

# FIVE ESTUARIES OFFSHORE WIND FARM

VOLUME 9, REPORT 22.1: ARBORICULTURAL REPORT

Application Reference
Application Document Number
Revision
APFP Regulation:
Date

EN010115 9.22.1 A 5(2)(q) March 2024



Project	Five Estuaries Offshore Wind Farm
Sub-Project or Package	DCO Application
Document Title	Volume 9, Report 22.1: Arboricultural Report
Application Document Number	9.22.1
Revision	A
APFP Regulation	5(2)(q)
Document Reference	005076723-01

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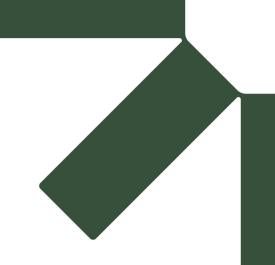
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Α	Mar-24	DCO Application	SLR	GoBe	VE OWFL





## **Arboricultural Feasibility Report**

## **Five Estuaries Offshore Wind Farm**

**Five Estuaries Offshore Wind Farm Ltd** 

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SLR Project No.: 404.05356.00010

20 February 2024

Revision: 02

#### **Revision Record**

Revision	Date	Date Prepared By		Authorised By	
01	10 January 2024	RB	MS	RB	
02	20 February 2024	RB	JF	JF	

## **Basis of Report**

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#### **Executive Summary**

SLR Consulting Ltd have been instructed by Five Estuaries Offshore Wind Farm Limited (VE OWFL) to undertake an Arboricultural Feasibility Report to inform the Environmental Statement (ES) for the proposed onshore Export Cable Corridor (ECC) area between landfall and the onshore substation location (ONSS). This report presents the findings of the high-level arboricultural survey and arboricultural constraints associated with the proposed onshore elements of the Five Estuaries Offshore Wind Farm (VE OWF).

Due to the early design stage of the project, it was not considered practical or proportional to undertake tree surveys to the high detail required to fulfil the requirements of BS 5837:2012, as such, the Arboricultural Feasibility Report has utilised National Tree Map (NTM) data to map the tree coverage within the survey area and calculate Indicative Root Protection Areas (RPA). Additionally, a desk-based review of the following was also undertaken to identify protected or designated trees and woodland: Ancient Tree Inventory (Ancient Tree Inventory - Woodland Trust) to identify known ancient or veteran trees; Ancient Woodland (Ancient Woodland (England) - data.gov.uk) prior to the field work, and found the database contains records of ancient or veteran trees within or adjacent to the Order Limits; and Tendring District Council Tree Preservation Orders.

Following a proportional approach to the field work, an early review of the NTM data within the survey area was undertaken to identify areas where a Construction Exclusion Zone (CEZ) providing a buffer of at least 15m from tree stems could be implemented, and as such, provide an RPA equal to or greater than the minimum area of protection recommended within BS 5837.

Field surveys were then undertaken following the principles of BS 5837 to record the following data for trees which were determined to have potential to be a constraint to the VE OWL scheme:

- BS 5837 category grading A, B, C, U
- Identification of ancient or veteran trees, or trees with veteran features
- Measured stem diameter of veteran trees.
- Identification of any trees which are unlikely to fall outside the criteria used to define Indicative RPA, e.g., pollarded trees.

This report should be used to develop the proposed scheme in a manner which avoids high and moderate quality trees (category A and B respectively) as far as possible.

Should additional design changes take place additional trees may require identification and surveying for inclusion within this report.

Following more detailed design development, a full BS 5837 tree survey should be undertaken to determine the quality and value of trees within the works areas and the spatial constraints associated with them in order to identify trees which will have to be removed to facilitate the proposed scheme and mitigation measures where possible.



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## **Acronyms and Abbreviations**

AIA	Arboricultural Impact Assessment	
AMS	Arboricultural Method Statement	
CEZ	Construction Exclusion Zone	
DBH	Diameter at Breast Height	
DCO	Development Consent Order	
EACN	East Anglia Connection Node	
ECC	Export Cable Corridor	
ES	Environmental Statement	
NGET	National Grid Electricity Transmission	
NTM	National Tree Map	
NF	North Falls	
NF OWF	North Falls Offshore Wind Farm	
NSIP	Nationally Significant Infrastructure Project	
OLEMP	Outline Landscape and Ecological Management Plan	
OnSS	Onshore Substation	
OWF	Offshore Wind Farm	
PEIR	Preliminary Environmental Information Report	
PRoW	Public Right of Way	
RPA	Root Protection Area	
TCC	Temporary Construction Compound	
TCP	Tree Constraints Plan	
TDC	Tendring District Council	
TPO	Tree Preservation Order	
TPP	Tree Protection Plan	
VE	Five Estuaries Offshore Wind Farm	



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#### 1.0 Introduction

SLR Consulting Ltd have been instructed by Five Estuaries Offshore Wind Farm Limited (VE OWFL) to undertake an Arboricultural Feasibility Report to inform the Environmental Statement (ES) for the proposed onshore Export Cable Corridor (ECC) area between landfall and the onshore substation location (OnSS). This report presents the findings of the high-level arboricultural survey and arboricultural constraints associated with the proposed onshore elements of the Five Estuaries Offshore Wind Farm (VE OWF).

#### 1.1 Project Description

VE OWF is a Nationally Significant Infrastructure Project (NSIP) and a proposed extension to the operational Galloper Offshore Wind Farm (OWF).

The onshore elements of VE OWF are located entirely within the administrative boundary of Essex County Council.

The export cable configuration will include up to two cable circuits connecting the offshore substation to the proposed Onshore Substation (OnSS) and into the proposed National Grid Norwich to Tilbury Reinforcement Project, by National Grid Electricity Transmission (NGET). The exact location for this is still to be determined and is subject to a separate consent process.

The onshore export cable corridor and substation arrangement have been designed in coordination with the adjacent NF project, and the onshore cable routes of the two projects will run immediately adjacent. This provides greater flexibility to coordinate with NF OWF, including allowing the installation of additional cable ducts. Additionally, the offshore wind farm onshore substations have been co-located in the same location to the west of Little Bromley.

Detailed information on the route of the Onshore ECC and associated infrastructure are given in the Environmental Statement (ES) Volume 6, Part 3, Chapter 1 Onshore Project Description.

#### 1.2 Survey Area

The survey area for the Arboricultural Feasibility Report includes all areas within the VE Order Limits plus an additional 15m buffer to account for trees adjacent to the site which have potential for their Root Protection Areas (RPA) to be impacted by works within the Order Limits.

#### 1.3 Trees and the Planning Process

#### 1.3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) recognises the contribution trees make to the 'intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services' (paragraph 180bullet point b).

The NPPF also recognises ancient woodland, and ancient and veteran trees as being 'of exceptional biodiversity, cultural or heritage value' and to be 'irreplaceable habitats'

Paragraph 186, bullet point c states 'When determining planning applications, local planning authorities should apply the following principles: development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons.



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#### 1.3.2 Town and Country Planning Act

Local Planning Authorities (LPA) are statutory consultees within the Development Consent Order (DCO) process and will regard the potential impact of VE OWF on all trees (including those not protected by a Tree Preservation Order or other statutory designation) as material consideration within the DCO submission.

Typically, a planning application will require the production of an Arboricultural Impact Assessment following the guidance set out in *BS 5837: 2012 Trees in relation to design, demolition and construction* – *Recommendations* (BS 5837). This document provides a framework for the consideration of trees within the context of a proposed development.

BS 5837 recommends that a tree survey is undertaken during the early stages of the project to identify the quality and benefits of trees and the spatial constraints associated with them. This information should be used to produce Tree Constraints Plans illustrating the above and below ground constraints associated with trees within and adjacent to the site, where the RPAs represent below ground constraints and above ground constraints might arise from the following attributes: the current and ultimate height and spread of the tree; species characteristics, including evergreen or deciduous, density of foliage, and factors such as susceptibility to honeydew drip, branch drop, fruit fall, etc.

The Tree Constraints Plans should be used as part of the design process and to allow the retention of good quality trees where appropriate.

#### 1.3.3 National Policy Statements

Energy National Policy Statements provide planning guidance for developers of nationally significant energy infrastructure projects. The 2023 revised NPSs came into force on 17 January 2024, superseding the NPSs designated in July 2011.

The NPSs of relevance to the proposed development, all designated in November 2023, comprise:

EN-1 overarching NPS for Energy

EN-3 Renewable Energy and

EN-5 Electricity Networks Infrastructure.

#### 1.3.3.1 NPS for Overarching Energy (EN-1)

The NPS recognises the importance of trees within the following paragraphs

- 5.4.14 Irreplaceable habitats are habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity.
- 5.4.15 Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland183. Keepers of Time, the government's policy for ancient and native trees and woodlands in England sets out the government's commitment to maintain and enhance the existing area of ancient woodland, maintain and enhance the existing resource of known ancient and veteran trees, excluding natural losses from disease and death, and to increase the percentage of ancient woodland in active. Ancient and veteran trees found outside ancient woodland are also particularly valuable. Other types of irreplaceable habitats include blanket bog, limestone pavement, coastal sand dunes, spartina salt marsh swards, mediterranean saltmarsh, scrub, and lowland fen.

Furthermore, the following paragraphs are also of relevance:



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- 5.4.32 Applicants should include measures to mitigate fully the direct and indirect effects of development on ancient woodland, ancient and veteran trees or other irreplaceable habitats during both construction and operational phase.
- 5.4.53 The Secretary of State should not grant development consent for any development that would result in the loss or deterioration of any irreplaceable habitats, including ancient woodland, and ancient and veteran trees unless there are wholly exceptional reasons193 and a suitable compensation strategy exists.
- 5.11.27 Existing trees and woodlands should be retained wherever possible. In the EIP, the Government committed to increase the tree canopy and woodland cover to 16.5% of total land area of England by 2050. The applicant should assess the impacts on, and loss of, all trees and woodlands within the project boundary and develop mitigation measures to minimise adverse impacts and any risk of net deforestation as a result of the scheme. Mitigation may include, but is not limited to, the use of buffers to enhance resilience, improvements to connectivity, and improved woodland management. Where woodland loss is unavoidable, compensation schemes will be required, and the long-term management and maintenance of newly planted trees should be secured.

#### 1.3.3.2 NPS for Renewable Energy (EN-3)

Paragraph 2.10.101 states 'The impact of the proposed development on established trees and hedges should be informed by a tree survey and arboricultural/hedge assessment as appropriate.'

#### 1.3.3.3 NPS for Electricity Networks (EN-5)

Paragraph 2.5.1 states 'When planning and evaluating the proposed development's contribution to environmental and biodiversity net gain, it will be important – for both the applicant and the Secretary of State – to supplement the generic guidance set out in EN-1 (Section 4.6) with recognition that the linear nature of electricity networks infrastructure can allow for excellent opportunities to: i. reconnect important habitats via green corridors, biodiversity stepping zones, and reestablishment of appropriate hedgerows'

#### 1.3.4 Local Policy Context

The Order Limits are located within the boundary Tendring District Local Plan 2013-2033 and Beyond (Adopted January 2022). Section 2 contains the following relevant planning policies.

#### 1.3.4.1 Policy PPL 3 The Rural Landscape

The Council will protect the rural landscape and refuse planning permission for any proposed development which would cause overriding harm to its character or appearance, including to:...d. native hedgerows, trees and woodlands;...'

#### 1.3.4.2 Policy PPL 4 Biodiversity and Geodiversity

'.....Sites designated for their local importance to nature conservation, including Local Wildlife Sites (LoWS), Ancient Woodlands Protected Verges and aged or veteran trees will be protected from development likely to have an adverse impact on such sites or features. Proposals for enhancement of special interest and features will be supported, subject to other material planning considerations.'

#### 1.3.5 Neighbourhood Plans

No areas with Neighbourhood Plans would be impacted by the VE OWF.



#### 2.0 Methodology

The mapping of tree constraints within and adjacent to the Order Limits followed a two-stage process, described in the following sections.

#### 2.1 Baseline Mapping

Due to the early design stage of the project, it was not considered practical or proportional to undertake tree surveys to the high detail required to fulfil the requirements of BS 5837, as such, the Arboricultural Feasibility Report has utilised National Tree Map (NTM) data to map the tree coverage within the survey area. This data can then be used to inform the detailed design and potential avoidance / micrositing within the route corridor.

The NTM data is derived from high-resolution aerial photography, accurate surface models and other geographic data, including infrared imagery to provide an accurate representation of tree canopy extents (refer to Appendix A for further details). It provides data of tree location, height and canopy/crown extents for every single tree 3m and above in height.

The NTM data is provided as vector data for use within GIS and AutoCAD software and includes: crown polygons based on the actual crown shape; idealised crowns represented as circles and height points for each crown. The NTM is updated on a 3-year rolling cycle to maximise accuracy.

A desk-based review the following was also undertaken to identify protected or designated trees and woodland:

- Ancient Tree Inventory (<u>Ancient Tree Inventory Woodland Trust</u>) to identify known ancient or veteran trees.
- Ancient Woodland (<u>Ancient Woodland (England) data.gov.uk</u>) prior to the field work, and found the database contains records of ancient or veteran trees within or adjacent to the Order Limits.
- Tendring District Council Tree Preservation Orders

#### 2.2 Field Survey

The field survey of accessible areas (Public Rights of Way, highways and private land with an access licence granted) within and adjacent to the Order Limits was conducted on the 25<sup>th</sup>-27<sup>th</sup> July, and 31<sup>st</sup> July to 3<sup>rd</sup> August 2023. The field survey followed the principles of BS 5837 to record the following data for trees which were determined to have potential to be a constraint to the VE OWL scheme:

- BS 5837 category grading A, B, C, U
- Identification of ancient or veteran trees, or trees with veteran features
- Measured stem diameter of veteran trees.
- Identification of any trees which are unlikely to fall outside the criteria used to define Indicative RPA, e.g., pollarded trees.

#### 2.2.1 Indicative Root Protection Areas

The BS 5837 process uses stem diameter data measured during the field survey to calculate notional RPAs, given the high-level nature of the feasibility report, SLR have utilised NTM height data to calculate Indicative RPAs for trees within the survey area.

In order to provided reasonably and proportionally accurate Indicative RPAs, SLR has undertaken a programme of analysing tree data previously recorded following the BS 5837



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process in order to establish criteria for defining an Indicative RPA based on a correlation between measured tree height and stem diameters. This work has analysed data recorded from a broad range of species and growing conditions, both rural and urban. The results of this analysis have allowed us to apply an Indicative RPA to the NTM based on tree height and provides an indicative area where trees would provide a constraint to development.

Where the canopy extents of the NTM data are greater than the Indicative RPA, the canopy forms the extent of the Indicative RPA. The maximum Indicative RPA for all trees not identified as ancient or veteran has been capped at a 15m radius in line with Annex D of BS 5837. Where veteran trees have been identified and are accessible, the Indicative RPA is based on a measured stem diameter of any tree identified as being ancient or veteran and calculated as per the current standing advice (Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)). Where the trees are not accessible, they have been given an Indicative RPA based on the following:

- Default radius of 18.75m, i.e., 15 times the stem diameter of 1250mm (maximum measured within BS 5837), or
- 5m beyond the canopy extent, where the canopy is greater than 18.75m.

#### 2.3 Areas Scoped Out due to Embedded Mitigation

Following a proportional approach to the field work, an early review of the NTM data within the survey area was undertaken to identify areas where a Construction Exclusion Zone (CEZ) providing a buffer of at least 15m from tree stems could be implemented, and as such, provide an RPA equal to the minimum area of protection recommended within BS 5837. It is accepted that this may not fully protect the RPA of any un-mapped ancient or veteran which are present, and as such all areas scoped out of the survey but identified as requiring tree protection, would be subject to a site walk over prior to tree protection measures being implemented by a qualified arboriculturist to ensure no un-mapped ancient or veteran are present.

A summary of the areas scoped out on the above basis is presented in the following subsections.

#### 2.3.1 Trenchless and Horizontal Directional Drilling (HDD) Areas

The proposed scheme includes areas where trenchless or HDD is proposed to take place. Within these areas, it would be possible to implement a CEZ a minimum distance of 15m from the trees to ensure the protection of their RPA. As such trees within these areas have been scoped out of the survey. In some circumstances the trenchless technique has been proposed to avoid impact to the trees / sensitive habitats.

#### 2.3.2 Areas where works have been avoided

The design development process has identified areas where works can be avoided and therefore there is no potential for trees to be impacted, these include:

Frinton Golf Course

#### 2.3.3 Landfall Compound Zone

There are no trees within or adjacent to the area identified within the Landfall Zone, as such it has been scoped out of the survey.

#### 2.3.4 Off-route Haul Roads

A review of the Off-route Haul Roads summarising which areas have been scoped out and a justification for this can be found in Table A below.



Table A: Off-route Haul Roads - Trees to be Surveyed

Road name	Surveyed	Comments
Clacton Road, Great Holland, Frinton and Walton	Yes	N/A
North of Little Clacton Road, Frinton and Walton	No	No trees within or adjacent to Off-route Haul Roads
West of Pork Lane, Great Holland, Frinton and Walton	Yes	N/A
South of Thorpe Road, Thorpe Cross	Yes	N/A
North of Thorpe Road, Thorpe Cross	Yes	N/A
East of Landermere Road, Thorpe-le-Soken	Yes	N/A
West of Landermere Road, Thorpe-le-Soken	Yes	N/A
Golden Lane, Thorpe-le- Soken	No	Trees outside survey area
Thorpe Road, Tendring	Yes	N/A
Tendring Brook, Lodge Lane, Tendring	No	Trees outside survey area
Stones Green Road, Wix	Yes	N/A
A120, Bradfield, Horsley Cross	No	No trees within or adjacent to Off-route Haul Roads
Ardleigh Road, Little Bromley	Yes	N/A

#### 2.3.5 Temporary Construction Compounds

In many of the Temporary Construction Compounds (TCCs), it would be possible to implement a CEZ of at least 15m from the stems of adjacent trees, and as such, these trees have been scoped out of the survey. Where, this is not possible, trees have been included within the survey.

A review of the TCCs summarising which areas have been scoped out and a justification for this can be found in Table B below.

Table B: Temporary Construction Compound – Trees to be Surveyed

Temporary Construction Compound	Surveyed	Comments
1	Partial	15m to be applied to trees along to the eastern, southern and southwest boundaries.
2	No	No trees within or adjacent to TCC
3	Yes	N/A
4	Yes	N/A
5	No	No trees within or adjacent to TCC
6	Partial	15m to be applied to trees along north-western boundary.



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Temporary Construction Compound	Surveyed	Comments	
7	No	No trees within or adjacent to TCC	
8	No	No trees within or adjacent to TCC	
9	No	No trees within or adjacent to TCC	
10	No	No trees within or adjacent to TCC	
11	No	No trees within or adjacent to TCC	
Beach Works	No	No trees within or adjacent to TCC	

#### 2.3.6 Access and Crossing Zones

Where possible a CEZ of at least 15m from the stems of trees adjacent the boundaries of the Access and Crossing Zones would be possible, and as such, these trees have been scoped out of the survey. Where, this is not possible, trees have been included within the survey. A summary of individual Access and Crossing Zones is shown in Table C below.

Table C: Access and Crossing Zones - Trees to be Surveyed

Road name	Surveyed	Comments
Clacton Road, Great Holland, Frinton and Walton	Yes	N/A
Little Clacton Road, Frinton and Walton	No	No trees within or adjacent to access area.
Thorpe Road, Thorpe Cross	Yes	N/A
Sneating Hall Lane, Thorpe-le- Soken	No	No trees within or adjacent to access area.
Damants Farm Lane, Thorpe Cross	Yes	N/A
Landermere Road, Thorpe-le- Soken	Yes	N/A
Golden Lane, Thorpe-le-Soken	No	No trees within or adjacent to access area
Tendring Road, Thorpe-le-Soken	No	No trees within or adjacent to access area
Thorpe Road, Tendring	Yes	N/A
Lodge Lane, Tendring	No	15m to be applied to trees to south of access area
Wolves Hall Lane, Tendring	No	No trees within or adjacent to access area
Stones Green Road, Wix	Yes	N/A
Clacton Road, New House Farm, Wix	Yes	N/A
Clacton Road, Kellys Farm, Wix	Yes	N/A
Clacton Road, Abbotts Hall	No	No trees within or adjacent to access area
Bentley Road, Little Bromley	No	No trees within or adjacent to access area
Payne's Lane, Little Bromley	No	No trees within or adjacent to access area
Spratts Lane, Little Bromley	Yes	N/A



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Road name	Surveyed	Comments
Barlon Road, Little Bromley	No	15m to be applied to tree along western boundary.
Ardleigh Road, Little Bromley	No	No trees within or adjacent to access area

#### 2.3.7 National Grid EACN Substation Zone

It has been assumed it would be possible to provide a Construction Exclusion Zone (CEZ) at least 15m from the stems of trees adjacent the boundaries of the National Grid EACN Substation Zone, as such, these trees have been scoped out of the survey.

#### 2.3.8 Existing access tracks to be utilised for construction access

Access to the beach will use Holland Haven Country Park car park access road which currently provides access to two residential properties, London Port Authority Radar Tower, Gunfield Boating Club and Clacton-Holland Haven Sewage Treatment Works (STW).

It is considered that there is no potential for impacts to trees along temporary access routes identified for use during the construction of the process scheme.

#### 2.4 Areas Scoped In

Ther following areas were included within the field survey:

- Onshore Order Limits, including
  - Landfall Compound Zone
  - Off-route Haul Roads
  - Access and Crossing Zones
  - Substation Zone, including
    - Substation Temporary Construction Compound
    - Substation Access Road
    - Substation Drainage Connection Zone
    - North Falls Substation works area and indicative access route
    - 400kV Underground Cable Zone

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#### 2.5 Limitations and Assumptions

The limitations to the tree survey include the following key points:

#### 2.5.1 No Access Granted

It was not possible to access a number of land parcels within the study area during the field survey due to no licence agreement being agreed with the landowners. Where possible, if PRoW crossed these areas, trees were surveyed from the PRoW, in all other areas the trees have not been surveyed. If access is granted (and the trees are likely to be impacted) missing trees could be surveyed at a later date and feed the information into the detailed design process.



#### 2.5.2 Order Limits

The survey was undertaken during September 2023, as such this report does not include areas beyond the defined Order Limits at this time. It is recommended that any additional areas identified beyond the scope of Survey Area defined by Order Limits at the time of the survey should be surveyed and included in any further detailed design process / mitigation measures proposed during construction.

#### 2.5.3 Indicative Root Protection Areas

The Indicative RPAs have been defined using NTM data and as such do not follow the guidance with BS 5837. The Indicative RPA illustrates a notional circular buffer around the highest point of the tree, rather than stem location. The Indicative RPA represents the likely extent of the minimum amount of root zone that is required in order to retain the tree in a safe and healthy manner. However, this is not necessarily representative of a tree root system e.g., the roots may extend beyond the RPA boundary on one side and remain inside it on the opposite. The root network extent is dependent on many factors including species, age, soil conditions, topography and exposure etc.

Whilst it is recognised that, on an individual basis, tree height does not necessarily correlate with the size of the RPA, we believe that the Indicative RPA illustrated on the tree Constraints Plan (Appendix B) provide a likely worse-case scenario based on empirical data from an extensive database of tree surveys.

#### 2.5.4 Tree Health

The health and condition of trees can change rapidly and all trees, even healthy ones, are at risk from unpredictable climatic and man-made events. This report is based on the observed health and structural condition of the trees at the time of survey by suitably qualified inspectors. The health, condition and safety of trees should be checked on a basis commensurate with the level of risk and preferably on an annual basis, as recommended in Common Sense Risk Management of Trees (National Tree Safety Group, 2011). The tree survey conducted for this report is not a tree health and safety survey and should not be used as such



#### 3.0 General Arboricultural Principles

#### 3.1 General Principles

Trees are dynamic living organisms which provide essential benefits to society and the wider environment. Any proposed development with the potential to impact on trees must take into consideration the value of trees on site, the impact of any proposed activity, and any potential future conflicts on the site. Suitable measures to safeguard retained trees or mitigate the loss of trees (to be removed) will need to be fully considered.

Tree branches and roots frequently grow across site boundaries and off-site trees can pose a constraint and should be carefully considered when assessing the developable space within a site.

#### 3.2 Below Ground Constraints

Below ground tree roots and the soil environment in which they grow need to be protected if the tree is to be retained. Trees grow in association with fungi and other soil organisms which are of key importance to tree health. Roots are essential for anchorage, the uptake of water and nutrients, and the storage of energy (carbohydrates) for the future growth and function of the tree.

Roots can be damaged by physical severance or wounding (e.g., following excavation of the soil) which can lead to the development of decay and a decline in vitality and/or instability. Raising the soil level can bury tree roots at a depth where suitable conditions for growth are less available. Toxic materials discharged into the soil (such as cement based aggregates, fuel and chemicals) can lead to root death and dysfunction. Soils can be compacted to levels inhospitable to tree growth with even a single pass of machinery, regular pedestrian traffic or the storage of plant and materials. Relieving compaction can be problematic and may require costly remedial works. Changes in drainage/water levels can also have significant long-term impacts for tree health.

The effects of these incursions may take many years to manifest, with a resulting decline in amenity value and potentially the death or failure of the tree. It should be noted that older trees are particularly sensitive to damage and changes in conditions.

The RPA is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. This area is deemed to be particularly important for tree stability, growth, function and health. However, roots may extend far greater distances, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients). It is accepted that tree roots grow predominantly near the surface, with 80-90% being located in the upper 60cm of soil, however, roots may develop at deeper levels where conditions allow.

The RPA of the existing tree stock is an important material consideration when assessing site constraints and planning development activities. The default position should be that all development, including any associated services will occur outside the RPAs of retained trees. Where this is unavoidable, it may be appropriate to use special measures to install structures, services or surfacing within RPAs which allow the protection of roots and soil structure which are essential for tree growth and keep any incursion to a minimum. Further steps to improve or increase the useable rooting area available to the tree may also be required.

#### 3.3 Soils

On shrinkable clay soil, tree growth can lead to the differential movement of structures as moisture is removed from the soil during the growing season. Soils must be carefully



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assessed. Where trees which predate existing structures are to be removed, this can result in heave as the soils are re-wet.

The advice of a suitably qualified engineer should be obtained to inform any potential issue of heave. Specific advice in relation to this issue is beyond the scope of this report.

#### 3.4 Above Ground Constraints

Tree stems and branches can restrict available space on a development site. Damage or wounding (including excessive pruning) can significantly reduce the amenity contribution of the tree and may lead to the development of dysfunction and decay, with significant long-term implications for tree health. The future impact of existing trees should be carefully considered, including individual species characteristics (such as potential future size, fruit fall, shade etc.) and how the tree will interact with any proposed development and future land use. Annual tree growth can lead to direct damage if stems/branches (or roots) come into physical contact with structures and this should also be taken into consideration.

#### 3.5 Trees and Risk in the Context of Development

Tree owners/managers have a legal duty to prevent foreseeable harm. It is generally accepted that this duty can be fulfilled by undertaking proactive inspections of significant trees to identify obvious defects and by taking appropriate remedial action or gaining further advice as appropriate.

Further guidance is available from the National Tree Safety Group (<a href="https://ntsgroup.org.uk/">https://ntsgroup.org.uk/</a>)

The tree survey carried out as the basis of this report is primarily for supporting the design purpose, focusing on the quality and benefits of the trees and is not specifically designed to assess the safety of the trees identified. However, when obvious issues have been identified recommendations have been included in the Tree Survey Schedule (Section 4.4).

The Construction (Design and Management) Regulations (2015) states that developers and contractors have responsibilities for health and safety as a result of their actions. Should trees be left in an unstable or hazardous condition the Health and Safety Executive (HSE) could seek to prosecute those responsible along with the potential for further civil claims for damages.

#### 3.6 Trees and Wildlife

Full consideration must be given to the presence of species protected under the Wildlife and Countryside Act (1981 - as amended), the Countryside Rights of Way Act (2000) and the Habitat Regulations (2017), in particular the presence of bats and nesting birds. It is recommended that wherever possible, significant tree/hedge works take place outside of the typical bird nesting season, typically March to August, but this may vary regionally and advice from a suitably qualified ecologist should be sought. The advice of a suitably qualified ecologist is also recommended in relation to any potential impacts on protected species. Volume 9, Report 9.22 presents the Outline Landscape and Ecological Management Plan (OLEMP), which sets out the in-principle measures which will be implemented for the onshore elements of Five Estuaries Offshore Wind Farm (VE) to avoid, reduce, mitigate or compensate for potential impacts on landscape and biodiversity resources, and the green infrastructure network they comprise. The OLEMP also includes measures intended to provide biodiversity and green infrastructure enhancements.



#### 3.7 Tree Works

Any tree surgery recommendations contained within this report are to be undertaken in accordance with BS3998: 2010 Tree work – Recommendations (BS3998) by suitably qualified and insured contractors. Significant pruning works are best undertaken when trees are dormant or outside periods of high functional activity to reduce the overall impact on energy available to the tree for growth and processes. In general, the optimum period for works is between November to February and July to August (subject to the presence of protected species) when the tree is less active and better placed to respond to wounding and a reduction in leaf area.

#### 3.8 Design Considerations

Section 5 of BS 5837 discusses the constraints trees pose on development design, paragraph 5.1.1 states that 'Certain trees are of such importance and sensitivity as to be major constraints on development or to justify its substantial modification. However, care should be taken to avoid misplaced tree retention; attempts to retain too many or unsuitable trees on a site can result in excessive pressure on the trees during demolition or construction work, or post-completion demands for their removal.'

In planning terms lower quality trees can generally be removed to facilitate development where their loss can be mitigated with replacement tree planting or where no replacement planting is necessary. This is likely to apply to C category and U category trees where there are no other constraints in place (e.g., ecological or heritage). Whereas higher quality trees (A and B category) should be retained and protected wherever possible; however, in some cases it may also be feasible to remove trees of this quality where there is no reasonable alternative and where the benefit of the development outweighs the impact of the loss of the tree(s).

#### 3.9 The Future Impact of Trees

The future impact of trees within or near to the survey area must be considered in relation to any development proposals. Trees and groups to be retained must be afforded suitable space to ensure they remain viable in the long term. Trees which are currently not fully grown will increase in size and this must be considered in conjunction with the proposed development and future use of the survey area.



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#### 4.0 Tree Constraints

The Tree Constraints Plans (TCP), (Appendix B) illustrate the area of spatial constraints associated with the trees within the survey area. As identified within the drawing legend, the green shaded area shows the extent of tree canopies, and the dashed line illustrates the Indicative RPA (which is the nominal area of tree roots which are considered essential to tree health and function). It is acknowledged that roots may extend beyond this boundary but are not considered a significant constraint within BS 5837. The category grading of the tree (as defined by Table 1 of BS 5837:2012) is indicated by the outline colour of the tree canopy.

The default position for any development is that all construction activities should be located outside of the RPA and crown spread of all retained trees.

The following sections summarise the constraints posed by trees within and adjacent to the survey area:

#### 4.1 Substation Access Haul Road

The route of the Substation Access Road passes through agricultural land between Bentley Road and Ardleigh Road. This route includes:

- a category A and category C tree along the highway boundary with Spratts Lane, with approximately 25m between Indicative RPAs.
- South of Ardleigh Road (right hand leg) the route includes a field boundary with two category B trees and one category A tree, with a gap of approximately 32m.
- South of Ardleigh Road (left hand leg) the route includes a field boundary with three
  individual category C trees, and a row of trees, including 12 category A (four of which
  are identified as veteran), three category B, one category C and one category U. The
  route would require the removal of the three individual category C trees, resulting in a
  minimum width of 31m between Indicative RPA of the retained trees and the Order
  Limits.

#### 4.2 Substation and Access Drainage Zone

The area identified as the Substation and Access Drainage Zone includes two trees (one classified as category A and one classified as category C) to the north-east of the area. The category C tree would require removal to facilitate the construction of the Substation Access Road. It considered that the category A tree would not be a significant constraint and could be retained. The area identified for the North Falls Substation Compound includes two trees (one classified as category B and one classified as category C) to the northern boundary. A minor adjustment to the location of this compound has potential to result in the retention of these trees.

#### 4.3 Off-route Haul Roads

#### 4.3.1 Clacton Road, Great Holland, Frinton and Walton

The area includes three category A (including one identified as veteran), five category C and two U category trees.

#### 4.3.2 West of Pork Lane, Great Holland, Frinton and Walton

The area includes no trees. The Indicative RPA of a single category A tree also identified as veteran extends into the area.



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#### 4.3.3 South of Thorpe Road, Thorpe Cross

The area includes no trees. A small woodland is adjacent to the east of the area, the Indicative RPA of six category A and two category B trees extends into the area.

#### 4.3.4 North of Thorpe Road, Thorpe Cross

The area includes no trees. The Indicative RPA of a single category A tree extends into the area.

#### 4.3.5 West of Landermere Road, Thorpe-le-Soken

The area includes two category B and three category C trees.

#### 4.3.6 Thorpe Road, Tendring

The area includes no trees. The Indicative RPA of a single category B tree extends into the area.

#### 4.3.7 Stones Green Road, Wix

The Indicative RPA of a single category A tree identified as veteran extends into the eastern area. A single category A tree is located within the western area.

#### 4.3.8 Ardleigh Road, Little Bromley

The area includes a field boundary with one category A, two category B, and four category C trees, and a row of trees, including 12 category A (four of which are identified as veteran), three category B, one category C and one category U.

#### 4.4 Temporary Construction Compounds (TCC)

#### 4.4.1 TCC 1

The northern boundary of the TCC includes three category A (including one identified as veteran), five category C trees. There is a gap of approximately 17m between the Indictive RPA of a category A and category C tree.

#### 4.4.2 TCC 3

The northern boundary of the TCC includes a single category B tree.

#### 4.4.3 TCC 4

The western boundary of the TCC includes a single category C tree, and the southern boundary includes one category B and one category U tree.

#### 4.4.4 TCC 6

The western boundary of the TCC includes four individual category C trees and a linear group containing category B and C trees

#### 4.5 Access and Crossing Zones

#### 4.5.1 Spratts Lane, Little Bromley

The crossing zone includes two category A, three category B and two category C trees located along the western field boundary adjacent to the highway.



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#### 4.5.2 Clacton Road, Kellys Farm, Wix

The access area includes three category C trees located along the eastern field boundary adjacent to the highway.

#### 4.5.3 Clacton Road, New House Farm, Wix

The access area includes five category B and two category C trees located along the eastern field boundary adjacent to the highway.

#### 4.5.4 Stones Green Road, Wix

The crossing zone includes two category A, one to each side of the Trenchless/HDD Area, with approximately 16m and 11m between the Indicative RPAs and the Order Limits to the eastern and western sides respectively.

#### 4.5.5 Thorpe Road, Tendring

The access area includes two category C trees located along the field boundary adjacent to the highway.

#### 4.5.6 Landermere Road, Thorpe-le-Soken

The crossing zone includes three category B trees to the south-west of the Trenchless/HDD Area, with a gap of approximately 10m between the Indicative RPA of two of the trees.

#### 4.5.7 Damants Farm Lane, Thorpe Cross

The crossing zone includes two category B and a single category C tree, additionally the Indicative RPA of a single category A tree to the north extends into the area.

#### 4.5.8 Thorpe Road, Thorpe Cross

The crossing zone includes a single category B tree to the north-west of the Trenchless/HDD Area, located within the field boundary to the south of the highway.

#### 4.5.9 Clacton Road, Great Holland, Frinton and Walton

The access area includes two category C trees located along the western field boundary to the highway.

#### 4.5.10 Bentley Road

The limits of the proposed widening along the southern extent of Bentley Road and the junction of the A120 includes 87 trees (13 category A, 12 category B, 60 category C and two category U) the majority of which are growing within the adjacent field boundary hedgerows or forming small tree groups adjacent properties. The Order Limits have been set out to minimise potential impacts on these trees, with areas of widening being focussed on areas of land with the least tree cover.

The proposed widening is likely to require the removal of one category B and 25 category C trees.



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#### 5.0 Legal Considerations

#### 5.1 Planning Policy

Prior to the removal of the trees or groups listed in this report, or any tree surgery works being undertaken, it is essential that the trees are assessed again for legal protected status. These include TPOs and Conservation Areas (CA), Sites of Special Scientific Interest, locally or nationally designated sites, designed landscapes and ancient woodland.

Works (either above or below ground) to trees protected by TPO or CA is an offence under the Town and Country Planning Act 1990 (as amended), and in the Town and Country Planning (Tree Preservation) (England) Regulations 2012 and Section 192 of the Planning Act 2008.

#### 5.2 Tree Preservation Orders

Tree Preservation Order (TPO) data was provided by TDC November 2023.

The following trees, tree groups and woodland are located within the Survey Area.

Table D: Tree Preservation Orders (TPOs)

Reference	Description	Location	Comments
77/00035/TPO	W.1 - Woodland consisting of oak and other hardwood trees	Parish of Thorpe-Le- Stoken	North-eastern edge situated within Trenchless/ HDD Area – No potential impact.  Northern boundary abuts O & M access Route with agricultural land – Potential impact on RPA - No dig construction required
97/00035/TPO	G.1 - 11 Oak Trees	Land Adjacent Wasses Corner, Swan Road, Beaumonth cum Moze	Trenchless/ HDD Area – No potential impact
97/00034/TPO	T.1 - 1 Oak	1 Barkers Hall Cottages, Tendring Road, Beaumonth cum Moze	Outside Order Limits Surveyed
23/00005/TPO	T.1 - 1 Oak T.2 - 1 Oak T.3 - 1 Oak T.4 - 1 Oak T.5 - 1 Oak T.6 - 1 Oak G.2 - 2 Oaks	Stones Green Rd, Tendring	Trees T3 to T6 within the Trenchless/ HDD Area – No potential impact. T1, T2 and G2 situated between Stones Green Road and O & M access Routes – mitigation required.
21/00091/TPO	G.1 - 3 Oaks and 2 Ash	Welhams Farm, Bentley Road, Little Bentley	Adjacent Bentley Road – No potential impact

The Tree Preservation Order prohibits the topping, lopping, damaging, wilful destruction and uprooting of the tress covered by the TPO without prior consent of the Local Authority. This includes any works included in the preliminary management recommendations in the Tree Survey Schedule and any work proposed in close proximity that may have an impact on both above and/or below parts of these trees.



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Consent needs to be sought from the Local Planning Authority if tree removal work or tree management work affect protected trees within the site or those which overhang the site boundary. Tree works must not be carried out without permission.

Work will also be permitted if it is included in an Arboricultural Impact Assessment, Arboricultural Method Statement and/or Tree Protection Plan approved by the Local Planning Authority where development proposals for a site have been granted Planning Permission.

#### 5.3 Conservation Areas

A review of Conservation Area (CA) within Tendring District Council was conducted on 6th December 2023 to identify the presence of CAs within the survey area. This check confirmed that the Order Limits do not overlap any conservation areas.

#### 5.4 Ancient Woodland

The Ancient Woodland Inventory was checked on the 3rd December 2023 for the presence of ancient woodland within or adjacent to the survey area. This inventory is located on the Multi-Agency Geographical Information for the Countryside (MAGIC) website (www.magic.defra.gov.uk). This is a spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

No part of the survey area or Order Limits is listed in the Ancient Woodland Inventory.

#### 5.5 Ancient and Veteran Trees

The Ancient Tree Inventory (Woodland Trust, 2021) was checked on 26<sup>th</sup>July 2023 for the presence of verified veteran/ancient trees within the survey area. National Planning Policy Framework (Ministry of Housing, Communities & Local Government, 2021) refers to veteran trees as "irreplaceable habitat" which due to their "age, size and condition, is of exceptional biodiversity, cultural or heritage value".

No trees within the survey area appeared within this inventory. SLR's qualified arboriculturists did not identify any trees, during survey, which they considered ancient or veteran.

During the field work 30 trees were identified as having veteran features.

#### 5.6 Felling Licence

The felling of trees is regulated in England by the Forestry Act 1967 (the Act). The Forestry Commission is the government regulator that enforces the provisions of the Act.

The felling of growing trees in England is restricted under section 9 of the Act. It requires that felling is either authorised by a felling licence issued by the FC or the felling activity is excepted from the need for a licence.

There are many exceptions to the need for a licence, based on the type of the tree, the location of the tree, the size of the tree, the nature and scope of the felling activity and the person responsible for the felling. These are primarily set out in section 9 of the Act as well as the Forestry (Exceptions from Restriction of Felling) Regulations 1979.

The most relevant exemption is:

'Section 9 - Requirement of licence for felling (1) A felling licence granted by the appropriate forestry authority shall be required for the felling of growing trees, except in a case whereby or under the following provisions of this Part of this Act this subsection is expressed not to apply...



(d) is immediately required for the purpose of carrying out development authorised by planning permission granted or deemed to be granted under the Town and Country Planning Act 1990 or the enactments replaced by that Act, or under the Town and Country Planning (Scotland) Act 1997.

Advice from a suitably qualified arboriculturist should be sought before any felling takes place on site.

The granting of permission to remove trees covered by a TPO by the Local Planning Authority does not remove the need to obtain a felling licence from the Forestry Commission if more than 5m<sup>3</sup> of timber are to be felled in a calendar quarter and none of the exemptions apply.



#### 6.0 Potential Mitigation Measures

It is often feasible to install new hard surfacing on existing soft ground within a tree RPA this requires the use of raised surfaces supported by carefully located piling or the use of proprietary load bearing surfaces (such as CellWeb, ArborRaft or equivalent) installed on top of the existing unsurfaced ground level using 'no dig' techniques. Guidance Note 12 – 'The use of cellular confinement systems near trees' published by the Arboricultural Association provides a guide to good practice.

New areas of hard surfacing or building footprints should not occupy more than 20% of the RPA of a retained tree, as set out in Section 7.4.2.3 of BS 5837:2012.

New services or the diversion or removal of existing services must be carefully considered. In general, all new services should be routed outside of the RPA of retained trees. Where this is unavoidable alternative methodologies such as the use of directional drilling or equivalent trenchless techniques can facilitate service installation beneath tree root systems (likely to be at least 1m+ dependent on ground conditions and tree species affected).

Shallow service runs may be installed using hand excavation where all significant tree roots can be retained and services be threaded beneath. Existing services can be winched out from a manhole/chamber located outside of an RPA and redundant pipework can be decommissioned using pipe bursting techniques to avoid excavation which could damage roots.

These operations typically require a detailed Arboricultural Method Statement to set out in detail how they can be successfully achieved.

#### 6.1 Tree Protection

Trees to be retained in close proximity to areas of construction, including areas for new surfacing, services, work site compounds and storage will need to be protected to ensure they are not damaged. This can be achieved with the use of robust, immovable temporary tree protection fencing, to prevent access within the RPA or canopy spread of trees. Where access is unavoidable, alternative protection arrangements such as ground protection (sufficient to protect the structure of the soil from compaction), and /or access facilitation pruning (to ensure a reasonable clearance for operations is provided) may be required. The advice of an arboriculturist should be sought to inform this assessment.

#### 6.2 Tree Planting

During the detailed design stage, consideration will be given to the reasonable provision of space for new tree planting to off-set any necessary tree loss. The OLEMP confirms that compensation for loss of hedgerows will be provided by re-instating native, species-rich hedgerows with trees, and including ditches where these were also present originally. Hedges will be reinstated at their original location and comprise a locally appropriate mixture of at least seven woody species and including heavy standard trees at a 3:1 ratio for any lost (noting that trees will not be planted above the installed cables). Compensation for the loss of trees along the route will also be provided by the proposed screen planting at the OnSS (see Chapter 2 and Section 8 of the OLEMP)

Soil structure in areas for new planting will need to be maintained and may require protection during operation of the proposed development to ensure reasonable conditions for future tree growth are available.

New planting should consider the existing species mix present within the survey area in relation to both arboricultural and ecological considerations. New planting also offers an opportunity to increase the species and age class diversity for a given area which can boost



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the resilience of the local tree stock in relation to pests, disease and climate change as well as providing a greater range of amenity and other benefits.

New trees should be planted in accordance with the minimum distances from new structures, services and surfacing set out in Table A.1 of BS 5837:2012. Tree stock selection, planting methods and planned maintenance regimes should follow guidance as set out in BS 8545:2014 Trees: from nursery to independence in the landscape.



### 7.0 Conclusions

The high-level assessment undertaken utilises NTM data to produce Indicative RPAs, this has been followed up a screening exercise to identified trees which would not be affected by the proposed works and location where a 15m CEZ can be constructed to ensure the RPA of all trees is sufficiently protected. Field surveys were than undertaken to categorise trees with potential to be affected in accordance with BS 5837 and identify any veteran trees.

This report should be used to develop the proposed scheme in a manner which avoids high and moderate quality trees (category A and B respectively) as far as possible.

Should additional design changes take place additional tree may require identification and surveying for inclusion within this report.

Following more detailed design development, a full BS 5837 tree survey should be undertaken to determine the quality and value of trees within the works areas and the spatial constraints associated with them.

Low quality trees (category C) are unlikely to be a significant constraint to development particularly where they can be easily replaced by mitigation planting, and as such should not be a design constraint in planning terms.

The removal (or height reduction) of trees will be kept to a minimum but where necessary will be completed in accordance with the prevailing best practice and controlled by the Code of Construction Practice (CoCP) and the OLEMP both of which will be secured within the DCO. The default position is that high and moderate quality tree should be retained and protected where possible.



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## Appendix A National Tree Map Data

## **Arboricultural Feasibility Report**

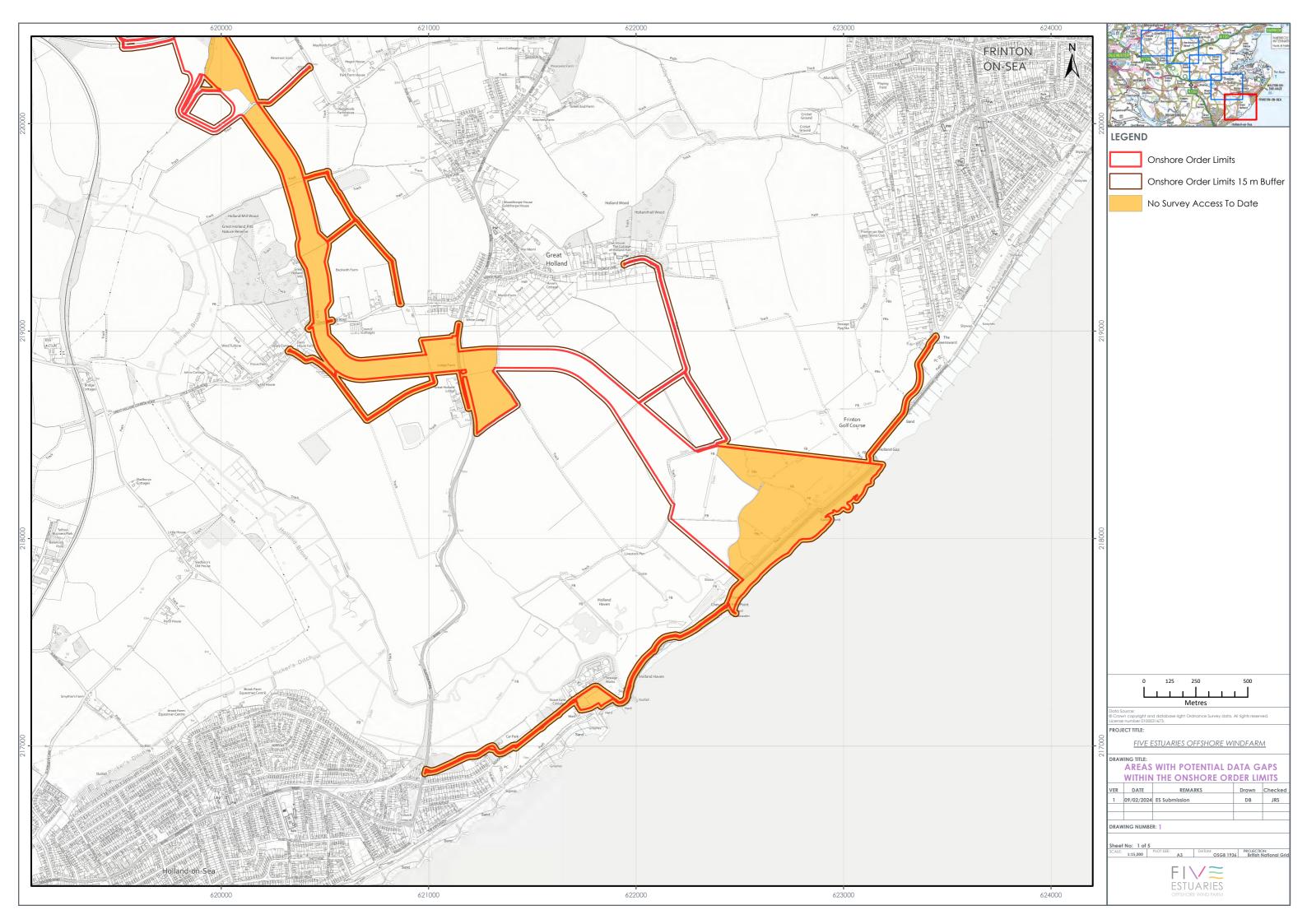
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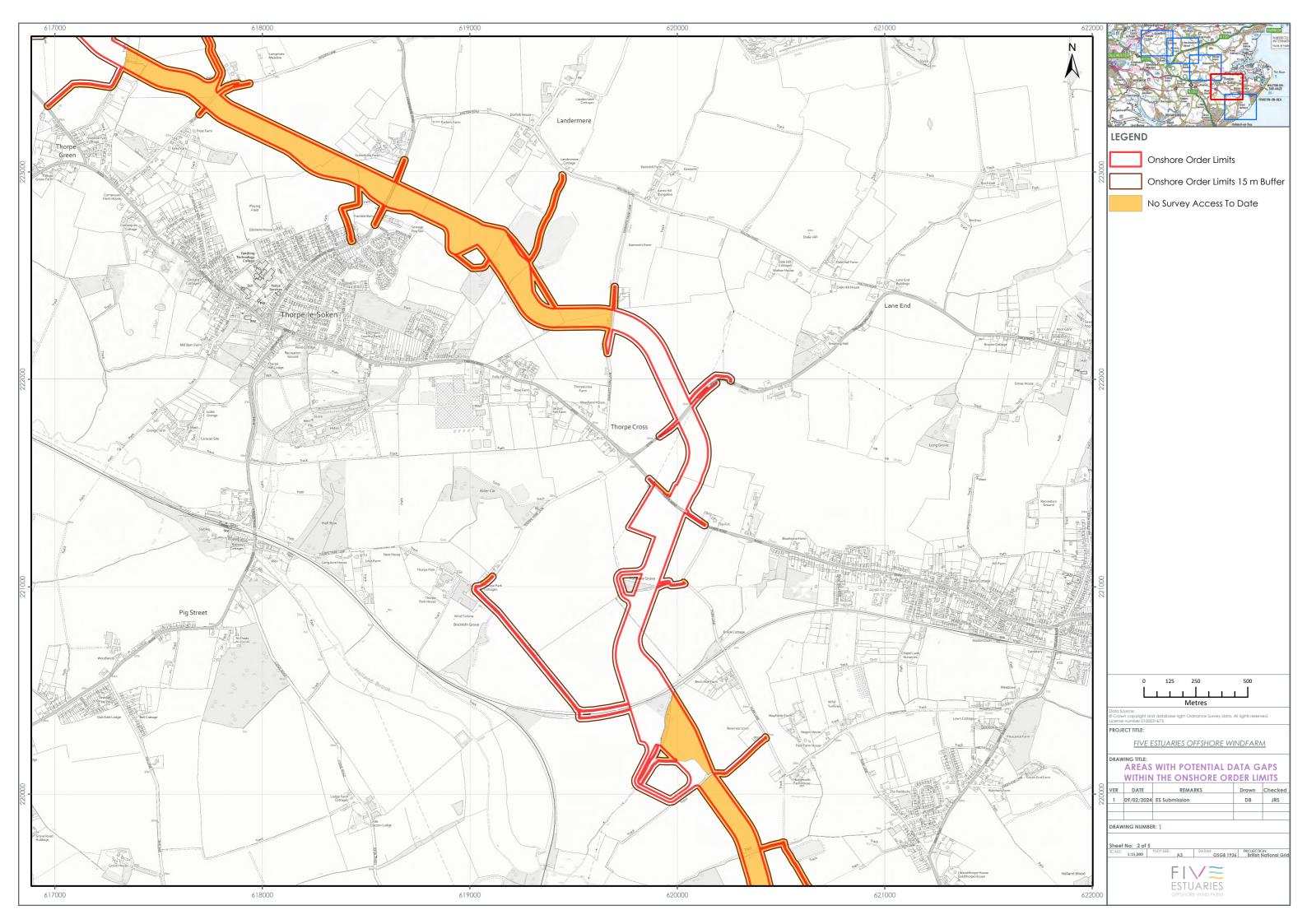
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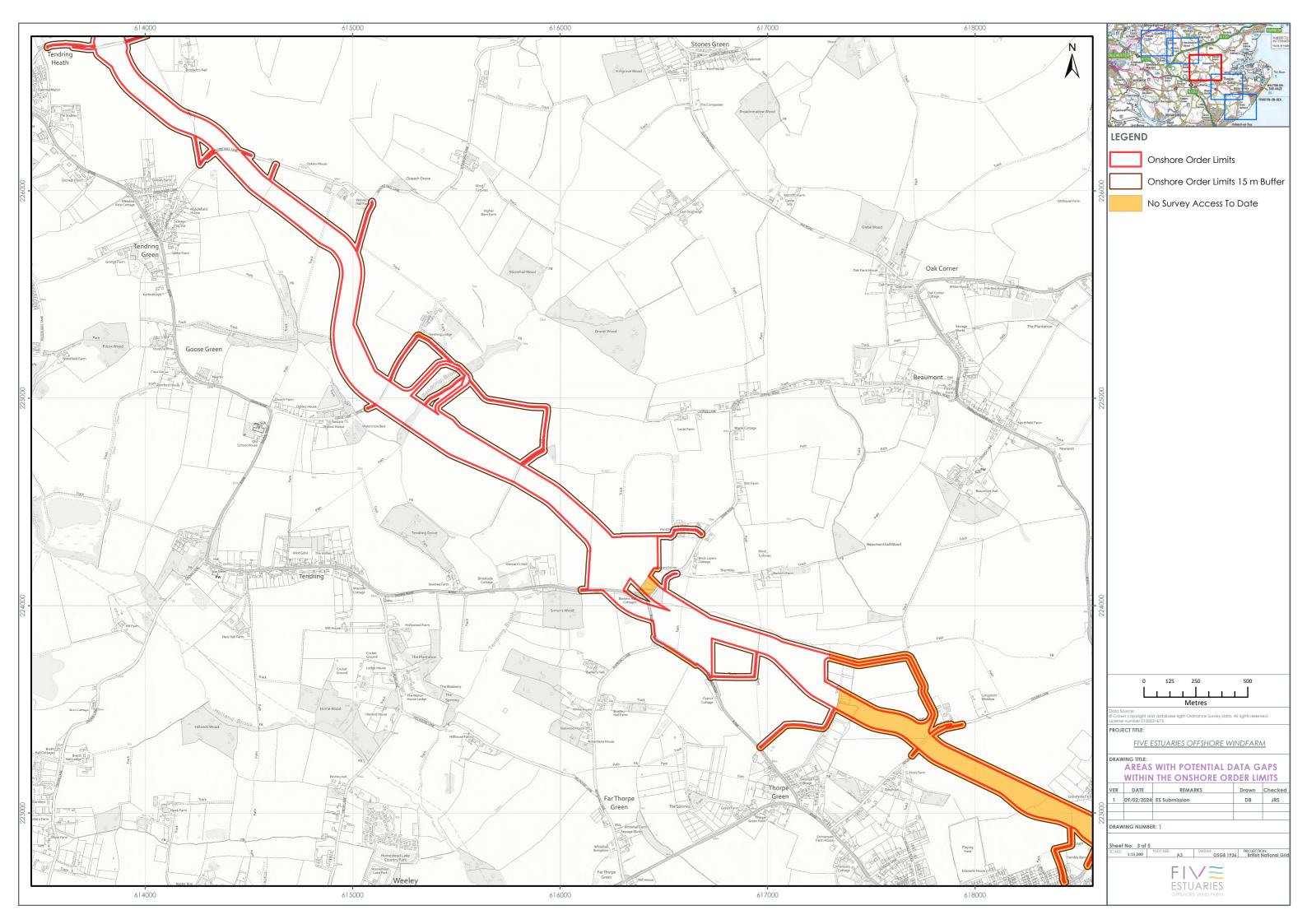
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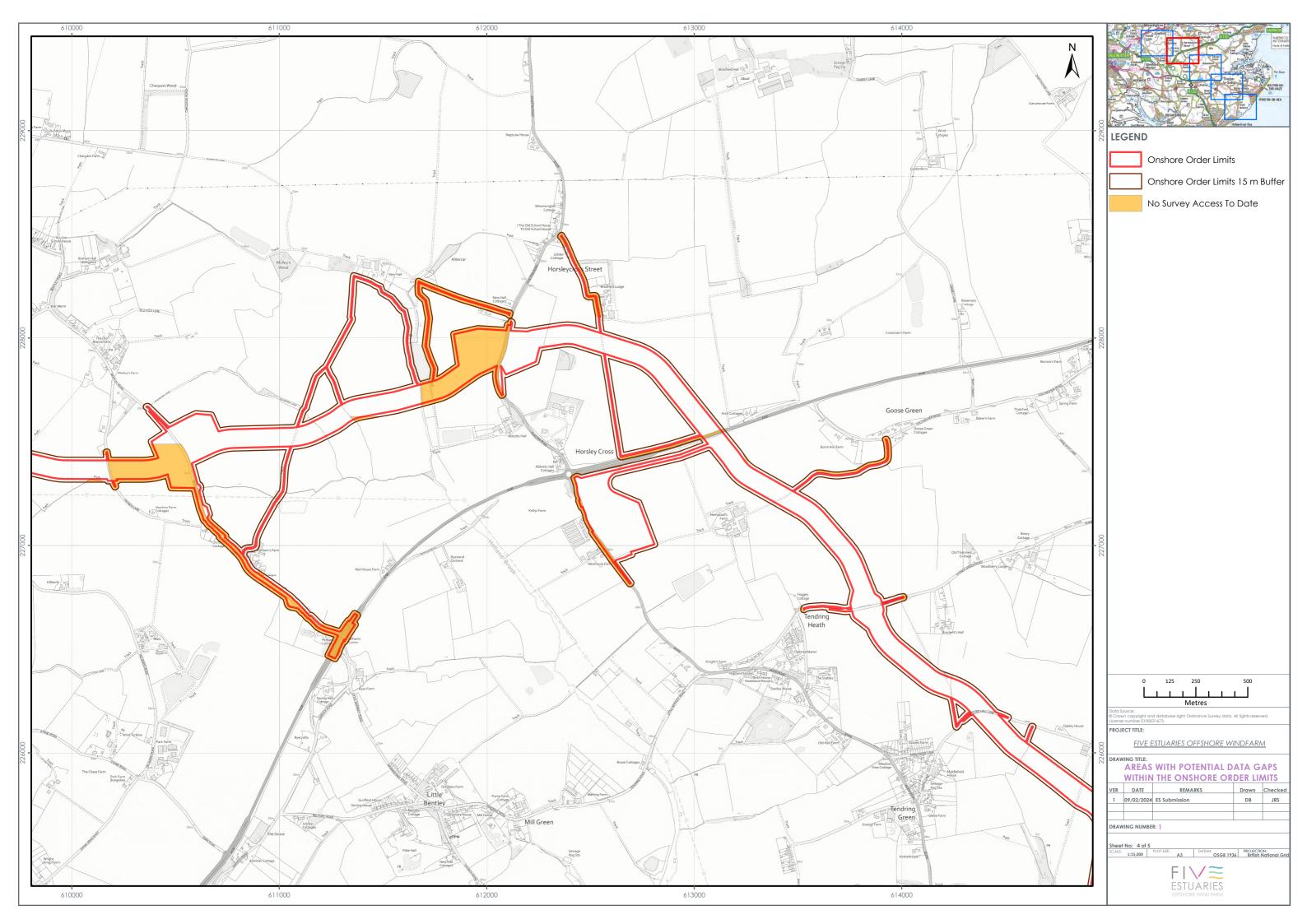
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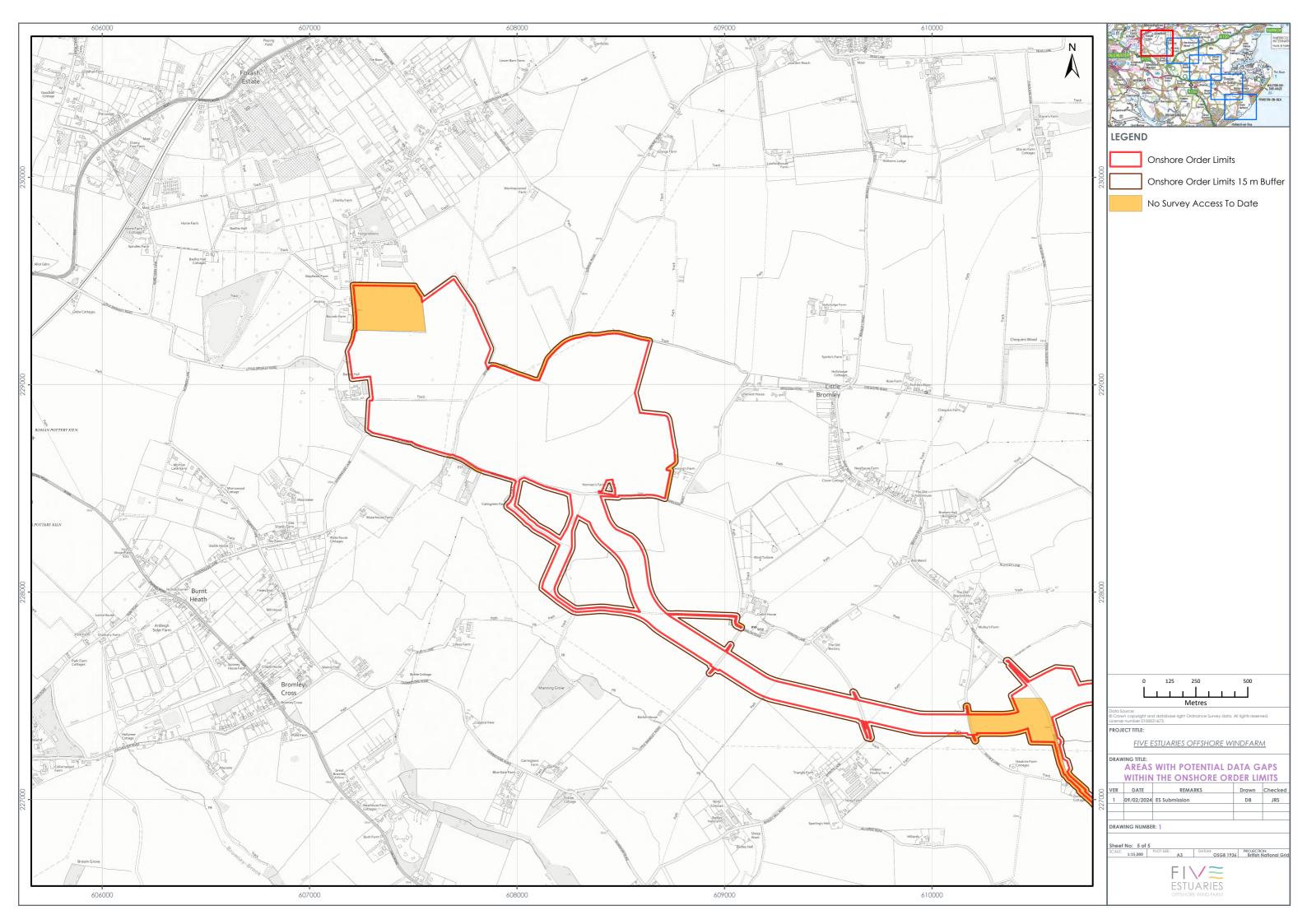


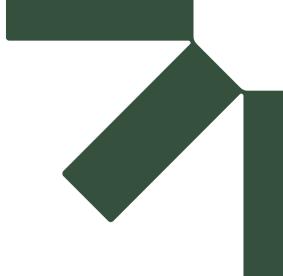












## Appendix B Tree Constraints Plans

## **Arboricultural Feasibility Report**

**Five Estuaries Offshore Windfarm** 

**Five Estuaries Offshore Wind Farm Ltd** 

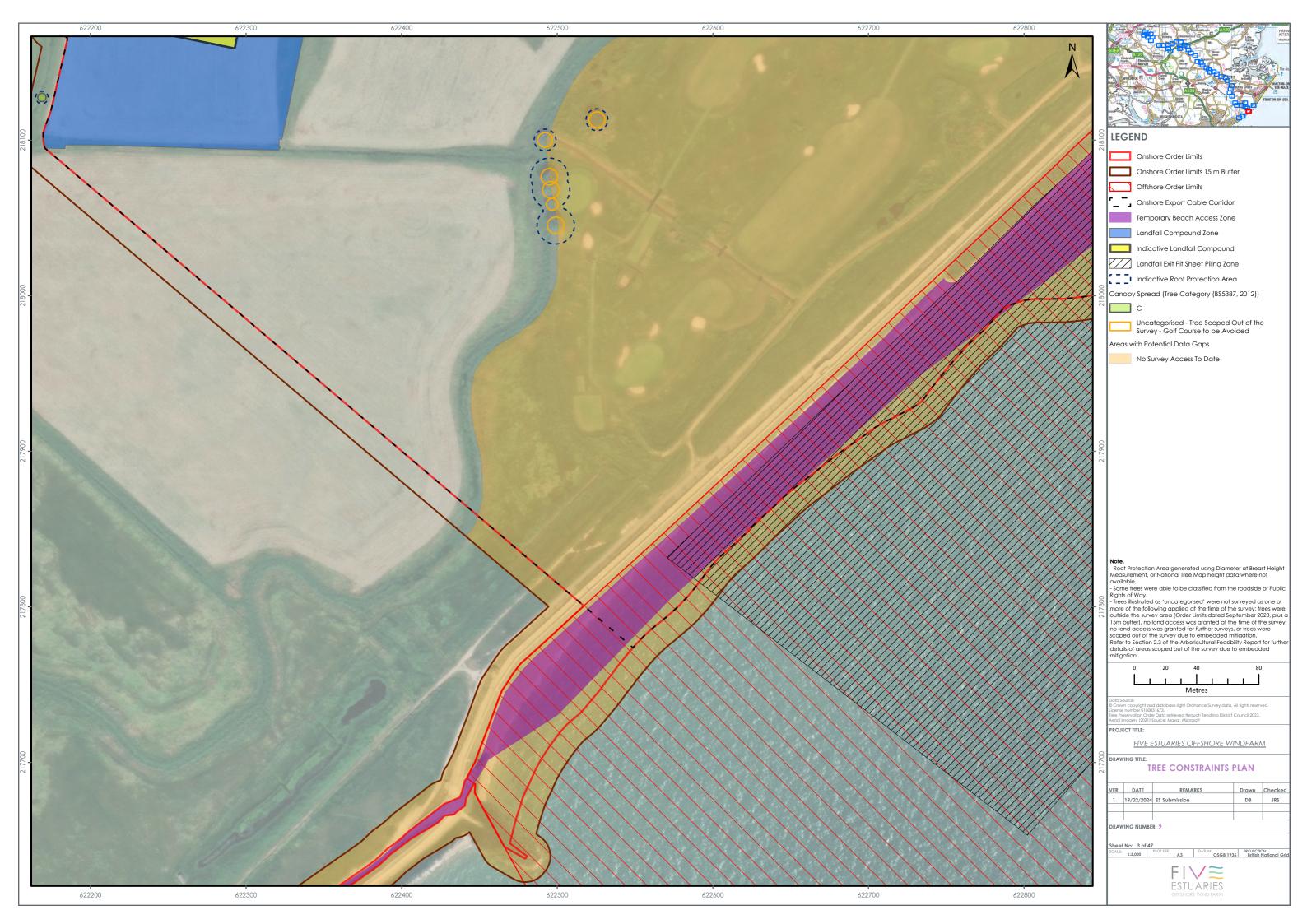
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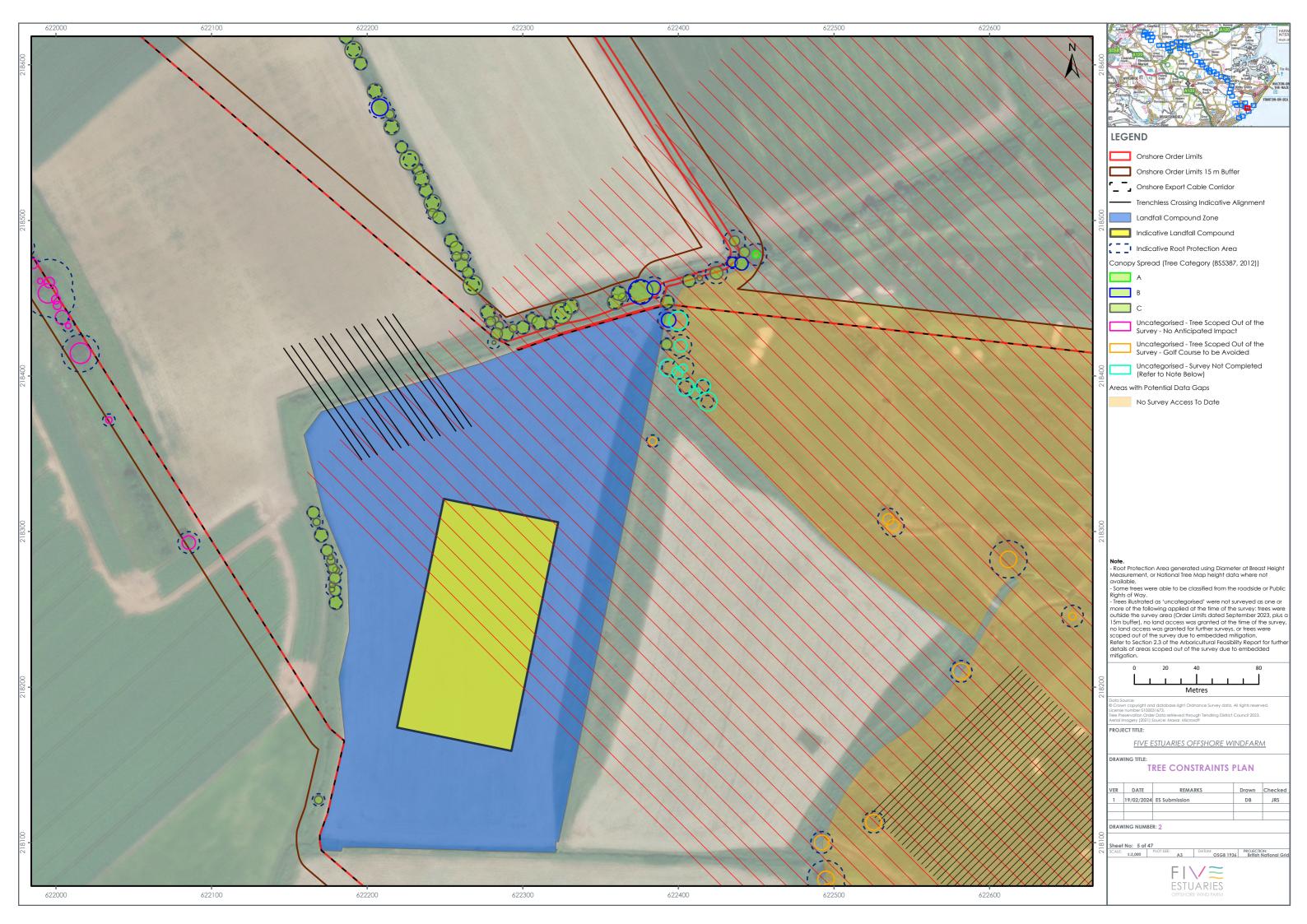






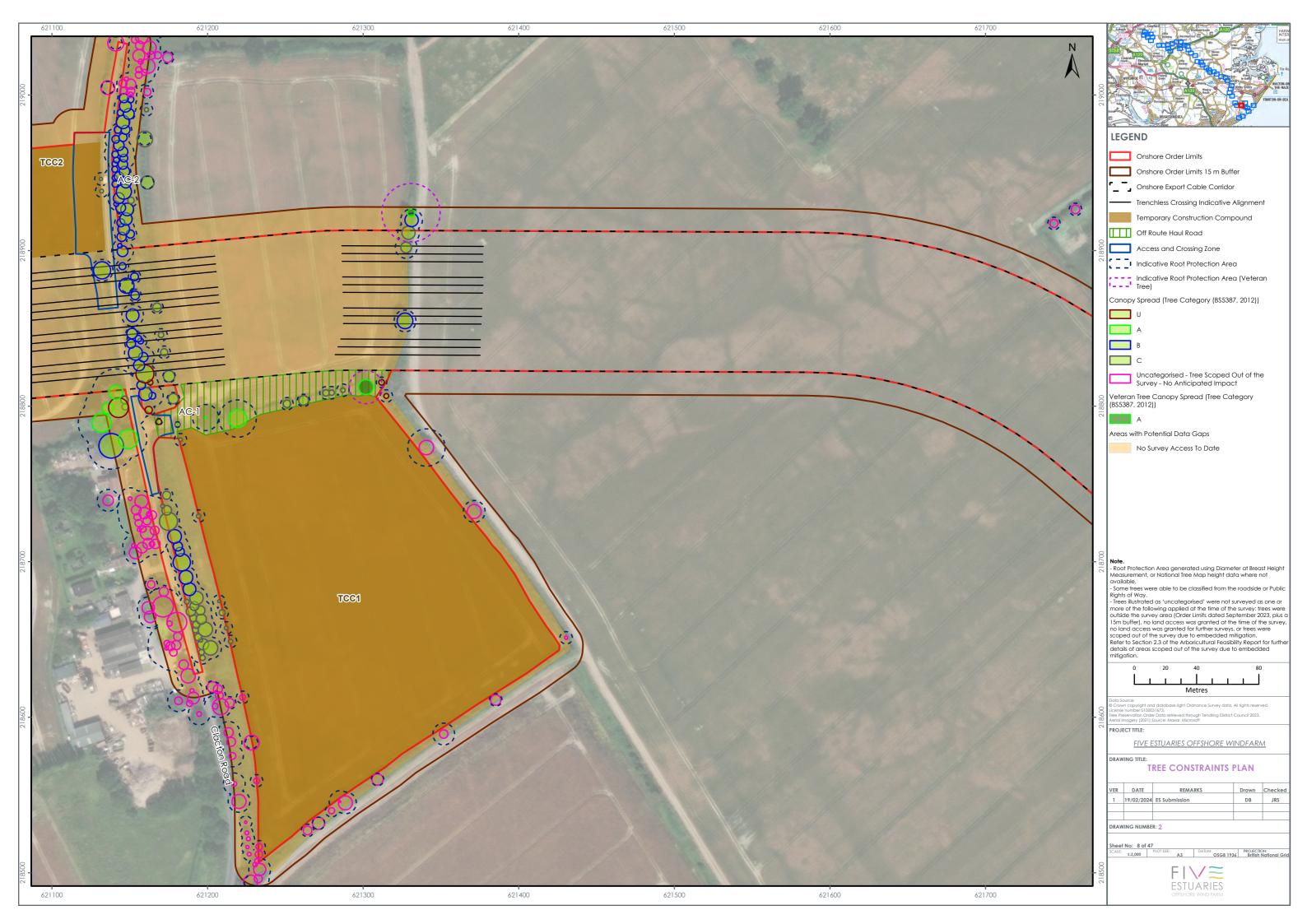




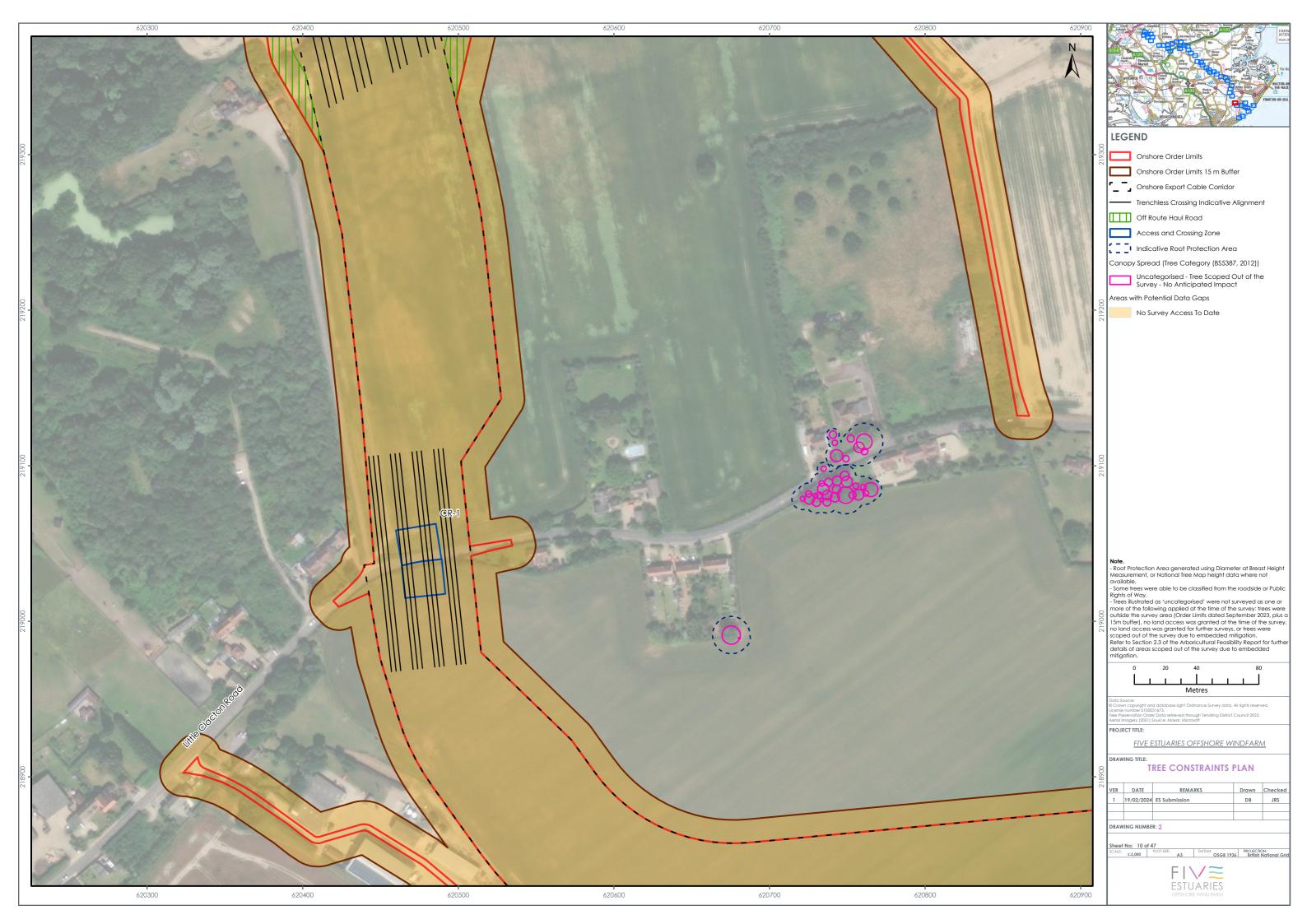


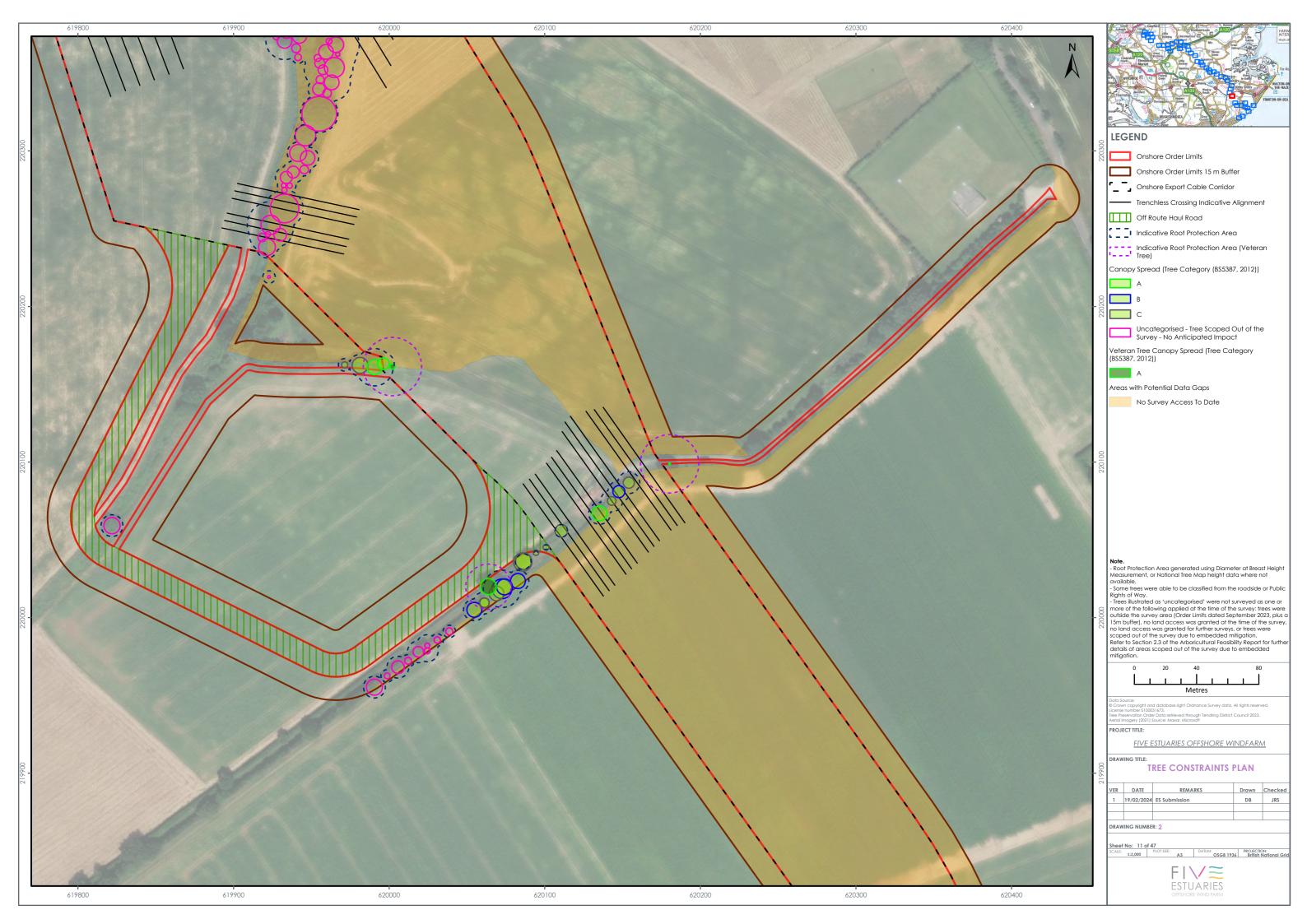


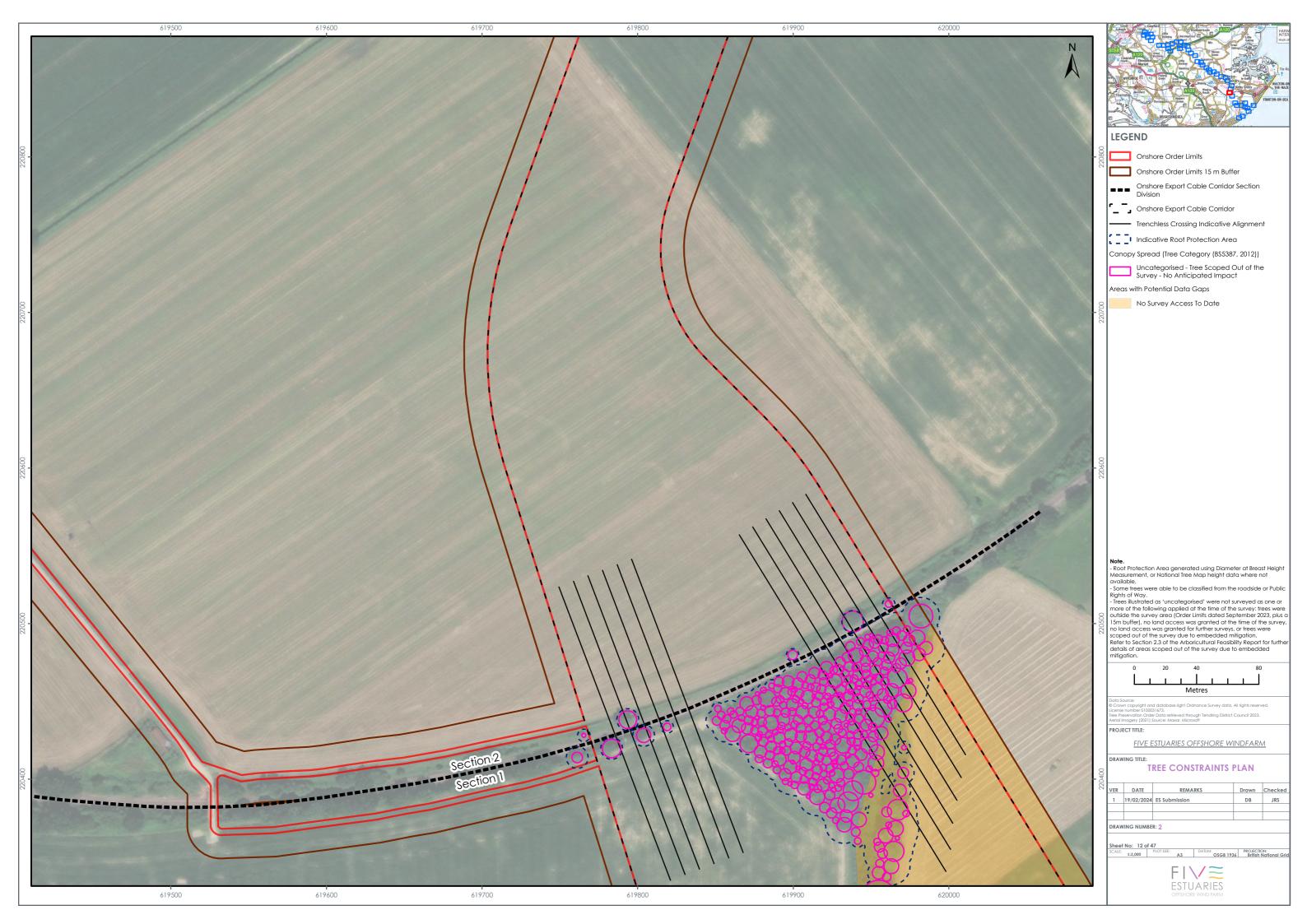


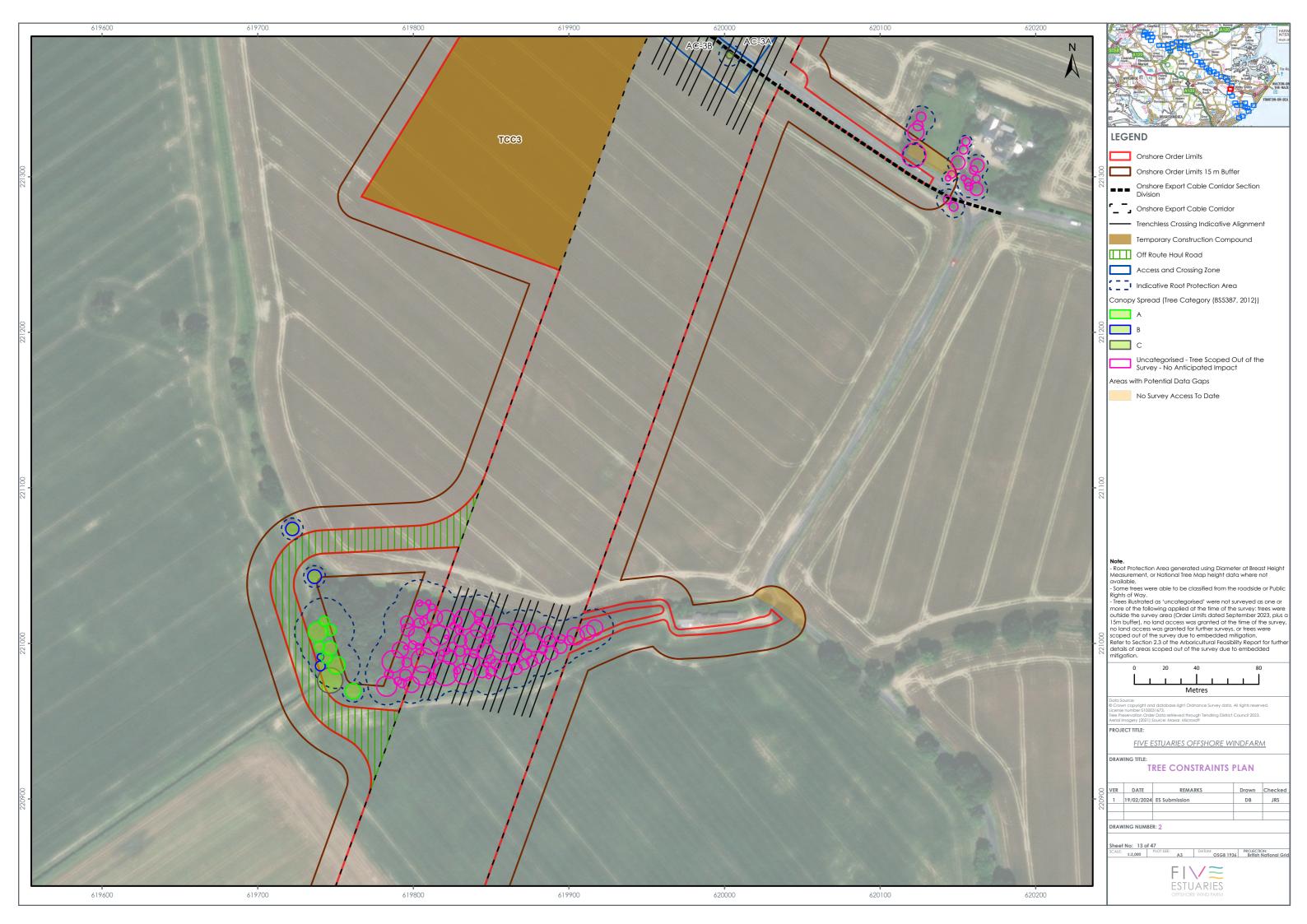


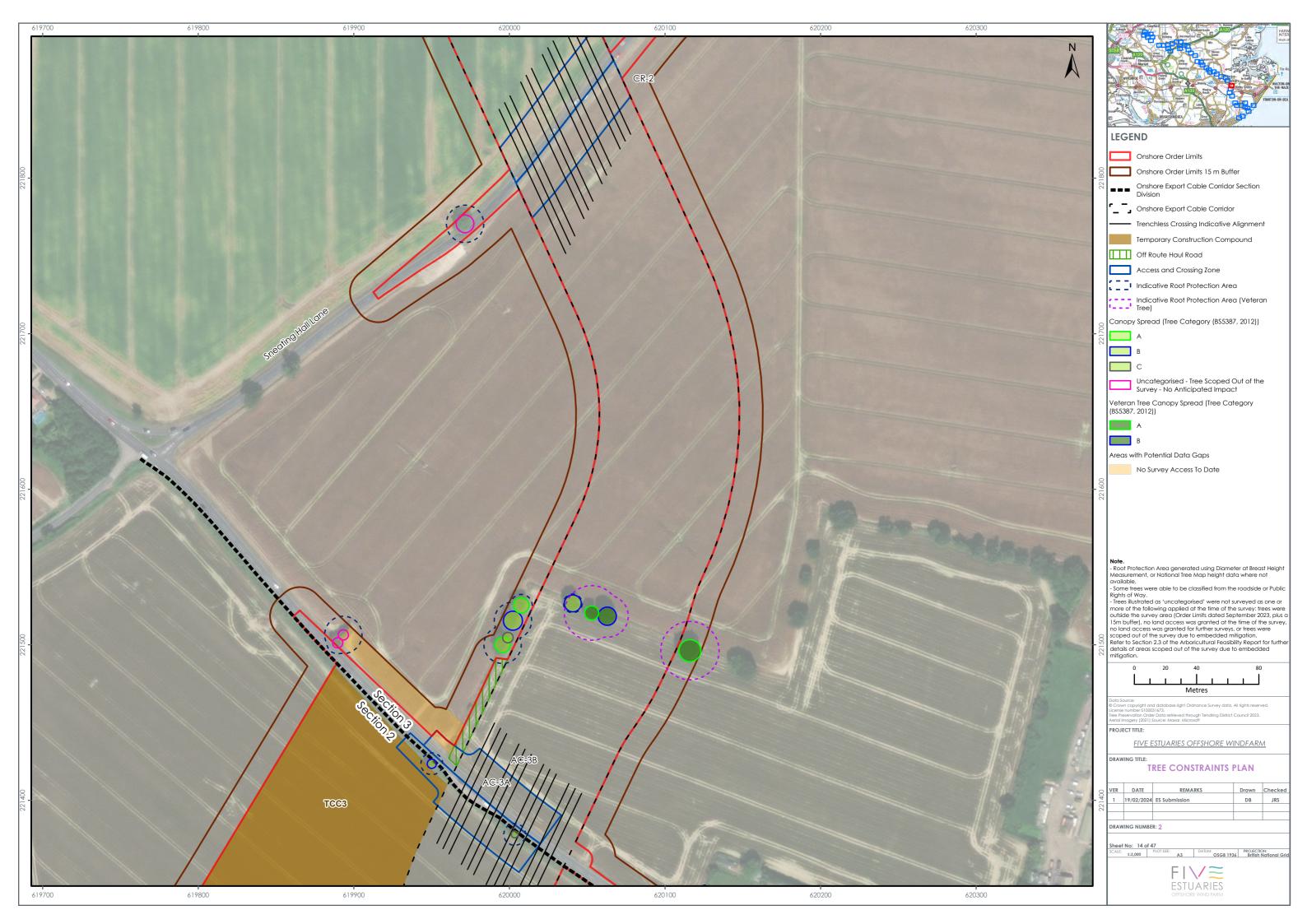


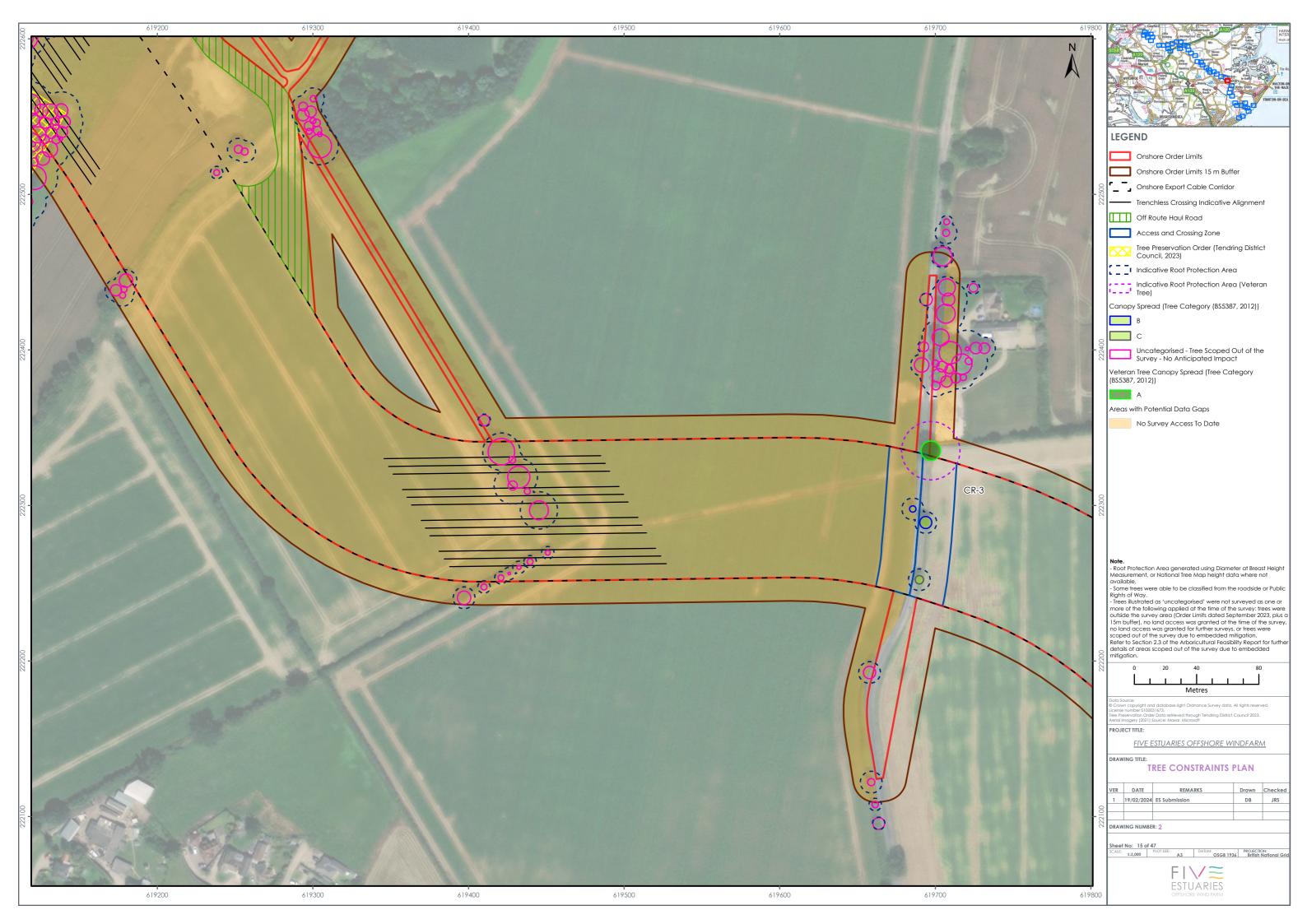


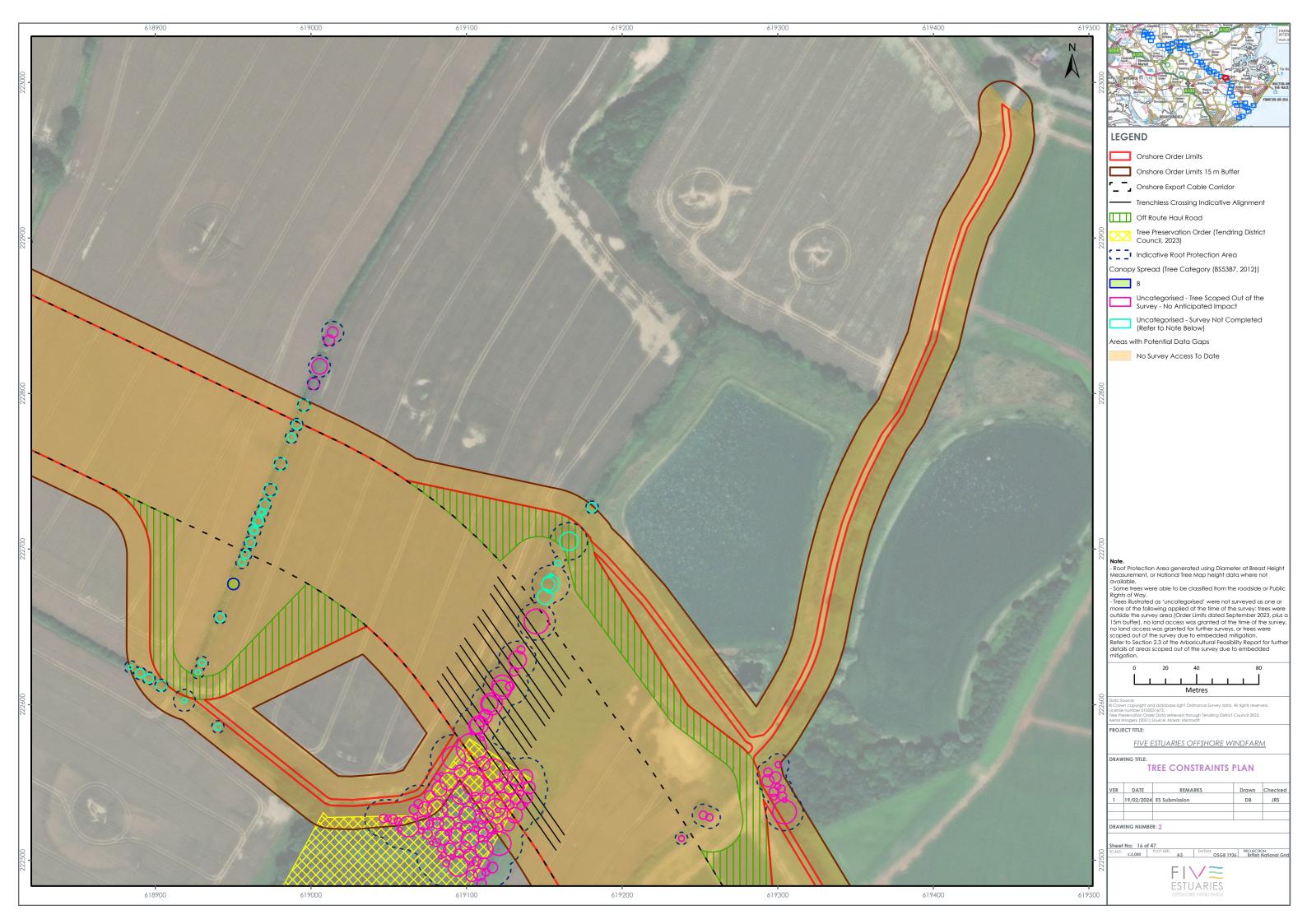


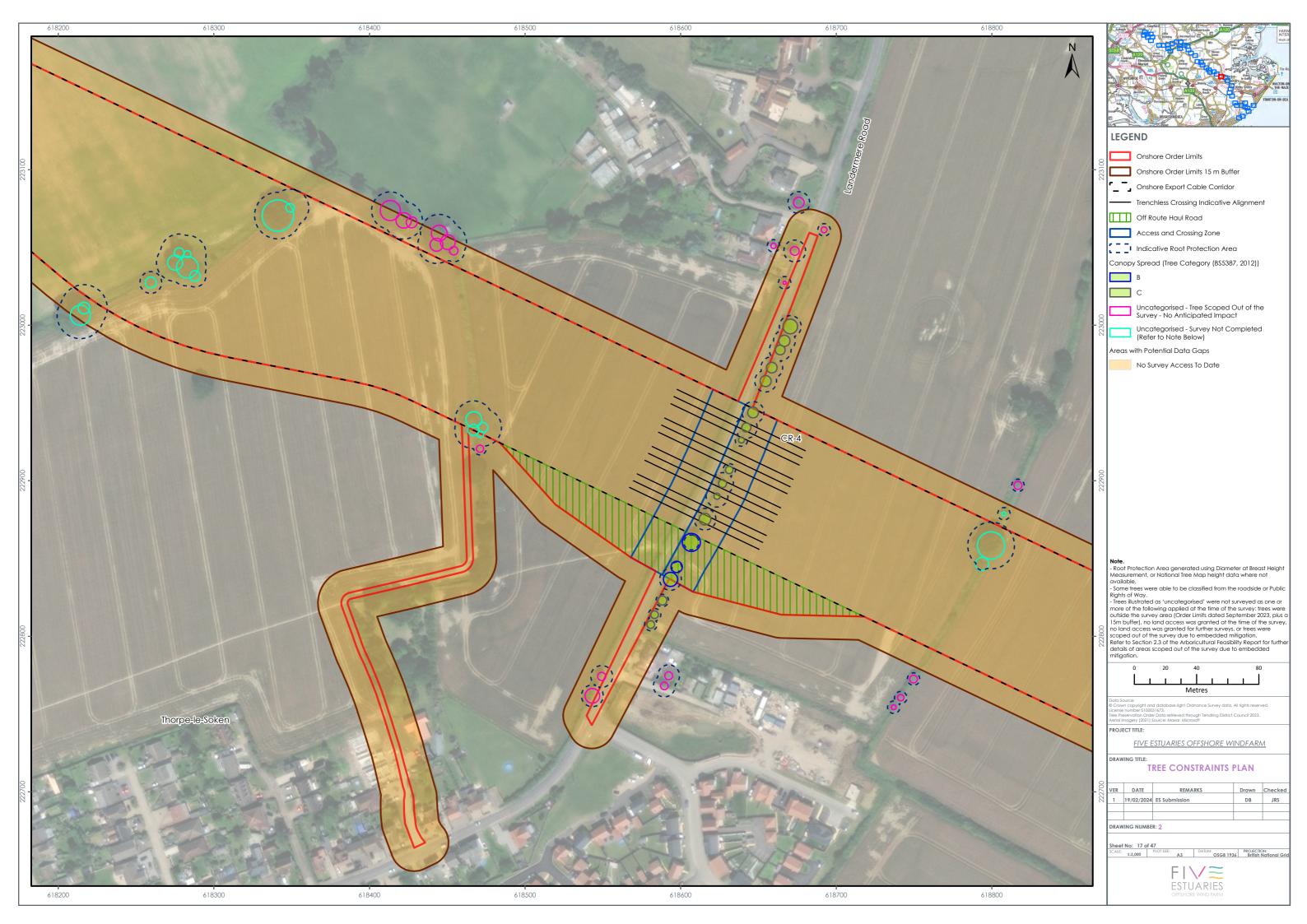


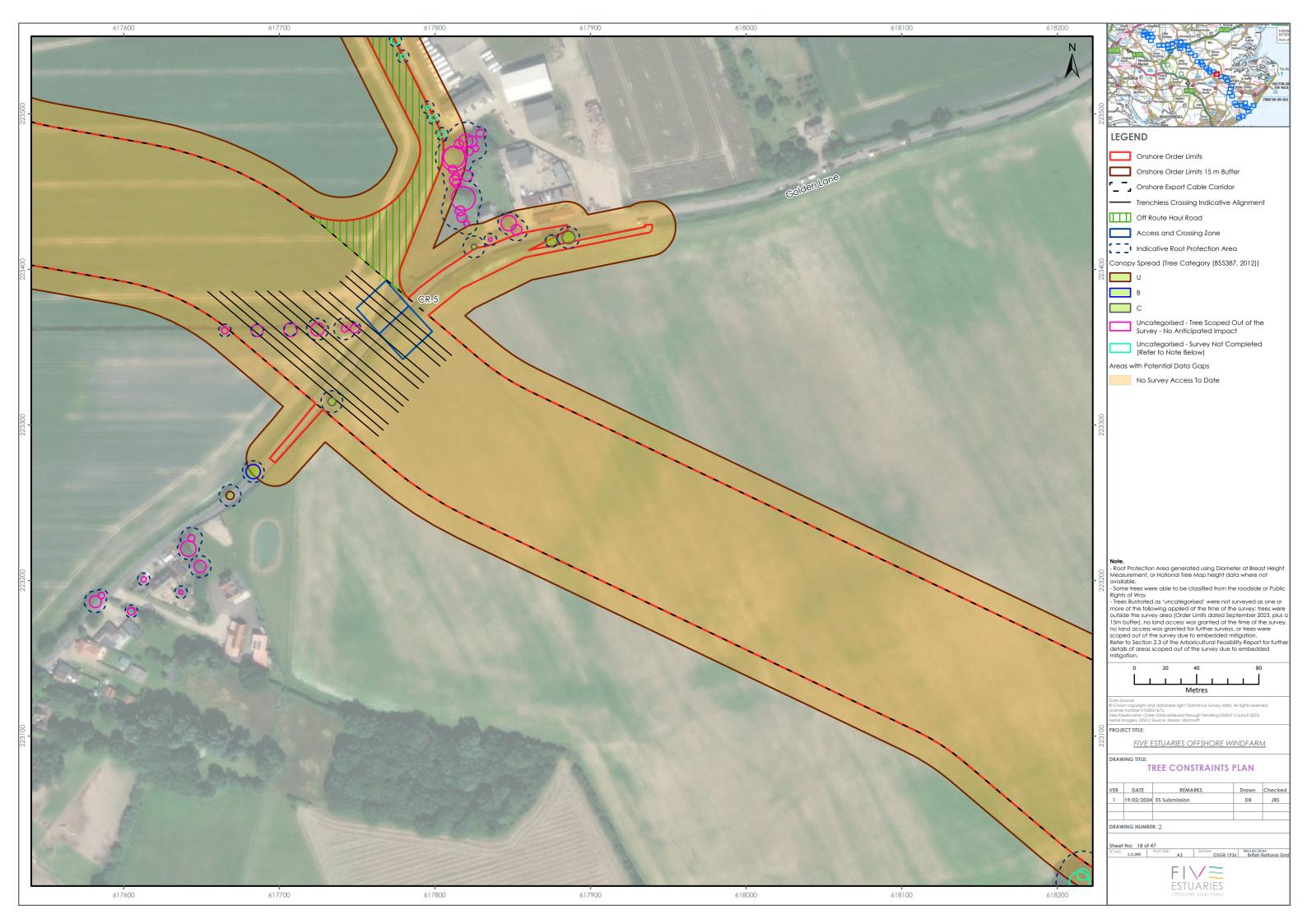


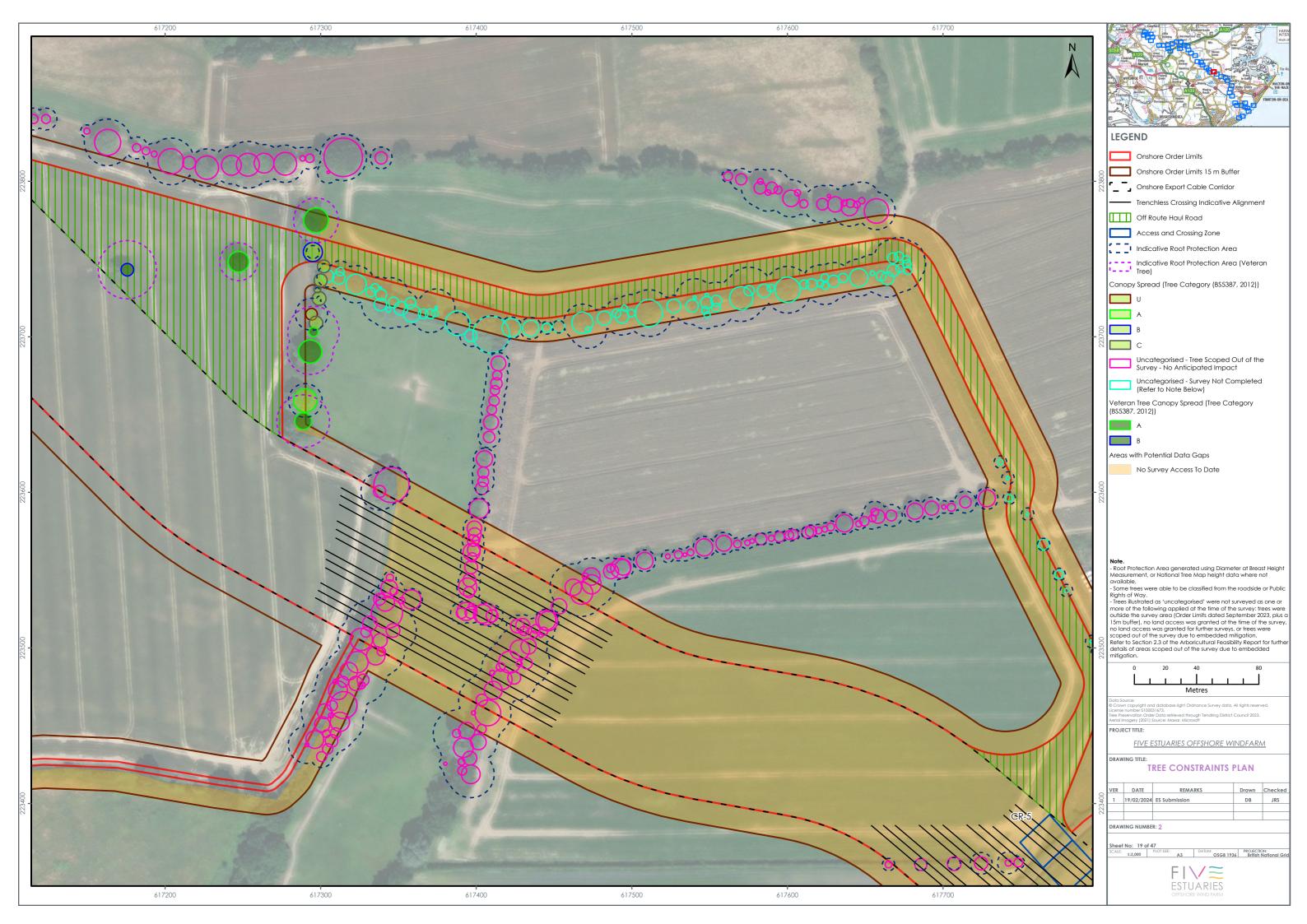


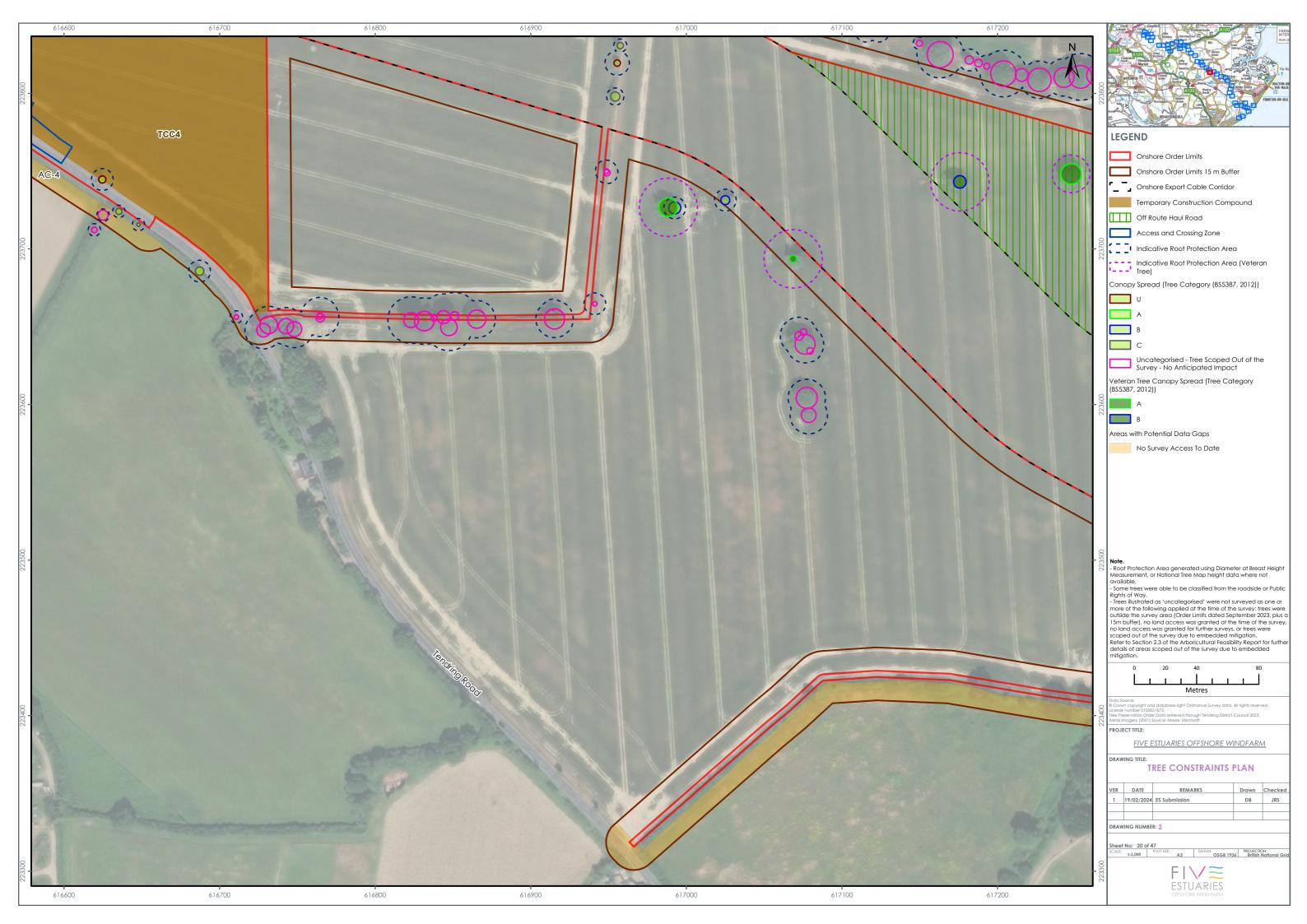


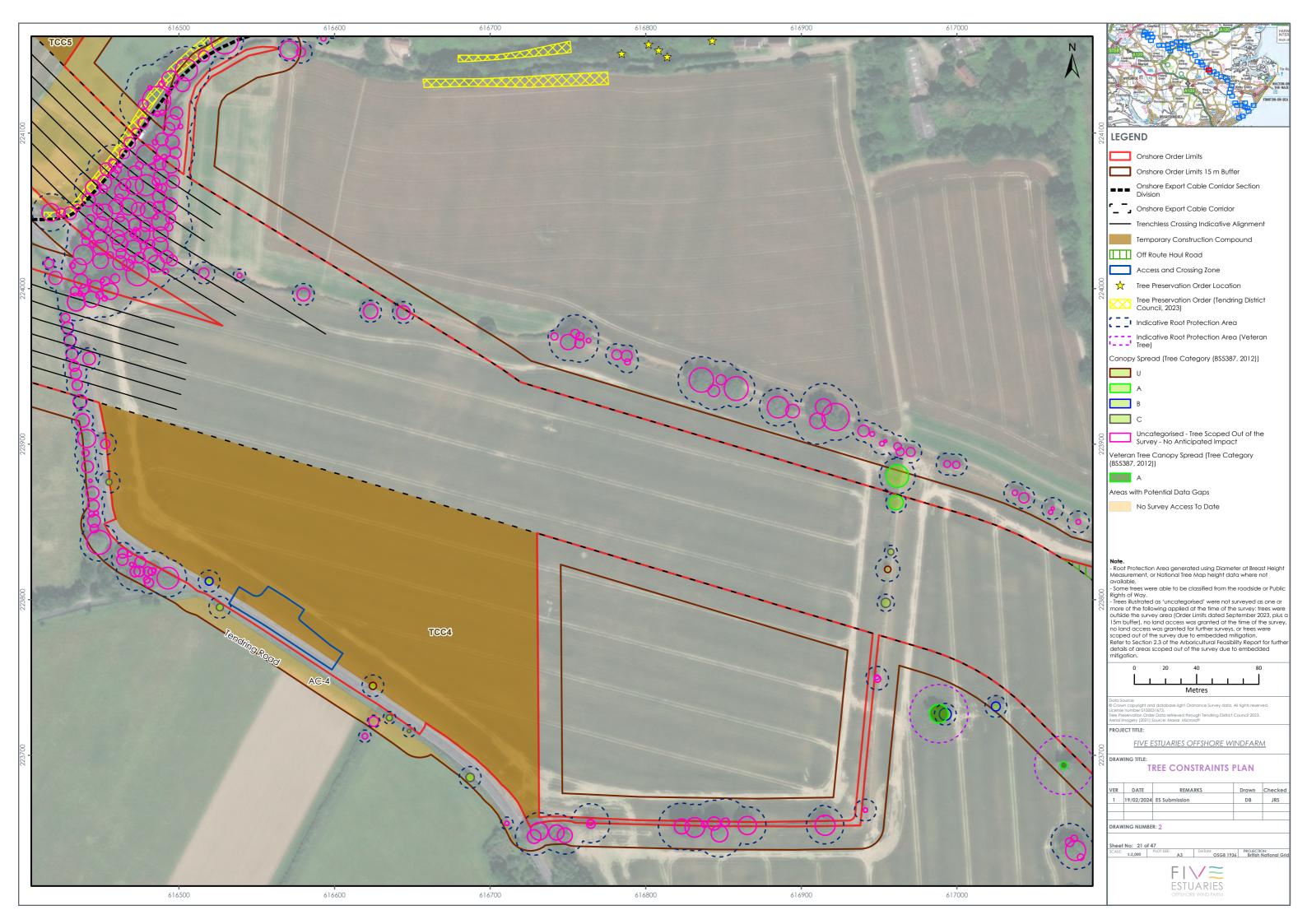


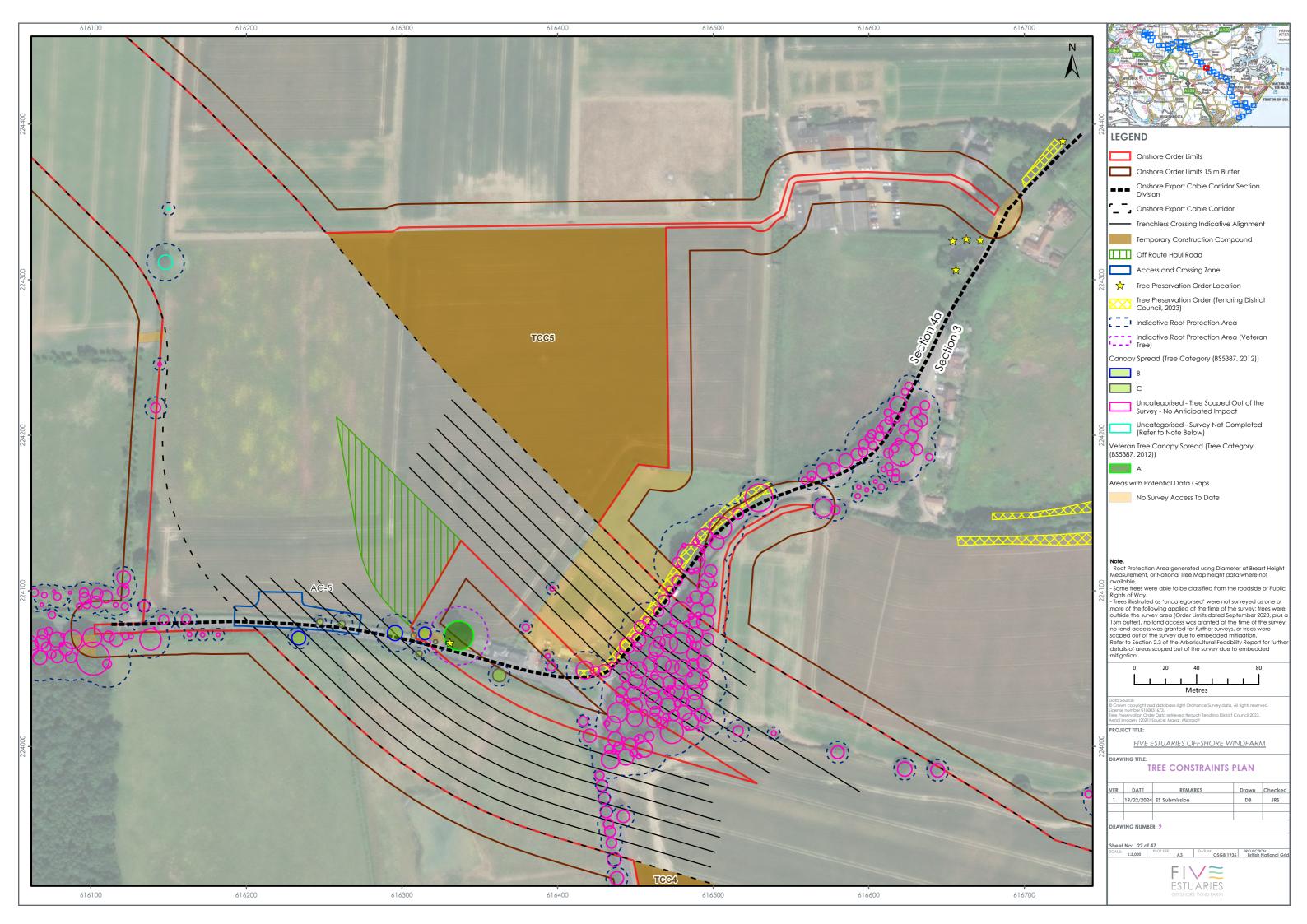


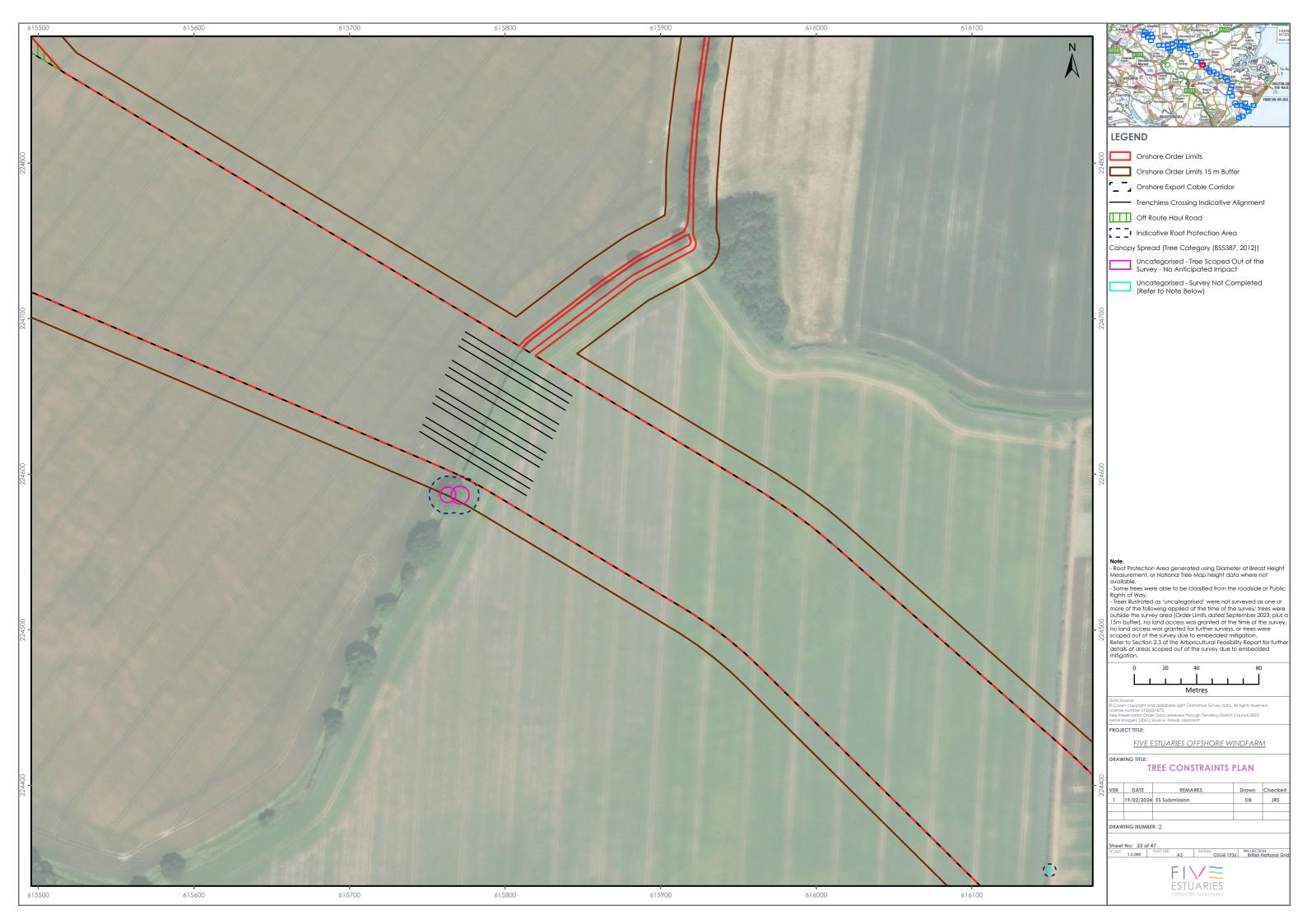




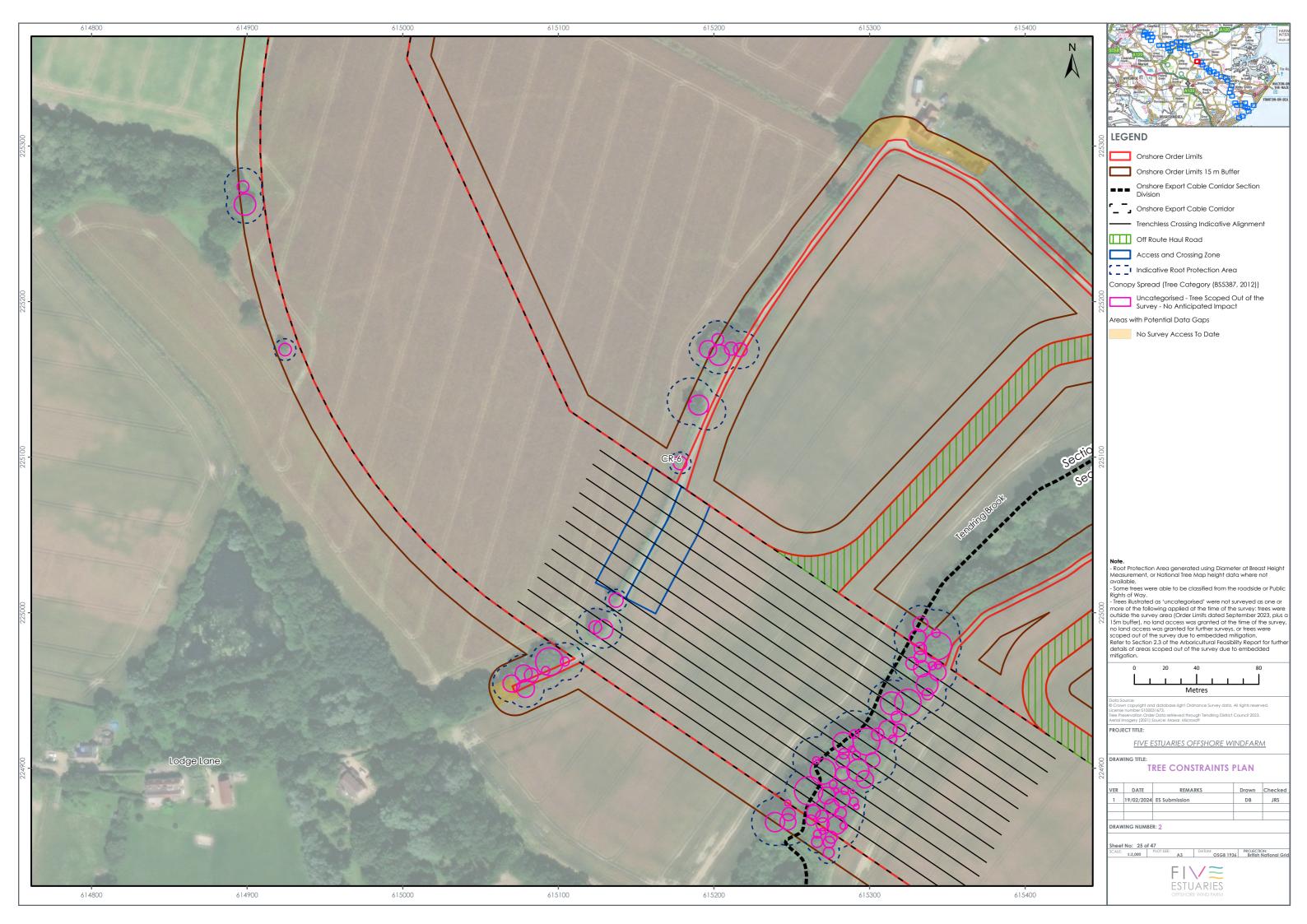


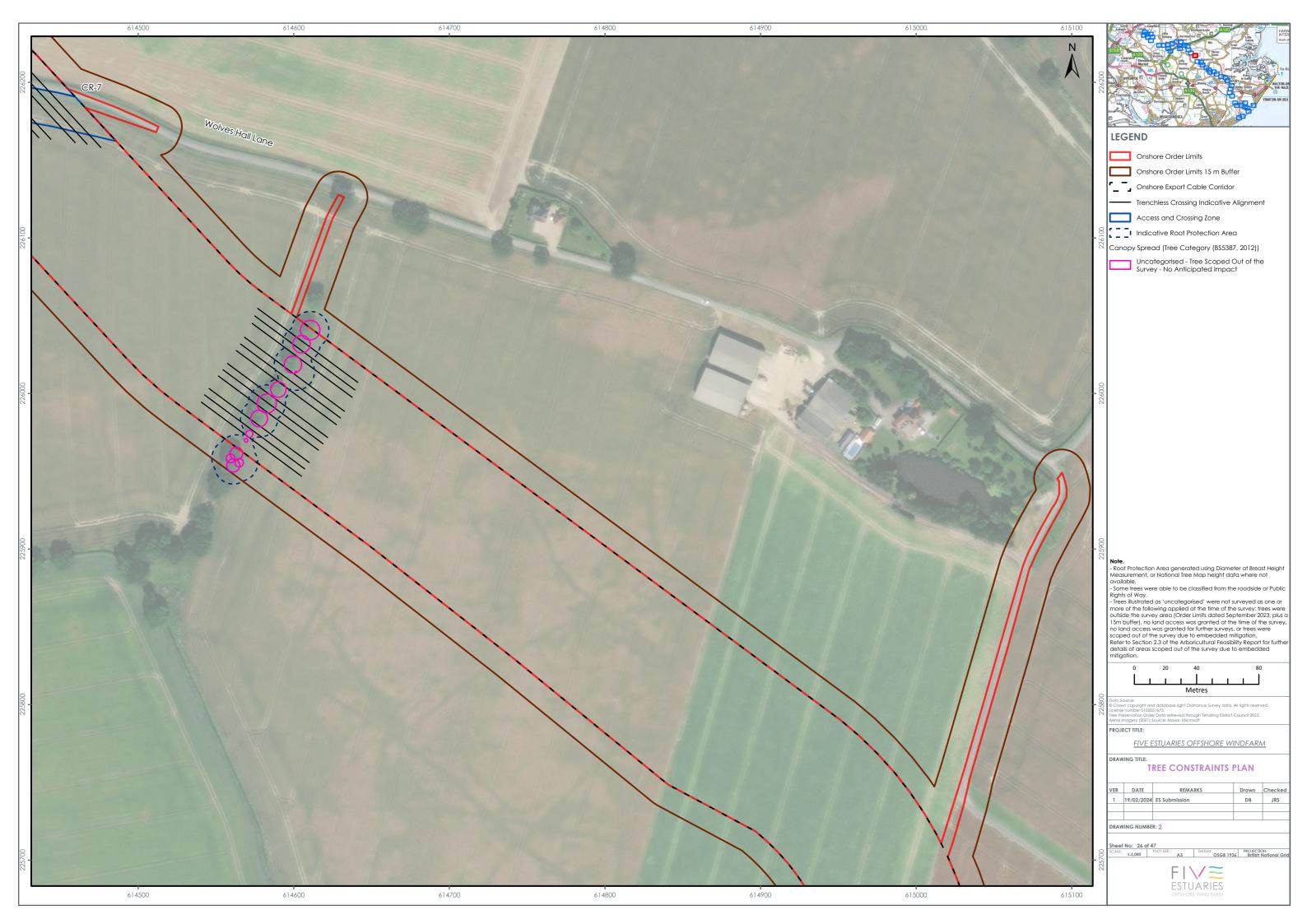


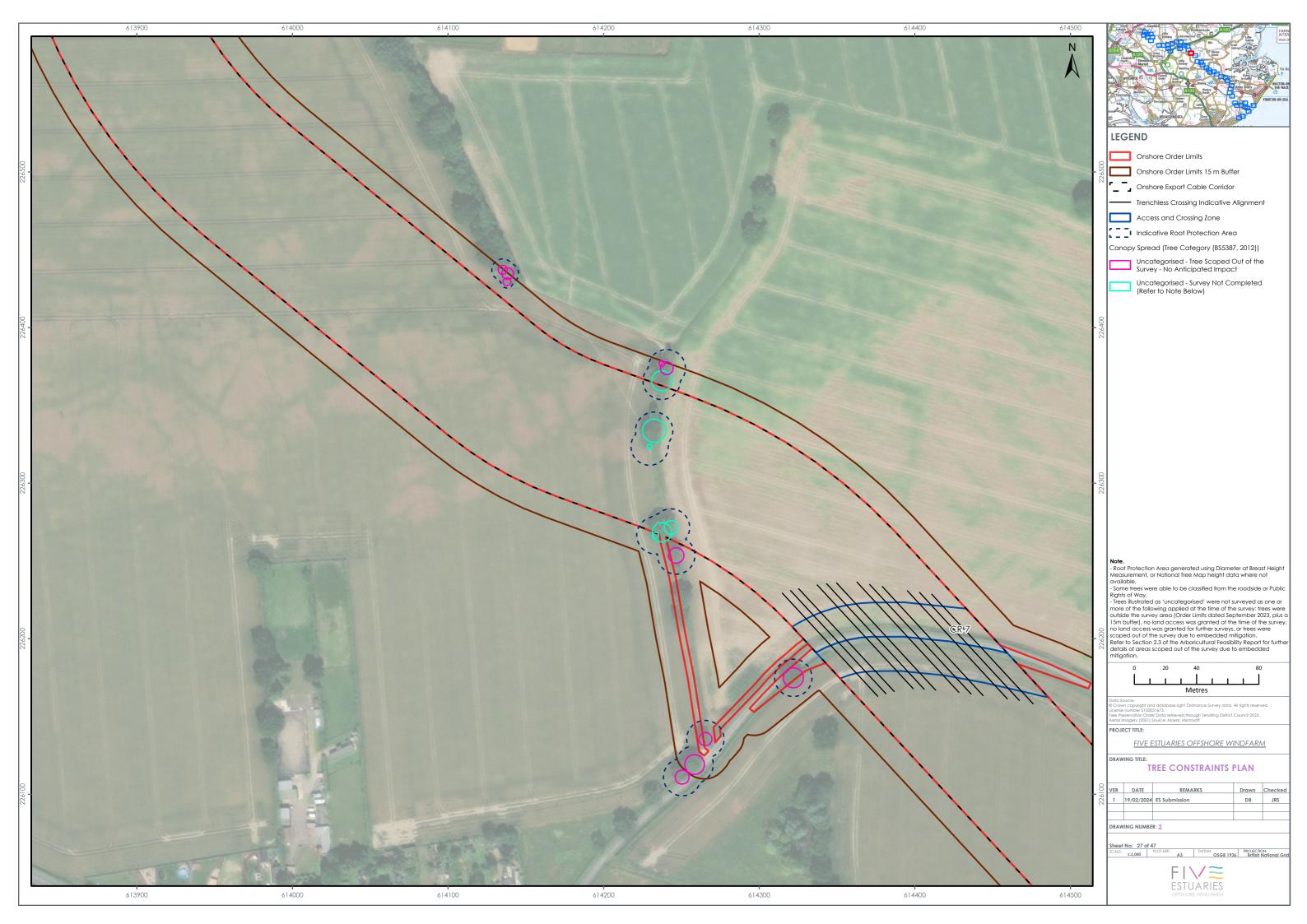




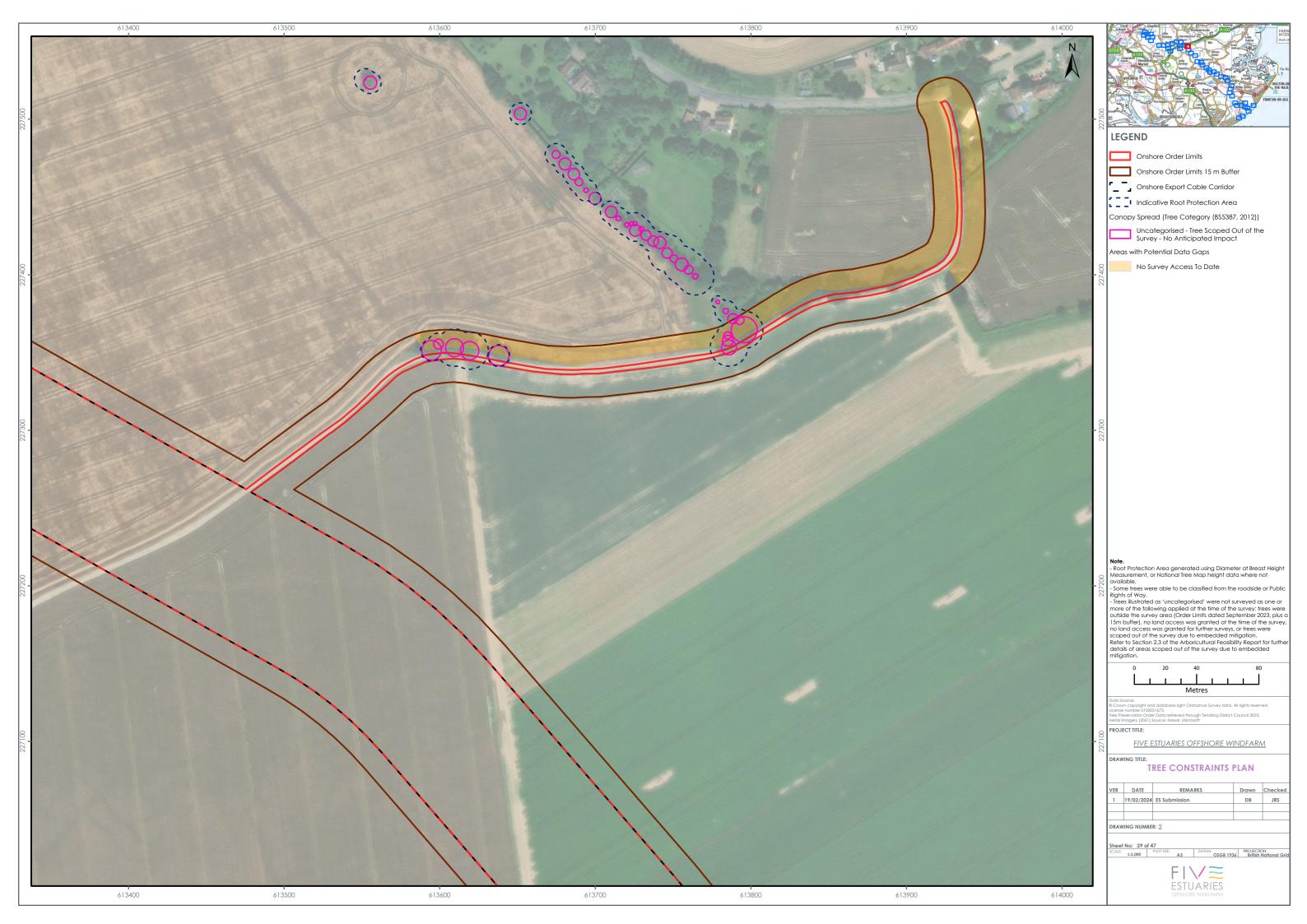


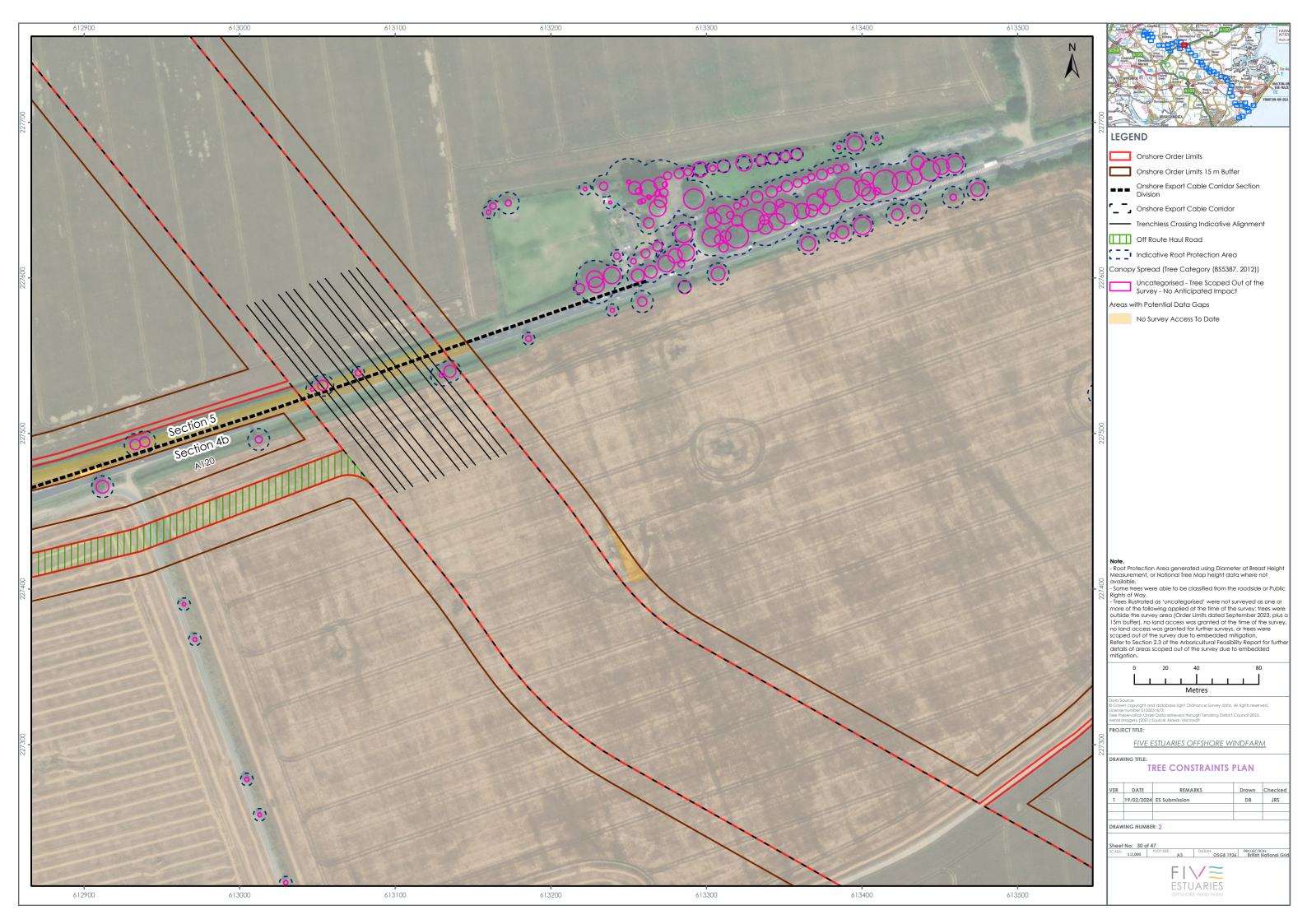


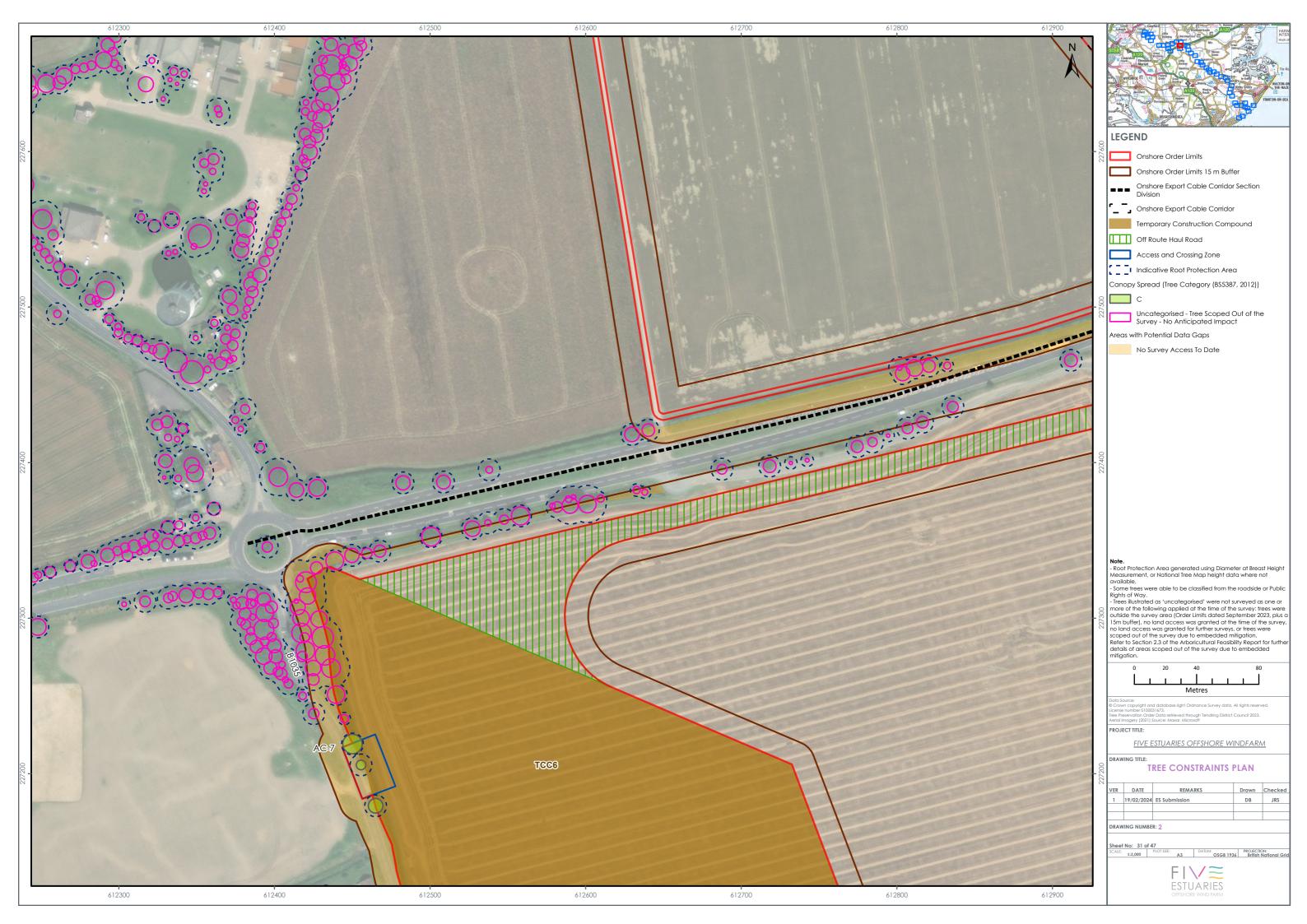




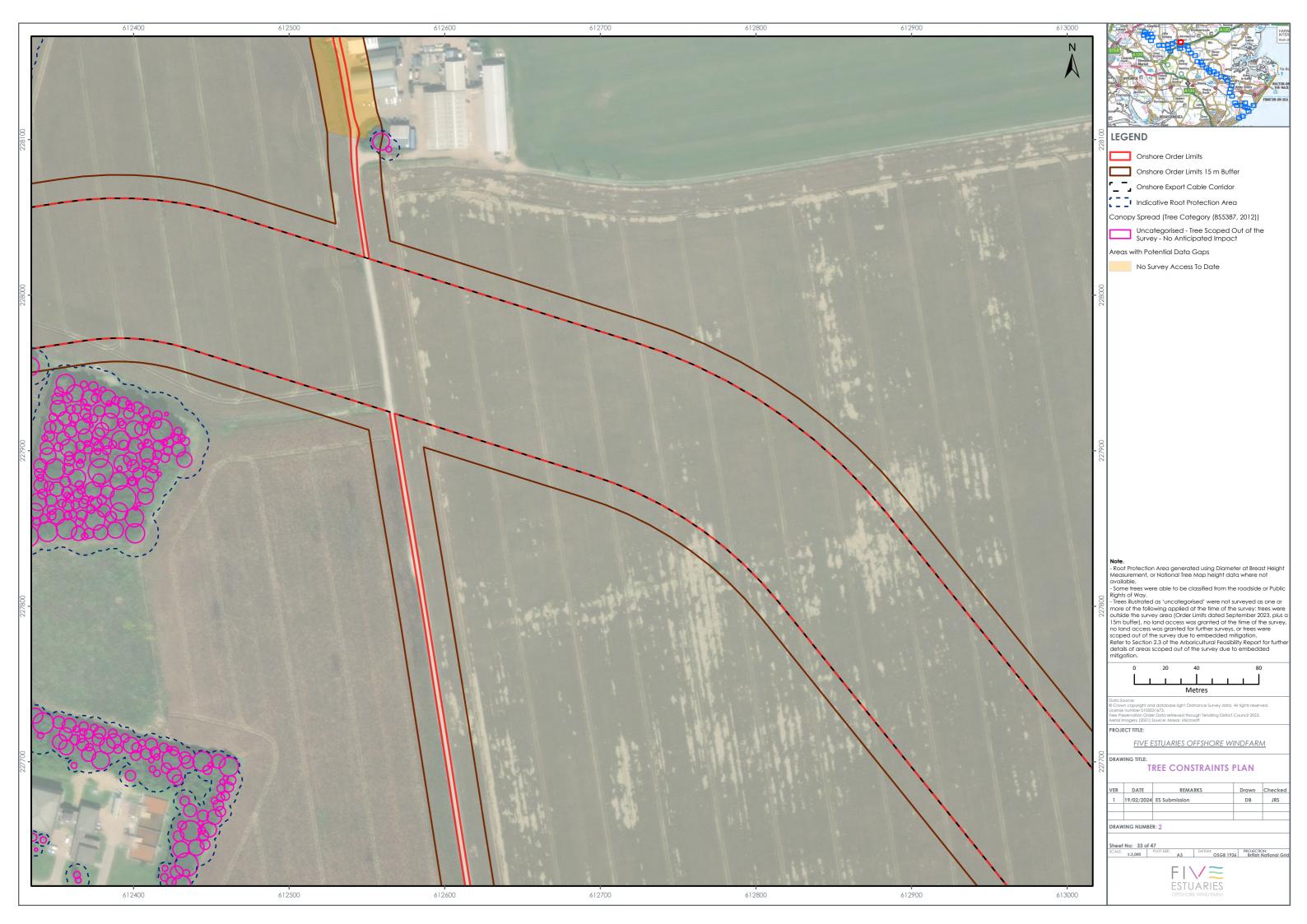


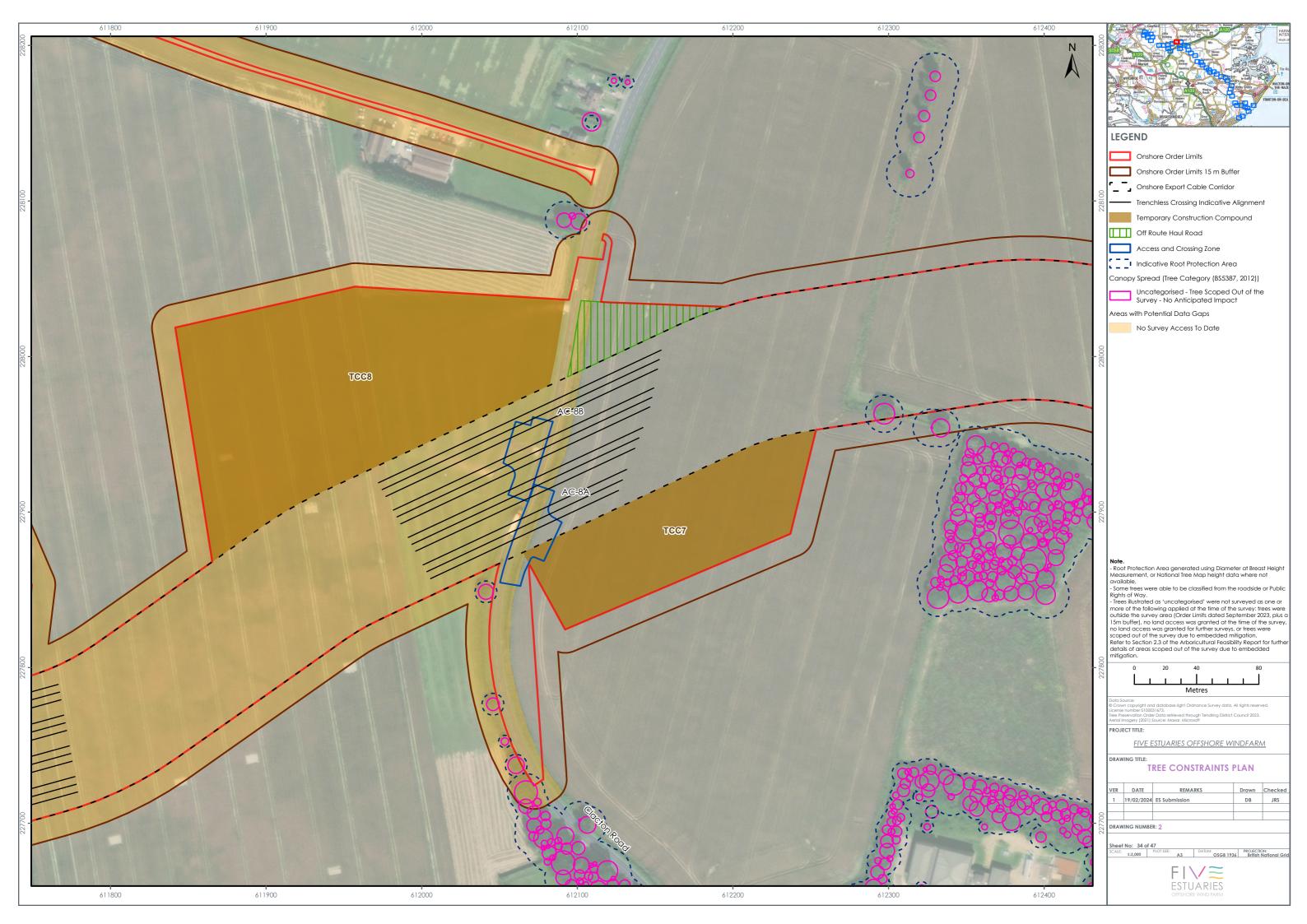


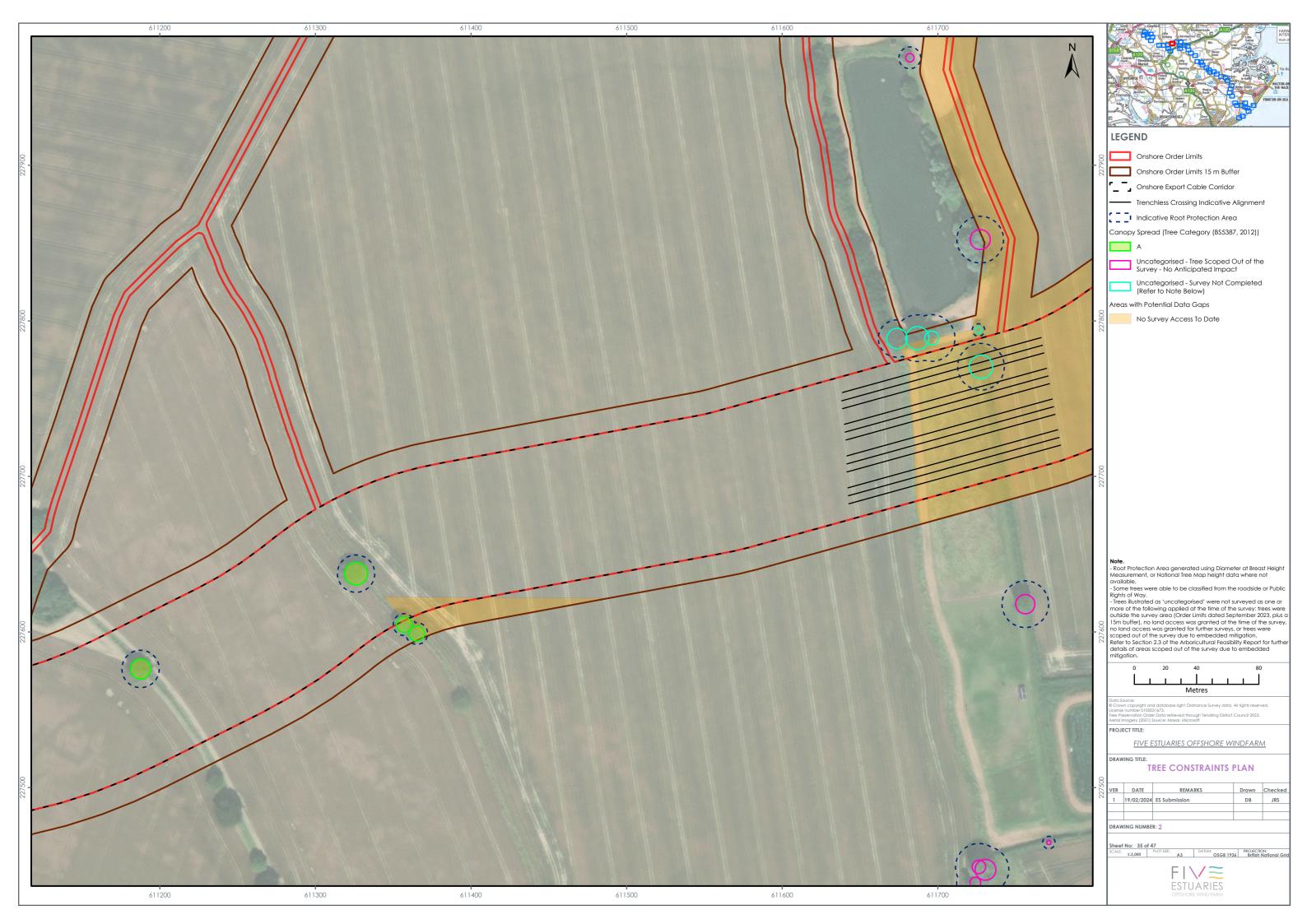






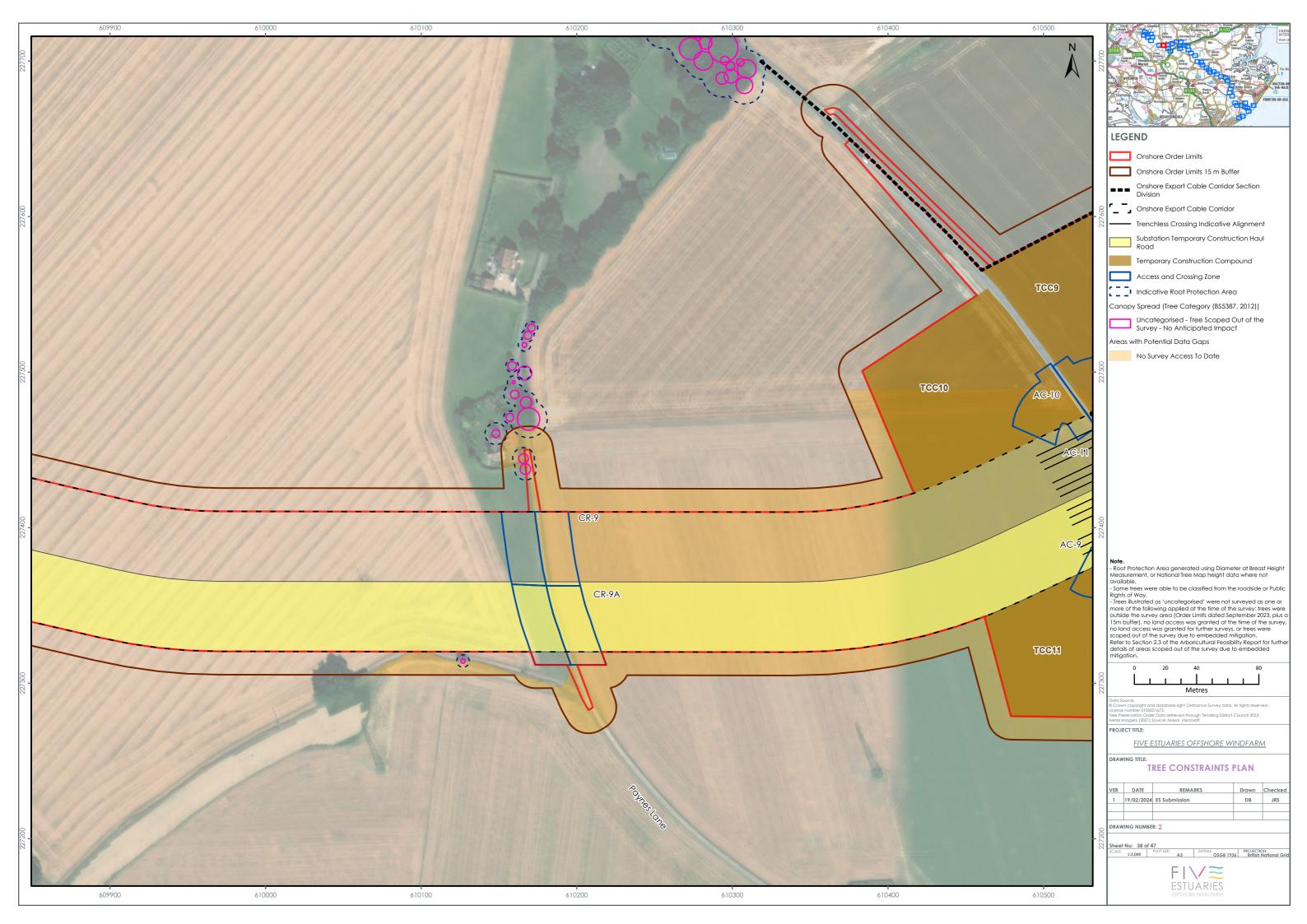






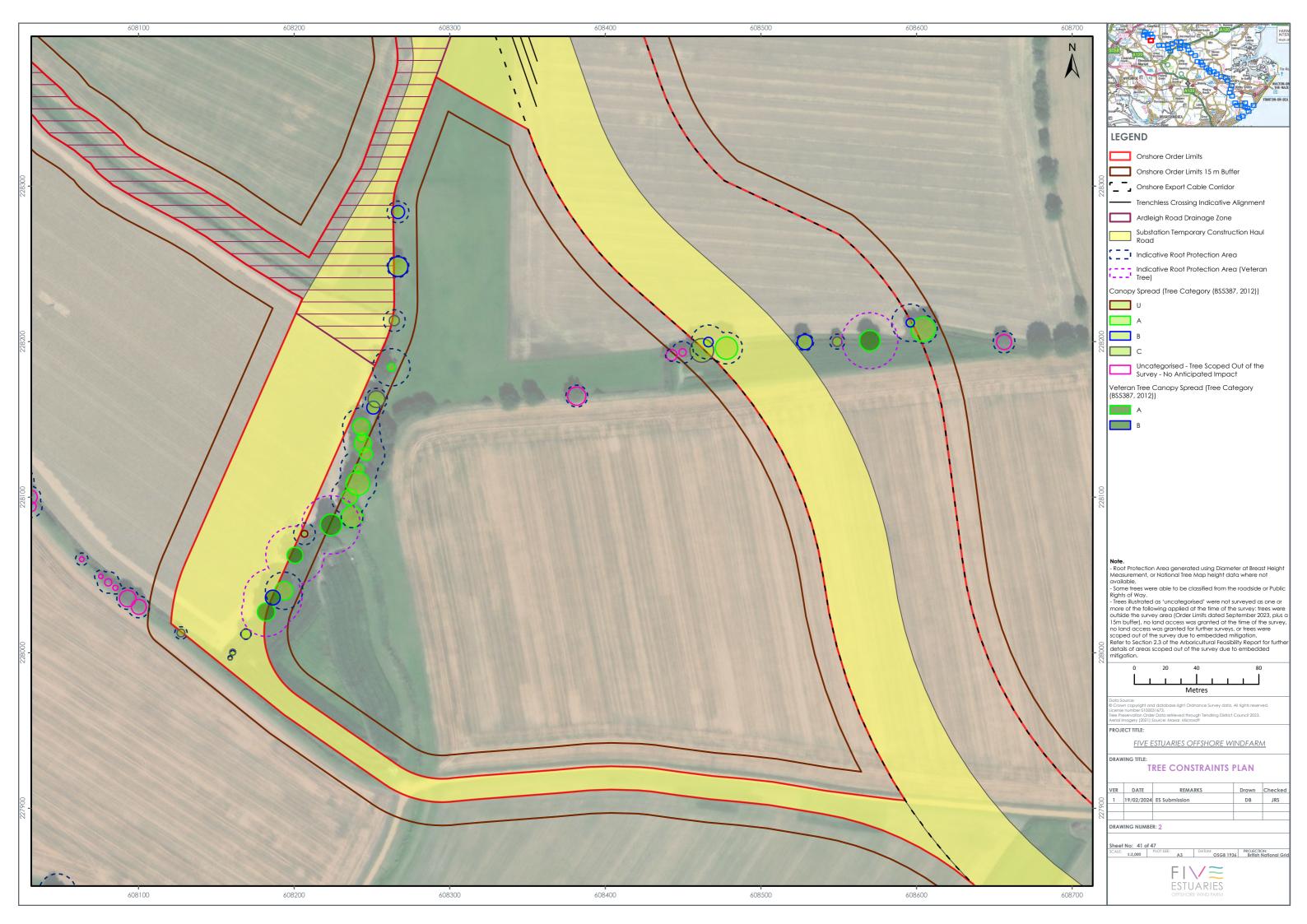




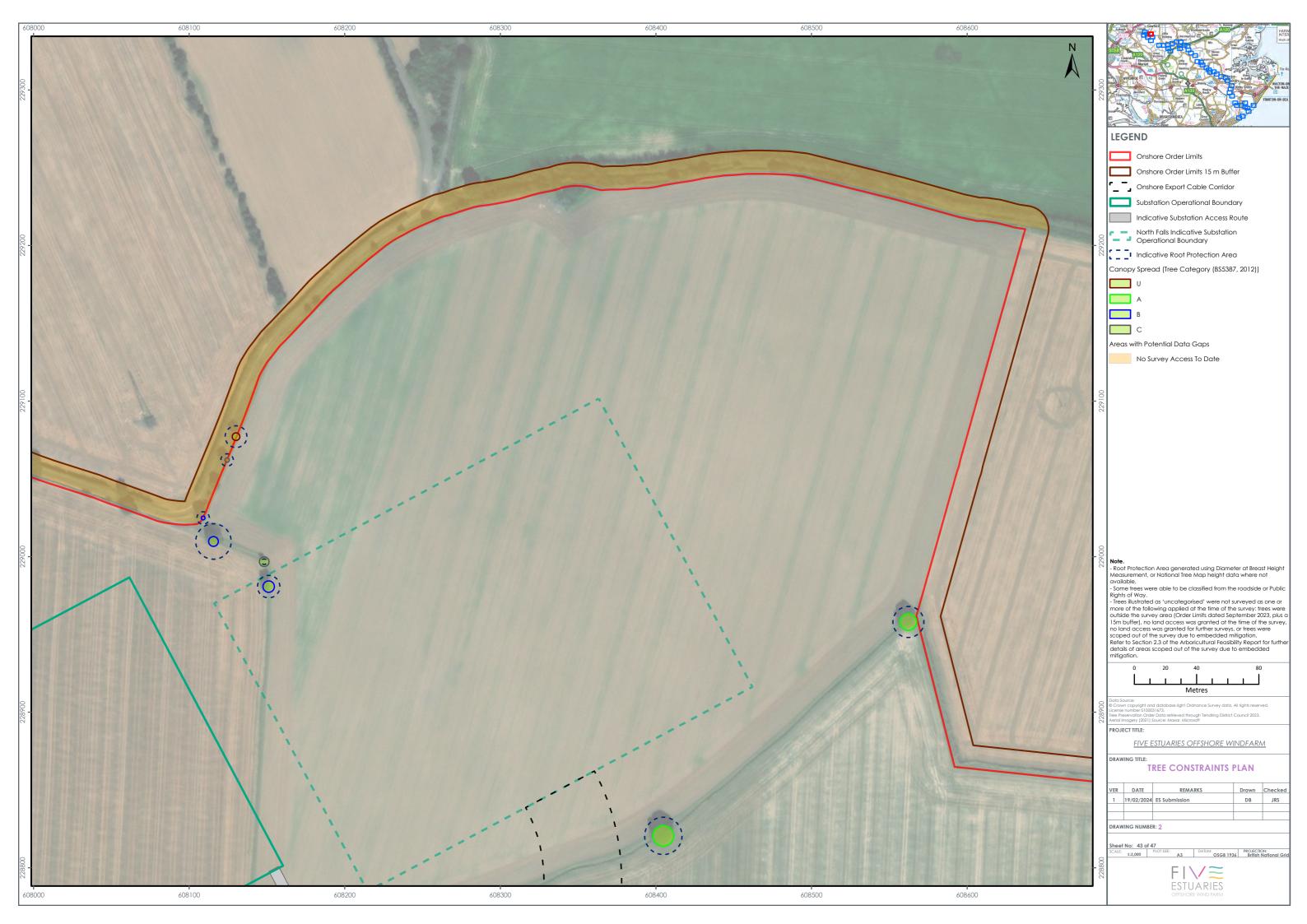


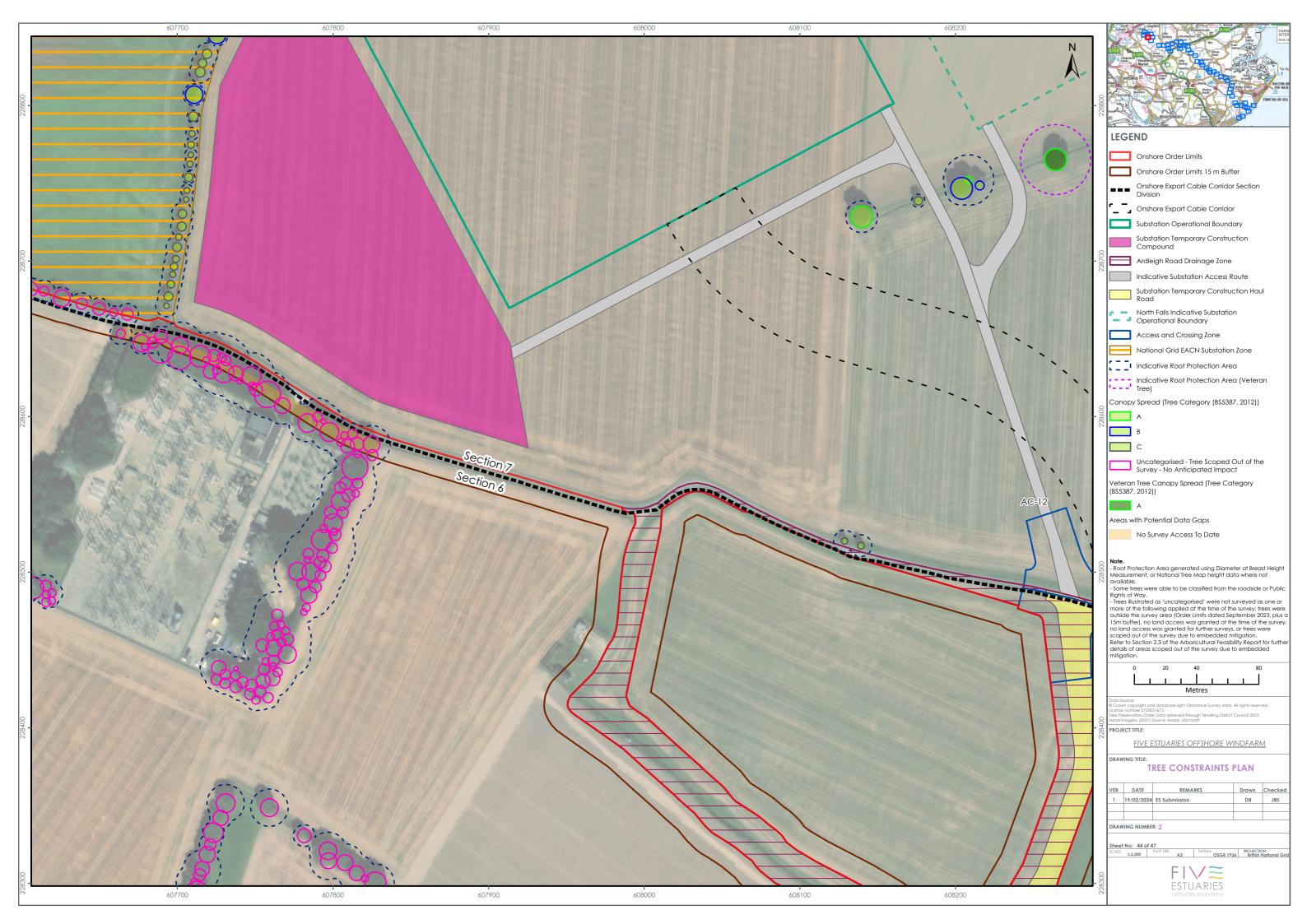


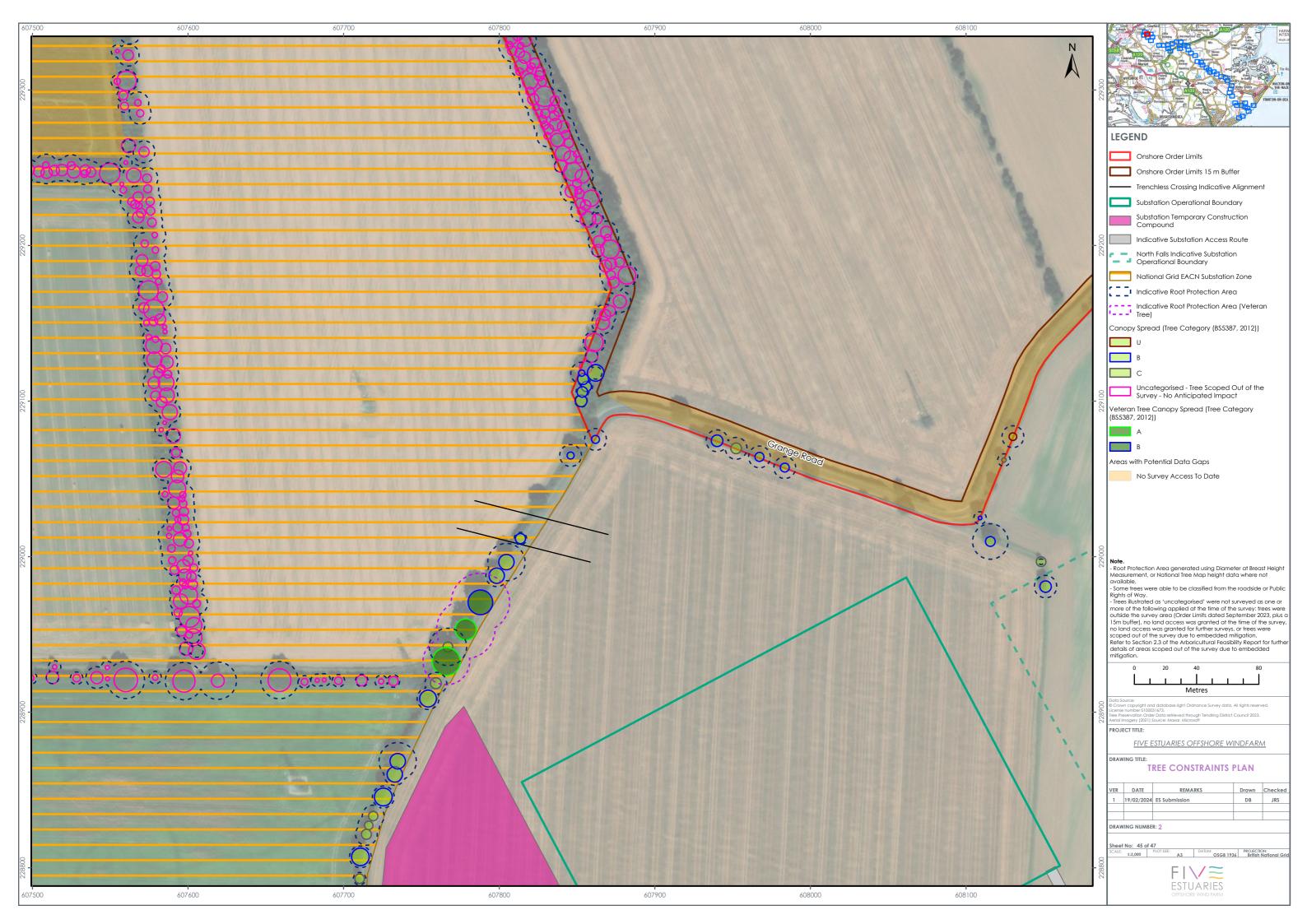


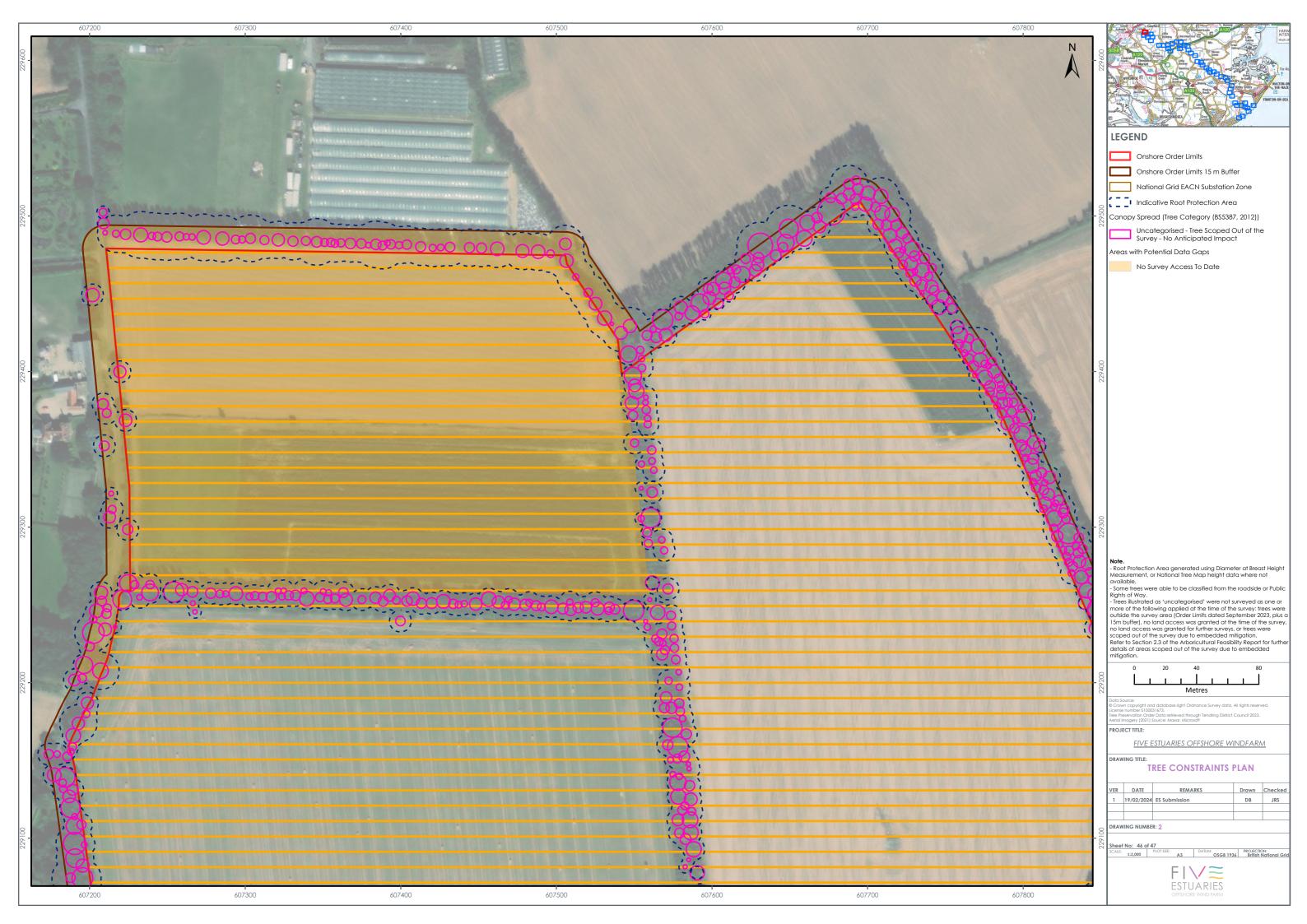




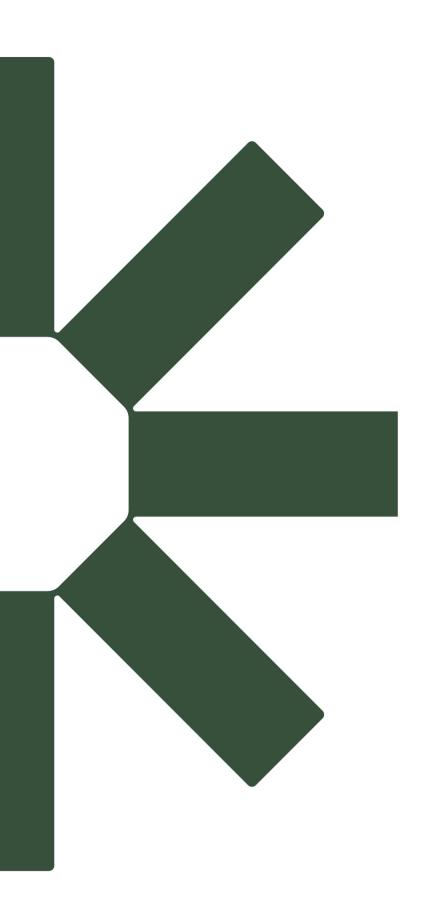














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