type to the Order Limits and survey area % Phase 1 Area % Area Habitat type (ha)/length contribution (ha)/length contribution code (km) (Order to Order (km) (survey to survey Limits) Limits (area area (area area) only) only) Acid Dry Dwarf D1.1 1.38 ha 0.2 4.73 ha 0.4 Shrub Heath E3.1 0.14 ha 0.02 Fen/Valley Mire 6.07 ha 0.5 F1 0.002 ha 0 0.10 ha 0.01 Swamp Standing Water 4.24 ha G1 3.81 ha 0.6 0.3 G2 17.97 km N/A N/A Running Water 31.96 km N/A 12.1 N/A 0.00 ha* N/A Quarry 0.1 Rock Exposure -11.4.2 0.56 ha 0.84 ha 0.1 basic Arable J1.1 22.70 ha 3.4 45.21 ha 3.6 J1.2 **Amenity Grassland** 8.63 ha 1.3 13.84 ha 1.1 Ephemeral/Short J1.3 0.06 ha 0.01 0.10 ha 0.01 Perennial J2.1.1 N/A N/A **Intact Native** 7.58 km 13.39 km Species-rich Hedge **Intact Species-**J2.1.2 29.12 km N/A 49.25 km N/A poor Hedge **Defunct Native** J2.2.1 N/A 0.67 km N/A 0.38 km Species-rich Hedge **Defunct Species-**J2.2.2 5.71 km N/A 11.01 km N/A

poor Hedge

Trees

Native Species-

rich Hedge with

J2.3.1

10.02 km

N/A

15.97 km

N/A

Table 4.9 Habitat areas and lengths and percentage contribution of each habitat type to the Order Limits and survey area

Habitat type		Area (ha)/length (km) (Order Limits)	% contribution to Order Limits (area only)	Area (ha)/length (km) (survey area)	% contribution to survey area (area only)
Species-poor Hedge with Trees	J2.3.2	13.60 km	N/A	23.48 km	N/A
Other Linear Habitats (including fence, wall, dry ditch, earth bank)	J2.4; J2.5; J2.6; J2.8;	37.50 km	N/A	56.32 km	N/A
Other Area Habitats (including caravan sites, buildings, bare ground)	J3.4; J3.6; J4; J5	13.49 ha	2.0	21.73 ha	1.8

The total area used for the percentage contribution calculations was 668.06 ha for the Order Limits and 1238.97 ha for the survey area

4.3 SECTION A WYLFA TO RHOSGOCH

4.3.1 In the north of this section, within the Horizon Nuclear Power boundary, the habitats were varied and included broadleaved woodland, coniferous woodland, scrub and parcels of semi-improved neutral and marshy grasslands. The remainder of this section was predominantly characterised by improved grassland habitats, grazed by both cattle and sheep; although a small number of arable fields were present. Field boundaries were typically formed by fences, species-rich and species-poor hedgerows. Semi-natural vegetation present within the survey area included semi-improved neutral, poor-semi-improved and marshy grasslands; these were mostly scattered and fragmented, and interspersed amongst improved grasslands.

^{*} The area for quarry is given as 0.00 ha as there is only a very small area located within the survey area (0.14 m²).

- 4.3.2 Instances of running water in the form of streams and rivers and standing water usually in the form of ponds or lakes were fewer in this section than those to the south. A tributary of the River Wygyr would be crossed.
- 4.3.3 Extensive tree cover was generally uncommon in the section, with small isolated parcels of broadleaved plantation woodland and a stand of coniferous plantation woodland present. There were however some small isolated parcels of broadleaved semi-natural woodland such as that around Brynddu that borders the survey area; a number of these were listed as ancient or restored ancient woodland.
- 4.3.4 Of the habitats present within this section, the parcels of semi-improved neutral and marshy grassland, hedgerows, woodland, scrub, running water and ponds have the most ecological value.
- 4.3.5 The notable plant species recorded by the desk study in this section were bluebell, hoary ragwort and water mint; these were all recorded in the Order Limits.
- 4.3.6 The non-native, invasive species recorded in the survey area of this section were New Zealand pigmyweed (*Crassula helmsii*) and giant rhubarb (*Gunnera* sp.); these were incidental sightings made during the various ecology surveys undertaken.

4.4 SECTION B RHOSGOCH TO LLANDYFRYDOG

- 4.4.1 Habitats within this section were generally less diverse than in Section A. The predominant habitat was improved grassland, farmed as pasture, with no arable fields. Neutral semi-improved and marshy grasslands were infrequent and highly fragmented amongst the improved grasslands. This section lies approximately 0.5 km to the east of Llyn Alaw SSSI and there was a connecting drain from the survey area to the lake. Field boundaries were typically formed by fences and some species-rich and species-poor hedgerows.
- 4.4.2 Both running water, in the form of streams and rivers, and standing water, often in the form of ponds, were present within this section.
- 4.4.3 Extensive tree cover was uncommon in the section, with small isolated parcels of broadleaved plantation woodland present. There were however, some small isolated parcels of broadleaved semi-natural woodland within the survey area.

- 4.4.4 Of the habitats present within this section, the parcels of marshy and semiimproved grasslands, hedgerows, woodland, running water and ponds have the most ecological value.
- 4.4.5 The notable plant species recorded by the desk study in this section were bluebell within the Order Limits, and polypody fern and stinking hellebore within 50 m of the Order Limits.
- 4.4.6 The non-native, invasive species recorded in the survey area of this section were Indian balsam, Japanese knotweed, rhododendron (*Rhododendron ponticum*) and Montbretia (*Crocosmia* sp.); these were incidental sightings made during the various ecology surveys undertaken.

4.5 SECTION C LLANDYFRYDOG TO B5110 NORTH OF TALWRN

- 4.5.1 The majority of this section was also characterised by improved grassland habitats, grazed by both cattle and sheep, interspersed with a small number of arable fields. Field boundaries were typically formed by fences and hedgerows. Defunct species-rich and species-poor hedgerows were also present, but recorded less frequently. Semi-natural vegetation includes semi-improved neutral and marshy grasslands; these were mostly fragmented and interspersed amongst improved grasslands although some larger areas of marshy grassland bordered Cors Erddreiniog NNR and SSSI.
- 4.5.2 The eastern extents of this section bordered the Cors Erddreiniog NNR and SSSI, which is a large calcareous valley mire, or fen, of national importance and forms part of the Corsydd Mon/Anglesey Fens SAC composite sites, and Corsydd Môn a Llyn/Anglesey and Llyn Fens Ramsar. Cors Erddreiniog contains a mosaic of wetland habitats including valley mire, wet dwarf shrub heath and basic flush. A small area of dry heath acid grassland mosaic is also present within the reserve.
- 4.5.3 Both running water in the form of streams and rivers and standing water often in the form of ponds or lakes were present within this section, in particular the River Clai and River Erddreiniog which cross the study area. These watercourses provided a link between Cefni Reservoir and the Cors Erddreiniog habitats.
- 4.5.4 Extensive tree cover was generally uncommon in the section; however there were small isolated parcels of broadleaved semi-natural woodland and mixed plantations including the linear strip along the River Erddreiniog which is classified as restored ancient semi-natural woodland.

- 4.5.5 Of the habitats present within this section, the parcels of marshy (in particular the area of species-rich marshy grassland at Cae Canol-dydd), unimproved and semi-improved grasslands, hedgerows, woodland, running water and ponds have the most ecological value. Habitats within the Cors Erddreiniog NNR/SSSI and Anglesey Fens SAC/Anglesey and Llyn Fens Ramsar have high botanical interest.
- 4.5.6 The notable plant species recorded by the desk study in this section were lesser water-plantain within the Order Limits, and lesser pond-sedge, water mint, marsh stitchwort, lesser tussock-sedge and blunt-flowered rush within 50 m of the Order Limits.
- 4.5.7 No non-native, invasive species were recorded in the survey area of this section.

4.6 SECTION D B5110 NORTH OF TALWRN TO THE CEINT

- 4.6.1 As with previous sections, improved grasslands were the dominant habitat type within this section and again they were mostly grazed by cattle and sheep. A small number of arable fields were also present. Neutral semi-improved and semi-improved acid grasslands and marshy grasslands were occasional and interspersed within the improved grasslands. An area of swamp habitat was also recorded on the eastern boundary of the survey area.
- 4.6.2 Caeau Talwrn SSSI is comprised of several parcels that fall within this section. Two small parcels of the SSSI lie within the survey area, but not the within the Order Limits at two locations, one to the east and one to the west of the Order Limits in this section. Caeau Talwrn SSSI is known for its areas of interest for neutral grassland and mire vegetation. The vegetation of this site is of particular interest as it includes not only dry neutral grasslands and various types of mire especially rich-fen, fen-meadow and rush pasture, but also shows the transitions between the various types particularly well.
- 4.6.3 Both running water, in the form of streams and rivers, and standing water, often in the form of ponds or lakes, were present within this section, although fewer ponds were present than in the other sections. Watercourses bisected the habitats, including the River Ceint, which links Malltraeth Marshes to the west and Cors Bodeilio wetland habitats to the east of the survey area.
- 4.6.4 Extensive tree cover was uncommon in the section, although small isolated parcels of broadleaved semi-natural woodland were present; one of which is

- classified as a CWS, namely Gylched Covert, which is within the survey area.
- 4.6.5 Of the habitats present within this section, the parcels of unimproved, marshy (in particular the area of species-rich marshy grassland at Cae Canol-dydd) and semi-improved grasslands, hedgerows, woodland, swamp, running water and ponds have the most ecological value. Those habitats within the Caeau Talwrn SSSI have high botanical interest.
- 4.6.6 The notable plant species recorded by the desk study in this section were bluebell, lesser pond-sedge and water mint within the Order Limits, and blunt-flowered rush within 50 m of the Order Limits.
- 4.6.7 The non-native, invasive species recorded in the survey area of this section were Indian balsam and Montbretia; these were incidental sightings made during the various ecology surveys undertaken.

4.7 SECTION E CEINT TO THE AFON BRAINT

- 4.7.1 Section E was characterised by improved grassland habitat, grazed by cattle and sheep, with one parcel of arable land present. Semi-improved neutral and marshy grasslands were interspersed throughout this section, with semi-improved acid grasslands and dense/continuous scrub confined to one or two small isolated areas. Intact native species-rich hedgerows (with and without trees) were frequent in this section, as were species-poor and defunct hedges.
- 4.7.2 Both running water in the form of streams and rivers and standing water were present within this section. Standing water was present in the form of ponds and drains. Substantial areas of woodland habitat were infrequent and restricted to three or four blocks of mixed plantation and broadleaved semi-natural woodland.
- 4.7.3 Of the habitats present within this section, the parcels of marshy and semiimproved grasslands, hedgerows, woodland, running water and ponds have the most ecological value.
- 4.7.4 The notable plant species recorded by the desk study in this section were yellow-rattle and smooth tare within 50 m of the Order Limits.
- 4.7.5 The non-native, invasive species recorded in the survey area of this section were Indian balsam, Japanese knotweed and giant rhubarb; these were incidental sightings made during the various ecology surveys undertaken.

4.8 SECTION F AFON BRAINT TO PENTIR

Overhead Line (OHL) Section

- 4.8.1 The Anglesey area of this section was predominantly characterised by poor semi-improved, marshy and amenity grassland habitats. Intact native species-rich hedgerows with trees were present, as were the species-poor and defunct classifications.
- 4.8.2 Both running water in the form of streams and rivers and standing water were present within this area; the most notable of which was the River Braint.
- 4.8.3 The Gwynedd area of this section included large areas of improved grassland habitats. Areas of scrub, neutral and marshy grasslands were interspersed throughout. Intact native species-rich and native species-rich hedgerows with trees were frequent as were the species-poor and defunct classifications. Small areas of unimproved grassland and acid dry dwarf shrub heath were present by Pentir Substation.
- 4.8.4 Running water in the form of drainage ditches and standing water often in the form of ponds were present.
- 4.8.5 Of the habitats present within this section, the parcels of marshy, unimproved and semi-improved grasslands, acid dry dwarf shrub heath, hedgerows, woodland, swamp, running water and ponds have the most ecological value.
- 4.8.6 The notable plant species recorded by the desk study in this section were flattened meadow-grass, broad-leaved helleborine, spurge laurel, small pondweed, downy hemp-nettle and *Parmotrema perlatum;* all were recorded within the Order Limits. The record for downy hemp-nettle which is now classified as extinct in the UK was dated 1975.
- 4.8.7 The non-native, invasive species recorded in the survey area of this section were Indian balsam, Japanese knotweed and rhododendron; these were incidental sightings and/or Cofnod records.

Braint THH/CSEC Site

4.8.8 The dominant habitat type for this THH/CSEC site was improved grassland. Adjacent to the Braint site there was poor semi-improved grassland to the west and small pockets of marshy grassland and broadleaved semi-natural woodland to the north and east, including a pond to the east within the area of semi-improved grassland.

Tunnel Order Limits

- 4.8.9 The tunnel Order Limits within Section F included further areas of grassland, however tree cover was more extensive and included planted coniferous, planted mixed, and broadleaved semi-natural woodlands including Nant-ygarth. A number of these are classified as ancient or restored ancient semi-natural woodlands. A small fenced area of swamp habitat was also recorded within the grounds of the Conway Centre. The terrestrial habitats present within the tunnel Order limits would not be affected directly.
- 4.8.10 The Menai Strait crossing zone encompasses a range of diverse terrestrial, intertidal and subtidal habitats, the marine elements of which have been described in more detail in the Appendix 9.16 Intertidal Report (**Document 5.9.2.16**) and Appendix 9.17 Subtidal Report (**Document 5.9.2.17**). For the purpose of this Phase 1 report the area has been mapped as intertidal cobbles/shingle.

Ty Fodol THH/CSEC Site

4.8.11 The dominant habitat type for this THH/CSEC site was improved grassland. Intact native species-rich hedgerows were present to the north and east of the Ty Fodol site. Coed Nant-y-Garth landfill site enclosed by mixed seminatural woodland is present to the south where the OHL will oversail the ravine.

5 Conclusion

- 5.1.1 The survey area encompasses a variety of habitats ranging from arable and improved grassland, to dry dwarf shrub heath and broadleaved woodland. There are also aquatic habitats including ponds, drains, streams, rivers and the Menai Strait (discussed in separate marine reports: Appendix 9.16 Intertidal Report (**Document 5.9.2.16**) and Appendix 9.17 Subtidal Report (**Document 5.9.2.17**)). The dominant habitat type within the survey area is improved grassland, comprising 70.1% of the survey area and 68.7% of the Order Limits.
- 5.1.2 Habitats within the Order Limits would be temporarily lost or disturbed, or permanently lost, to facilitate construction and operation of the Proposed Development. However the majority of habitat would be fully re-instated to its former habitat type on completion of the construction works so there would be limited long-term effects. At the THH/CSECs and the extension to Pentir Substation, and within the footprint of the pylon foundations, habitat would be permanently lost and fragmented; however habitat would be replaced on a like for like basis where possible, and areas of new habitat would be created as part of the landscape mitigation which could lead to an overall increase in habitat diversity over time.
- 5.1.3 Statutory designated sites have been identified within the study area; a number of these sites are located within the Order Limits which could result in a direct impact through habitat loss or changes to their designating features. Numerous non-statutory designated sites have also been identified within the study area.
- 5.1.4 Effects as a result of the Proposed Development and mitigation measures are detailed in Chapter 9, Ecology and Nature Conservation (**Document 5.9**). Further details on the mitigation measures are provided in the Biodiversity Mitigation Strategy (**Document 7.7**). Potential enhancement opportunities are detailed within the Enhancement Strategy (**Document 7.13**) which includes opportunities for enhancement of habitats.

6 References

Ref 1: CIEEM (2012); Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management (CIEEM), Winchester.

Ref 2: Welsh Government. The Environment (Wales) Act 2016 Part 1 Interim guidance https://www.biodiversitywales.org.uk/Environment-Wales-Act

Ref 3: Welsh Government (2016); Planning Policy Wales Edition 9 – November 2016. http://gov.wales/docs/desh/publications/161117planning-policy-wales-edition-9-en.pdf

Ref 4: IACC and Gwynedd Council (2017); Anglesey and Gwynedd Joint Local Development Plan 2011-2026.

Ref 5: Joint Nature Conservation Committee (2010); Handbook for phase 1 habitat survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough.

<u>Websites</u>

Environment (Wales) Act 2016:

http://www.legislation.gov.uk/anaw/2016/3/contents/enacted

HMSO The Wildlife and Countryside Act 1981 (as amended): http://www.legislation.gov.uk/ukpga/1981/69

JNCCs Seabird Monitoring Programme: http://jncc.defra.gov.uk/smp/

On-line Aerial Mapping: Bing, GiGi and Google

The Conservation of Habitats and Species Regulations 2017: http://www.legislation.gov.uk/uksi/2010/490/contents/made

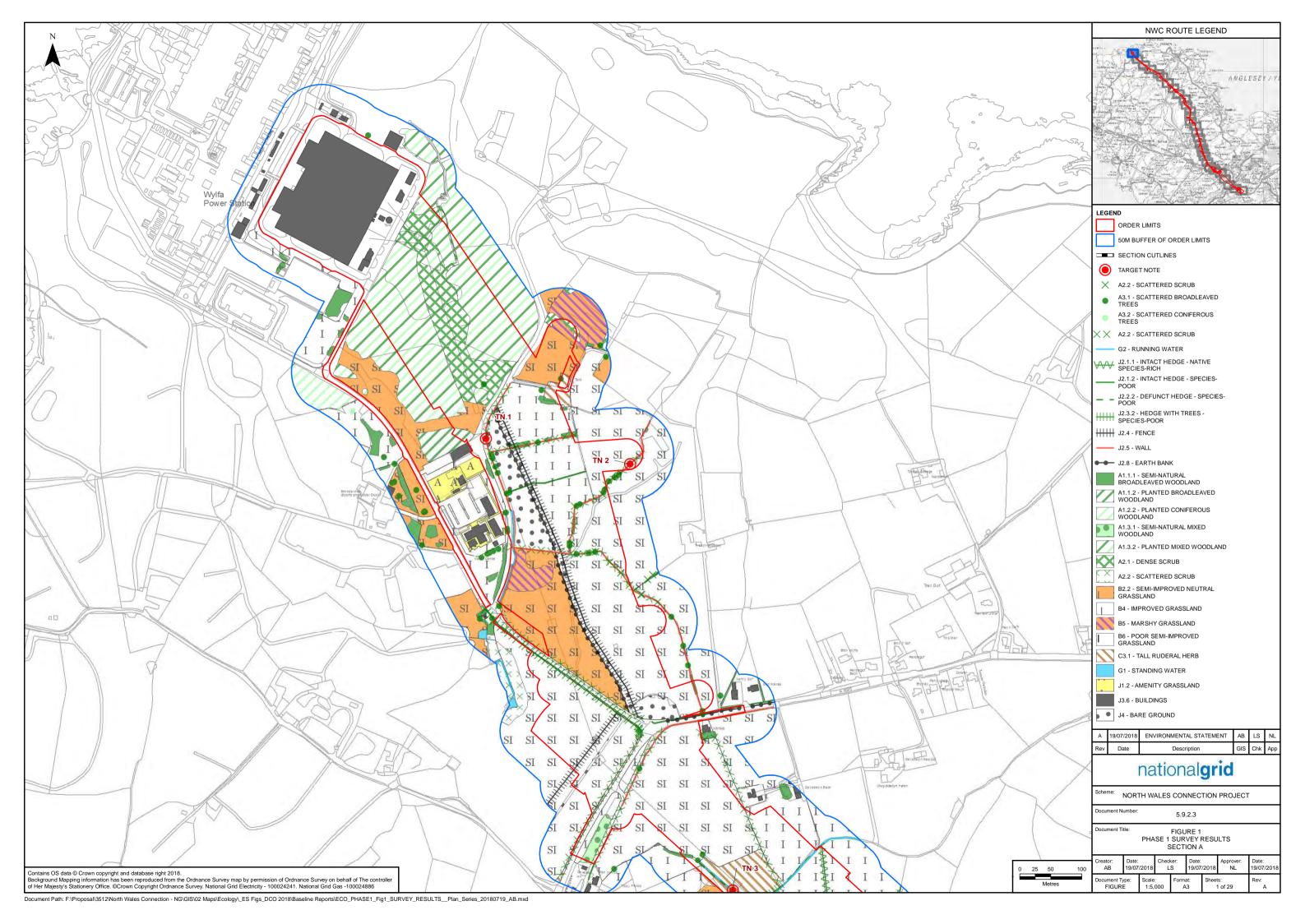
The Countryside and Rights of Way Act 2000: http://www.legislation.gov.uk/ukpga/2000/37/contents

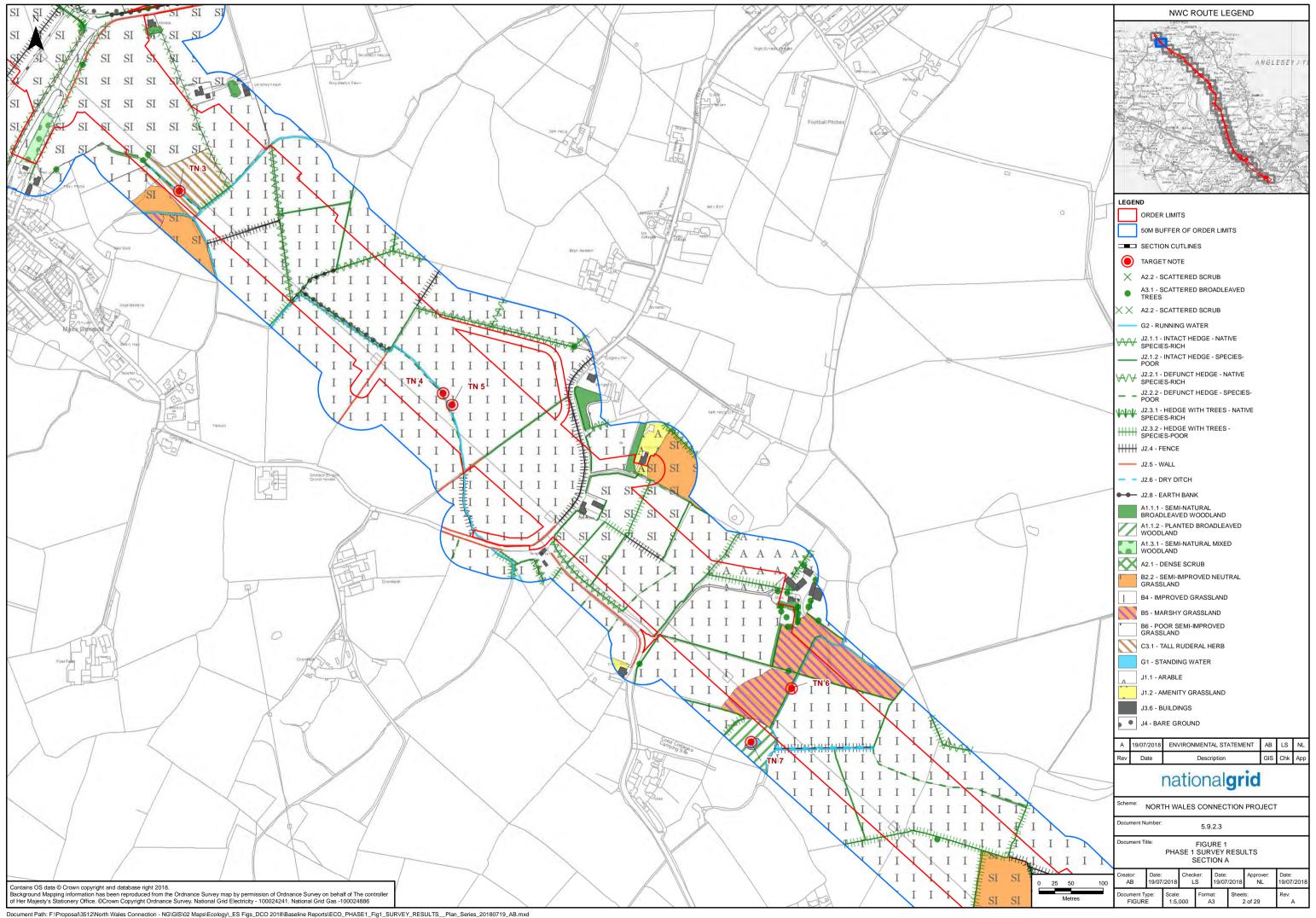
The Hedgerows Regulations 1997:

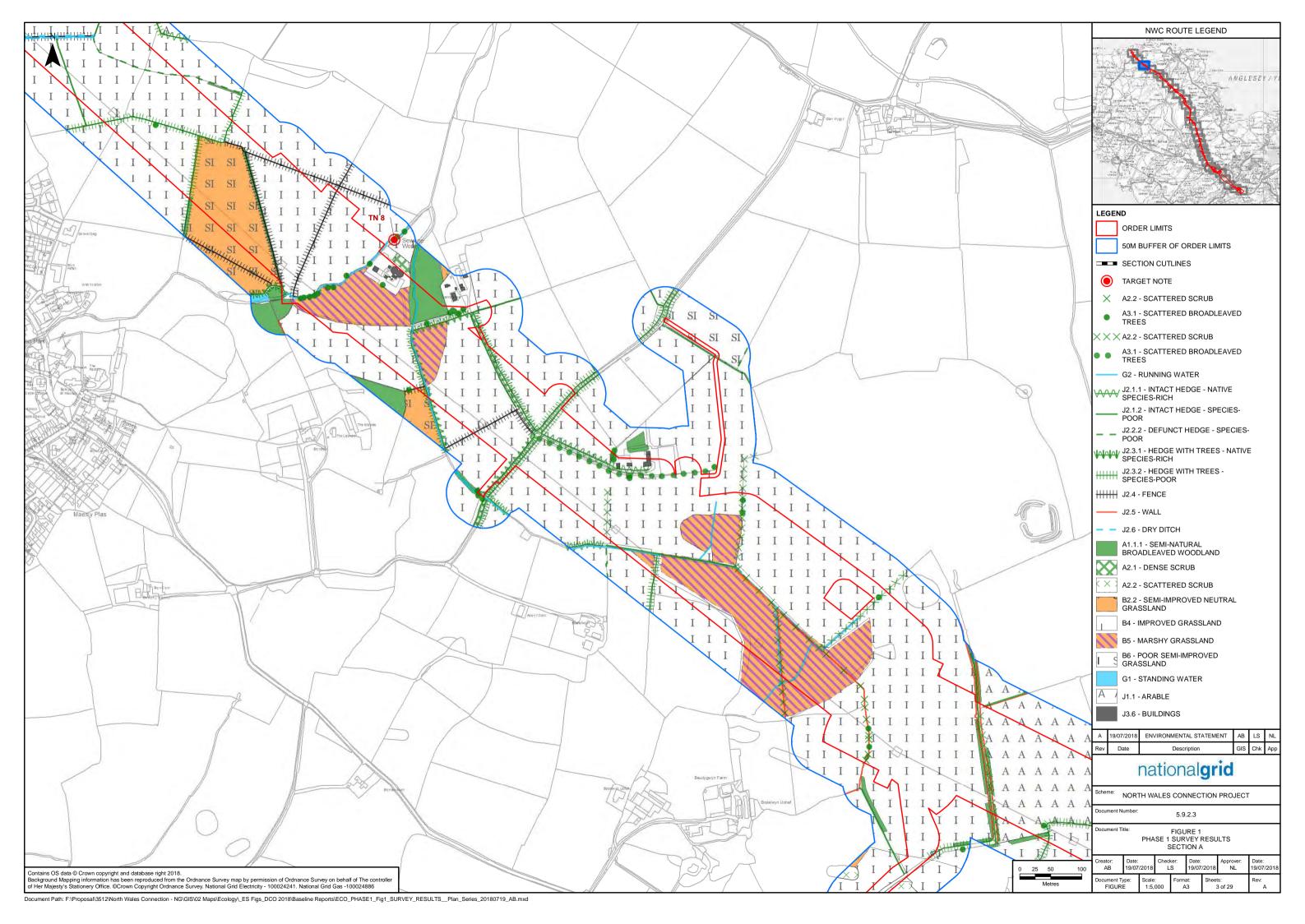
http://www.legislation.gov.uk/uksi/1997/1160/contents/made

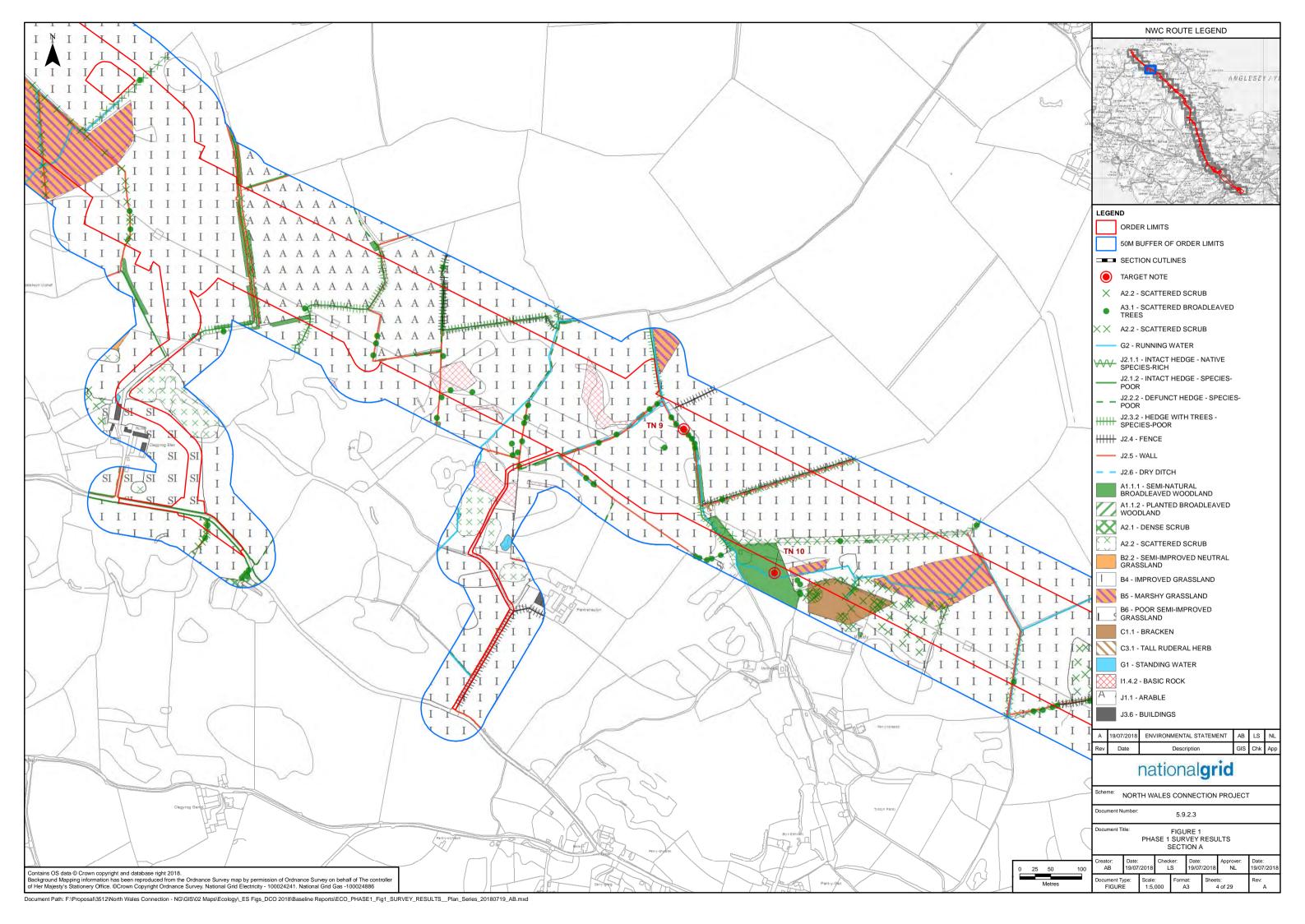
Figures

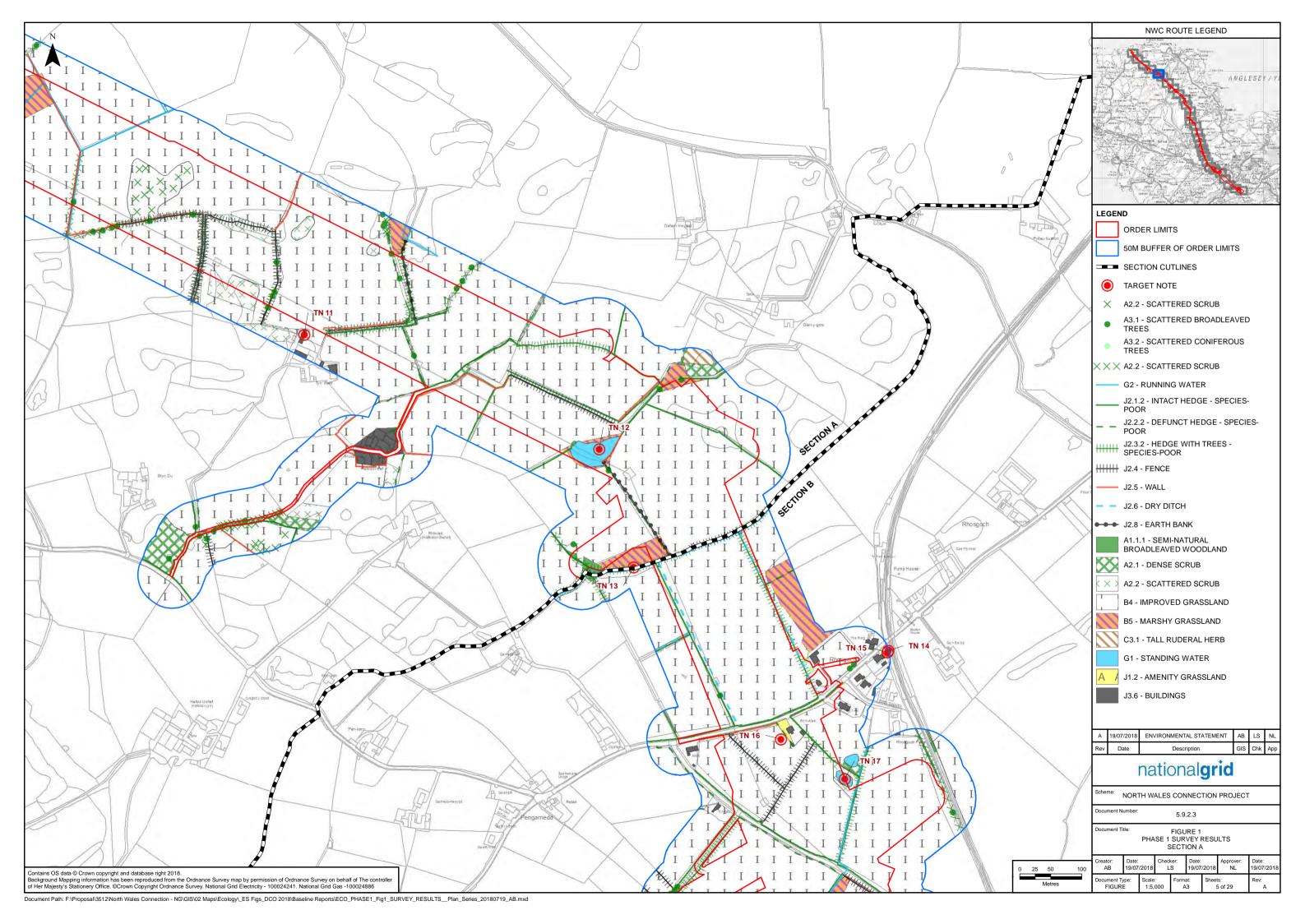
Page intentionally blank

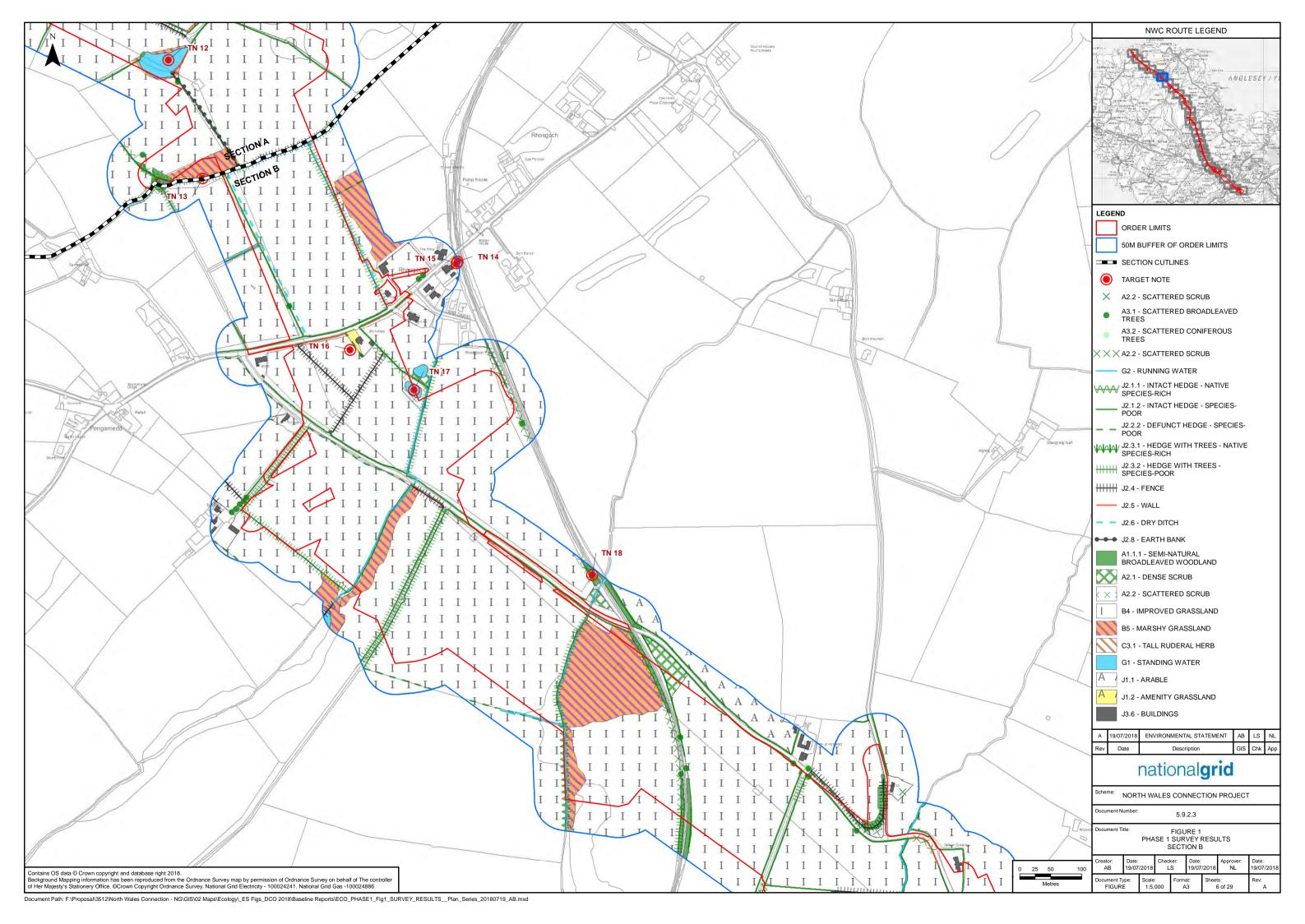


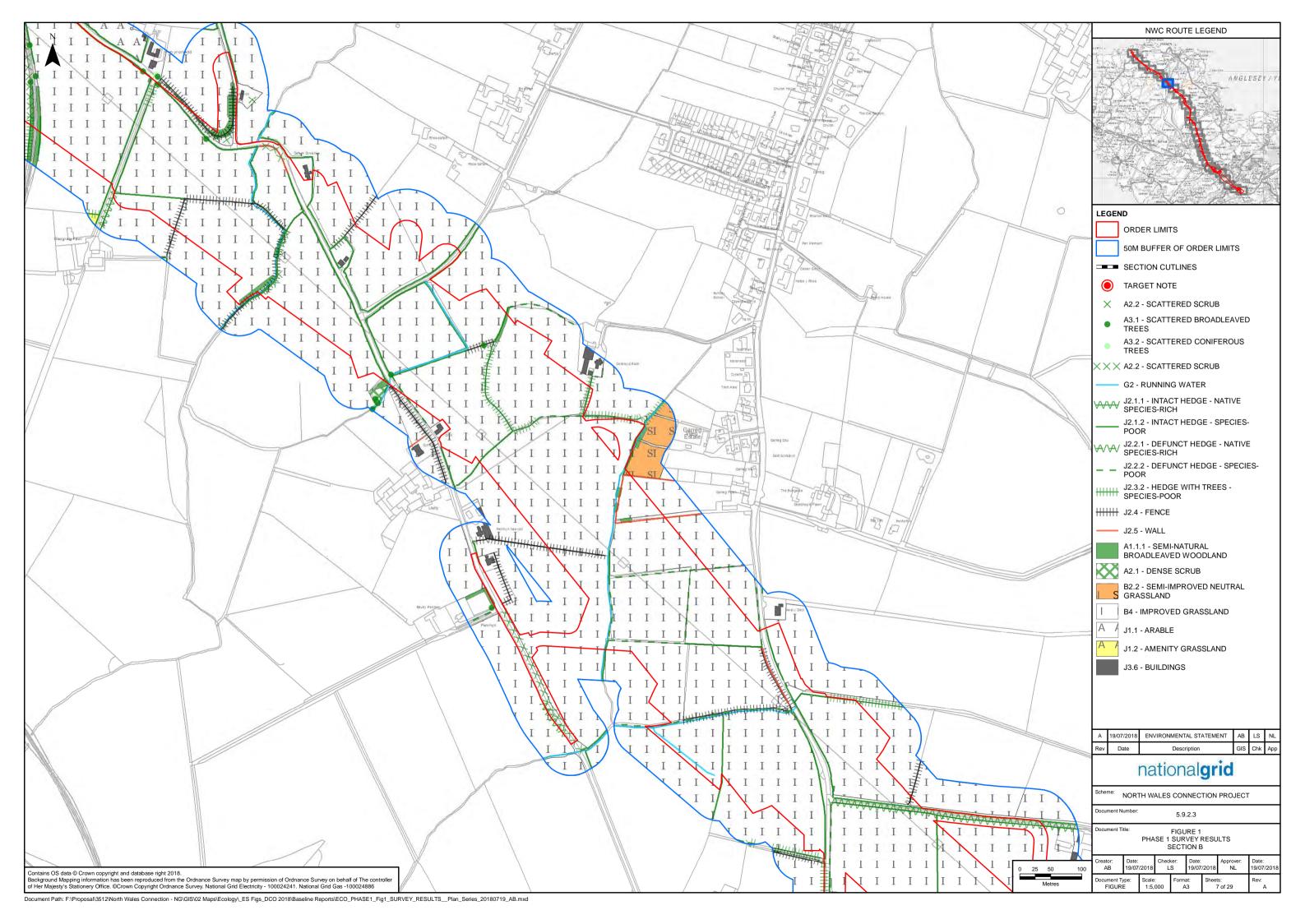


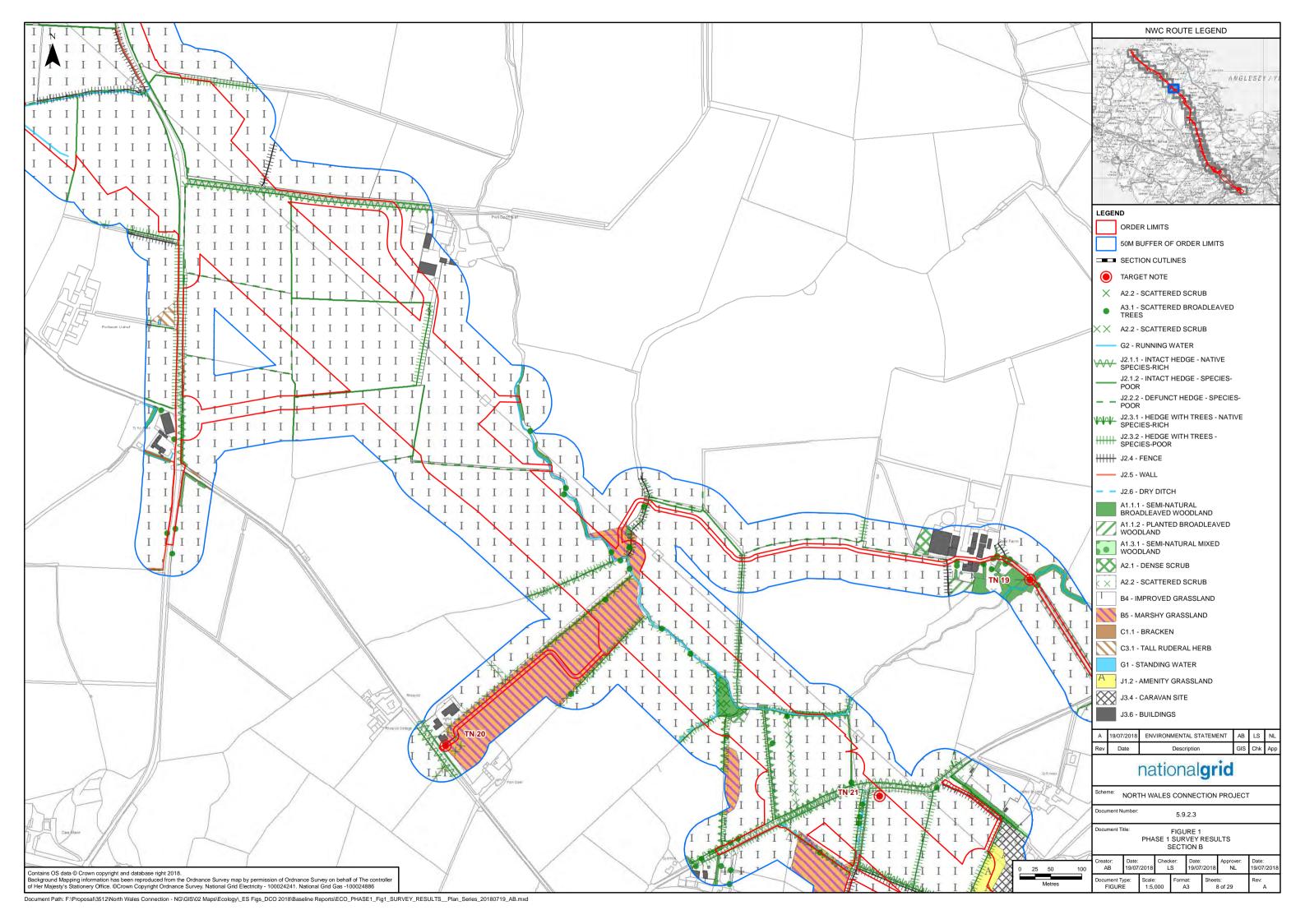


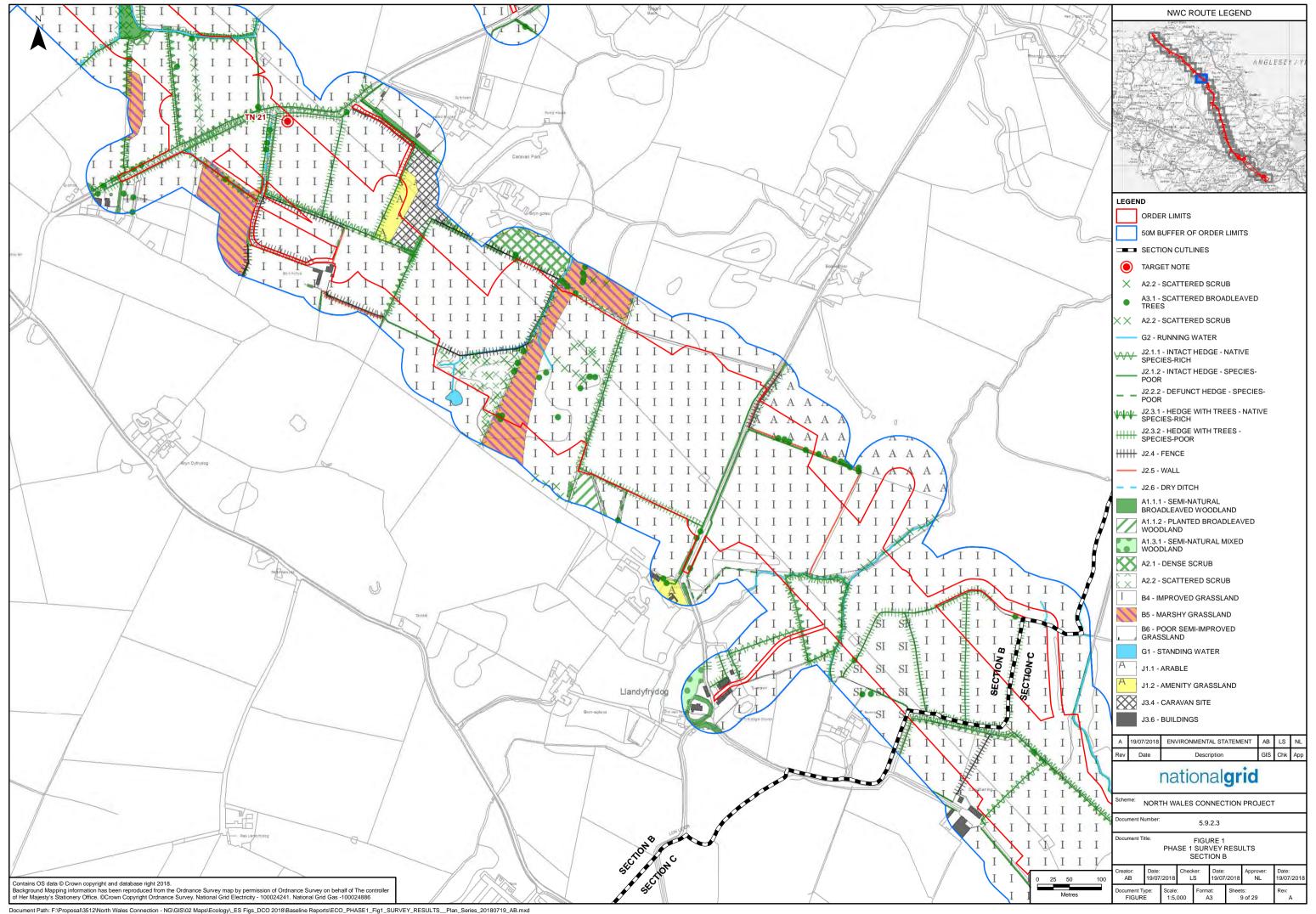


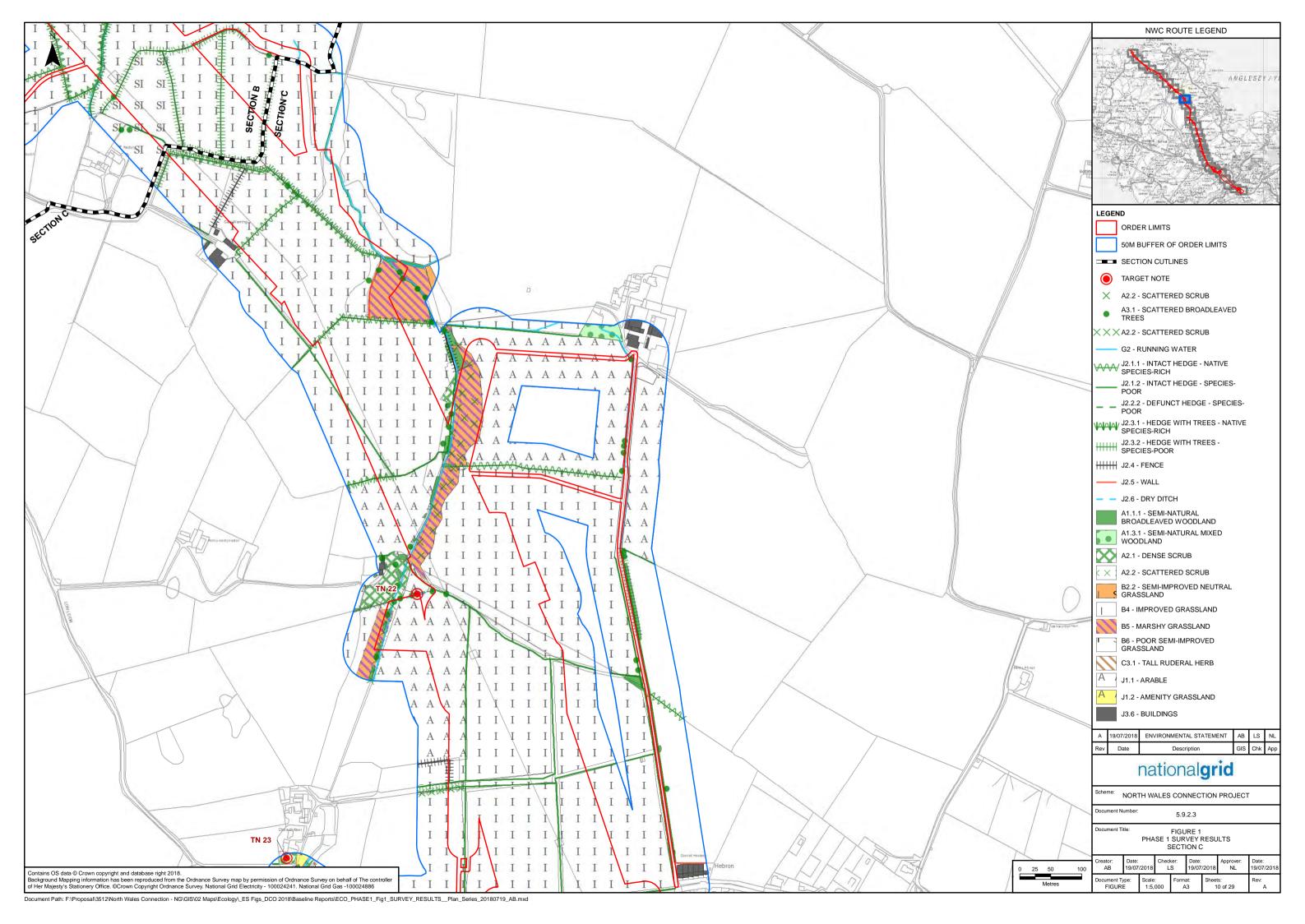


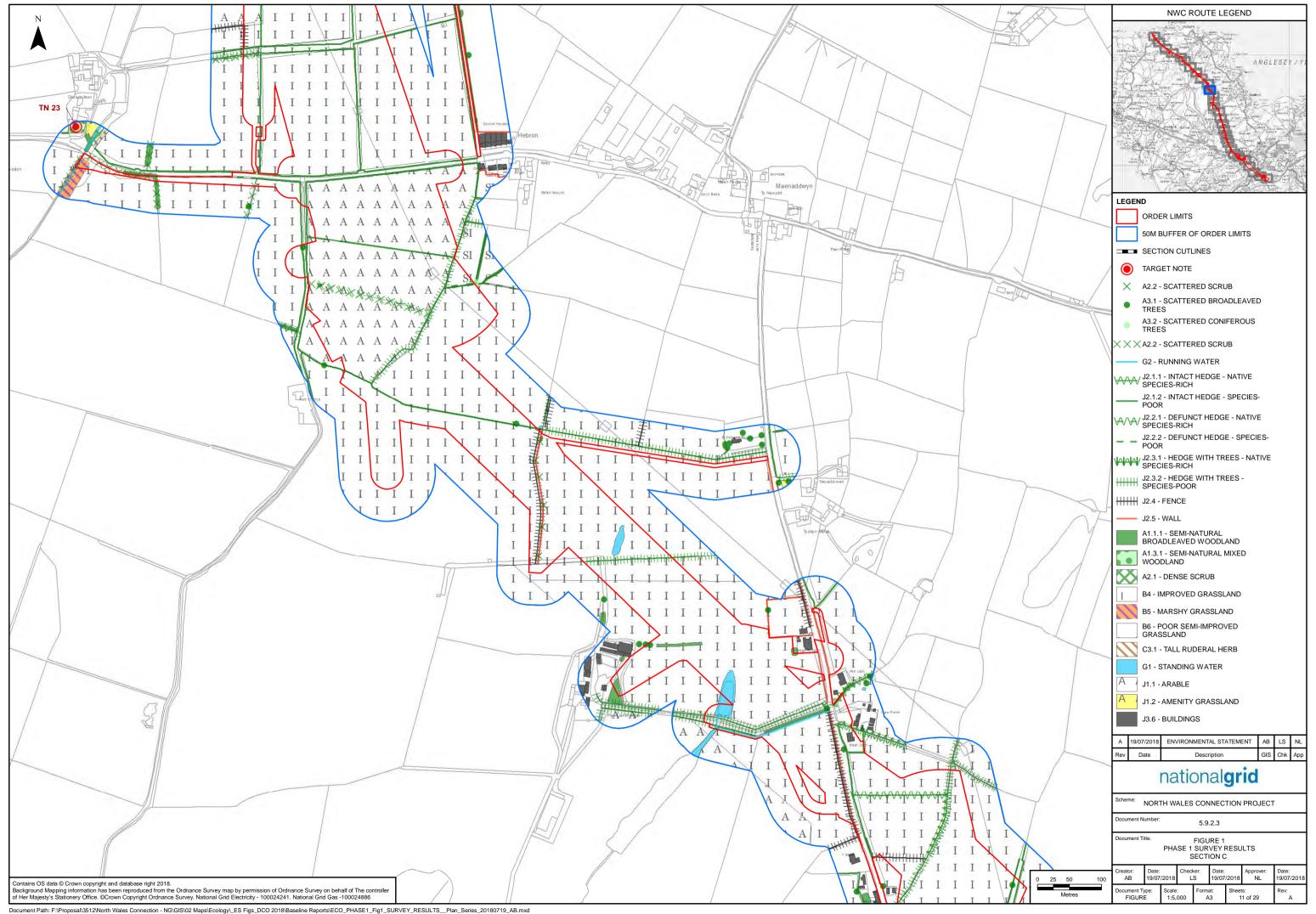


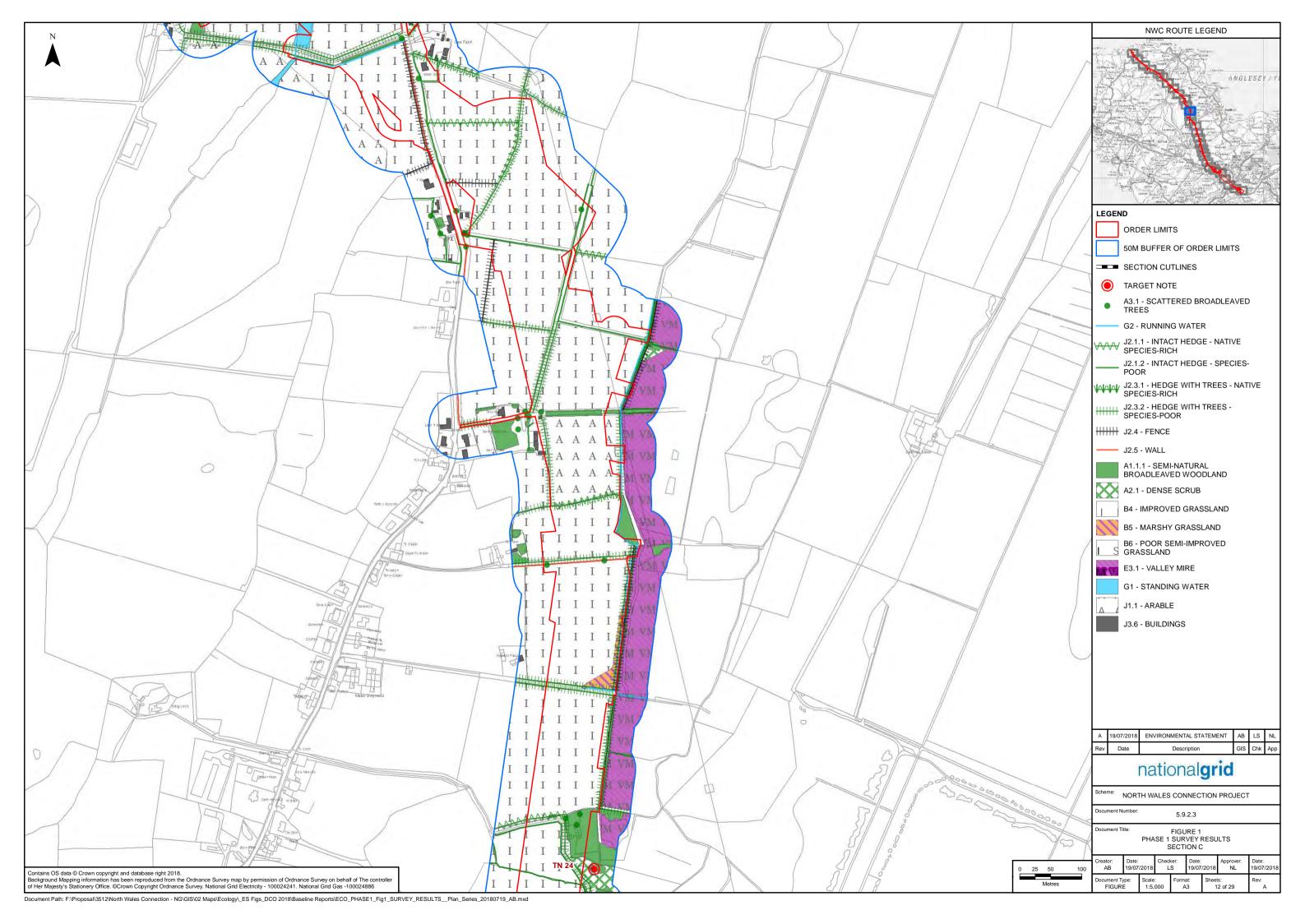


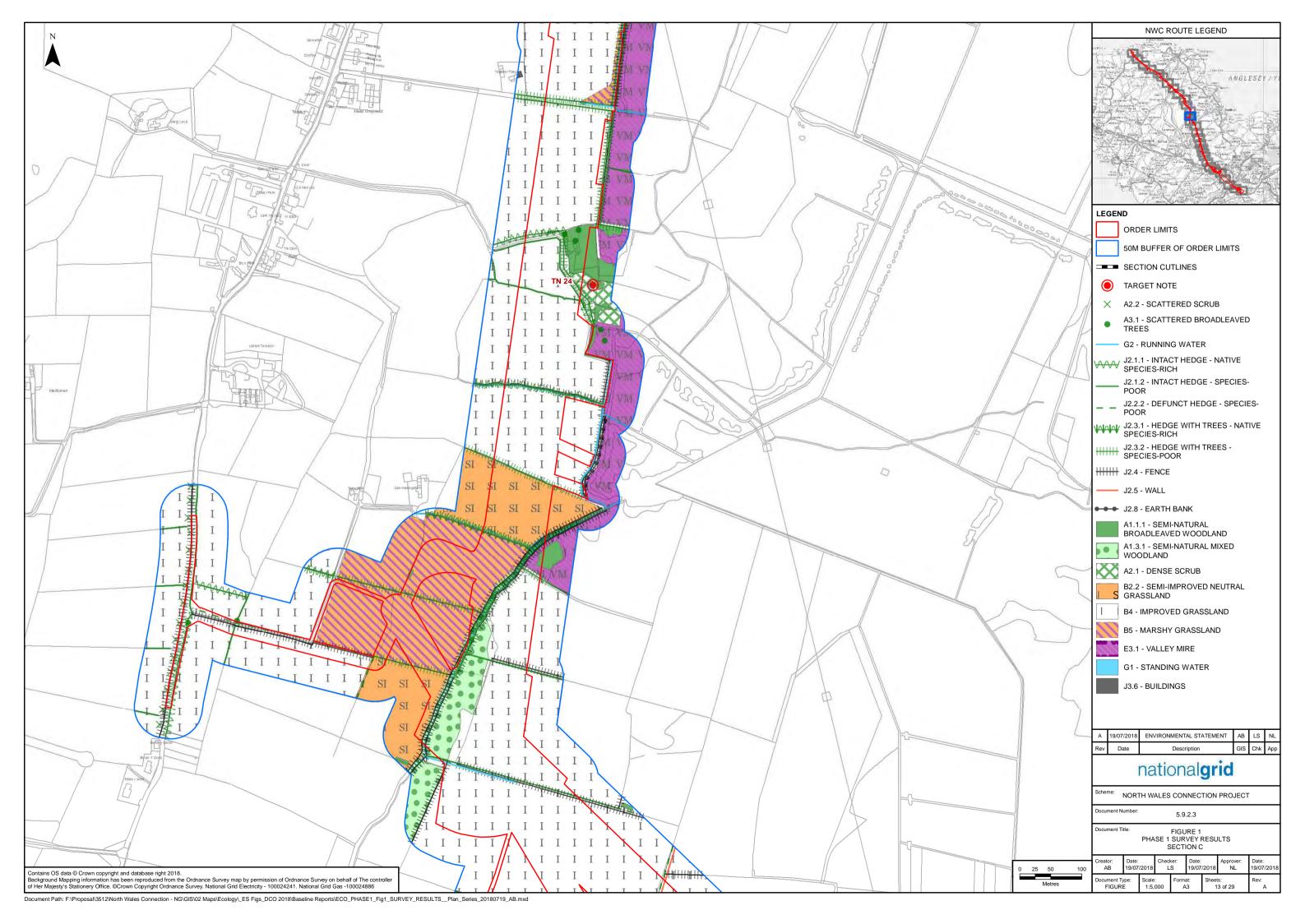


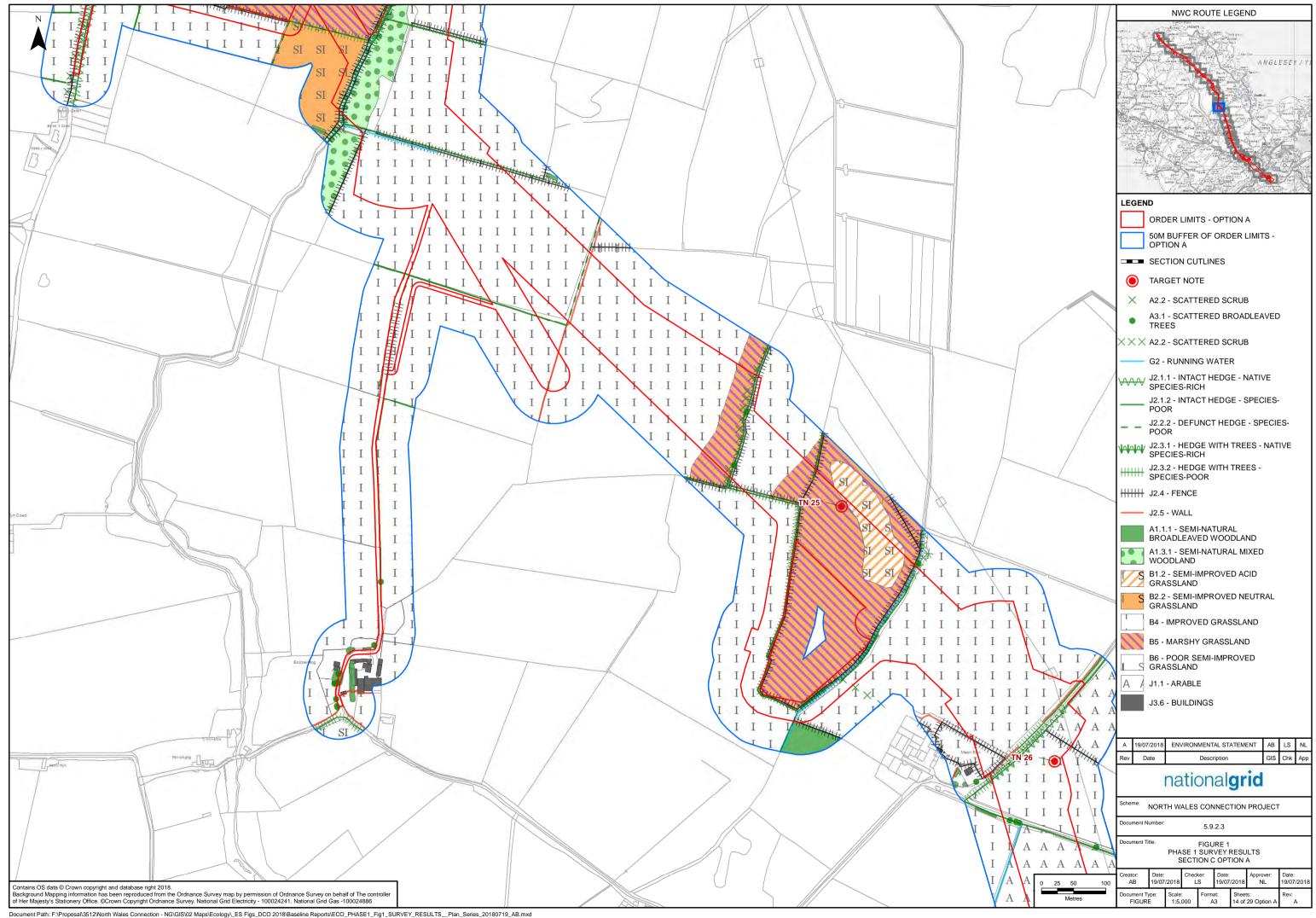


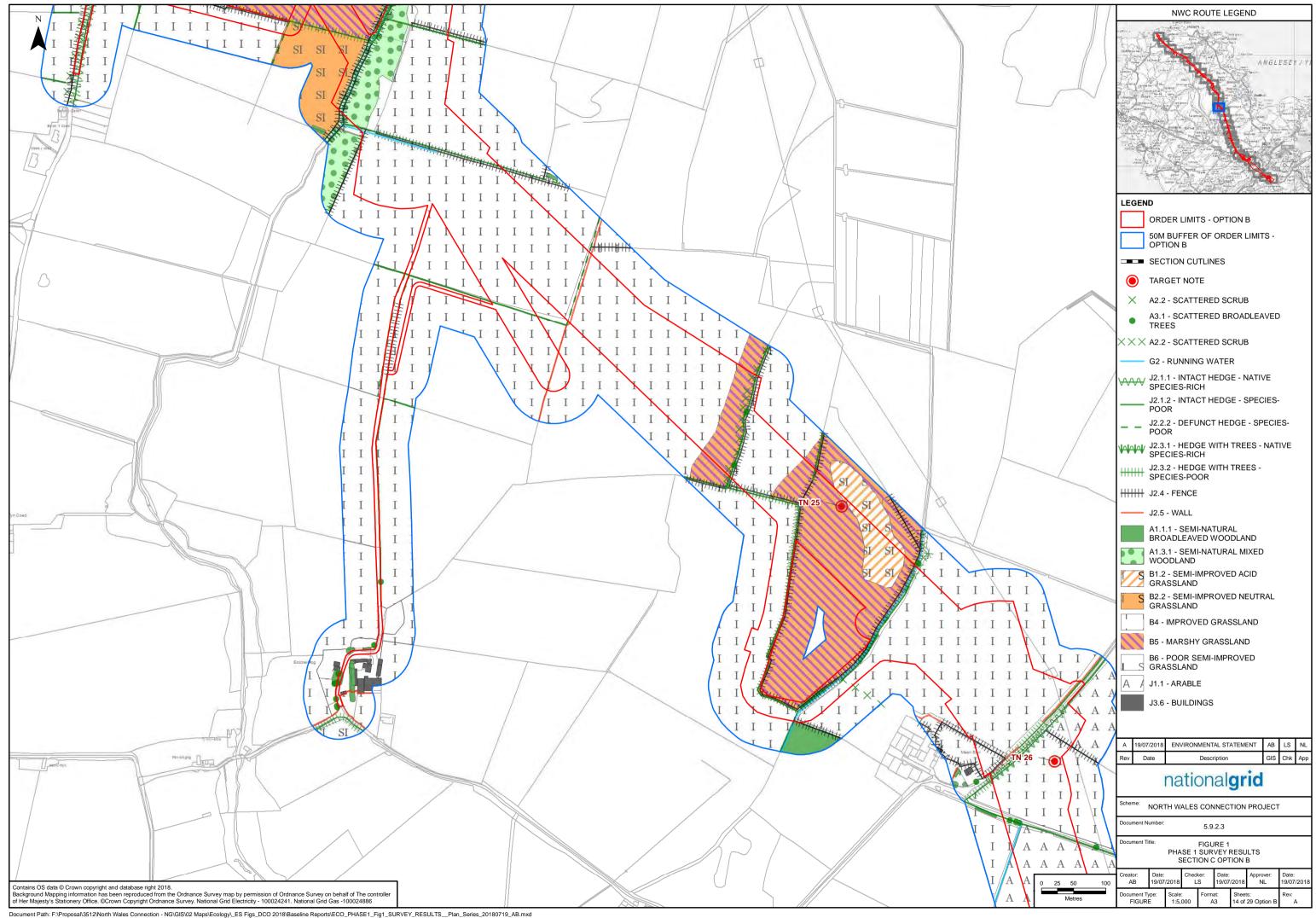


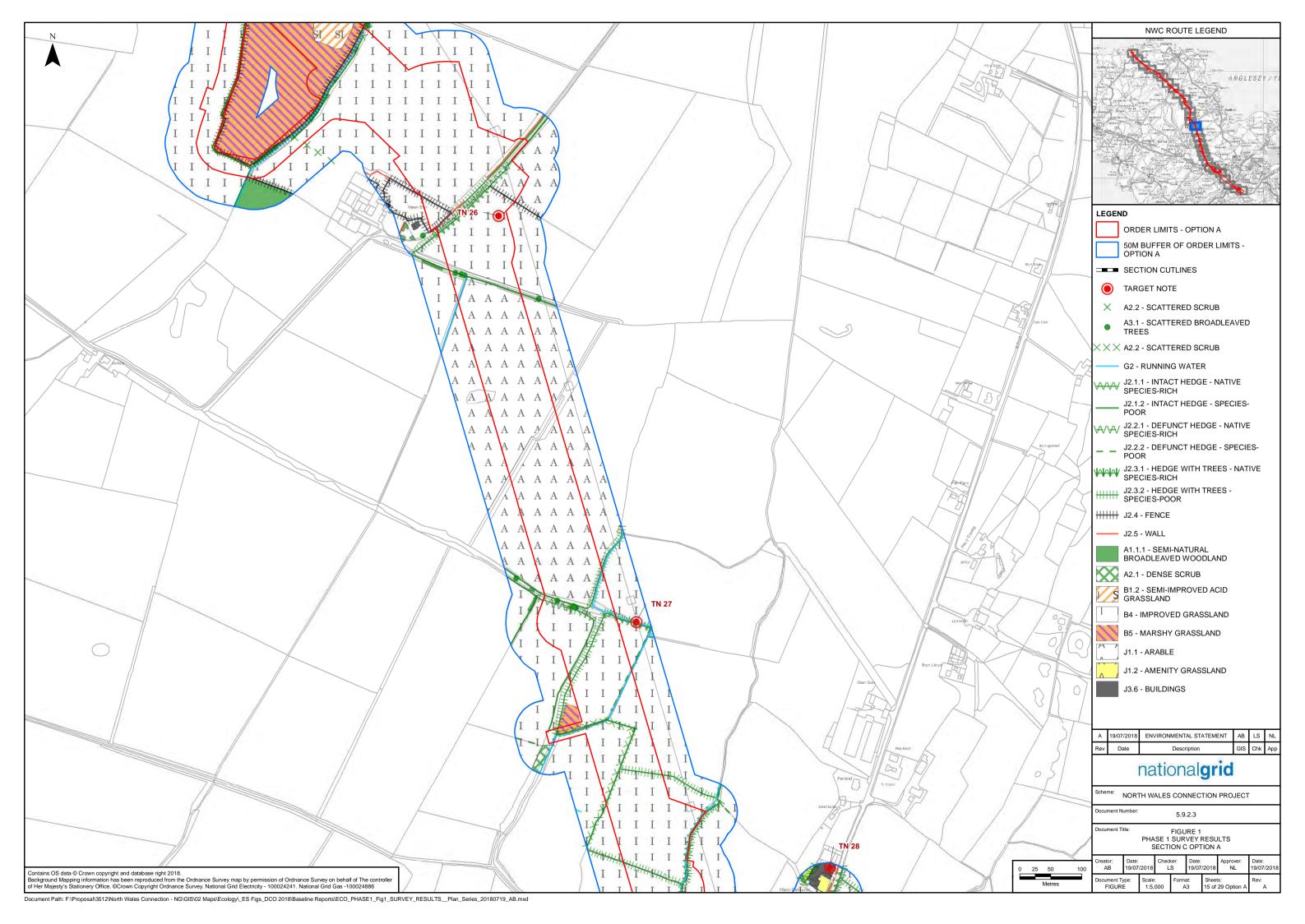


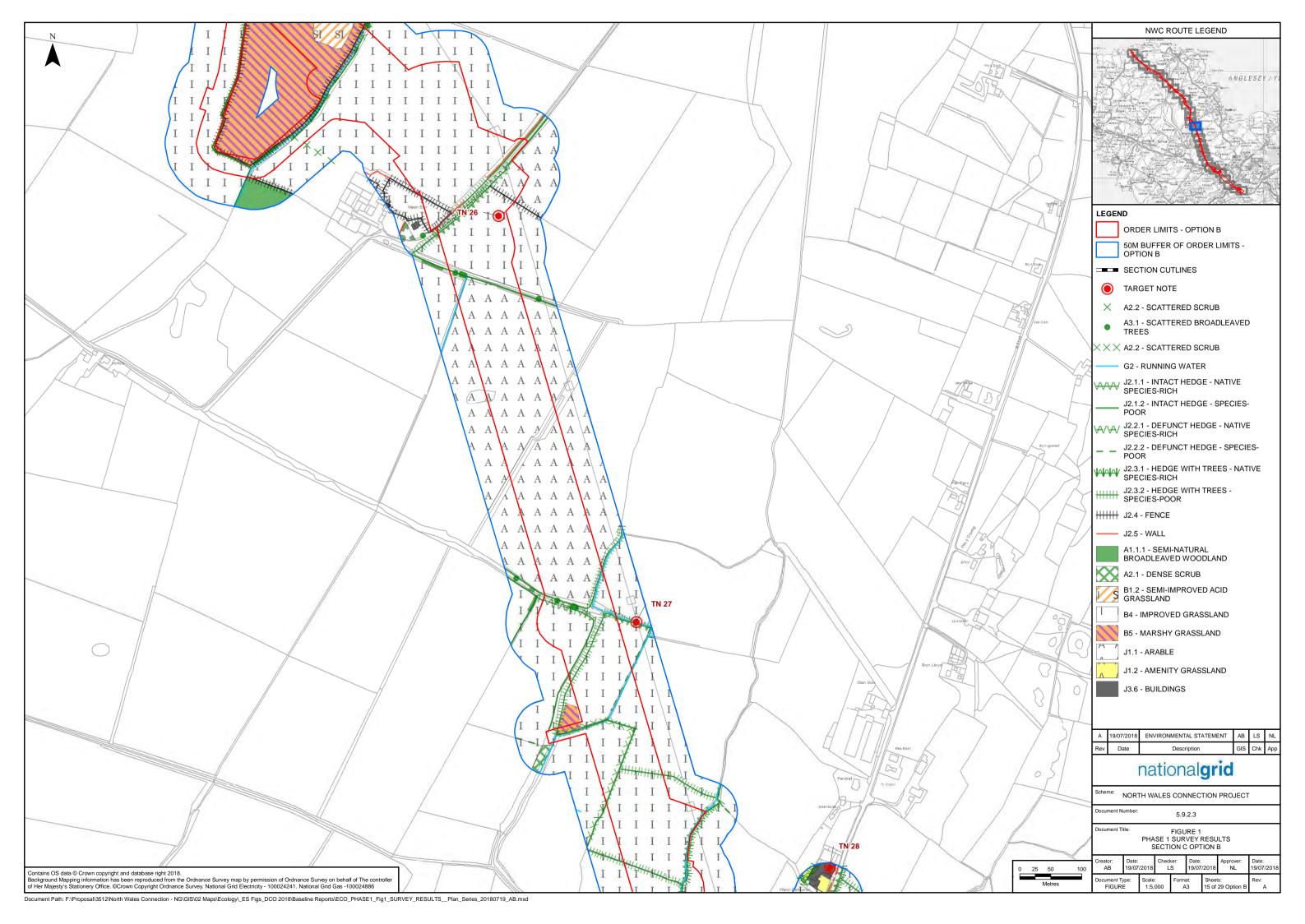


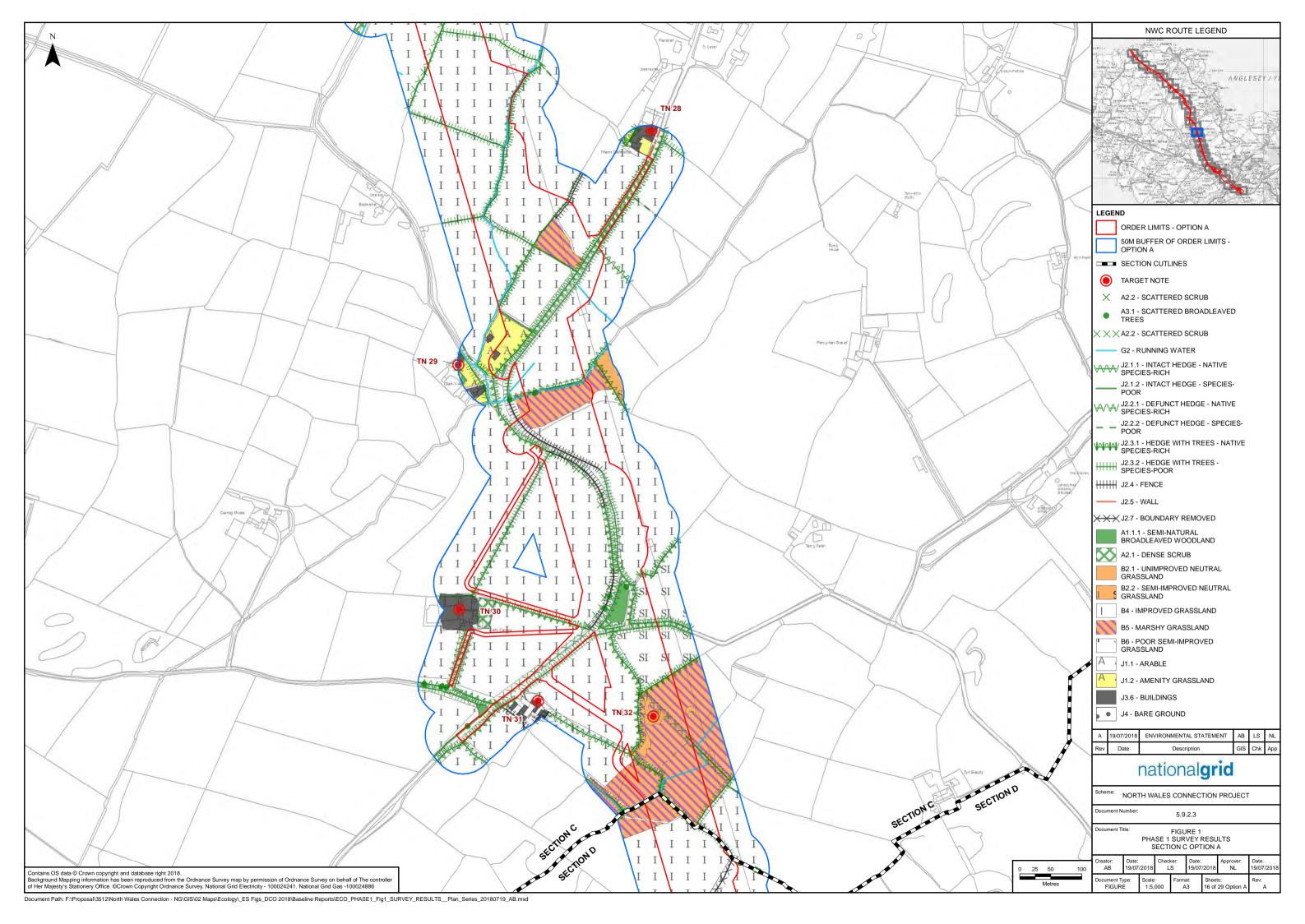


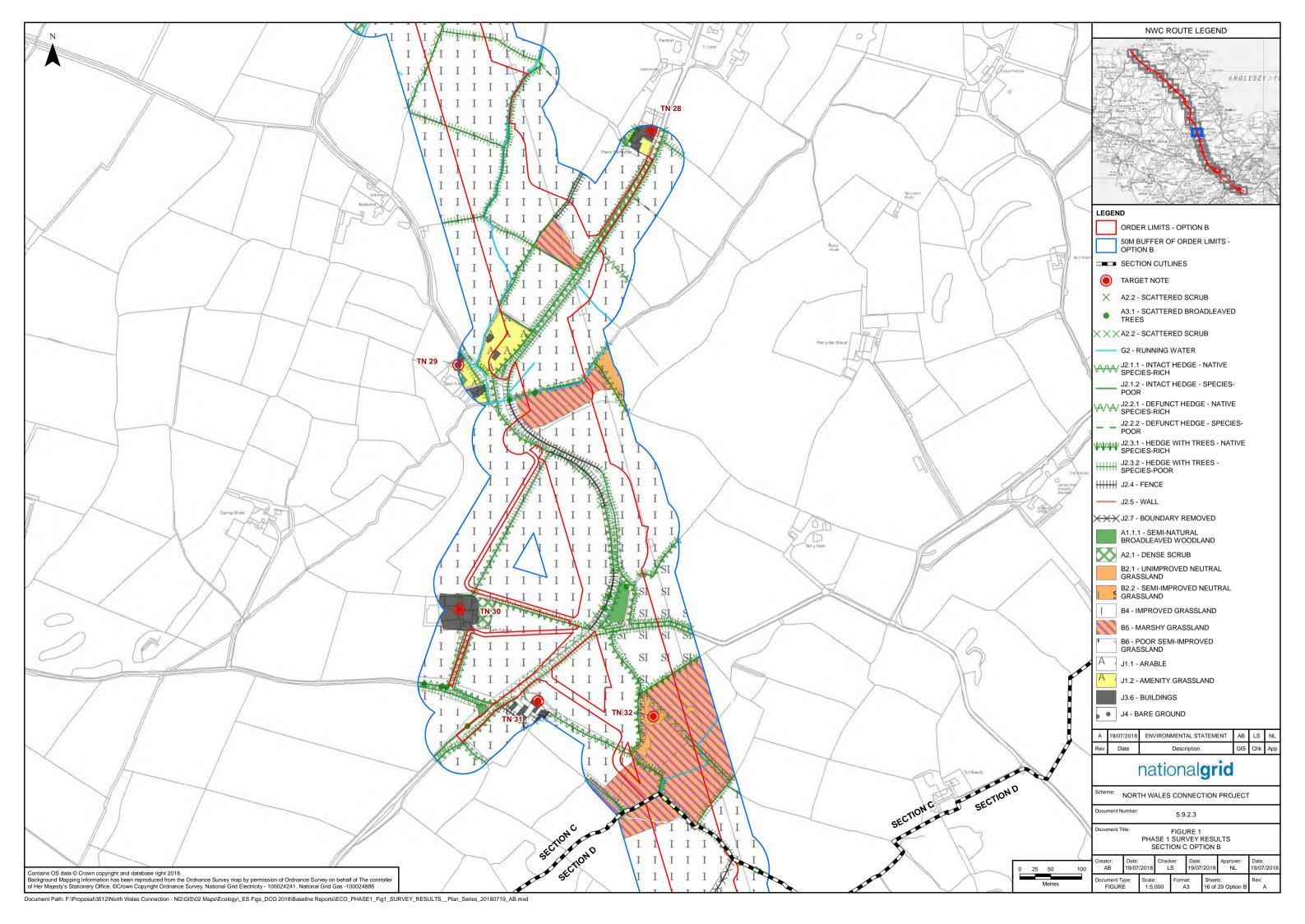


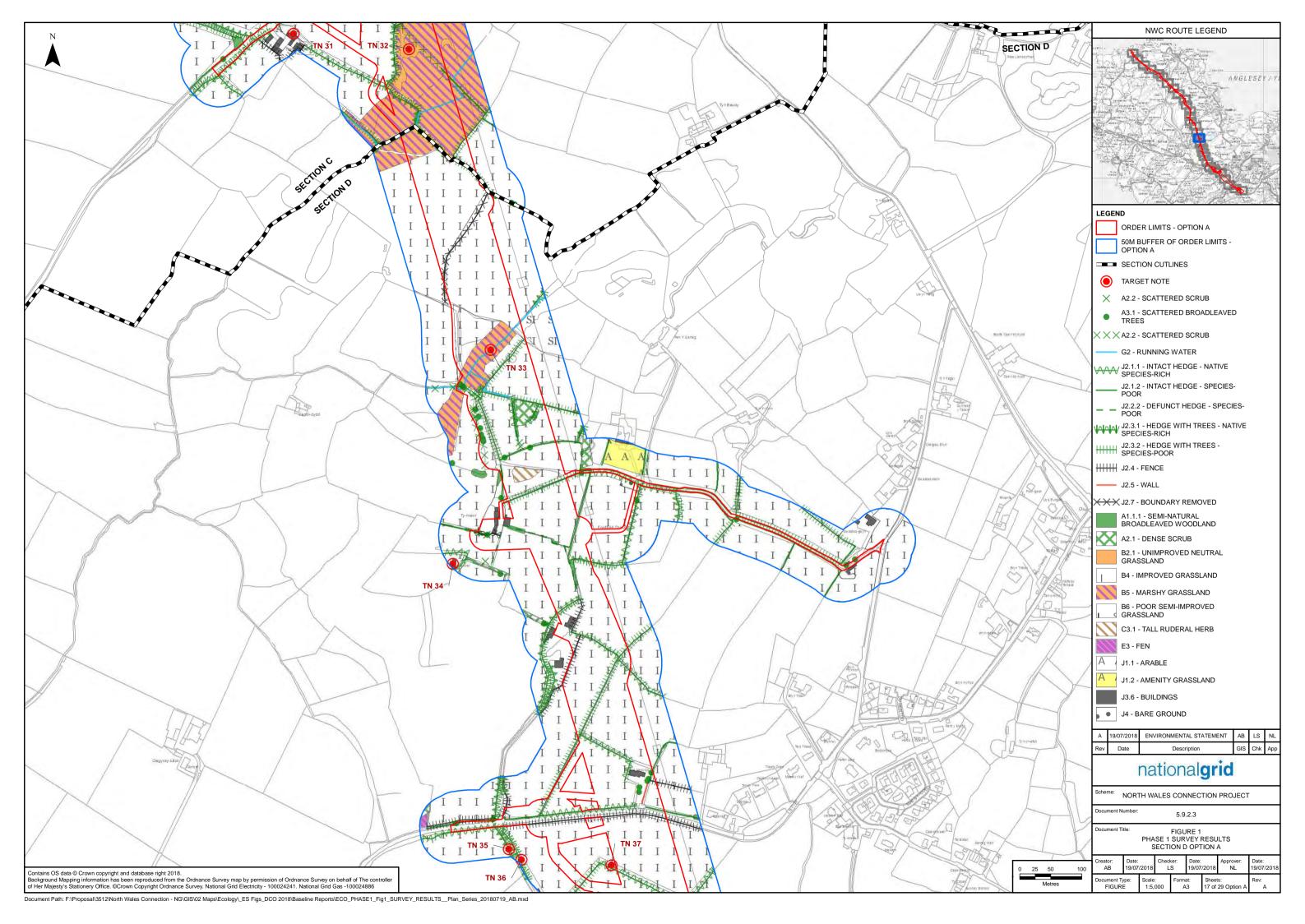


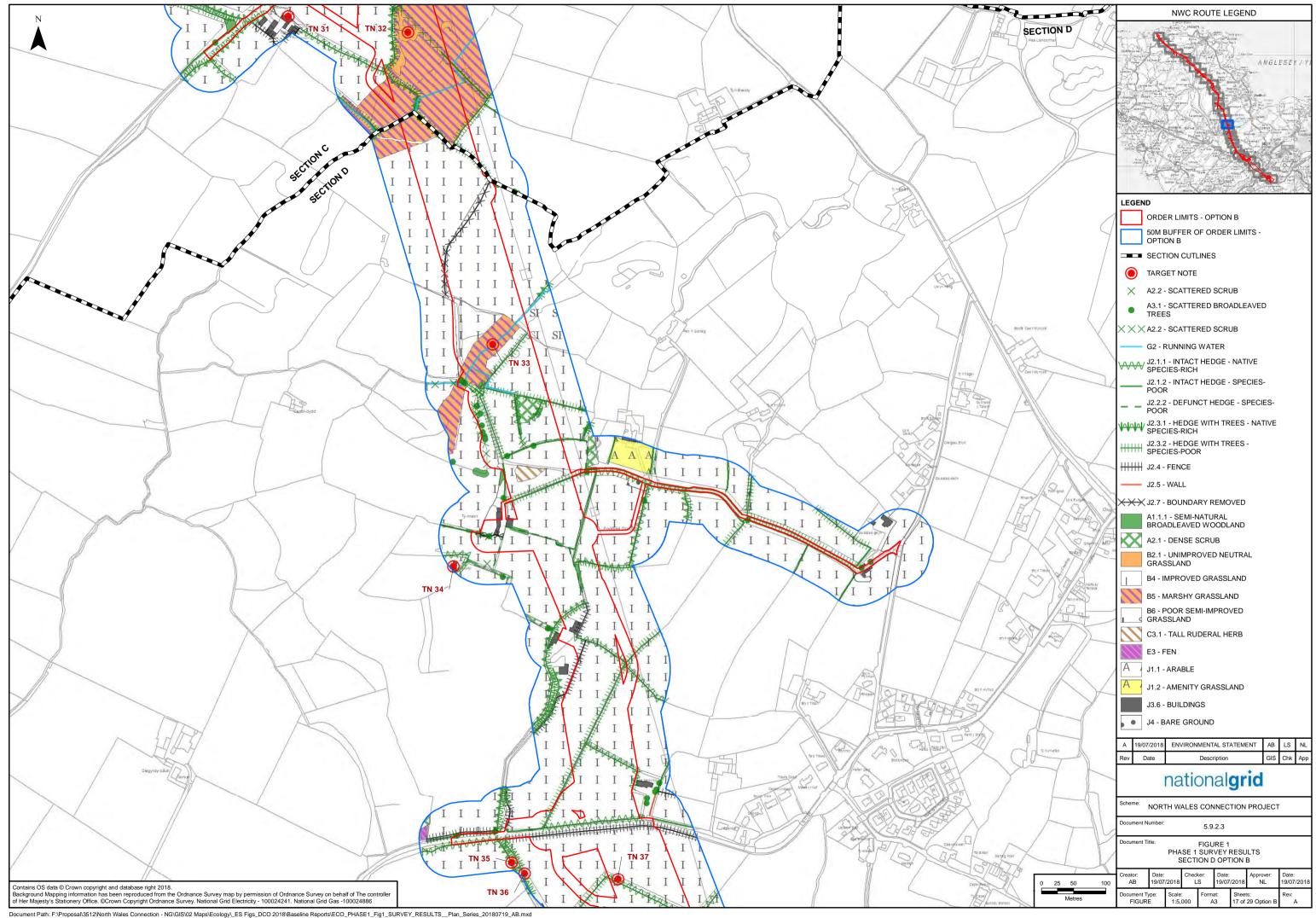


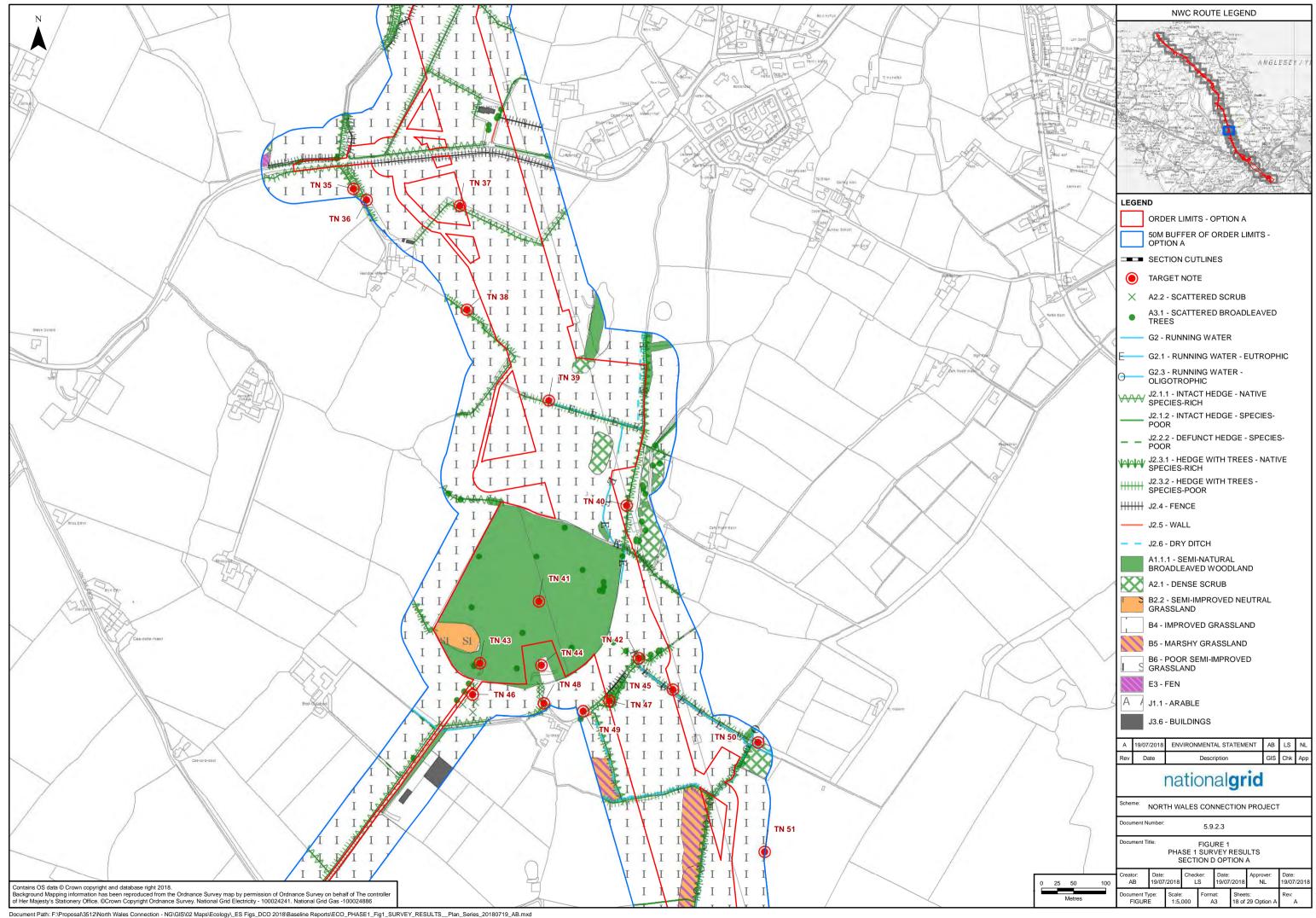


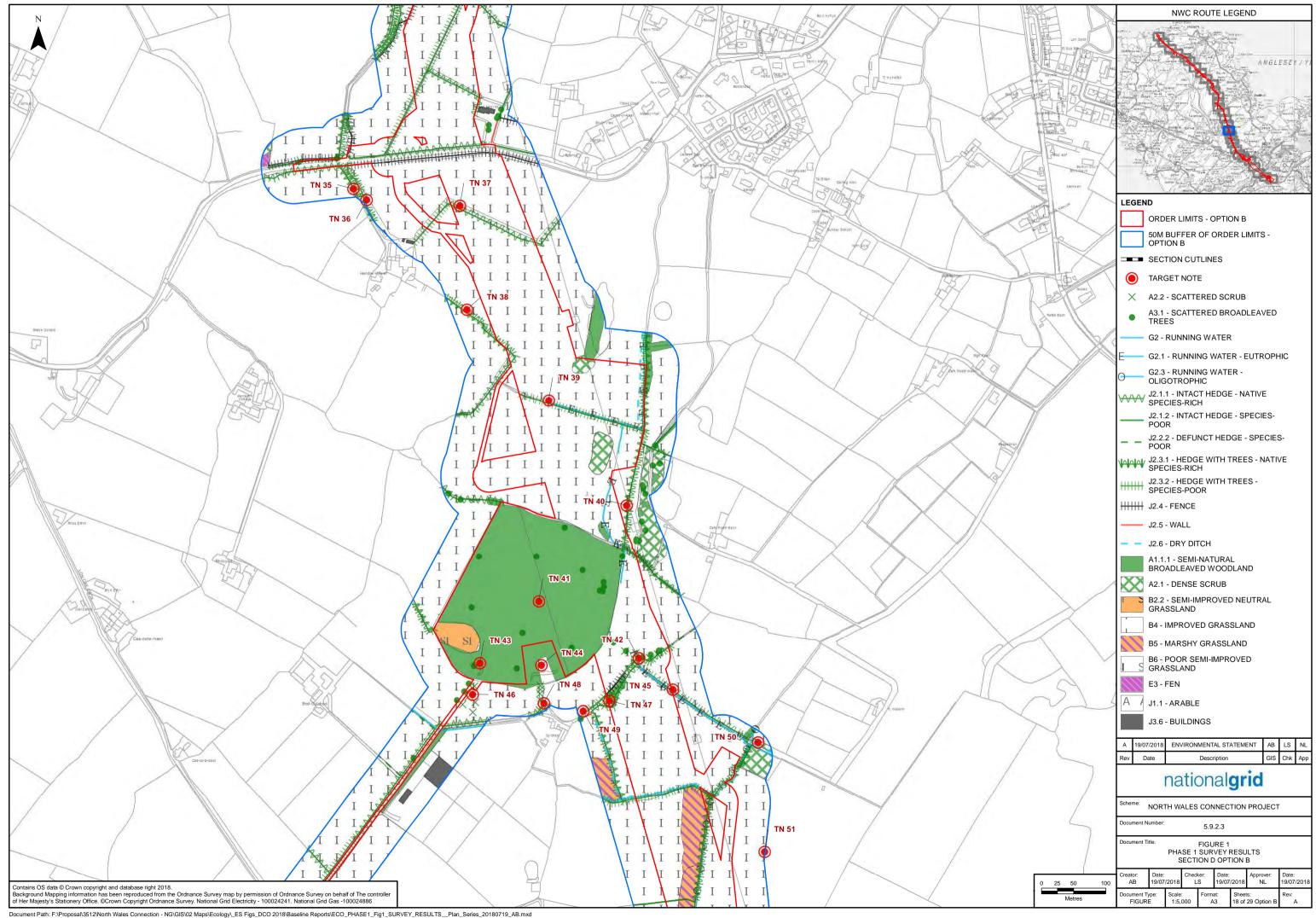


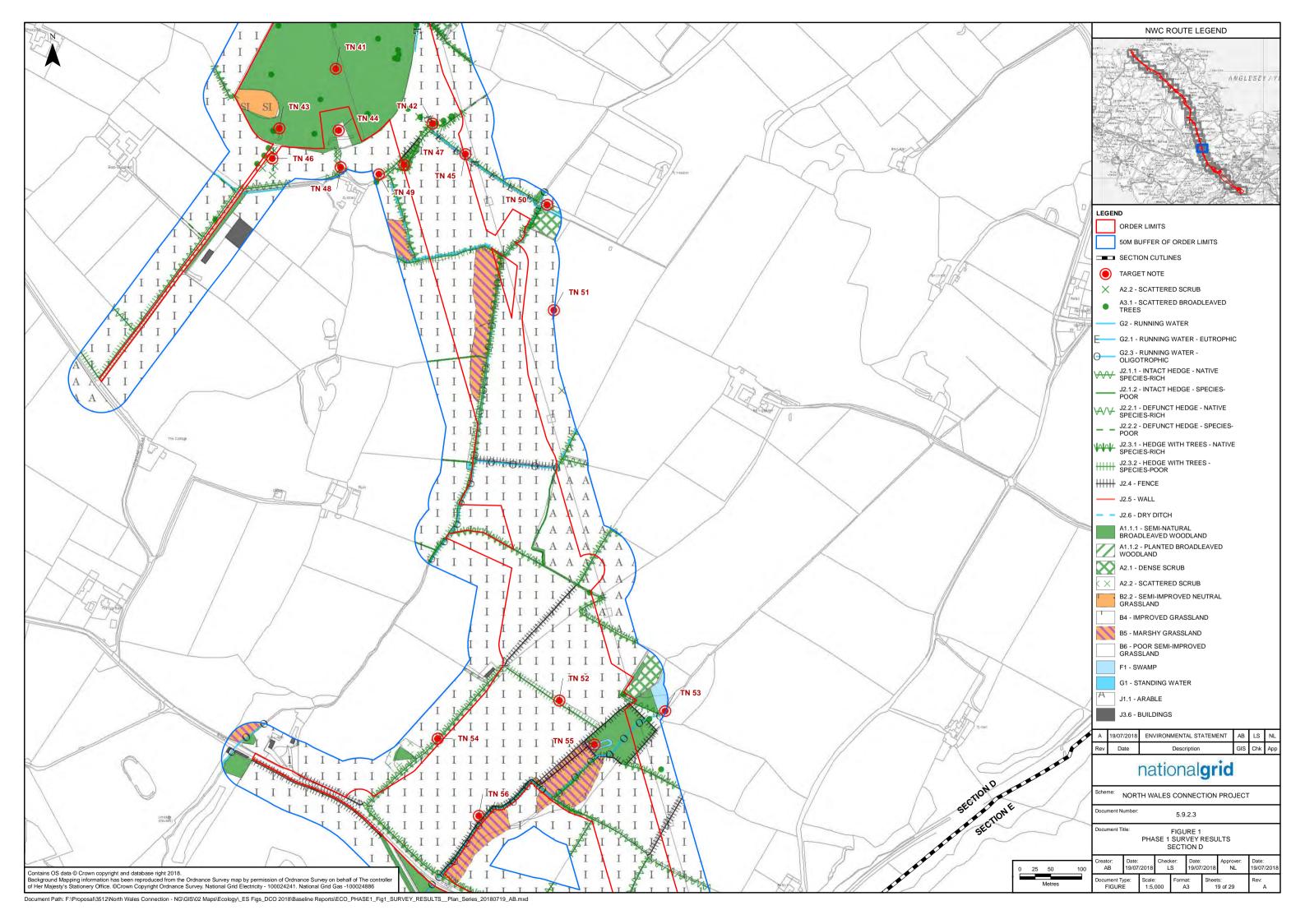


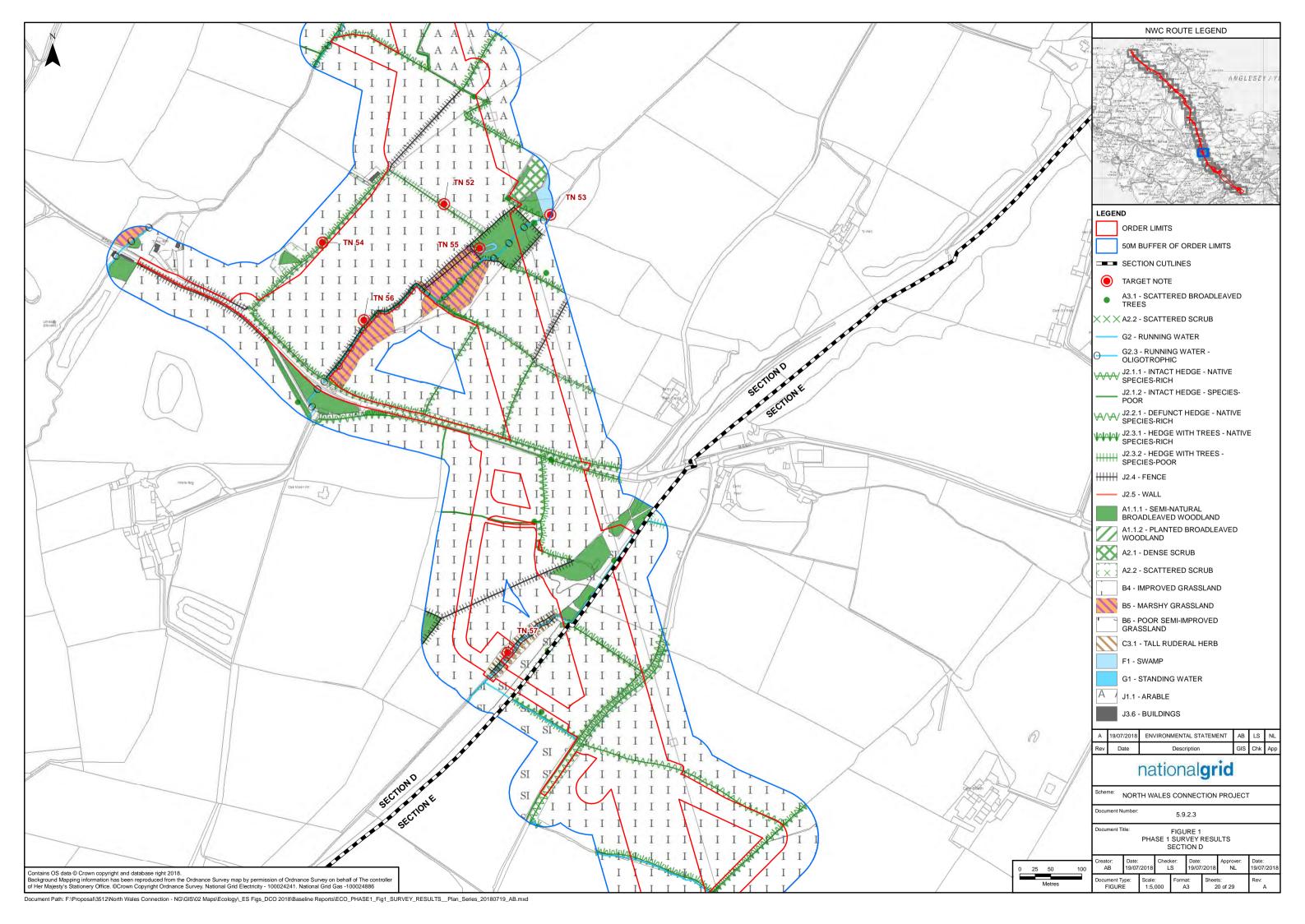


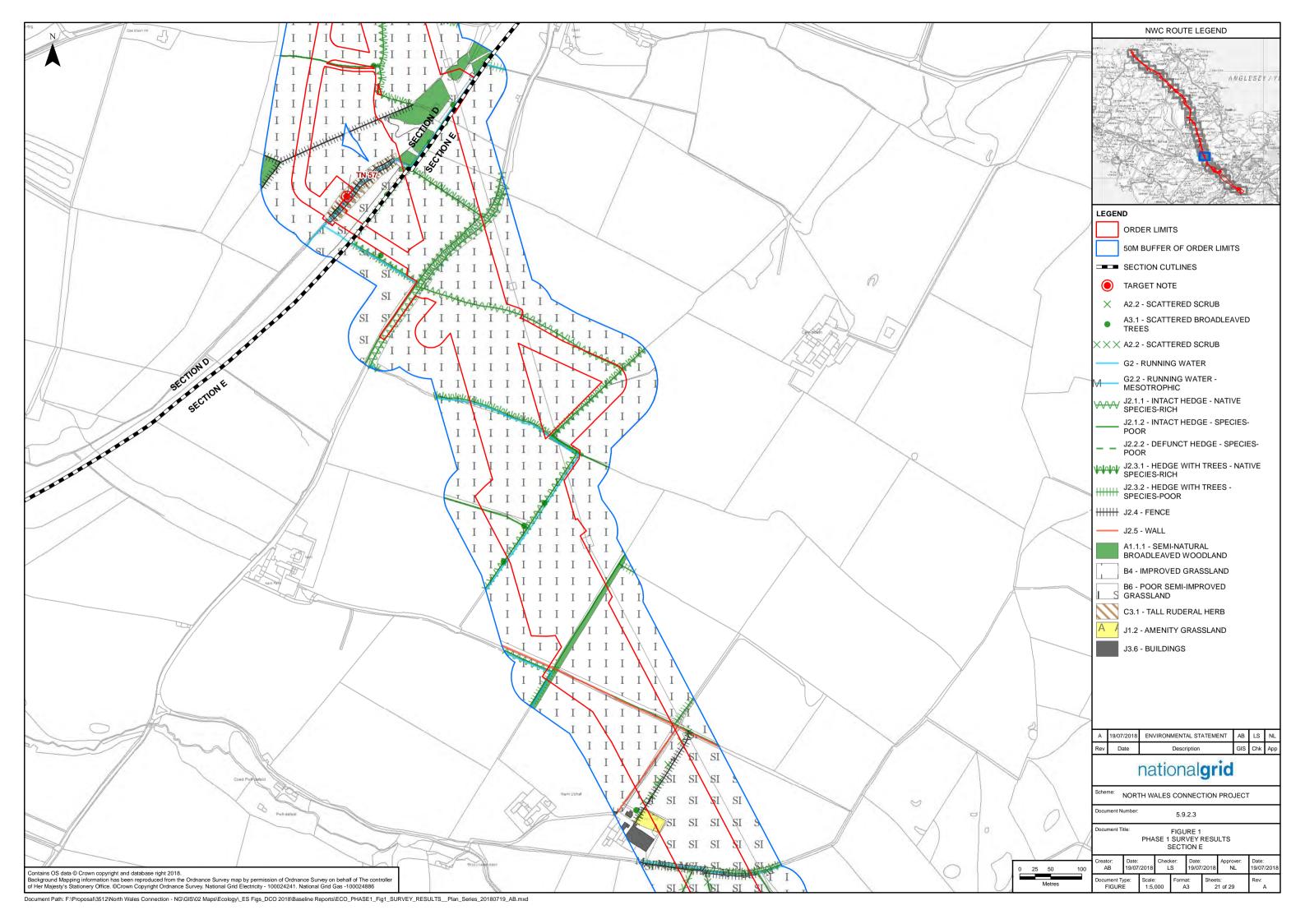


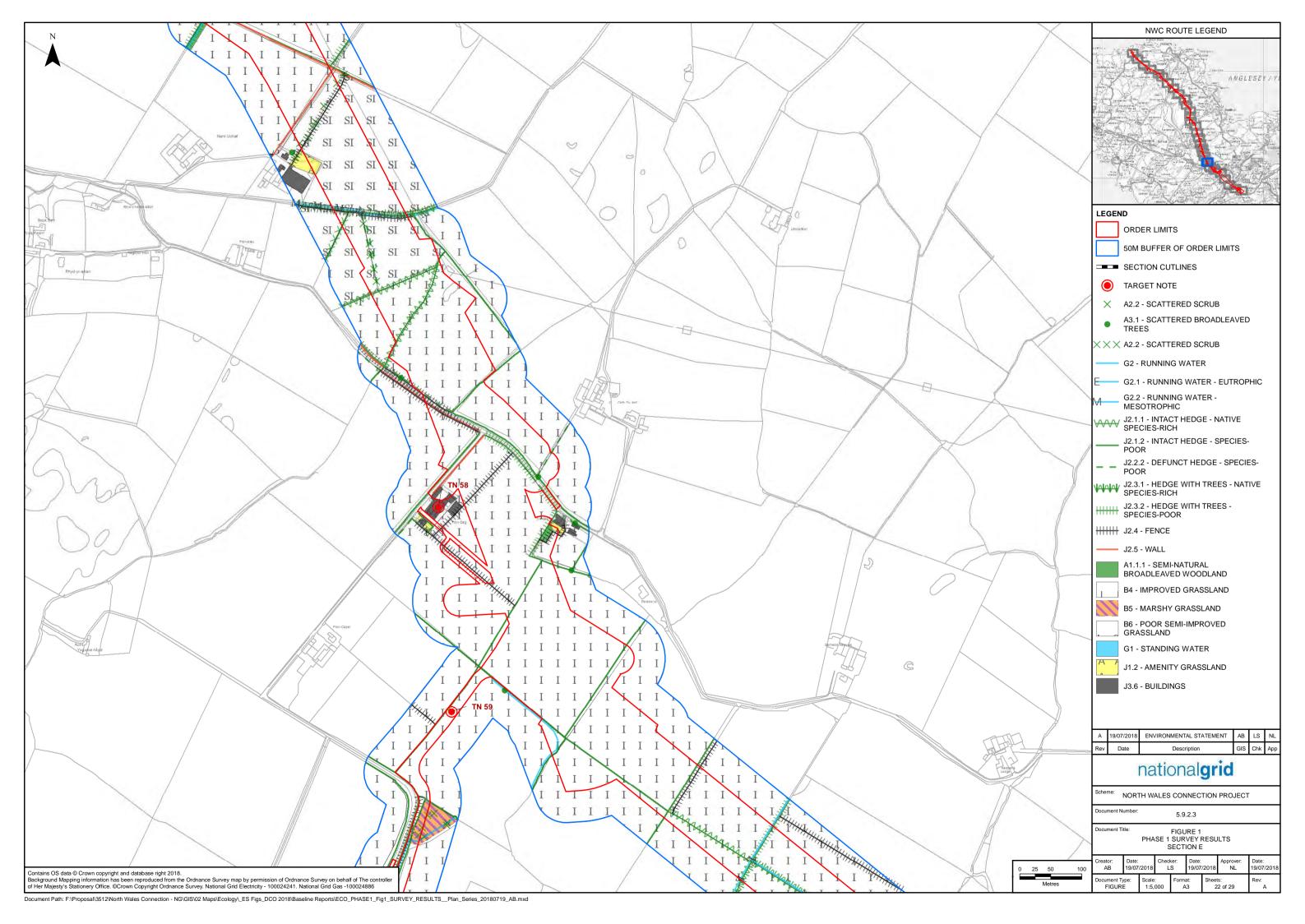


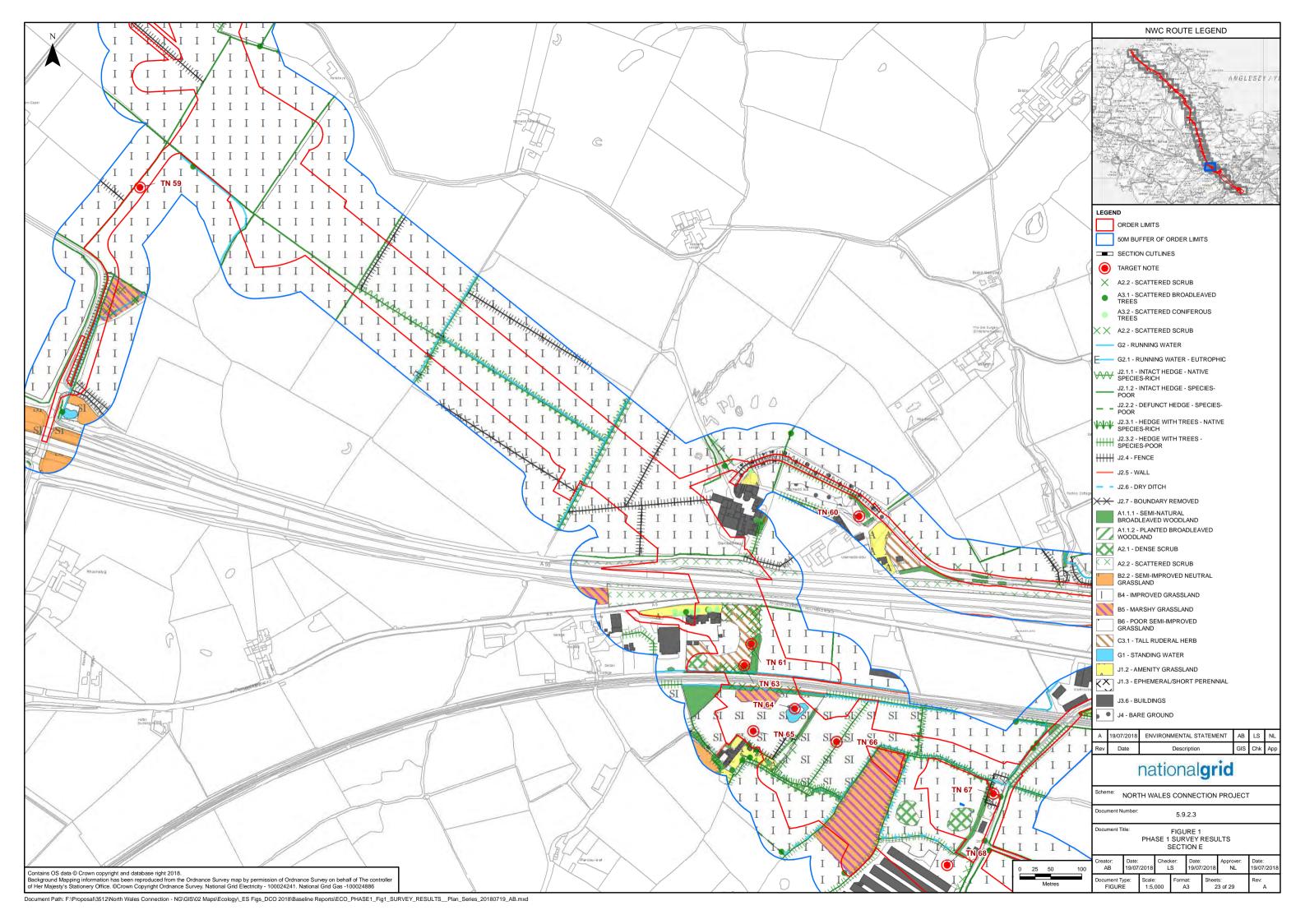


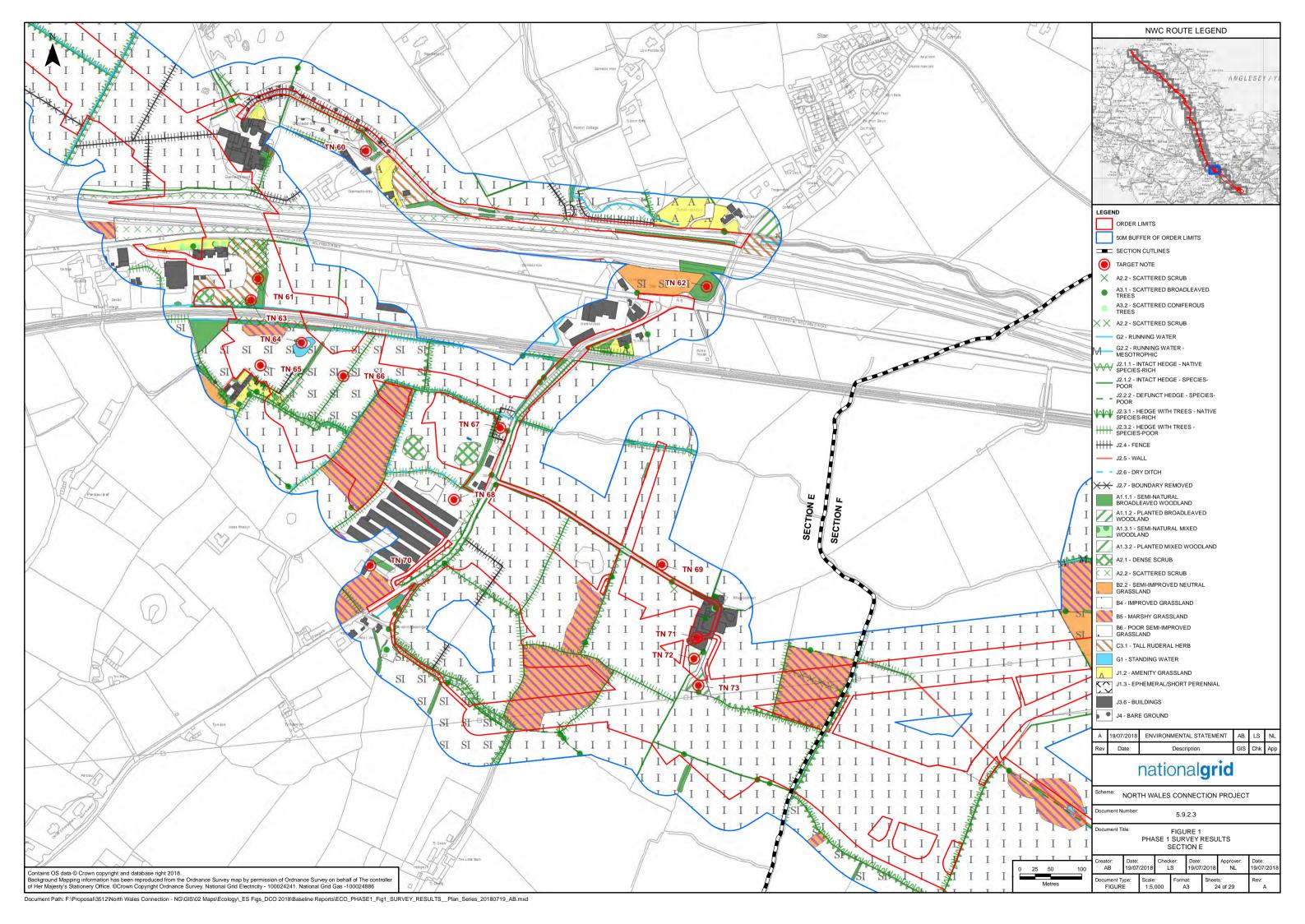


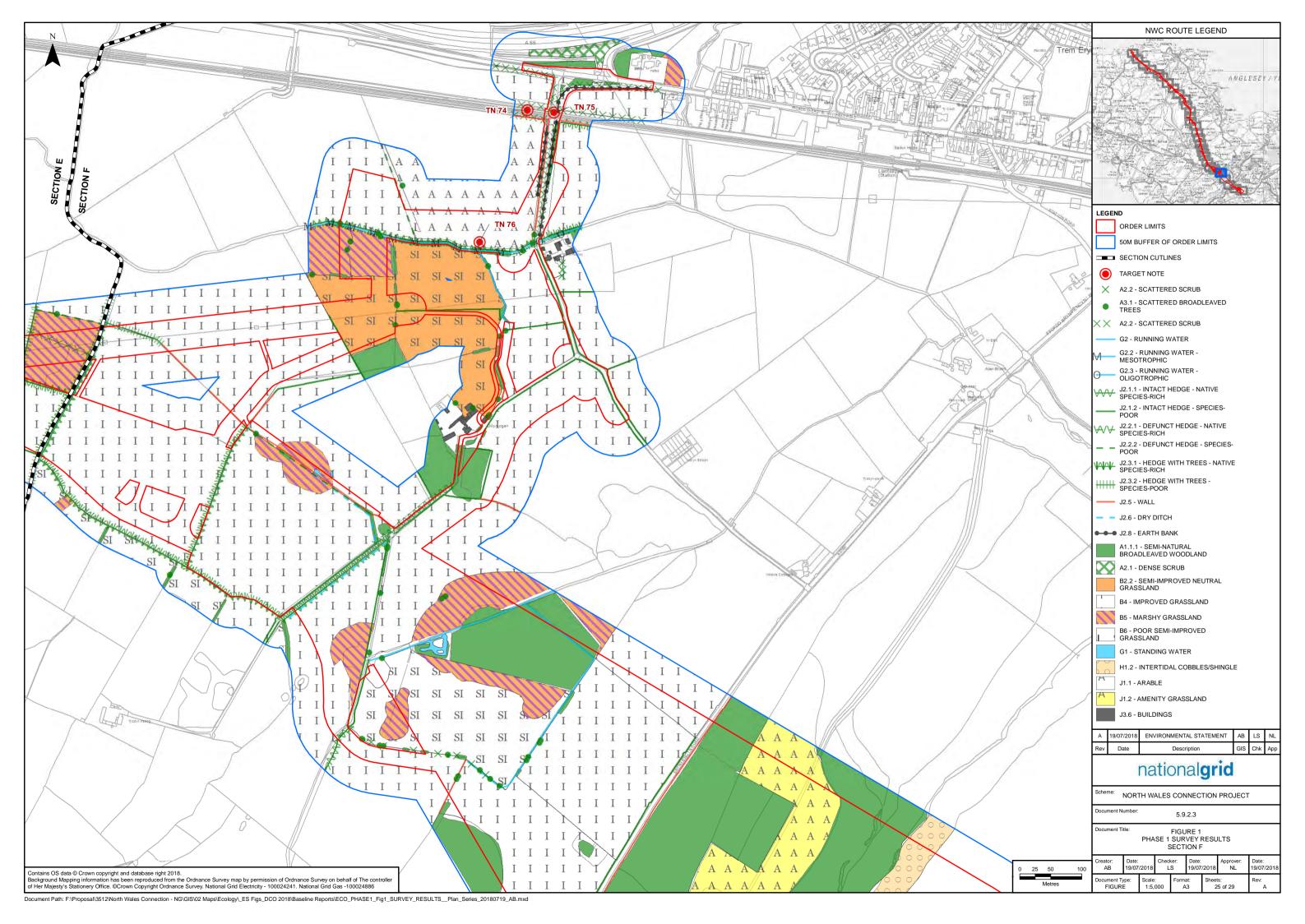


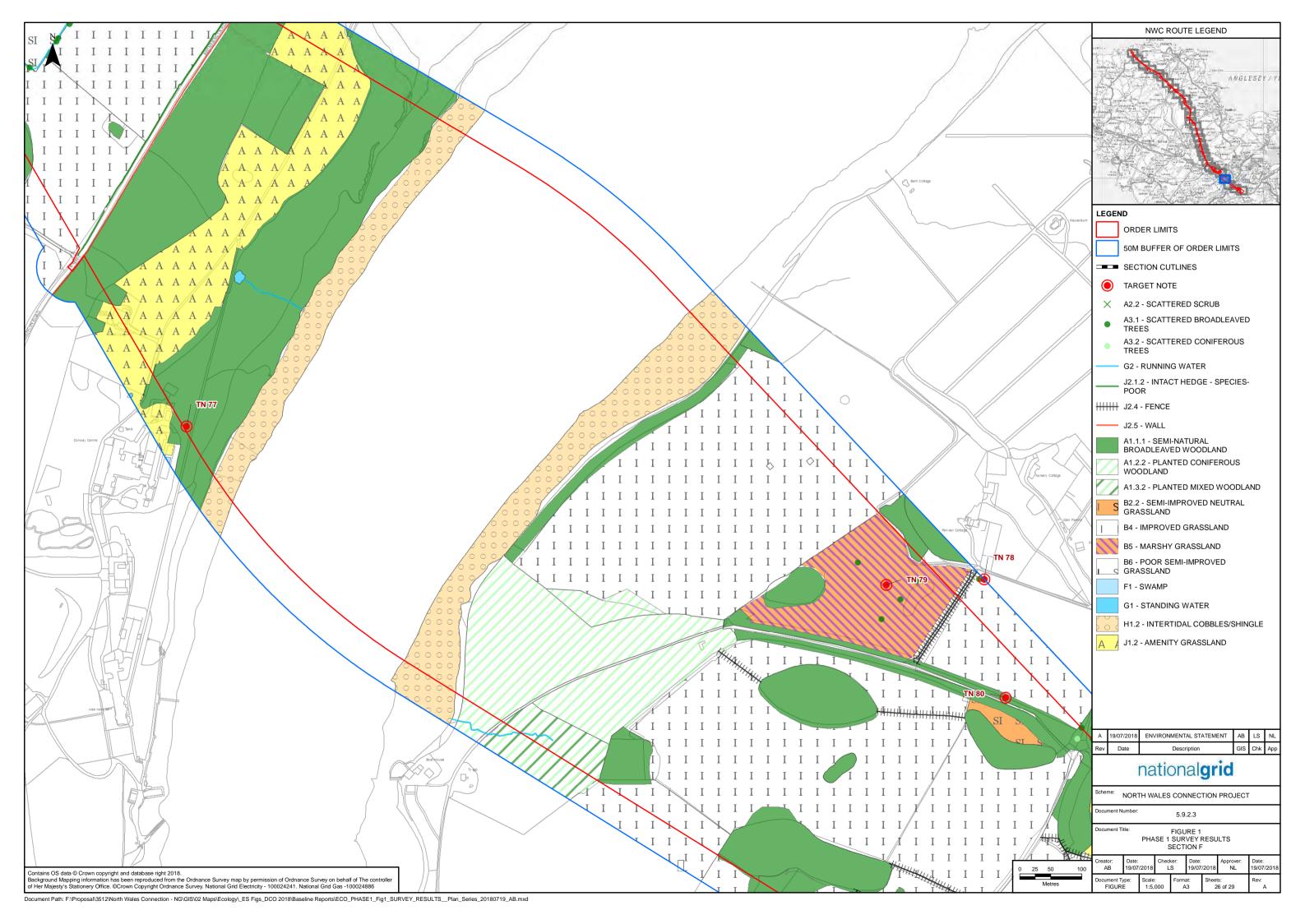


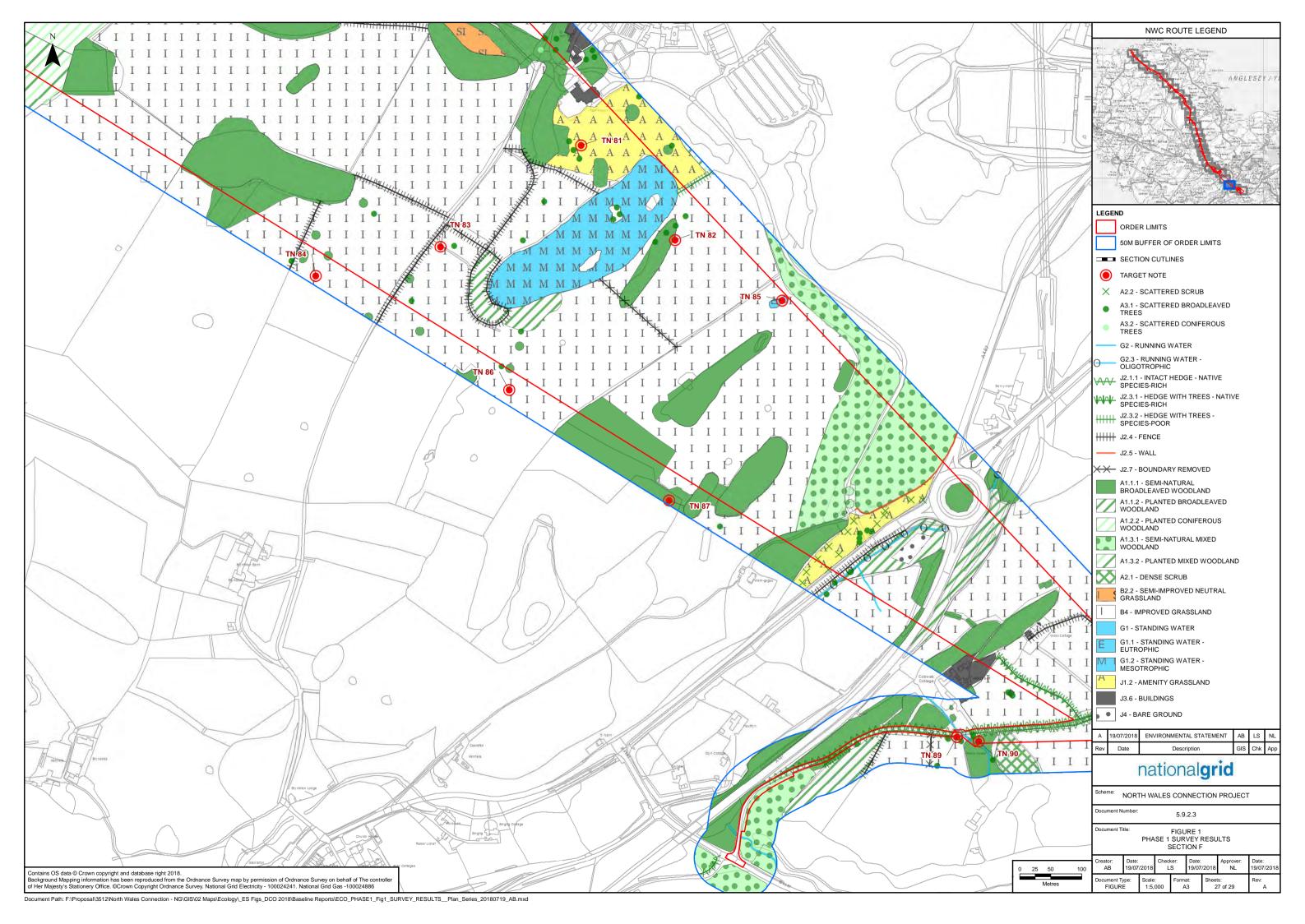


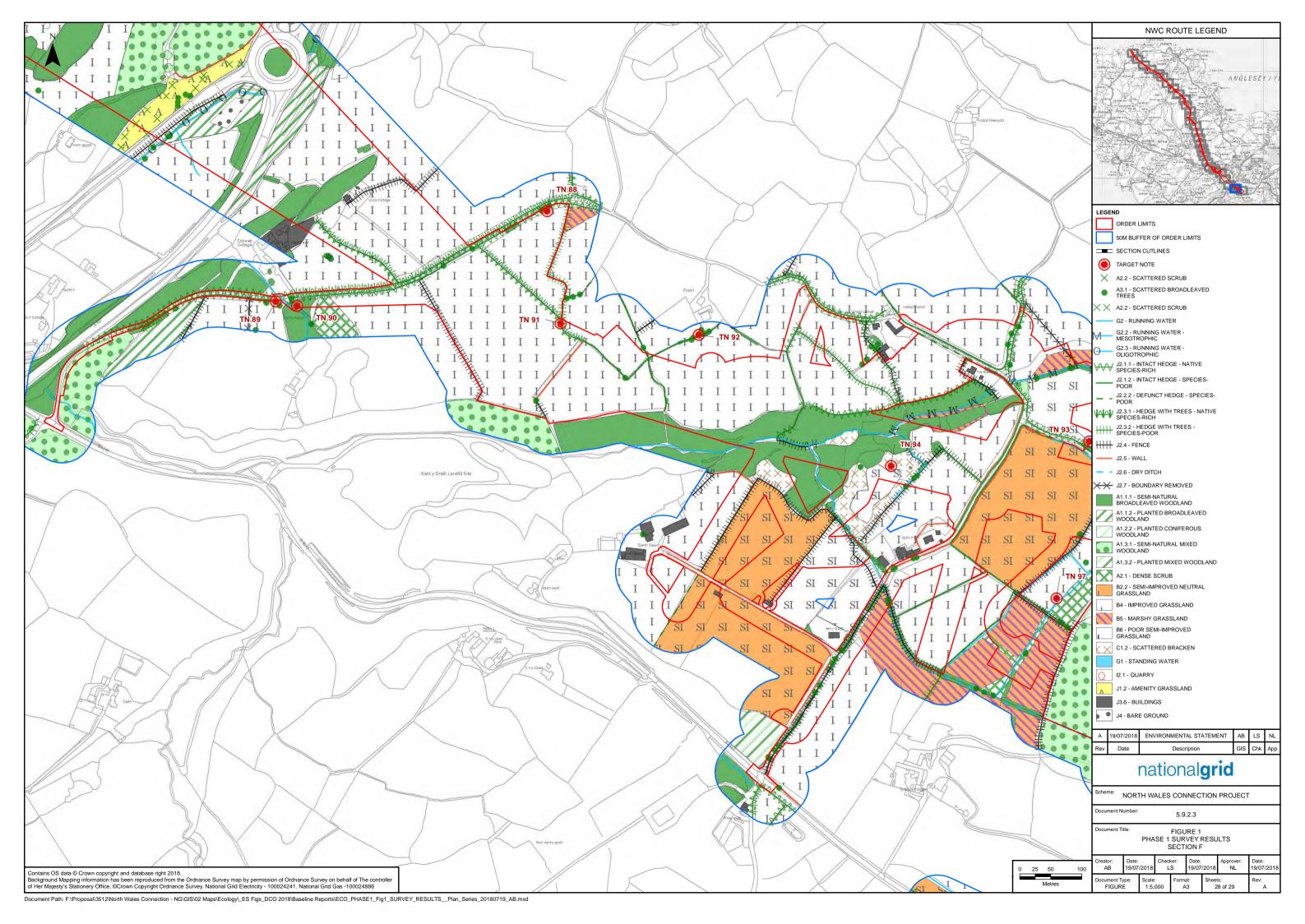


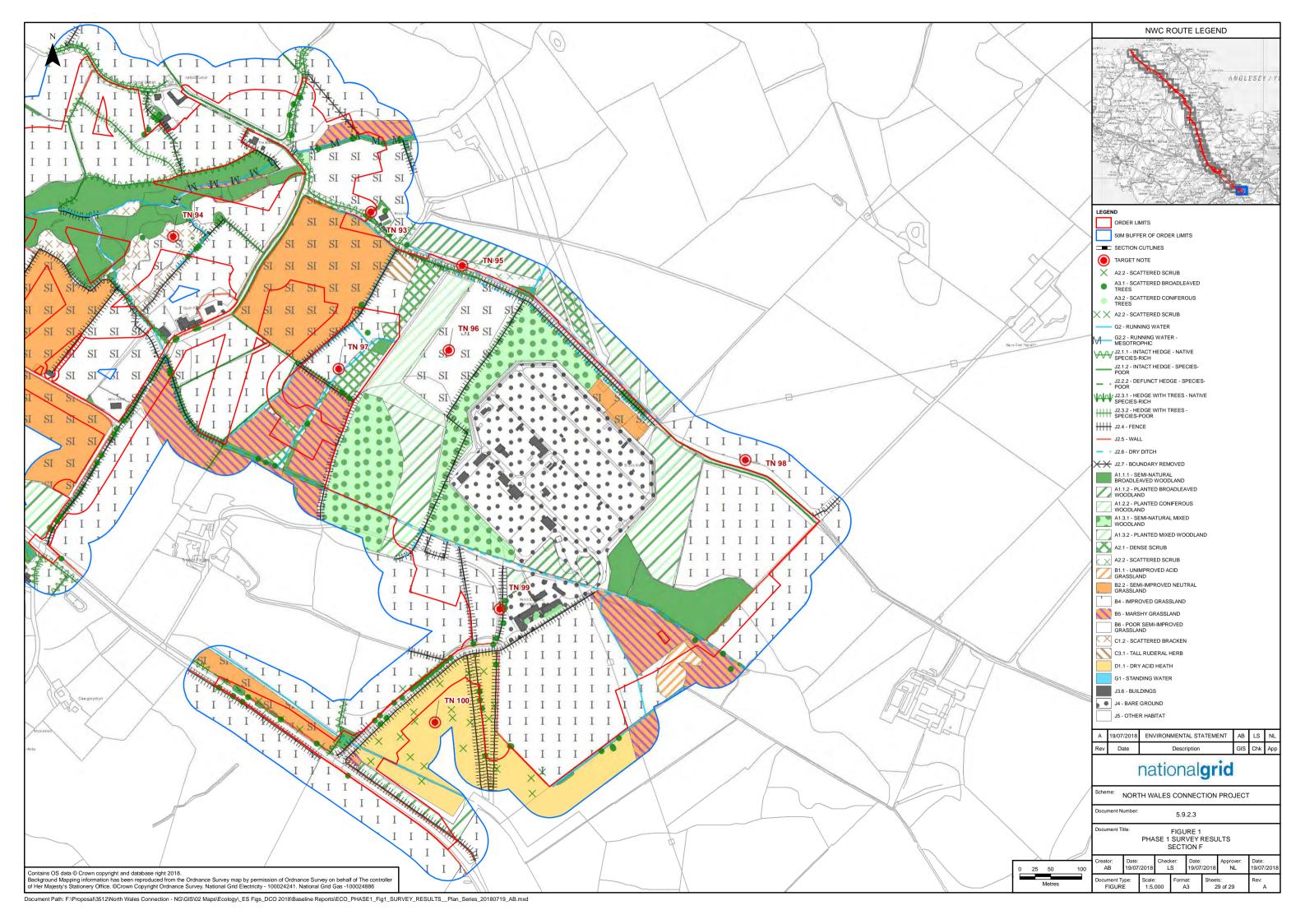


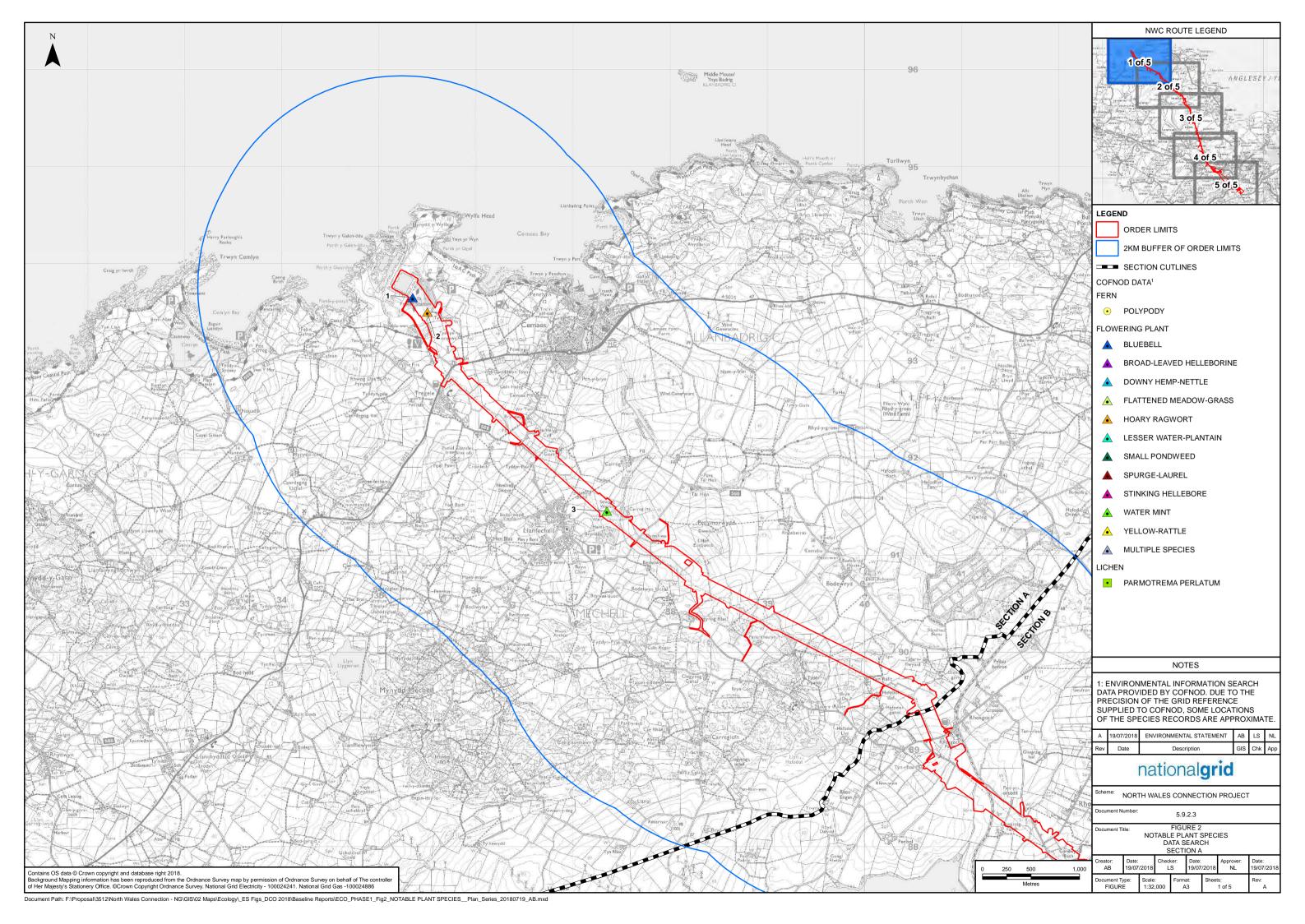


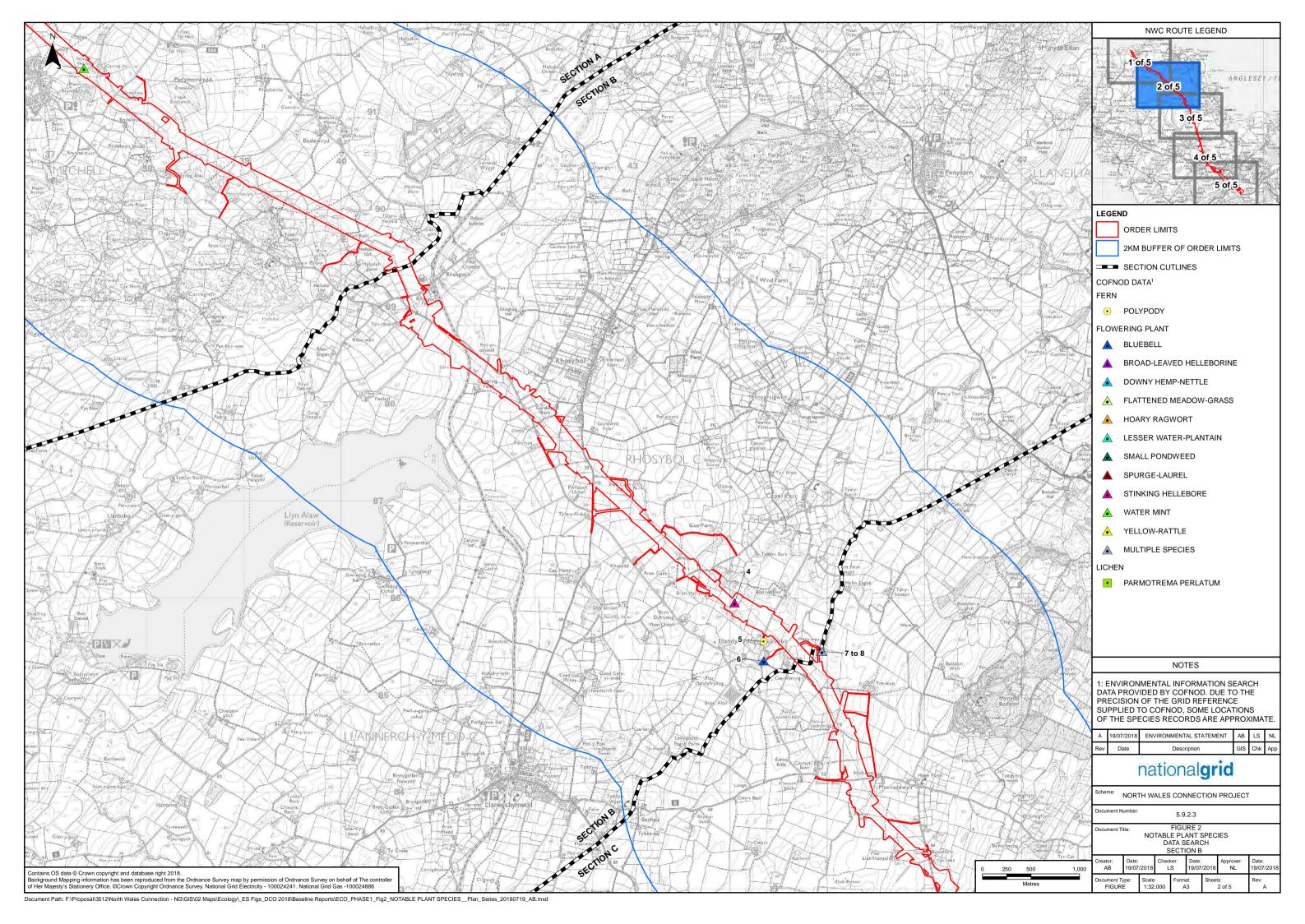


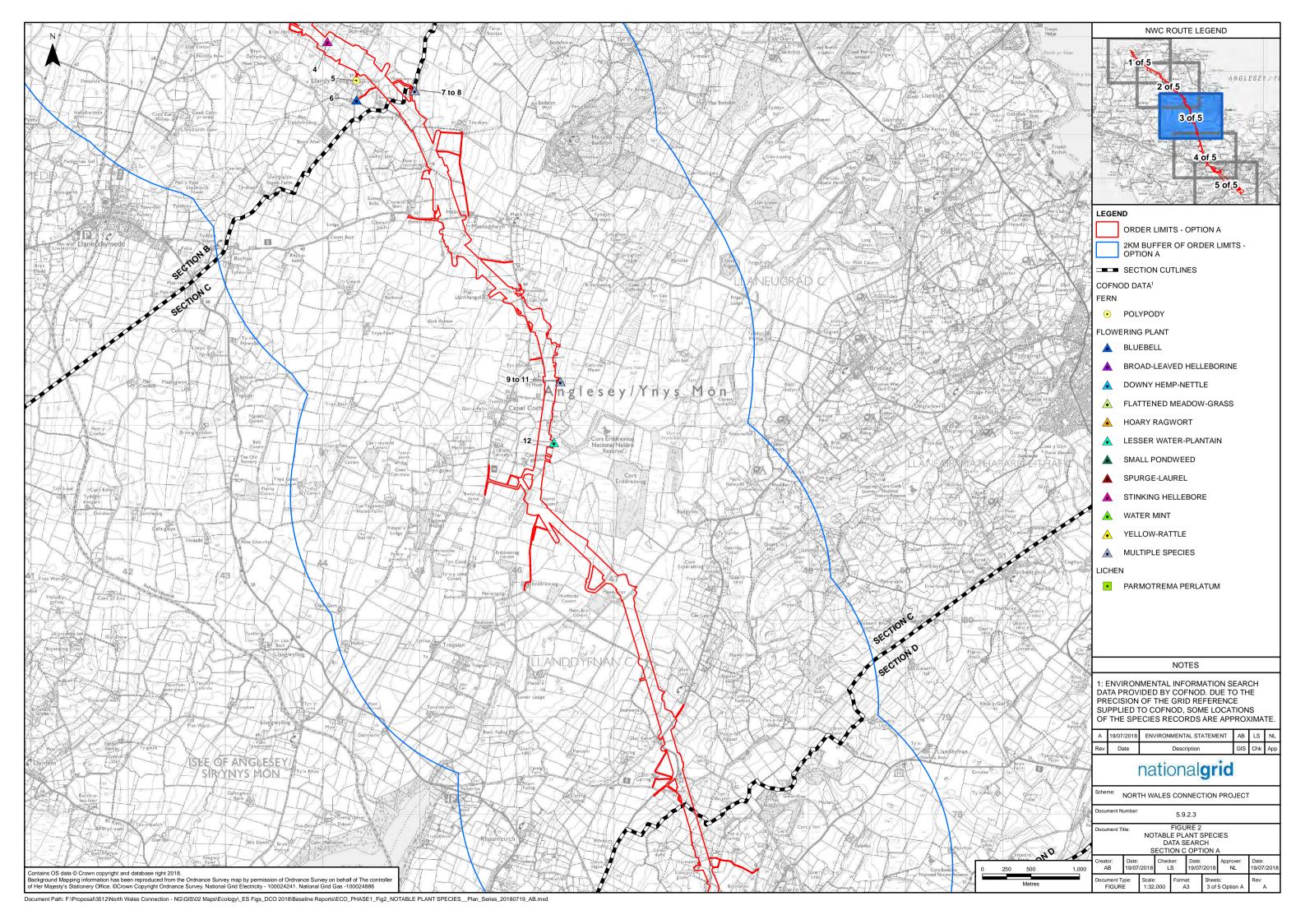


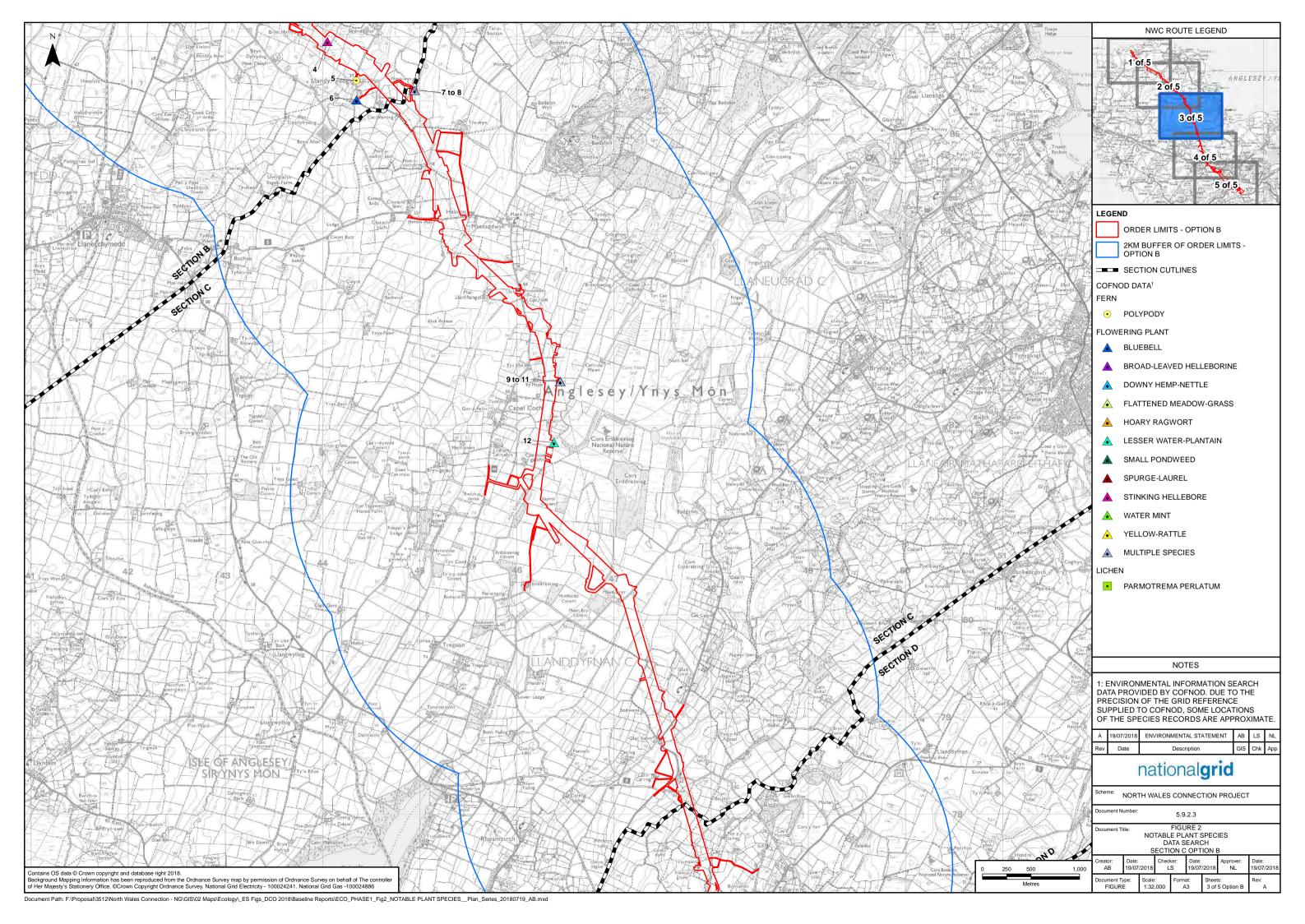


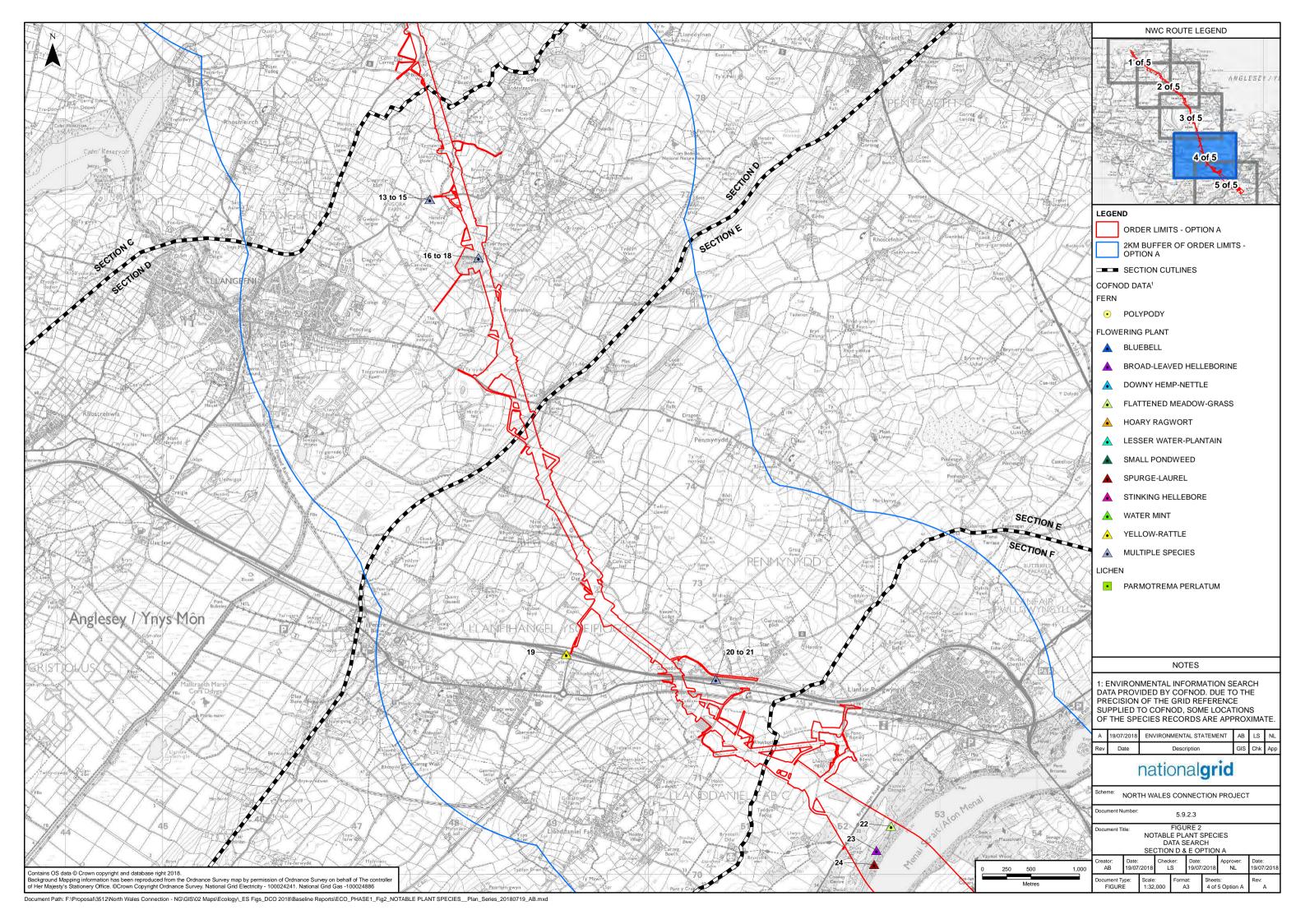


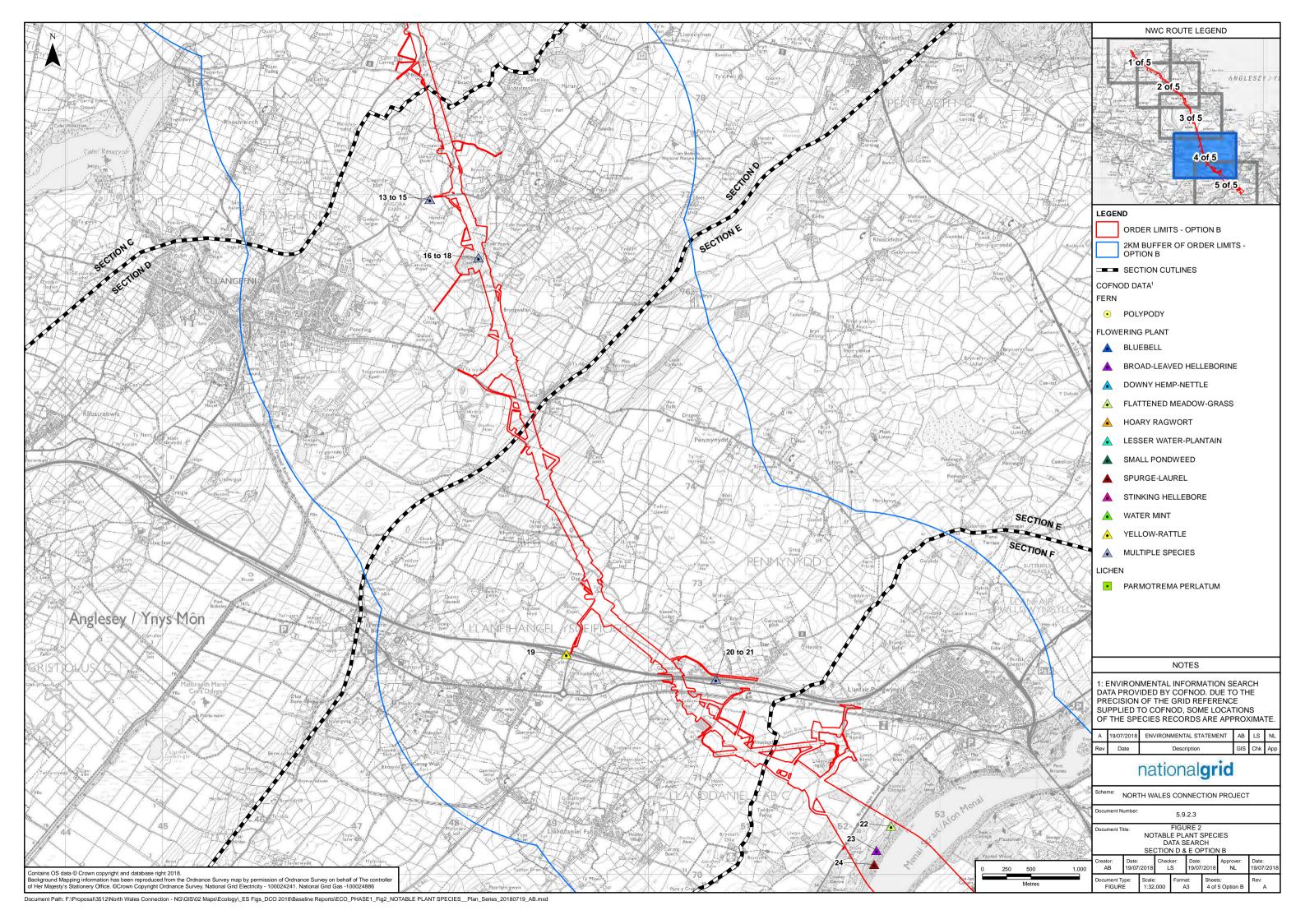


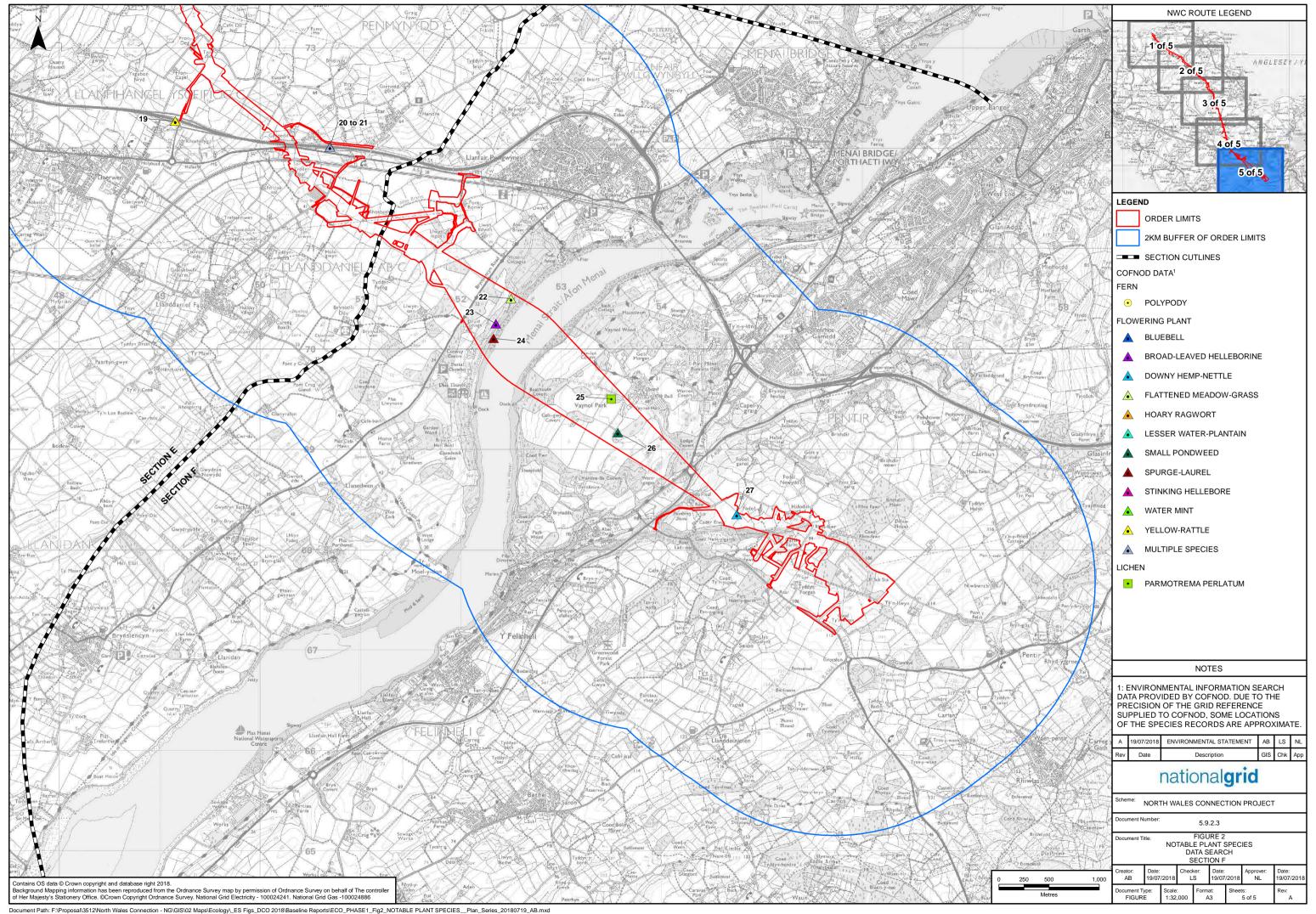


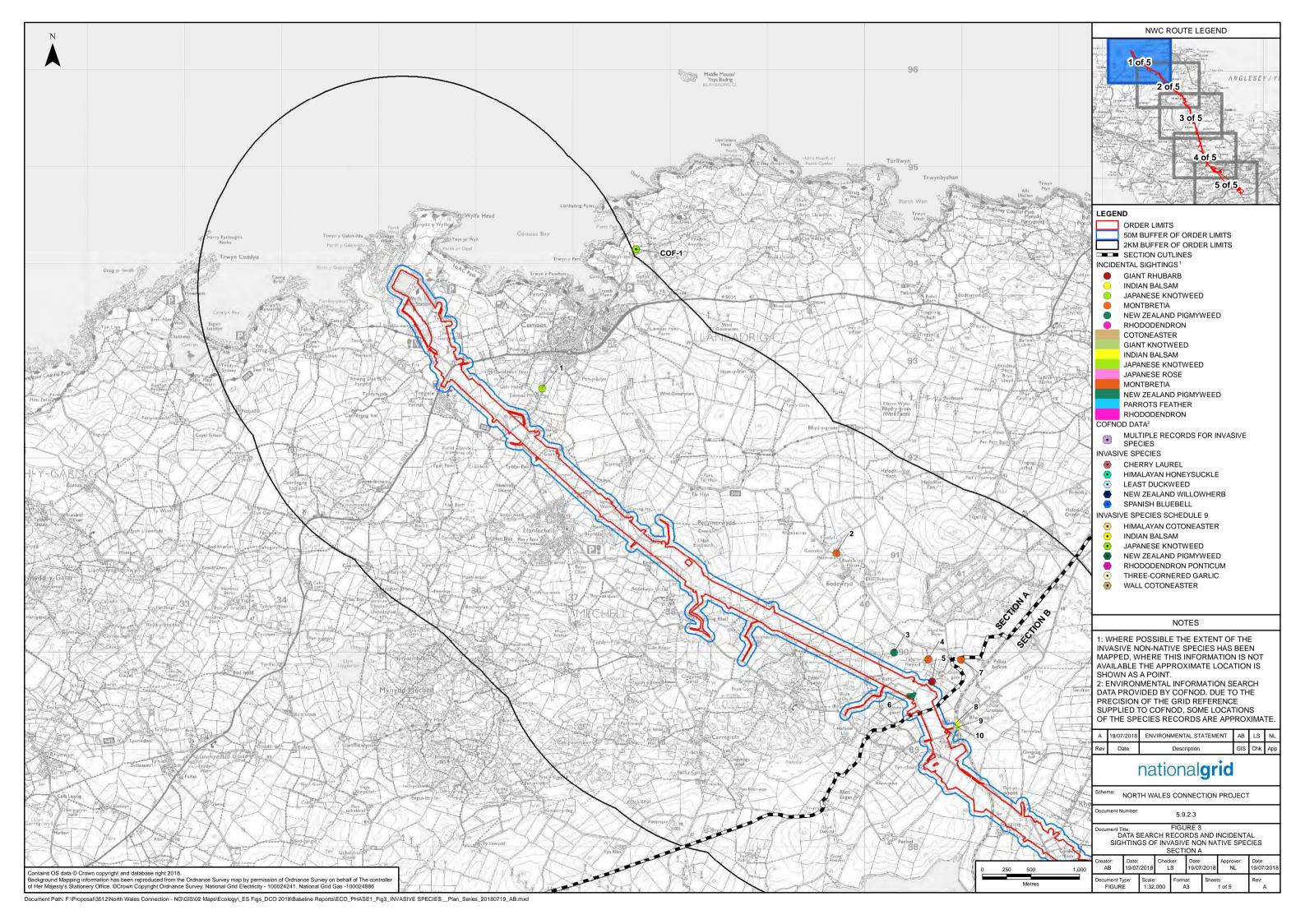


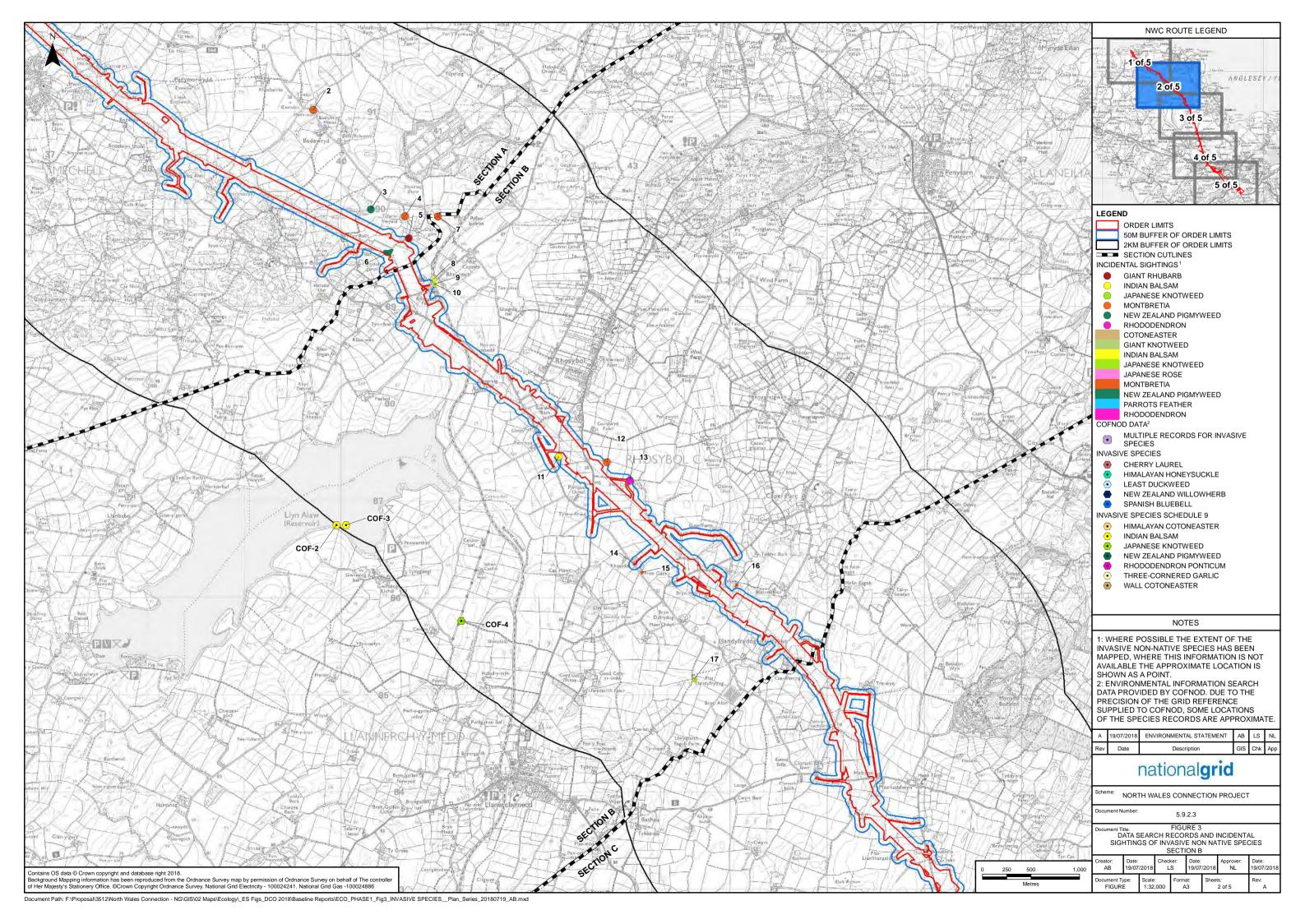


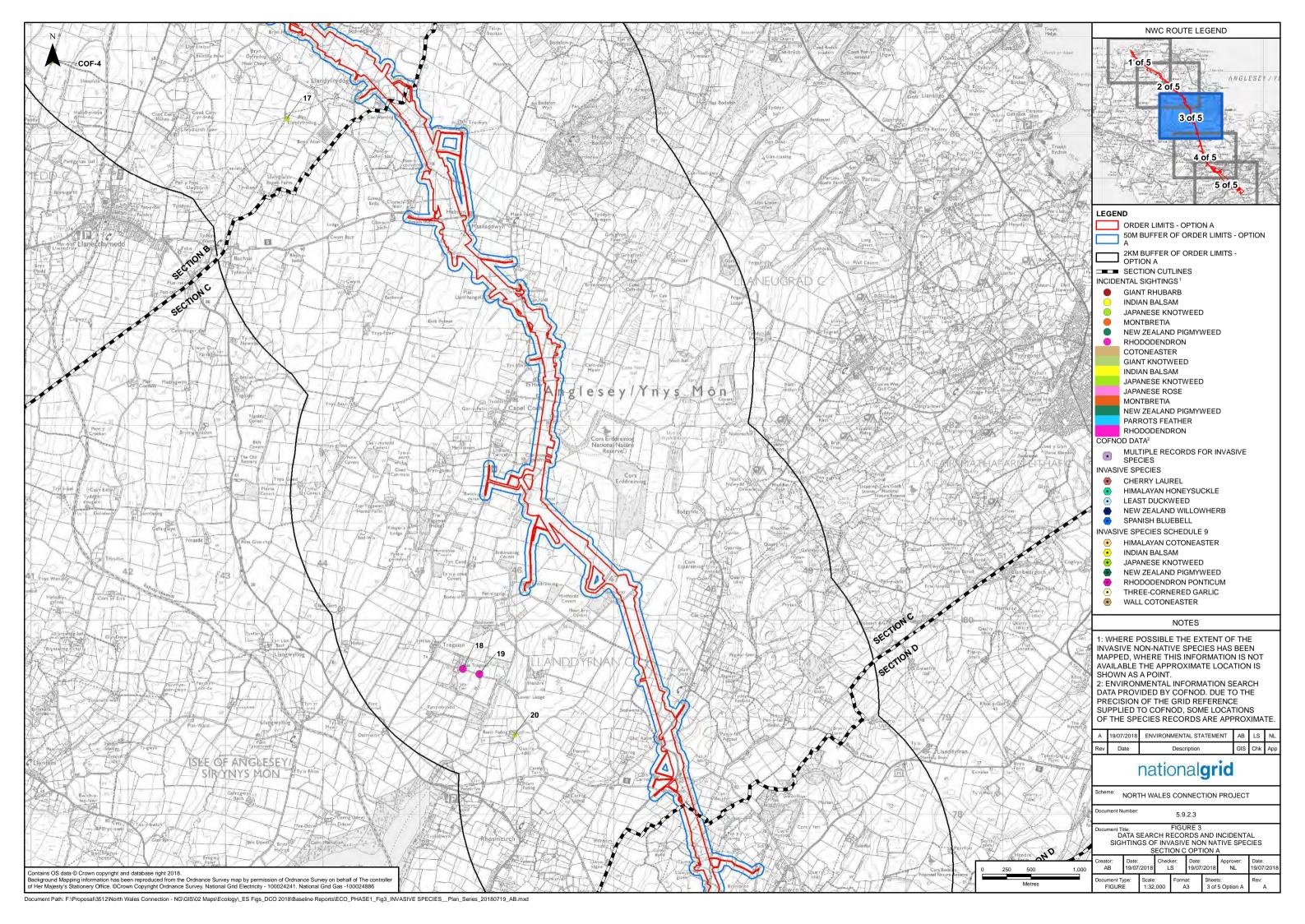


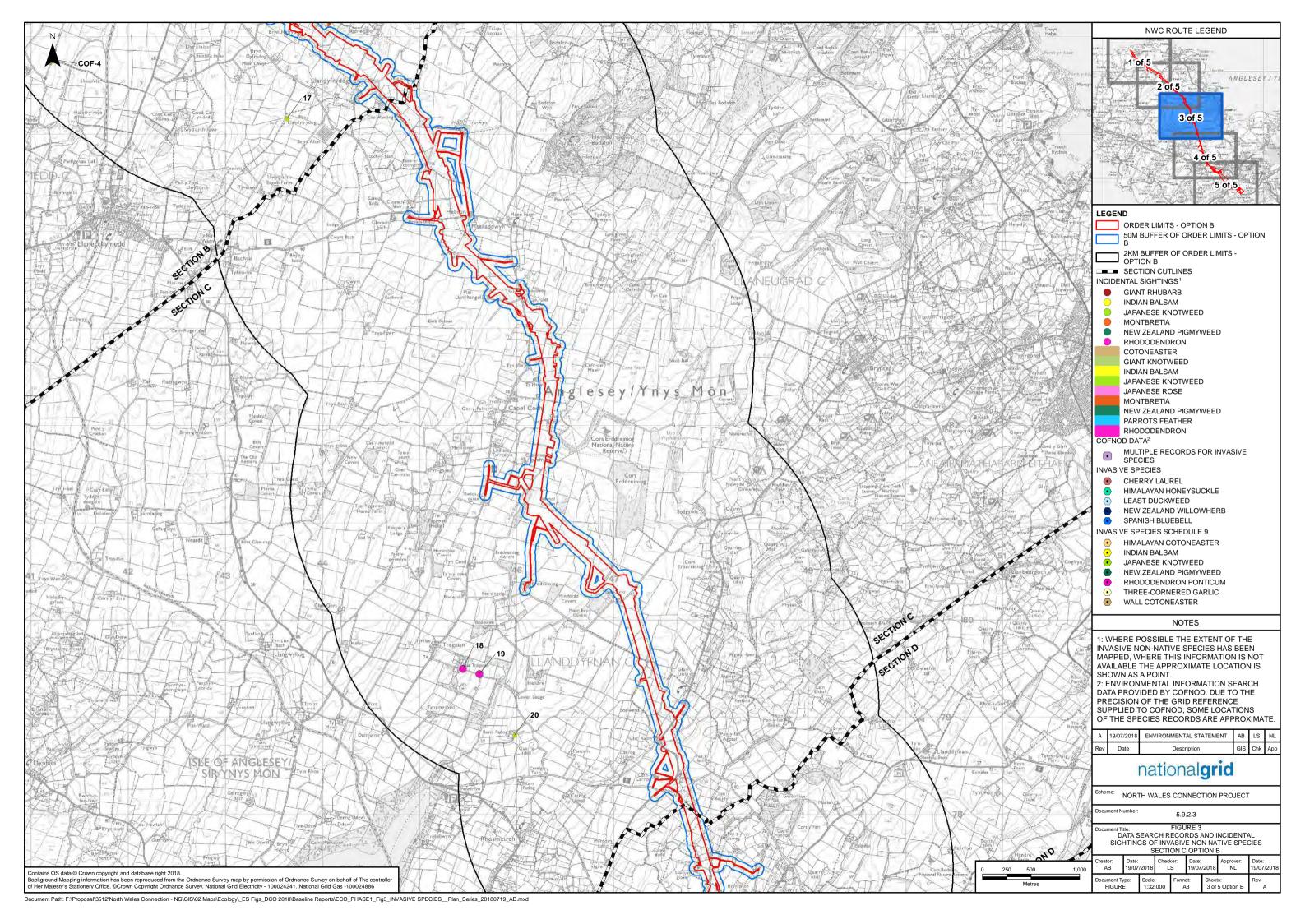


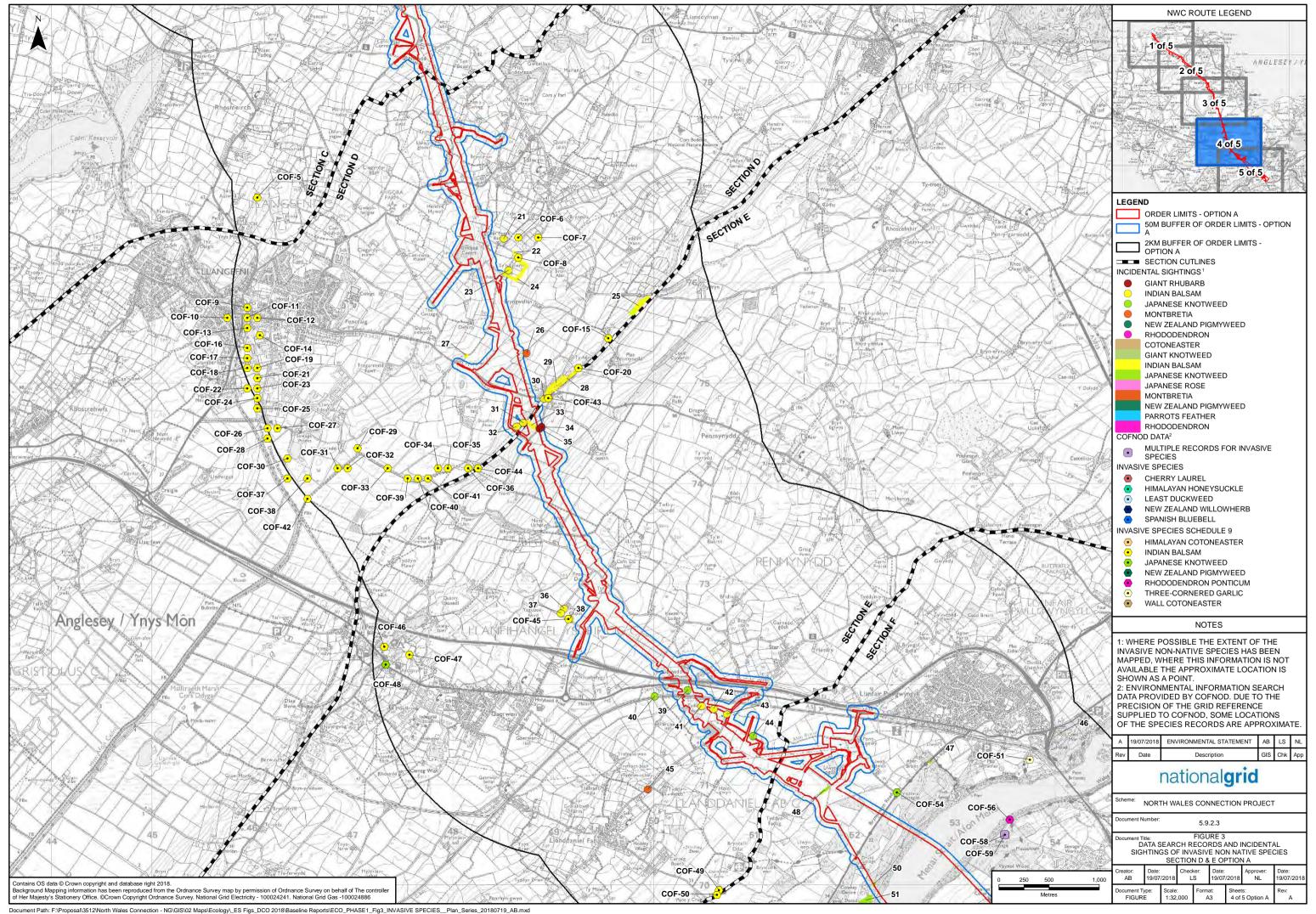


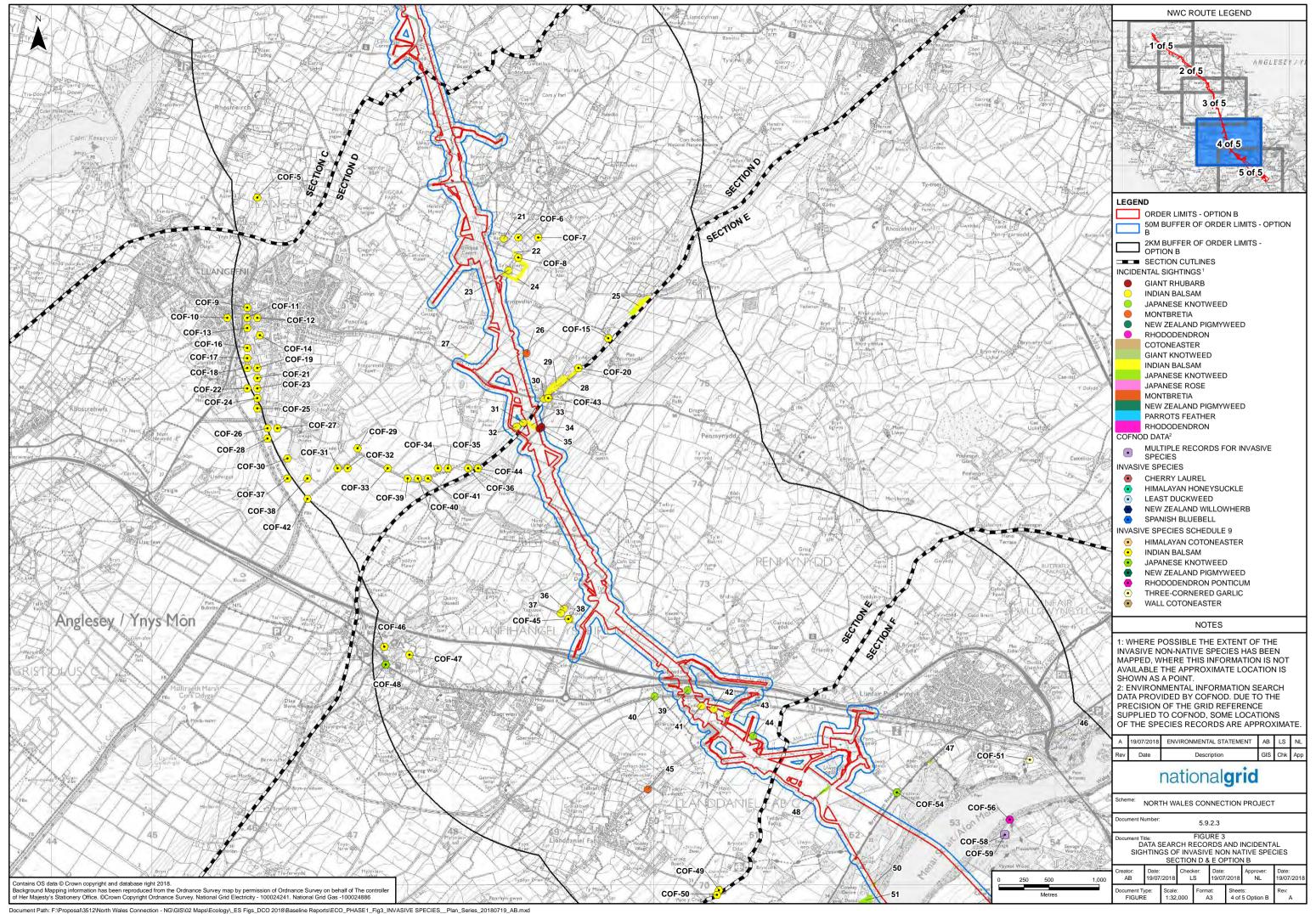


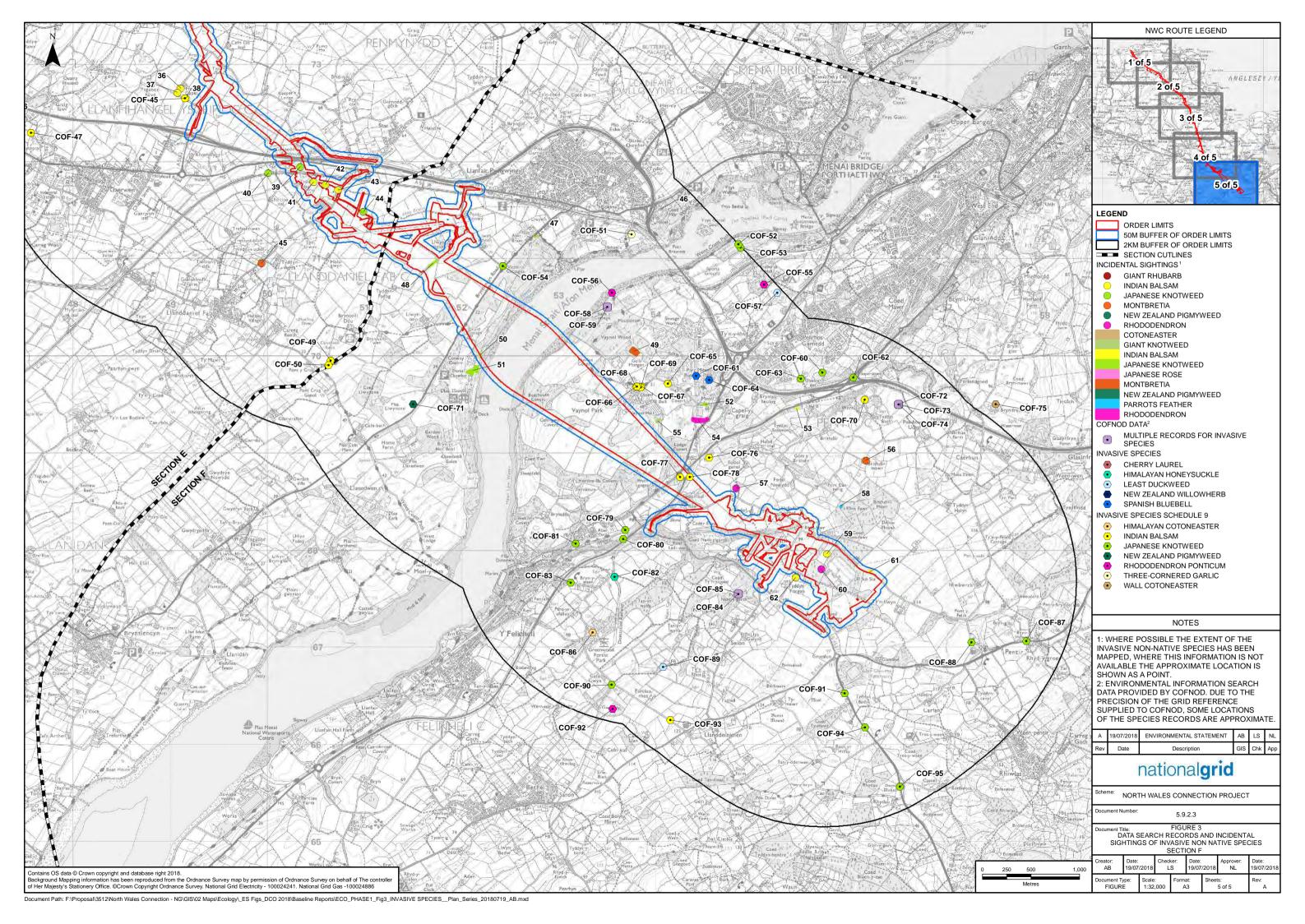












Appendix A: Cofnod Data Search Records

Due to the precision of some of the grid references provided by Cofnod e.g. 1 km² grid reference which then places the record at the centre of the square, some of the records show slightly outside the 2 km study area (see table below and Figure 3); however these have been included for completeness.

Ref Number on Figure 3	Section	Species	Date of Record	Distance from Order Limits (m)
COF-1	Section A	Japanese Knotweed	2014	2041
COF-2	Section B	Himalayan Balsam	2016	2002
COF-3	Section B	Himalayan Balsam	2016	1945
COF-4	Section B	Japanese Knotweed	2015	1614
COF-5	Section C	Himalayan Balsam	2017	1748
COF-6	Section D	Himalayan Balsam	2011	331
COF-7	Section D	Himalayan Balsam	2011	523
COF-8	Section D	Himalayan Balsam	2011	250
COF-9	Section D	Himalayan Balsam	2017	1844
COF-10	Section D	Himalayan Balsam	2017	2049
COF-11	Section D	Himalayan Balsam	2011	1850
COF-12	Section D	Himalayan Balsam	2013	1750
COF-13	Section D	Himalayan Balsam	2013	1861
COF-14	Section D	Himalayan Balsam	2017	1749
COF-15	Section D	Himalayan Balsam	2011	907
COF-16	Section D	Himalayan Balsam	2013	1898
COF-17	Section D	Himalayan Balsam	2013	1925
COF-18	Section D	Himalayan Balsam	2011	1956
COF-19	Section D	Himalayan Balsam	2013	1862
COF-20	Section D	Himalayan Balsam	2011	554
COF-21	Section D	Himalayan Balsam	2013	1899
COF-22	Section D	Himalayan Balsam	2013	2031
COF-23	Section D	Himalayan Balsam	2013	1941
COF-24	Section D	Himalayan Balsam	2013	1987
COF-25	Section D	Himalayan Balsam	2013	2037
COF-26	Section D	Himalayan Balsam	2012	1996

Ref Number on Figure 3	Section	Species	Date of Record	Distance from Order Limits (m)
COF-27	Section D	Himalayan Balsam	2013	1902
COF-28	Section D	Himalayan Balsam	2017	2030
COF-29	Section D	Himalayan Balsam	2011	1300
COF-30	Section D	Himalayan Balsam	2011	1935
COF-31	Section D	Himalayan Balsam	2011	1582
COF-32	Section D	Himalayan Balsam	2011	1508
COF-33	Section D	Himalayan Balsam	2011	1251
COF-34	Section D	Himalayan Balsam	2011	818
COF-35	Section D	Himalayan Balsam	2011	734
COF-36	Section D	Himalayan Balsam	2011	570
COF-37	Section D	Himalayan Balsam	2017	2040
COF-38	Section D	Himalayan Balsam	2011	1878
COF-39	Section D	Himalayan Balsam	2011	1129
COF-40	Section D	Himalayan Balsam	2011	1041
COF-41	Section D	Himalayan Balsam	2011	956
COF-42	Section D	Himalayan Balsam	2011	2006
COF-43	Section E	Himalayan Balsam	2017	143
COF-44	Section E	Himalayan Balsam	2011	477
COF-45	Section E	Himalayan Balsam	2010	134
COF-46	Section E	Himalayan Balsam	2017	1886
COF-47	Section E	Himalayan Balsam	2017	1633
COF-48	Section E	Japanese Knotweed	2017	1871
COF-49	Section E	Himalayan Balsam	2013	1241
COF-50	Section E	Himalayan Balsam	2013	1291
COF-51	Section F	Three-cornered Garlic	2012	1276
COF-52	Section F	Japanese Knotweed	2014	2001
COF-53	Section F	Japanese Knotweed	2014	1992
COF-54	Section F	Japanese Knotweed	2016	273
COF-55	Section F	Rhododendron ponticum	2012	1909
COF-56	Section F	Rhododendron ponticum	2009	711
COF-57	Section F	Least Duckweed	2008	1949
COF-58	Section F	Himalayan Honeysuckle	2009	572
COF-59	Section F	Cherry Laurel	2009	572
COF-60	Section F	Japanese Knotweed	2012	1448
COF-61	Section F	Bluebell	2009	755
COF-62	Section F	Japanese Knotweed	2008	1483
COF-63	Section F	Japanese Knotweed	2012	1372

Ref Number on Figure 3	Section	Species	Date of Record	Distance from Order Limits (m)
COF-64	Section F	Bluebell	2013	822
COF-65	Section F	Himalayan Balsam	2010	489
COF-66	Section F	Himalayan Balsam	2016	235
COF-67	Section F	Himalayan Balsam	2010	272
COF-68	Section F	Himalayan Balsam	2014	227
COF-69	Section F	Himalayan Balsam	2016	258
COF-70	Section F	Himalayan Balsam	2012	1328
COF-71	Section F	New Zealand Pigmyweed	2008	852
COF-72	Section F	New Zealand Willowherb	2014	1490
COF-73	Section F	Japanese Knotweed	2014	1490
COF-74	Section F	Cherry Laurel	2014	1490
COF-75	Section F	Wall Cotoneaster	2014	2154
COF-76	Section F	Himalayan Balsam	2009	274
COF-77	Section F	Himalayan Balsam	2012	0
COF-78	Section F	Himalayan Balsam	2012	0
COF-79	Section F	Japanese Knotweed	2008	237
COF-80	Section F	Japanese Knotweed	2016	274
COF-81	Section F	Japanese Knotweed	2008	761
COF-82	Section F	Himalayan Honeysuckle	2011	596
COF-83	Section F	Japanese Knotweed	2008	965
COF-84	Section F	Cherry Laurel	2013	223
COF-85	Section F	Rhododendron ponticum	2013	223
COF-86	Section F	Himalayan Cotoneaster	2014	1204
COF-87	Section F	Japanese Knotweed	2008	1613
COF-88	Section F	Japanese Knotweed	2011	1120
COF-89	Section F	Least Duckweed	2007	1295
COF-90	Section F	Japanese Knotweed	2008	1630
COF-91	Section F	Japanese Knotweed	2008	664
COF-92	Section F	Rhododendron ponticum	2012	1871
COF-93	Section F	Himalayan Balsam	2016	1656
COF-94	Section F	Japanese Knotweed	2008	1067
COF-95	Section F	Japanese Knotweed	2008	1773

Appendix B: Target Notes

Target Notes were initially recorded for the larger survey area included in the assessment however due to the evolution of the design, the survey area was refined to the Order Limits plus a 50 m buffer between Wylfa and Pentir. Only Target Notes recorded within the survey area are presented here however the results gathered in the wider area were used to inform other ecology surveys conducted as part of the Proposed Development.

Phase 1 Target Notes		
Target Note Number	Description	
TN 1	Wall/fence with scattered scrub and marshy areas.	
TN 2	Wall/fence with scattered scrub and marshy areas.	
TN 3	Hedge running adjacent to a shallow stream approximately 1-2 m wide and 0.5 m deep. Overgrown with limited water.	
TN 4	Shallow stream approximately 0.5 m deep. Thick, dense scrub.	
TN 5	Flowing stream with scattered scrub and water-parsnip (Sium latifolium) on the banks. Too shaded for water vole (Arvicola amphibious) and unsuitable for otter (Lutra lutra).	
TN 6	Shallow stream 1-2 m wide with a species-poor hedge.	
TN 7	Anecdotal evidence was given of birds nesting on the pond and also of peregrine falcon (<i>Falco peregrinus</i>).	
TN 8	Shallow stream 1-2 m wide and approximately 0.5 m deep. Cattle poached in places. An otter spraint was observed.	
TN 9	Dry drain	
TN 10	Semi-natural broadleaved woodland which contains oak <i>Quercus</i> sp., ash (<i>Fraxinus excelsior</i>), sycamore (<i>Acer pseudoplatanus</i>), beech (<i>Fagus sylvestris</i>), hawthorn (<i>Crataegus monogyna</i>) and blackthorn (<i>Prunus spinose</i>).	

Phase 1 Target Notes		
Target Note Number	Description	
TN 11	Three farm buildings are considered to offer potential for bats and barn owls (<i>Tyto alba</i>).	
TN 12	Dry, boggy pond with no standing surface water.	
TN 13	A pair of stonechats (Saxicola rubicola) observed.	
TN 14	Indian balsam (Impatiens glandulifera) observed on the old railway line.	
TN 15	At least three stands of Japanese knotweed (Fallopia japonica) present along the old railway line; in view from the bridge.	
TN 16	Anecdotal evidence was given of great crested newts on the land.	
TN 17	Large pond is considered to offer potential for great crested newts and also possible reptiles.	
TN 18	Railway bank with associated scrub are considered to offer potential for basking reptiles.	
TN 19	A small shaded stream that may be suitable for commuting otter, but having low potential for water vole.	
TN 20	Japanese rose (Rosa rugose) observed.	
TN 21	Six common snipe (Gallinago gallinago) observed.	
TN 22	Incidental notification of culvert/ditch in this area.	
TN 23	Farmer has reported breeding tawny owls (Strix aluco).	
TN 24	Small pond which is succeeding to marshy grassland. It is considered that his pond is likely to dry out in summer.	
TN 25	Majority marshy grassland with some poor semi-improved grassland - 3-8 % coverage of rushes (<i>Juncus</i> sp.).	
TN 26	Rocky outcrops within the field.	
TN 27	Species-rich verge adjacent to a ditch. Species included bird's-foot-trefoil (<i>Lotus corniculatus</i>), meadowsweet (<i>Fillipendua ulmaria</i>) and water mint (<i>Mentha aquatic</i>).	
TN 28	Three out of four buildings are considered to offer potential for bats.	
TN 29	Anecdotal evidence from the homeowner suggests that bats and owls use the buildings.	

Phase 1 Target Notes		
Target Note Number	Description	
TN 30	Buildings with bat roost potential.	
TN 31	Potential for roosting bats.	
TN 32	Unimproved grassland	
TN 33	Numerous butterflies and dragonflies observed.	
TN 34	Old building featuring lots of vegetation is considered to offer bat roost potential.	
TN 35	Possible bat roost potential.	
TN 36	Tree with bat roost potential.	
TN 37	Possible bat roost potential	
TN 38	Trees with bat roost potential.	
TN 39	Tree with bat roost potential.	
TN 40	Mature ash considered to offer bat roost potential.	
TN 41	Potential for bats, badgers and birds.	
TN 42	Trees with bat roost potential.	
TN 43	An area of exposed rock and cliff edge that is overgrown.	
TN 44	Small clearing, felled and quarried with a grave and iron cross present.	
TN 45	Trees with bat roost potential.	
TN 46	Possible bat roost potential	
TN 47	Trees with bat roost potential.	
TN 48	Mature sycamore (Acer pseudoplatanus) with bat roost potential.	
TN 49	Trees with bat roost potential.	
TN 50	Indian balsam observed	
TN 51	Waxcap fungi observed.	
TN 52	Trees with bat roost potential.	
TN 53	Trees with bat roost potential.	
TN 54	Trees with possible bat roost potential.	

Phase 1 Target Notes		
Target Note Number	Description	
TN 55	Possible newt potential.	
TN 56	Trees with possible bat roost potential.	
TN 57	Tall ruderal with Indian balsam.	
TN 58	Farm buildings with bat roost potential.	
TN 59	An area of very deep, very wet mud. Health and Safety Target Note.	
TN 60	Rubble present, potential hibernacula for amphibians and reptiles.	
TN 61	Large stand of Japanese knotweed. Montbretia (<i>Crocosmia</i> sp.) is also present.	
TN 62	Broadleaved woodland plantation with dense scrub.	
TN 63	Large patches of dense scrub.	
TN 64	Pond containing an island of reedmace (<i>Typha</i> sp.) in the centre, possibly providing potential for great crested newts.	
TN 65	Old brash pile which may provide refugia for reptiles and hedgehogs (<i>Erinaceus europaeus</i>).	
TN 66	Indian balsam	
TN 67	Disturbed ephemeral vegetation includes Indian balsam.	
TN 68	Disturbed ground, potential for reptile and amphibian shelter.	
TN 69	Stand of Japanese knotweed.	
TN 70	Building with possible bat roost potential. May also be suitable for nesting birds.	
TN 71	Farm building with bat roost and nesting bird potential.	
TN 72	Mixed plantation woodland with potential for red squirrel (Sciurus vulgaris).	
TN 73	Mixed plantation woodland with potential for red squirrel.	
TN 74	Active railway line.	
TN 75	Stone railway bridge in good condition.	
TN 76	Trees with bat roost potential.	
TN 77	Japanese knotweed observed.	

Phase 1 Target Notes		
Target Note Number	Description	
TN 78	Tree with bat roost potential.	
TN 79	Marshy grassland providing potential for breeding birds. Trees providing potential for bats are also present.	
TN 80	Trees with bat roost potential.	
TN 81	Trees with bat roost potential.	
TN 82	Trees with bat roost potential.	
TN 83	Tree with bat roost potential.	
TN 84	Suitable bat habitat.	
TN 85	Suitable amphibian habitat.	
TN 86	Four trees with bat roost potential.	
TN 87	Suitable amphibian habitat.	
TN 88	Trees with bat roost potential on either side of the road.	
TN 89	Bat droppings observed on gate.	
TN 90	Building with bat roost potential.	
TN 91	Tree with bat roost potential.	
TN 92	Trees with bat roost potential.	
TN 93	Trees with bat roost potential.	
TN 94	Poor semi-improved grassland and bracken mosaic with semi-natural broadleaved woodland on the perimeter is considered to offer potential for reptiles.	
TN 95	Unimproved grassland	
TN 96	Potential for reptiles, invertebrates and birds.	
TN 97	Trees with bat roost potential.	
TN 98	Indian balsam observed.	
TN 99	Tree with possible bat roost potential on the boundary.	
TN 100	Extensive gorse (<i>Ulex</i> sp.) scrub and marshy grassland. Bell heather (<i>Erica cinerea</i>) is present and there is potential for greater botanical interest, in addition to the potential for birds and reptiles.	