Outer Dowsing Offshore Wind

Environmental Statement

Chapter 21 Onshore Ecology Volume 3 Appendices

Appendix 21.6 Riparian Mammal

Date: March 2024

Surveys

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Volume 3, Appendix 21.06: Riparian Mammal Surveys

Outer Dowsing Offshore Wind

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Making Sustainability Happen

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Acronyms and Definitions

Acronyms and Abbreviations	Description
DCO	Development Consent Order
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
ETG	Expert Topic Group
GLNP	Greater Lincolnshire Nature Partnership
GPS	Global Positioning System
LNR	Local Nature Reserve
LWS	Local Wildlife Site
LWT	Lincolnshire Wildlife Trust
NERC	Natural Environment and Rural Communities
NGSS	National Grid Substation
NSIP	Significant Infrastructure Project
ODOW	Outer Dowsing Wind
PBDE	Polybrominated diphenyl
UK	United Kingdom
WCID	Water Course Identification

Term	Definition
400kV cables	High voltage cables linking the OnSS to the NGSS.
400kV cable corridor	The 400kV cable corridor is the area within which the 400kV cables connecting the onshore substation to the NGSS will be situated.
The Applicant	GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4 Limited (a joint venture between Corio Generation, Total Energies and Gulf Energy Development (GULF)), trading as Outer Dowsing Offshore Wind. The Project is being developed by Corio Generation (a wholly owned Green Investment Group portfolio company), Total Energies and GULF.
Baseline	The status of the environment at the time of assessment without the development in place.
Connection Area	An indicative search area for the NGSS.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations, including the publication of an Environmental Statement (ES).

Environmental Statement (ES)	The suite of documents that detail the processes and results of the EIA.
Export cables	High voltage cables which transmit power from the Offshore Substations (OSS) to the Onshore Substation (OnSS) via an Offshore Reactive Compensation Platform (ORCP) if required, which may include one or more auxiliary cables (normally fibre optic cables).
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Landfall	The location at the land-sea interface where the offshore export cables and fibre optic cables will come ashore.
Mitigation	Mitigation measures are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects.
Onshore Export Cable Corridor (ECC)	The Onshore Export Cable Corridor (Onshore ECC) is the area within which, the export cables running from the landfall to the onshore substation will be situated.
Onshore Infrastructure	The combined name for all onshore infrastructure associated with the Project from landfall to grid connection.
Onshore substation (OnSS)	The Project's onshore HVAC substation, containing electrical equipment, control buildings, lightning protection masts, communications masts, access, fencing and other associated equipment, structures or buildings; to enable connection to the National Grid.
Outer Dowsing Offshore Wind (ODOW)	The Project.
Order Limits	The area subject to the application for development consent, the limits shown on the works plans within which the Project may be carried out.
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as 'residential' or those using areas for amenity or recreation), watercourses etc.
Study Area	Area(s) within which environmental impact may occur – to be defined on a receptor-by-receptor basis by the relevant technical specialist.

21.0 Riparian Mammal Survey

21.1 Introduction

- Outer Dowsing Offshore Wind (ODOW) is a Nationally Significant Infrastructure Project (NSIP). An Environmental Impact Assessment (EIA) has been undertaken, the findings of which are presented within an Environmental Statement (ES), which accompanies the Development Consent Order (DCO) application under the Planning Act 2008.
- SLR Consulting was commissioned by GoBe Consultants, whom has been instructed by GT R4 Limited (trading as Outer Dowsing Offshore Wind) (the Applicant), to undertake a suite of ecological surveys of those relevant parts of the Project site that may be affected by the construction, operation and maintenance, and decommissioning of the onshore aspects of the Project.
- 3. This report presents the findings of the riparian mammal surveys, including those for otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) undertaken in late 2022 and 2023 and supports Volume 1, Chapter 21: Onshore Ecology (document reference 6.1.21).

21.2 The Project

- 4. The Project will include both offshore and onshore infrastructure including an offshore generating station (windfarm) located approximately 54km from the Lincolnshire coastline, export cables to landfall, onshore cables, an onshore substation, connection to the electricity transmission network, and ancillary and associated development (see Volume 1, Chapter 3: Project Description 6.1.3 (document reference 6.1.3) for full details).
- 5. The ES references the Project's 'Order Limits' which comprises the extent of the land for which the DCO application has been made. Onshore it reflects the landfall, the Onshore Export Cable Corridor (a typically80m wide corridor around a centre line totalling approximately 70km in length)the Onshore substation (OnSS), a 400kV cable corridor connecting the OnSS to the Connection Area (an indicative search zone for the National Grid substation (NGSS) in to which the project will ultimately connect.
- 6. Due to the linear footprint of the Project, the Survey Area for some receptors is relatively large-scale, therefore to assist with the interpretation and explanation of associated data, the Order Limits have been split into segments. The extent of these segments has been



aligned with key geographical features such as roads or rivers which cross the Order Limits.

7. The segments for the Onshore Order limits are shown in Table 21-21-1 below.

Table 21-21-1: Segments in Re	elation to Route Options
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Segment Name
ECC 1: Landfall to A52 – Hogsthorpe
ECC 2: A52 – Hogsthorpe to Marsh Lane
ECC 3: Marsh Lane to A158 - Skegness Road
ECC 4: A158 – Skegness Road to Low Road
ECC 5: Low Road to Steeping River
ECC 6: Steeping River to Fodder Dike Bank/Fen Bank
ECC 7: Fodder Dike Bank/Fen Bank to Broadgate
ECC 8: Broadgate to Ings Drove
ECC 9: Ings Drove to Church End Lane
ECC 10: Church End Lane to The Haven
ECC 11: The Haven to Marsh Road
ECC 12: Marsh Road to Fosdyke Bridge
ECC 13: Fosdyke to Surfleet Marsh OnSS/Marsh Drove
ECC 14: Surfleet Marsh OnSS/Marsh Drove to the Connection Area

21.3 **Purpose of this Report**

8. This appendix has been produced to support Volume 1, Chapter 21: Onshore Ecology of the Project.

21.4 Legislation

- Otter are covered by the Conservation of Habitats and Species Regulations 2017 (as amended). The Regulations make it an offence, with very few exceptions, to:
 - Deliberately capture, injure or kill an otter;
 - Deliberately disturb an otter in such a way as to be likely:

- To impair its ability to survive, to breed or reproduce, or to rear or nurture its young;
- \circ $\;$ To impair its ability to hibernate or migrate; or,
- \circ $\,$ To affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of an otter.
- 10. In addition to the protection given to otters under the conservation of Habitats and Species Regulations 2010 already described, otters are also protected in England under the Wildlife and Countryside Act 1981 (as amended), which adds the following offences (with certain exceptions):
 - Disturbance while it is occupying a structure or place which it uses for shelter or protection; and,
 - Obstructing access to any structure or place used for shelter or protection.
- 11. Water vole are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally kill, capture or injure a water vole, and/or intentionally or recklessly disturb, obstruct, damage or destroy their burrows.
- 12. Both Otter and water vole are also classified as Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act (NERC) 2006. There is a requirement that adverse effects of development on a Species of Principal Importance should be avoided through planning conditions or obligations, and that planning permission should be refused where harm to these species, or their habitats, may result, unless the need for, and benefits of, the development clearly outweigh the harm.

21.5 Methodology

13. The requirement for riparian mammal surveys was outlined in the EIA Scoping Report (ODOW, 2022). No comments specifically relating to the survey methodology for riparian mammals were received in the Scoping Opinion (Case Reference EN010130, The Planning Inspectorate 2022) or in the subsequent S42 consultations and Onshore Expert Topic Group (ETG) discussions (See ES Chapter 6 Technical Consultation, Appendix 6.1 Evidence Plan (document 6.3.6.1)) The accepted standards for otter (Chanin, 2003) and for water vole (Dean et al., 2016 and Strachan, et al., 2011) were therefore adopted.

21.5.1 Desk Study

14. Otter and water vole records were requested from Greater Lincolnshire Nature Partnership (GLNP) for all land within the Order Limits, plus a 2km buffer (the Study Area) to provide context for data gathered during the field surveys.

21.5.2 Field Survey

- 15. The Survey Area includes all accessible waterbodies (ponds, ditches, streams and rivers) within the Order Limits, and functionally linked waterbodies, both 250m upstream and downstream of a watercourse within the Order Limits.
- 16. Habitat suitability assessments were initially undertaken to ascertain a waterbodies suitability to support water vole and/or otter. Where habitats presented favourable conditions for riparian mammals, further survey visits were carried out to establish presence/absence of a population.
- 17. To quantify the habitats and aid data management, the riparian habitats were broken more easily into sections within the ECC and given a unique Water Course Identification (WCID) (shown in Figure 21.6.1). However, numbering is not continuous due to discovery of new waterbodies during the survey or removal of waterbodies following route changes made following numbering.

21.5.2.1 Initial Habitat Suitability Survey

- 18. Between November 2022 and May 2023 waterbodies, including ponds, ditches, streams and rivers, were evaluated for their suitability to support otter and water vole. Suitably experienced surveyors walked the banks of each water body to determine whether or not the features support the habitat preferences of water vole and otter. Habitat preferences for both water vole and otter were adapted from those listed within The Water Vole Mitigation Handbook (Dean, *et al.*, 2016). This is considered to be appropriate for otter given the habitats available within the Lincolnshire landscape (i.e. a prominence of large, open fields bordered by field ditches and large drains, with relatively few wooded and scrub embankments). Data collected on habitat suitability included: bank profile, watercourse and channel depth and width, water quality and flow rate, bank substrate, tree, shrub and bramble shading, grass, reed and tall herb cover, emergent vegetation, active management practices and surrounding land use.
- 19. Direct evidence of water vole, otter and other riparian mammal presence, outlined below, was recorded during this survey. The condition of water bodies was also recorded during other field survey visits, including those for habitat suitability for great crested newt, great crested newt presence/absence, UK Habitat Classification and condition assessments.
- 20. Evaluating the data outlined above, waterbodies were then classified as having either 'low', 'moderate' or 'high' suitability for water vole and otter. It is recognised that discounting water vole and otter presence is rarely possible and consequently the category of 'unsuitable' has not been used.
- 21. The primary reason for classification of a ditch as having 'low' suitability for both water vole and otter was where there was clear evidence that the ditch remained dry throughout the majority of the year (either through survey data across the year, or through assessment of vegetation types found in the base of a ditch). However, it is recognised that both species may use the dry field ditch network occasionally when commuting between better quality habitats.

21.5.2.2 Presence/Absence Survey

22. Those waterbodies considered to offer 'low' habitat suitability for water vole and otter were not subjected to further survey.

- 23. Water bodies with either 'moderate' or 'high' habitat suitability, and those water bodies where field signs of riparian mammal presence were identified during the initial habitat suitability evaluation were subject to a presence/absence survey by a team of suitably qualified ecologists. All surveys were conducted in suitable weather conditions, when the waterbodies were not in flood and when there had been no significant rainfall, that could potentially wash away field signs, 24-hours prior to survey.
- 24. For both species, the survey focused on those waterbodies within the Order Limits. Surveys were extended to include watercourses of 'moderate' or 'high' habitat suitability that were functionally linked to waterbodies within the Order Limits, up to a distance of 250m, both upstream and downstream. This included the field ditch network, with ditches up to 20m from one another considered to be functionally linked. For smaller ditches, typically up to 2 m wide, where both banks could be viewed, surveys were conducted from one side of the bank. For those larger watercourses, including main drains and rivers, surveys were conducted from both banks where access was possible.
- 25. Initially there were 641 waterbodies identified which were going to have surveys undertaken. After the initial surveys, forty-two of these were scoped out due to them being dry or not existing once a site visit was made, therefore a total of 599 waterbodies were surveyed for water vole and otter, with evidence of the presence for both species searched for during the same field visit. Where land access was available, two survey visits were undertaken between April 2023 and September 2023 to record presence/absence. Typically, the two survey visits were at least six weeks apart for any one waterbody.

Otter

- 26. Otter surveys were undertaken in accordance with standard methodologies (Chanin, 2003). Field signs such as holts, couches, slides, spraints and feeding remains were searched for during surveys. The location and details of otter field signs were recorded digitally in Field Maps on a GPS enabled mobile mapping device and geo-referenced photographs were taken, as appropriate.
- 27. Where evidence of otter presence was recorded, the banks of the waterbody within the immediate vicinity of the recording were searched in greater detail for habitat features suitable for otter. These habitat features include:

- resting sites, or potential resting sites where suitable habitat exists but no evidence of otter presence is found;
- otter holts, or potential otter holts (as above);
- breeding sites, where evidence may include a number of very well-defined otter trails in a small area and/or cub-sized otter footprints; and,
- commuting opportunities (e.g. dense reedbeds or tall ruderal vegetation) which may allow otter to travel through their home range.

Water Vole

28. Water vole surveys were undertaken in accordance with the methodology set out in the Water Vole Conservation Handbook (3rd Ed.) (Strachan, *et al.*, 2011) and The Water Vole Mitigation Handbook (Dean *et al.*, 2016). Field signs such as latrines, runs, footprints, burrows, lawns, nests and feeding stations were searched for during surveys. The location and details of otter field signs were recorded digitally in Field Maps on a GPS enabled mobile mapping device and geo-referenced photographs were taken, as appropriate.

Other Mammals

29. Sightings of other mammals were recorded in an ad hoc basis during other field survey types.

21.6 Limitations

- 30. Of the 408 surveyed. a total of 37 waterbodies could not be visited due to permission to access the land not being granted. Access was also not available to waterbodies within private gardens.
- 31. A close inspection of some ditches was restricted by dense vegetation or steep banks which prevented full access and in such areas water vole and otter presence could not be completely ruled out. To minimise this limitation, surveyors used binoculars to view banks at distance and searched stretches of ditches up and down stream. The survey coverage achieved is considered adequate for the purposes of informing the impact assessment.
- 32. Although not all waterbodies could be surveyed, the survey effort was sufficient to establish the presence of otters within the Survey Area. Otters are likely to occur on water bodies that could not be surveyed where suitable habitat is present as otters are



highly mobile and range over large areas. However, the areas which were not accessible were covered by the ecological data from other survey types (including initial habitat assessments, UK Habitat Classification, habitat suitability index assessment for great crested newt and presence/absence surveys for great crested newt), which, combined with the ability to characterise from the data collected in the remainder of the survey area, is considered sufficient to inform the impact assessment.

33. The lack of positive field signs does not preclude the confirmation of riparian mammal presence and precaution was adopted in the field work and data analysis to account for this. Given the good survey coverage and survey results which reflect the GLNP data set, this is not considered to be a significant limitation to the survey's findings.

21.7 Results

21.7.1 Desk Study Results

21.7.1.1 Otter

34. GLNP returned one record of otter from within the Order Limits and 92 records from within the Study Area (See Figure 21.1.12 for results). The otter record from within the Order Limits, dates from 2015 and was located at ECC 13: Fosdyke to Surfleet Marsh OnSS/Marsh Drove. Outside the Order Limits, the largest number of otter records were located near to segment ECC: 6: Steeping River to Fodder Dike Bank/Fen Bank with a total of 20 records.

21.7.1.2 Water Vole

- 35. GLNP returned 38 records of water vole from within the Order Limits. Over 2,000 records of water voles were returned from within the Study Area. (See Figure 21.1.12 for results).
- 36. The majority of water vole records returned from within the Order Limits were within segment ECC 5: Low Road to Steeping River, with a total of 16 records during 2007-2019. Outside the Order Limits, the largest number of records were returned near to segment ECC 2: Hogsthorpe to Marsh Lane with a total of 455 records.

21.8 Field Results

21.8.1 Initial Habitat Suitability

21.8.1.1 Watercourses in the Survey Area

37. There are a total of 636 ditches either within the Order Limits, or functionally linked within 250 m of Project. Of the 636 within the Order Limits, 9% were field ditches that remained dry over the course of the 2022/2023 ecology field surveys. Field ditches across much of the project are uniform in their profile, often with a bank profile of 45 degrees or slightly less. The majority are also subjected to regular management, with grass and reed cutting, dredging and bank profile maintenance operations evident in every Segment. Often, watercourses have little, or no shading from trees and shrubs. Away from the road network, the ditches experience only low levels of disturbance from farm vehicle movements. Plate 1 illustrates a typical wet ditch with 'moderate' habitat suitability for riparian mammals; Plate 2 is a typical dry ditch with Low habitat suitability. These two ditch categories are prevalent across the survey area.



Plate 1: WCID 20091 - A Typical Wet Field Drainage Ditch with Moderate Habitat Suitability for Water Vole and Otter



Plate 2: WCID 20148 - A Typical Dry Ditch under Eco-succession with Low Habitat Suitability for Water Vole and Otter



21.8.1.2 Ponds in the Survey Area

- 38. There are no ponds within the Order Limits and only 72 functionally linked ponds within 250 m of the Limits.
- 39. Ponds across the Survey Area are considered to have 'moderate' suitability for both water vole and otter.

21.8.1.3 Main River in the Survey Area

- 40. There are six main rivers within the Order Limits. Main rivers are designated by the Environment Agency under section 193C(1) of the Water Resources Act 1991¹. The rivers that are within the Order Limits include:
 - Willoughby High Drain;
 - Wainfleet Relief Channel;
 - Steeping River;
 - Hobhole Drain;
 - The Haven; and,
 - River Welland.
- 41. **Willoughby High Drain** is classified as a river due to its end point flowing into the sea. In 2019, the Environment Agency found Willoughby High Drain (which also includes Four Hundred Acre Drain) to have 'moderate' ecological status and 'failed' chemical status owing to poor nutrient management, high levels of dissolved oxygen, high levels of pollutants (including mercury and its compounds and PBDE and its components). This Water Body includes Mumby Drain, Four Hundred Acre Drain and another large drain running parallel with Sloothby High Lane in Hogsthorpe. Water levels within these large

¹ Main Rivers can be reviewed freely online at

https://environment.maps.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc5244339 80cc333726a56386



drains are controlled by the Chapel Pumping Station and flood defences in Chapel St. Leonards.

42. It was recorded as having a steep bank profile >45°, *c*.1m water depth, *c*.2.5m width, *c*.3m channel depth and the bank structure was predominantly earth (Plate 3). Within the channel, there was abundant reed/sedge cover, occasional tall grass, abundant short grass with *c*.20% shading along the riverbank. Surrounding this watercourse, the habitat was largely arable (c1) with a secondary habitat of neutral grassland (g3). No positive evidence of riparian mammals was found during the surveys, however, Willoughby High Drain continues to offer 'moderate' habitat suitability for both water vole and otter.

Plate 3: Willoughby High Drain taken 1st January 2023

43. The Wainfleet Relief Channel flows north around the village of Wainfleet All Saints. Flow rate is slow with water levels controlled by Croft Pumping Station. The channel is c.30m width and has artificial banks with a 45° bank profile, raised to provide flood defence to the village. In 2022, a programme of dredging operations was undertaken to maintain a minimum water depth of 1.5m and to reduce weed growth (East Lindsey Local Authority Website). The grassland along the vegetation is cut, although left



unmanaged at the water's edge. Species present include rosebay willowherb (*Chamaenerion angustifolium*), great willowherb (*Epilobium hirsutum*), bulrush (*Typha latifolia*), branched bur-reed (*Sparganium erectum*), water lily (*Nymphaeaceae* sp.) and common reed (*Phragmites australis*). The Wainfleet Relief Channel is considered to have 'moderate' habitat suitability for otter and 'low' suitability for water vole.

Plate 4: Wainfleet Relief Channel



44. The **Steeping River** was recorded as having a shallow bank profile <45°, *c*.2m watercourse depth, *c*.5m width, *c*.3m channel width and the bank structure was predominantly earth. Within the channel, tree cover was rare, tall herbs were frequent, tall grass cover was occasional, short grass cover was abundant, shading was *c*.20% and reeds and sedges were dominant (Plate 5). The surrounding primary habitat here was neutral grassland. At the time of surveying, anglers were observed with cutting of adjacent grass to enable pedestrian access. Otter feeding remains were identified on the banks of the Steeping River. It has 'low' habitat suitability for water vole.



Plate 5: Steeping River



- 45. **Hobhole Drain** forms part of the Witham Navigable Drains. Its water levels are artificially controlled at Hobhole Pumping Station before it discharges into the Haven. The Witham Navigable Drains have 'bad' ecological status and 'failed' chemical status according to the 2019 dataset from the Environment Agency. At the Hobhole Drain crossing point is Fishtoft Lakes, a private fishing lake and activity centre.
- 46. Hobhole Drain is very, large, straight watercourse measuring approximately 31 m across. (Plate 6). It is bordered by a public footpath within a narrow strip of broad-leaved woodland along the right bank. The left bank is managed, neutral grassland, bordered by a line of broad-leaved trees and single lane, tarmacked road.

Plate 6: Hobhole Drain



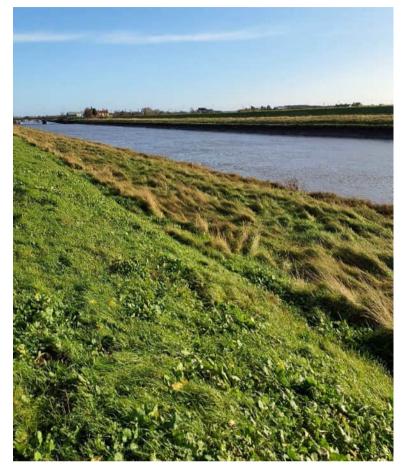
- 47. **The Haven** is a heavily modified, tidal river which connects both the River Witham in Boston and the South Forty Foot Drain to the south of Boston, with The Wash. The Haven forms part of Havenside Country Park Local Nature Reserve (LNR). In 2019, the Environment Agency found the relevant stretch of The Haven to have poor ecological and chemical status, attributing this to poor nutrient and soil management, high levels of dissolved oxygen, high levels of pollutants (including mercury and its compounds and polybrominated diphenyl (PBDE) and its components) (Environment Agency Catchment Data Website). Despite this, it is known to support saltmarsh communities and provide habitat for common seal and water birds.
- 48. The Haven is a very large river with a shallow bank profile <45°, *c*.5m watercourse depth, *c*.50m width, *c*.100m channel depth with a primary bank substrate of stone with surrounding habitat consisting of salt marshes (Plate 7). The Haven is a tidal river which links up with The Wash and boats were recorded navigating up and down the river.

Plate 7: The Haven



- 49. The **River Welland** is a 105km, heavily modified, tidal river which flows into The Wash. In 2019, the Environment Agency found this relevant stretch of the River Welland to have 'moderate' ecological status and 'failed' chemical status owing to poor nutrient management, high levels of dissolved oxygen, high levels of pollutants (including mercury and its compounds and PBDE and its components). On the south bank of the River is Moulton Marsh Local Wildlife Site (LWS) and Lincolnshire Wildlife Trust (LWT) Reserve, a series of lagoons supporting good numbers of water birds.
- 50. It has a shallow bank profile <45°, *c*.20m watercourse width and *c*.25m channel depth (Plate 8). The vegetation within the channel consisted of occasional reeds and tall herbs, frequent short and tall grass cover with *c*.5% of shading. The primary surrounding habitat is supralittoral sediment with a secondary habitat of neutral grassland.

Plate 8: River Welland



21.8.2 Presence/Absence

21.8.2.1 Otter Evidence

- 51. There were no direct observations of otter made during the targeted otter surveys or during any other ecological surveys undertaken by SLR.
- 52. Otter footprints were found within segment ECC 14: Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (WCID: 1753) and segment ECC 13: Fosdyke to Surfleet Marsh OnSS/Marsh Drove (WCID: 1636) (Plate 9).



Plate 9: Evidence of Otter Presence. Footprints Recorded on WCID 1636

- 53. Holts were recorded at ECC 14: Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (WCID: 1753) and ECC 10: Church End Lane to The Haven (WCID: 1357). A couch was found at ECC 3: Marsh Lane to A158 Skegness Road (WCID: 624) and a slide was found at ECC 5: Low Road to Steeping River (WCID: 20129).
- 54. Otter feeding evidence constituting bivalve remains were recorded at ECC 10 Church End Lane to The Haven (WCID: 1357), ECC 5: Low Road to Steeping River (WCID: 20149), and ECC 2: Hogsthorpe to Marsh Lane (WCID: 443).
- 55. Full details of otter field signs recorded during the surveys are presented in Annex A and their locations illustrated in Figure 21.6.3.

21.8.2.2 Water Vole Evidence

56. Table 21-2-1 presents details of the water vole evidence found.

Water Vole Evidence	Count of Evidence	Segment and WCID
Individual water vole	1	ECC 10: Church End Lane to The Haven
		WCID: 1307
Water vole footprints	1	ECC 7: Fodder Dike Bank/Fen Bank to Broadgate
		WCID: 20386
Feeding station/remains	3	ECC 1: Landfall to A52 – Hogsthorpe
		WCID: 303
Feeding station/remain	1	ECC 5: Low Road to Steeping River
		WCID: 20132
Feeding station/remains	4	ECC 7: Fodder Dike Bank/Fen Bank to Broadgate
		WCID: 20322
Feeding station/remains	77	ECC 10: Church End Lane to The Haven
		WCID: 1288, 1291, 1292, and 1294,
Individual water vole burrows	7	ECC 1: Landfall to A52 – Hogsthorpe
		WCID: 293, and 303
Individual water vole burrow	2	ECC 2: Hogsthorpe to Marsh Lane
		WCID: 550
Individual water vole burrow	1	ECC 3: Marsh Lane to A158 - Skegness Road
		WCID: 580
Individual water vole burrows	3	ECC 4: Skegness Road to Low Road
		WCID: 659
Individual water vole burrows	15	ECC 5: Low Road to Steeping River
		WCID: 725, 731, 20004, 20072, 20132 and 20114
Individual water vole burrows	8	ECC 6: Steeping River to Fodder Dike Bank/Fen Bank
		WCID: 20167, 20273 and 20279
Individual water vole burrows	2	ECC 7: Fodder Dike Bank/Fen Bank to Broadgate
		WCID: 20322
Individual water vole burrow	1	ECC 9: Ings Drove to Church End Lane
		WCID: 20732
Individual water vole burrows	14	ECC 10: Church End Lane to The Haven
		WCID: 1275, 1291, 1294, 1292

Water Vole Evidence	Count of Evidence	Segment and WCID
Individual water vole burrows	7	ECC 11: The Haven to Marsh Road
		WCID: 1426, 1435, 1452, 1468 and 1470
Individual water vole burrows	11	ECC 12: Marsh Road to Fosdyke Bridge
		WCID: 1477, 1561, 1548, 1584, 1571 and 1580
Latrine	3	ECC 5: Low Road to Steeping River
		WCID: 20004
Latrine	46	ECC 10: Church End Lane to The Haven
		WCID: 1291, 1292, 1294, and 1354
Latrine	3	ECC 11: The Haven to Marsh Road
		WCID: 1416, and 1468
Runway	1	ECC 9: Ings Drove to Church End Lane
		WCID: 20823
Runway	1	ECC 12: Marsh Road to Fosdyke Bridge
		WCID: 1548
Nest	1	ECC 5: Low Road to Steeping River
		WCID: 20004
Nest	1	ECC 6: Steeping River to Fodder Dike Bank/Fen Bank
		WCID: 20167
Nest	1	ECC 12: Marsh Road to Fosdyke Bridge
		WCID: 1548

57. Full details of water vole field signs recorded during the surveys are presented in Annex B, with their locations illustrated in Figure 21.6.2.

21.8.3 Other Mammal Field Signs

- 58. Other evidence or records of mammals included brown rat (*Rattus norvegicus*), common shrew (*Sorex araneus*), brown hare (*Lepus europaeus*), rabbit (*Oryctolagus cuniculus*) and roe deer (*Capreolus capreolus*).
- 59. Evidence of brown rat included individual burrows, droppings and prints at ECC 9 Ings Drove to Church End Lane, ECC 8 Broadgate to Ings Drove, ECC 7 Fodder Dike Bank/Fen Bank to Broadgate, ECC 4 A158 Skegness Road to Low Road, ECC 13 Fosdyke to Surfleet Marsh OnSS/Marsh Drove, ECC 11: The Haven to Marsh Road and ECC 10: Church End Lane to The Haven. These were found on the field margins of arable land, rather than within waterbodies.
- 60. Evidence of common shrew was an individual sighting at ECC 13: Fosdyke to Surfleet Marsh OnSS/Marsh Drove. Again, these were found on the field margins of arable land., rather than within waterbodies.
- Evidence of hares were potential individual burrows found at ECC 1: Landfall to A52 Hogsthorpe and ECC 11: The Haven to Marsh Road. These were found on field margins of arable land.
- 62. Evidence of rabbits included visual sightings of individuals and individual burrows found at ECC 1: Landfall to A52 – Hogsthorpe, ECC 11: The Haven to Marsh Road, ECC 2: A52 - Hogsthorpe to Marsh Lane and ECC 5: Low Road to Steeping River. These were found on field margins of arable land.
- 63. Evidence of roe deer were footprints recorded at ECC 10: Church End Lane to The Haven. These were found within an arable land parcel.

21.9 Conclusion

21.9.1 Otters

- 64. Due to the landscape being predominantly arable, it is likely that many of the watercourses in the area have been chemically polluted by surface run off and therefore fish, which are otters' main food source, in these areas may be less abundant (See Appendix 21.6 Fish Habitat Suitability).
- 65. The desk study returned only one record from within the Order Limits, when compared to the results generated by the field survey. This is likely due to the rural and isolated nature of the landscape within the Study Area, with less people present to witness and submit such records, compared with the intensive and targeted nature of the field surveys.
- 66. Evidence of otters were recorded within ECC 5, ECC 10 and ECC 14. Despite the field signs for these areas being relatively low, because otters typically have large home ranges (often 20-30km) it is possible that other nearby areas (outside ECC5, ECC 10, ECC 14) which haven't recorded the presence of otter may be used for commuting. However, it is unlikely they would use these watercourses for foraging due to poor water quality and therefore a lack of food sources available.

21.9.2 Water Vole

- 67. Water voles rely on grasses and reeds for their main diet rather than the availability of fish and therefore are more abundant within the areas of the Order Limits, as the habitats are more suited.
- 68. The greatest number of records of water vole returned by the desk study were at ECC 10 correlating with the high number of field signs observed during the surveys in this area. Together these results indicate that this area has a particularly high density of water vole. As the watercourses surveyed were observed to be generally highly vegetated, including abundant marginal and in channel vegetation, this would provide ideal habitat for water vole, not just as a food source but also for cover and protection from predators.
- 69. Other areas that had water vole records were ECC 1- ECC 7 and ECC 9- ECC 12. Water voles prefer steep banks so they can excavate their burrows, however they are also adapted to using shallow bank profiles if the water levels are stable. Within the areas where these species have been recorded, many of the ditches have a bank profile



of 45 degrees water levels appear stable making preferable habitat for this species. This species also has a varied diet of plant species, amphibians and invertebrates so can survive in areas where there is a low diversity of species and a lack of lush emergent vegetation. As some of the watercourses in these areas lack good water quality and diversity of vegetation they can still be classified as ideal habitat for water vole survival.

21.10 References

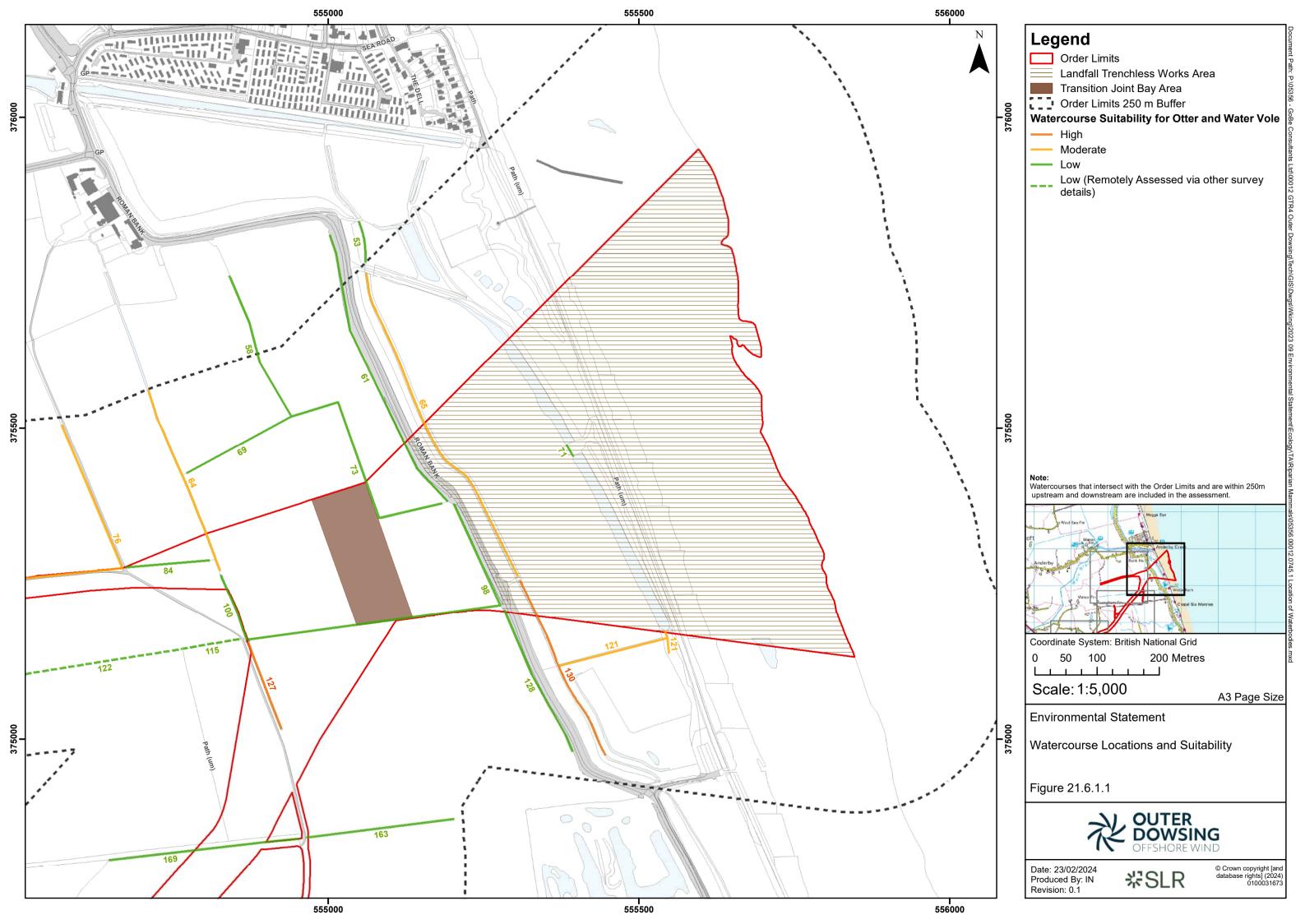
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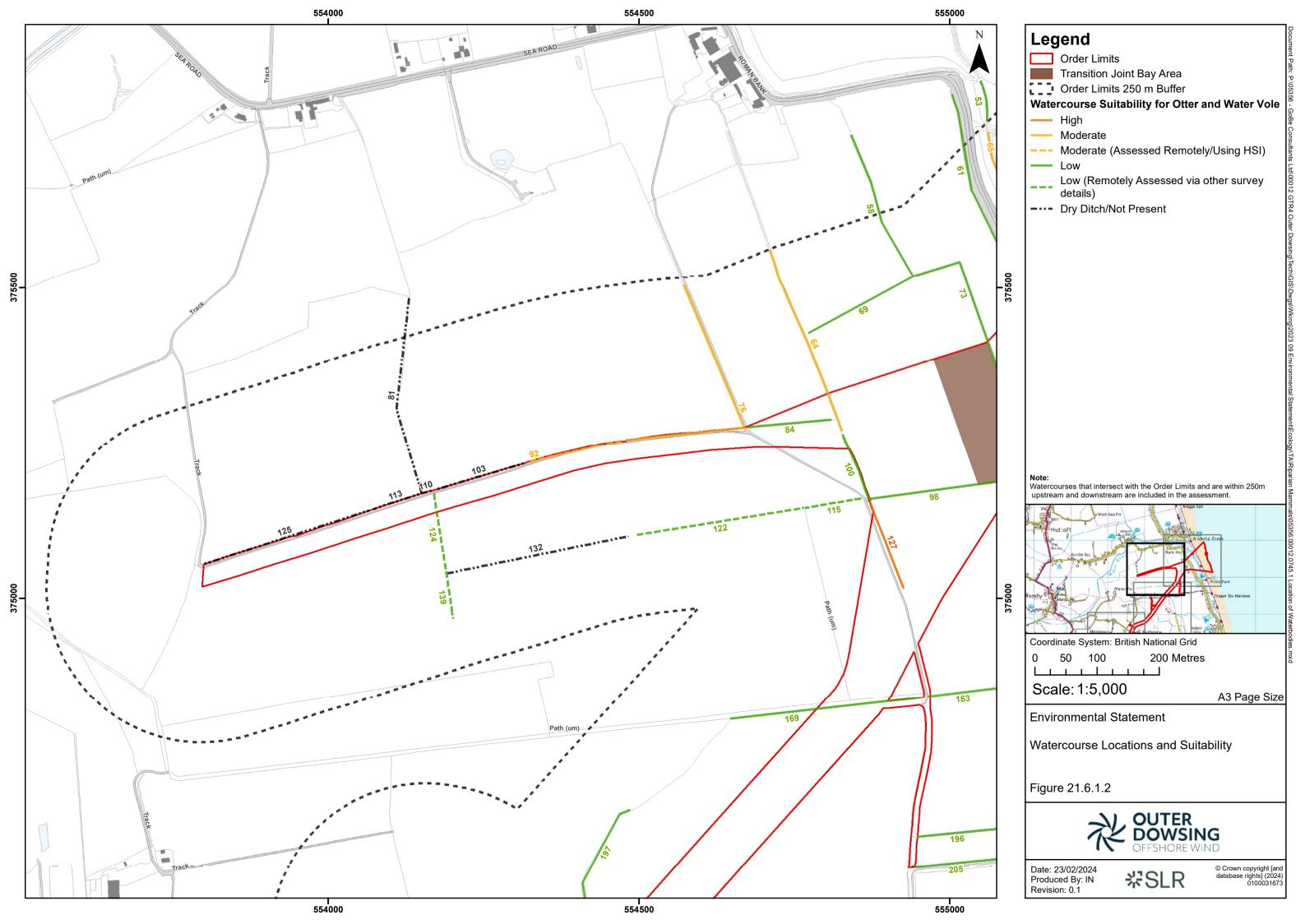
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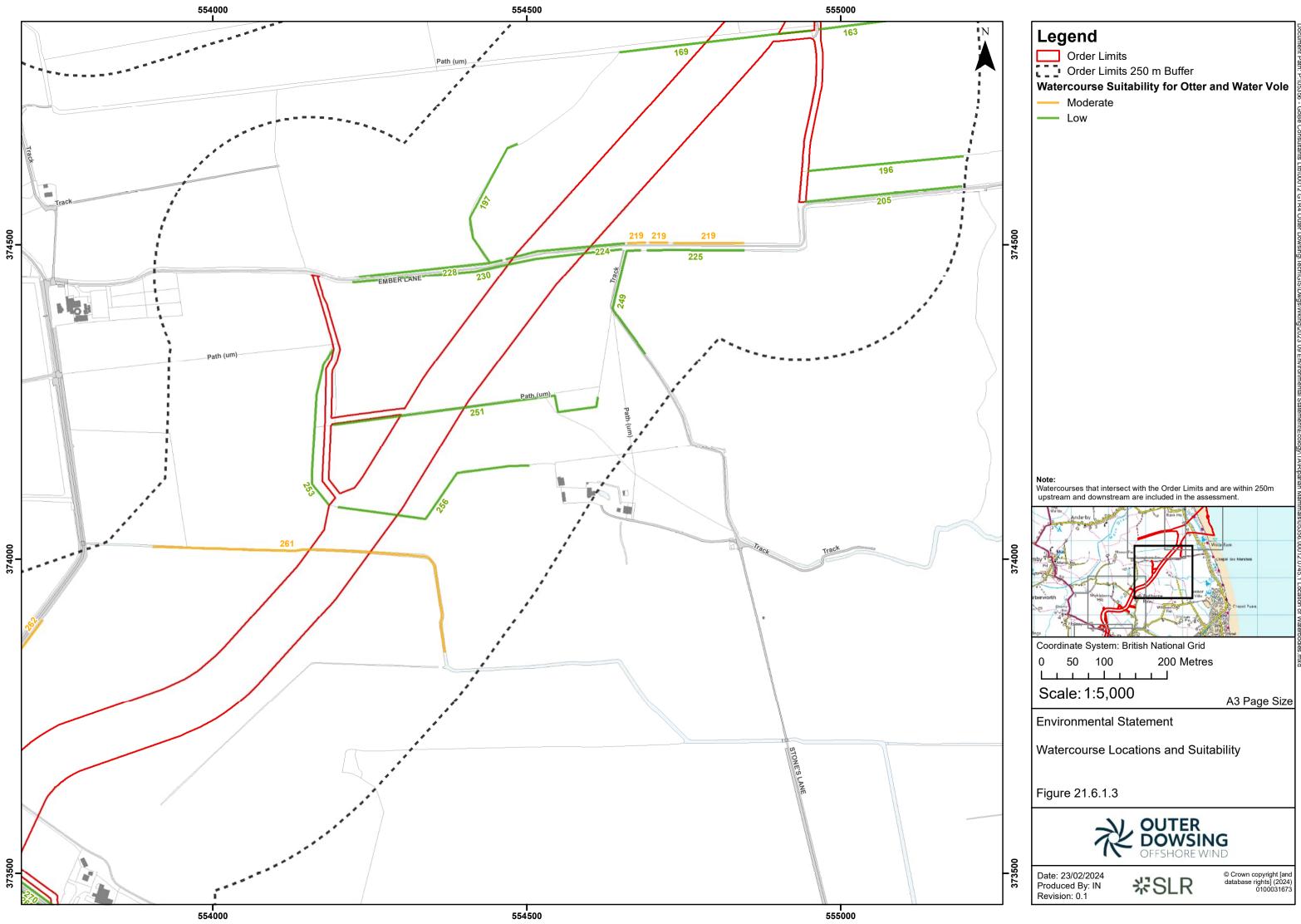
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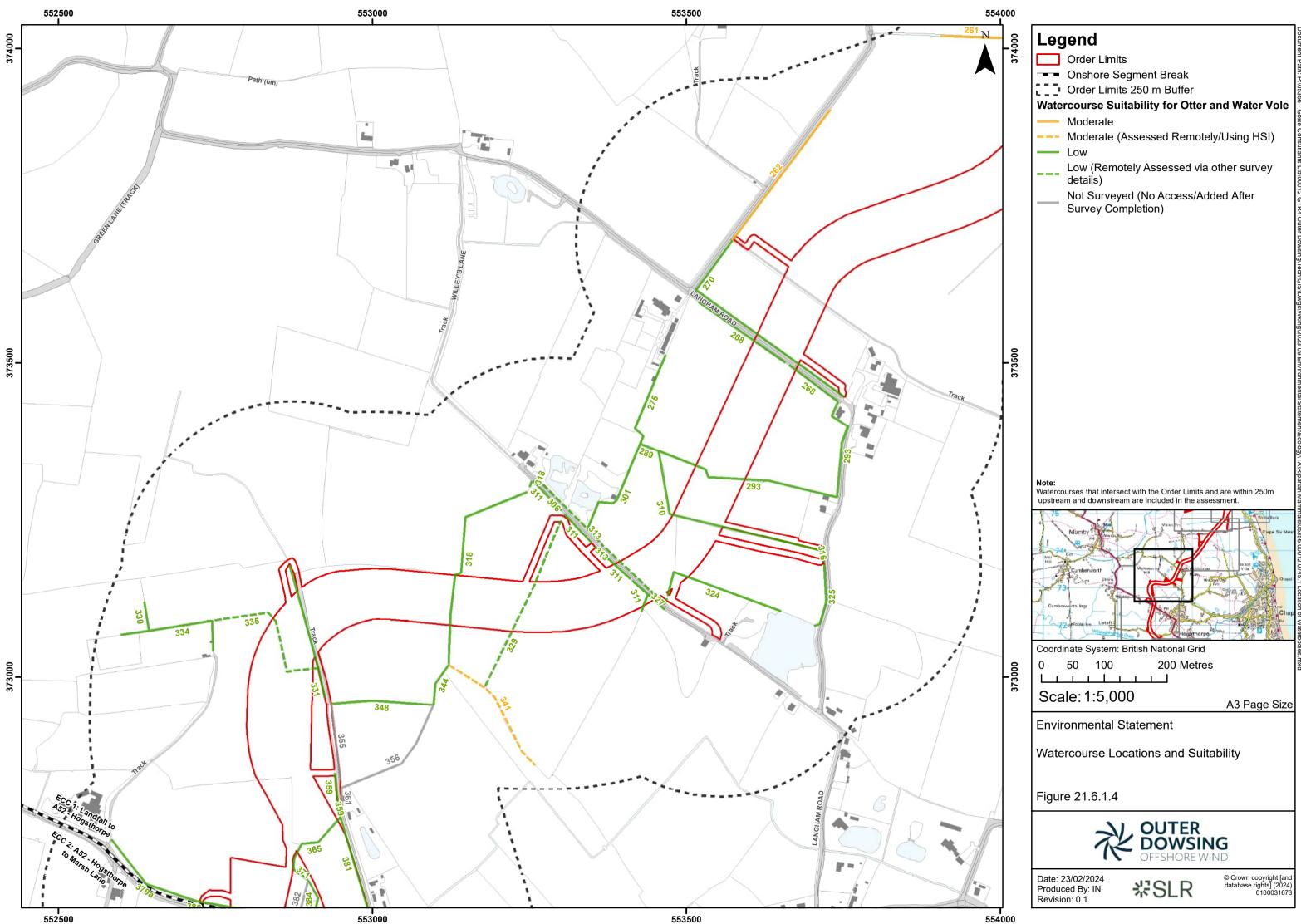
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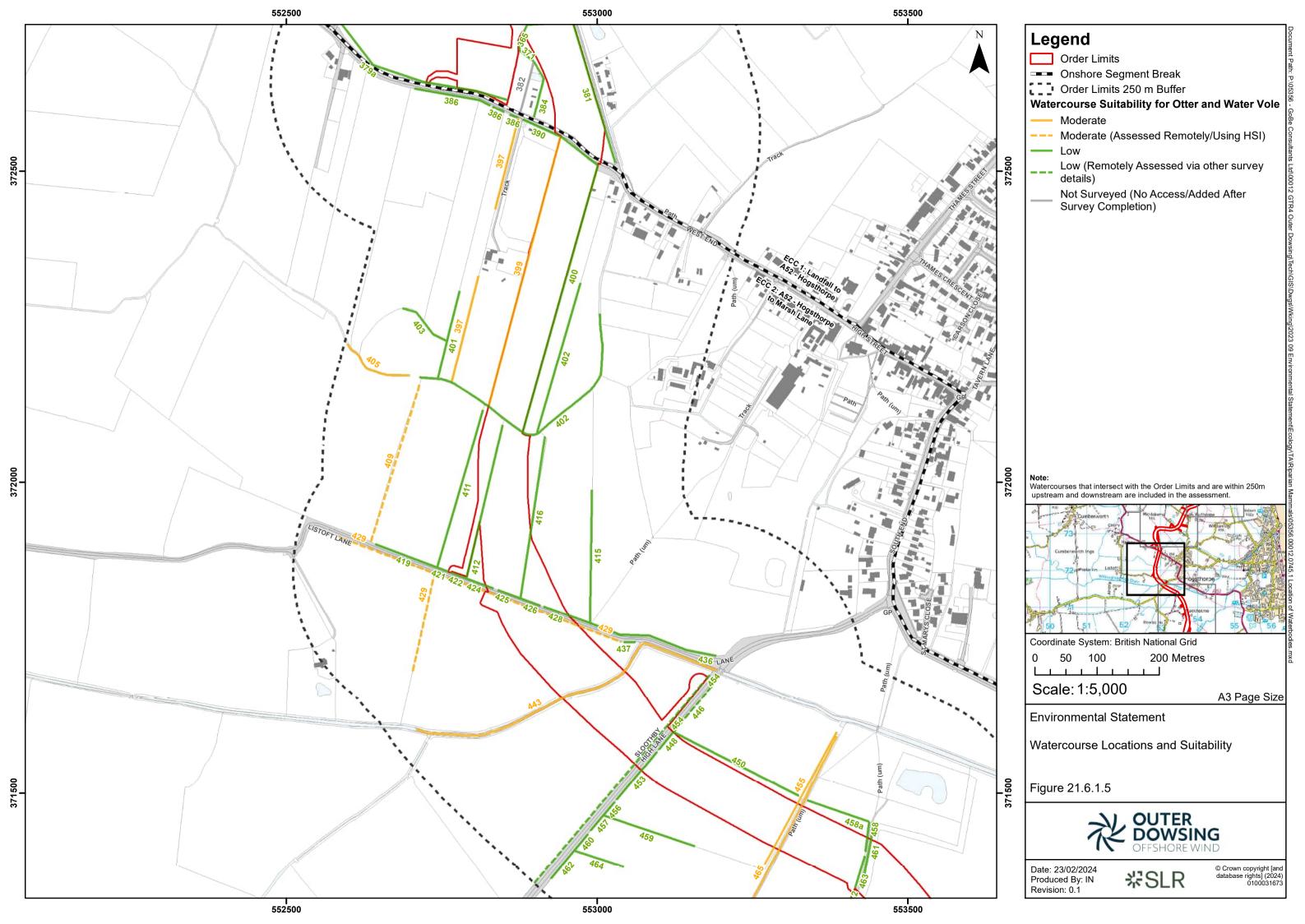
Figure 21.6.1: Watercourse Locations and Suitability

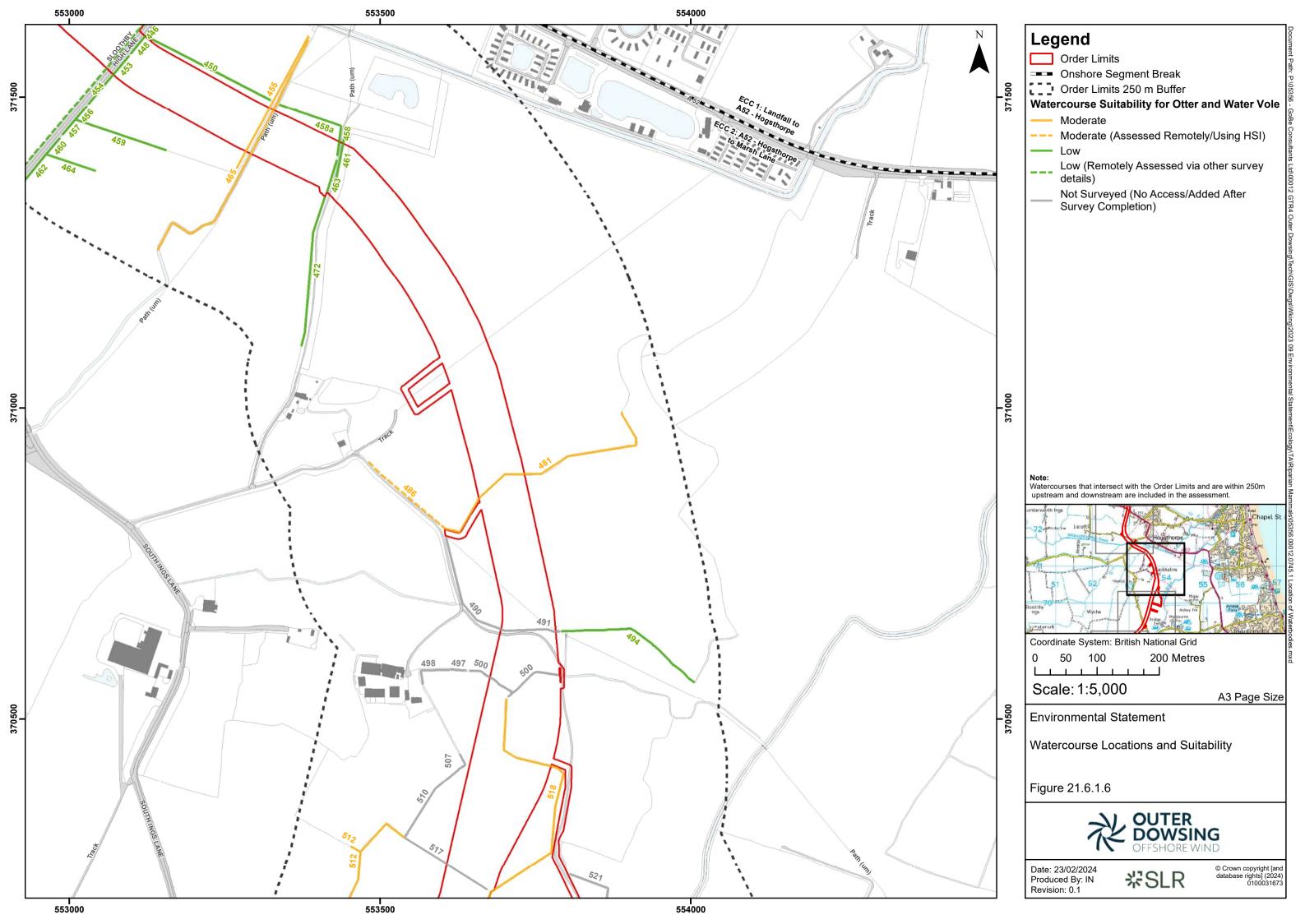


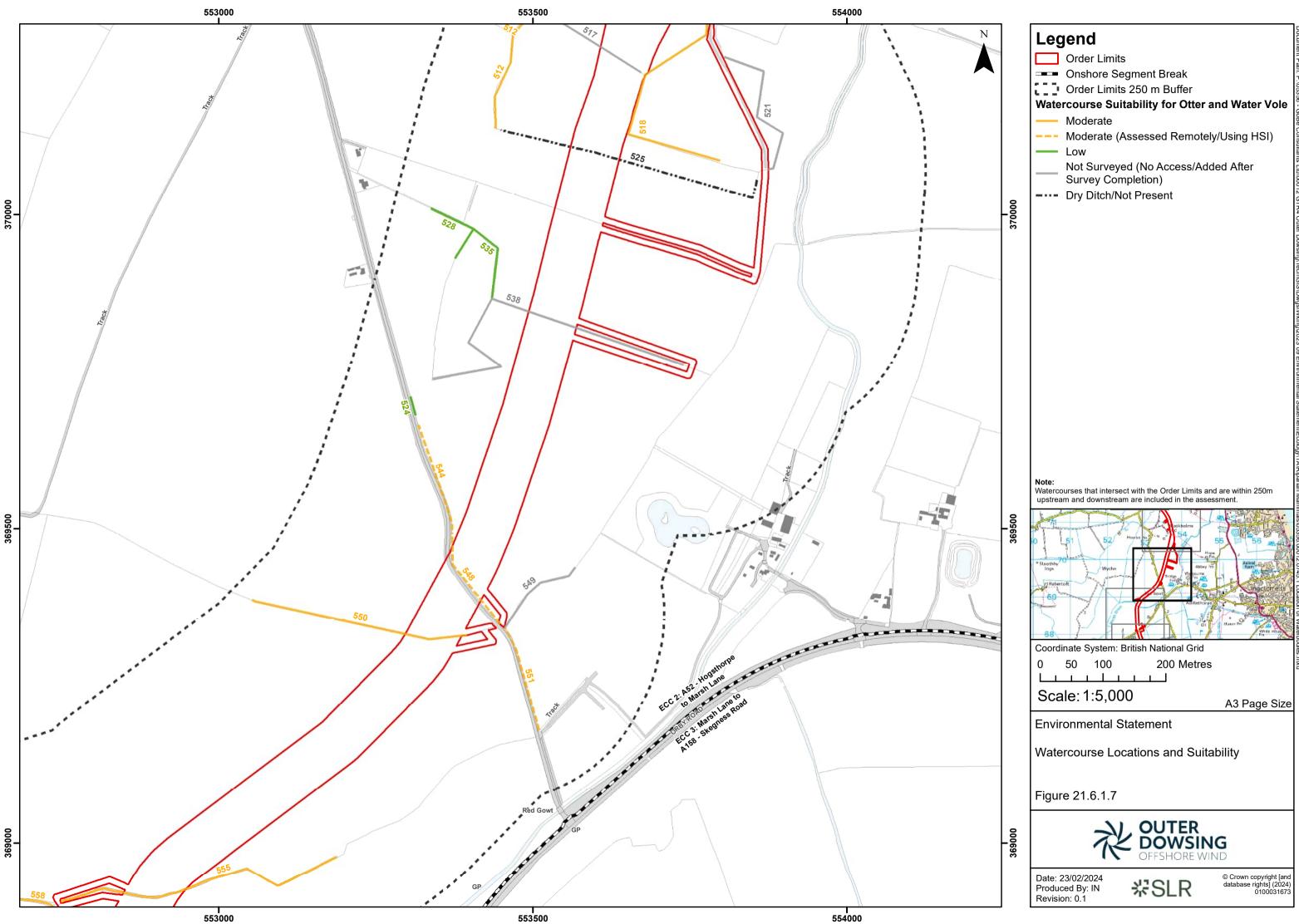


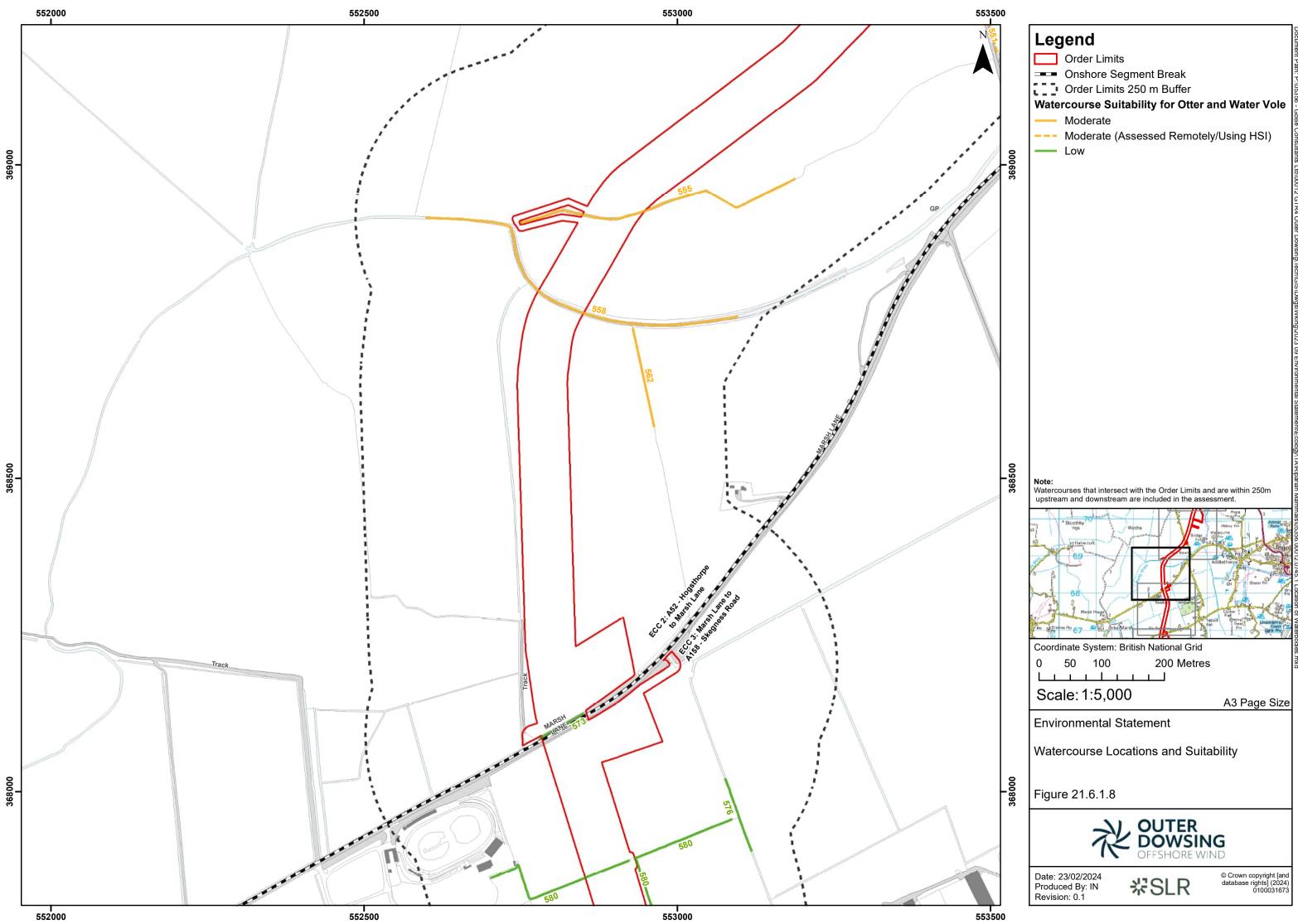


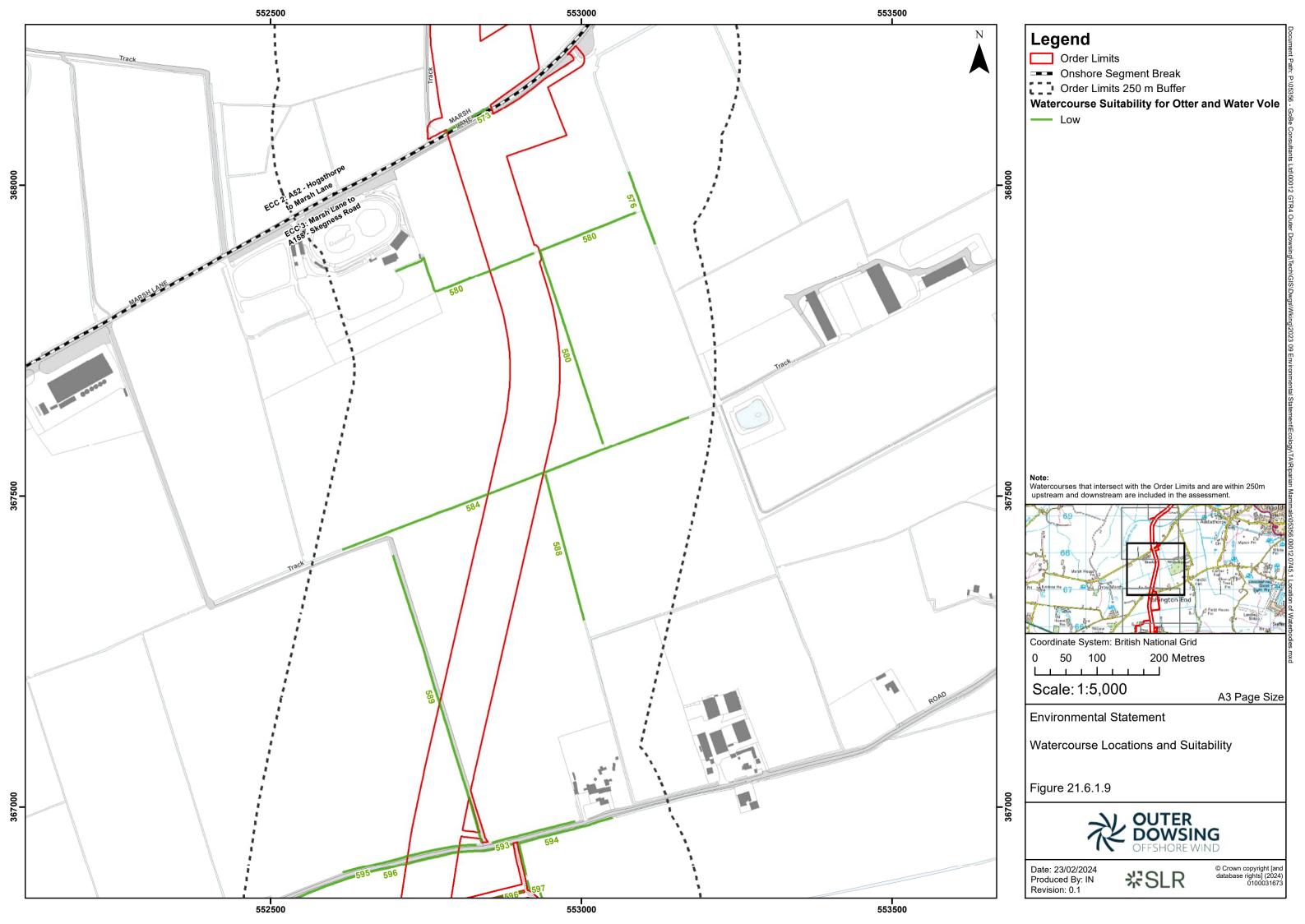


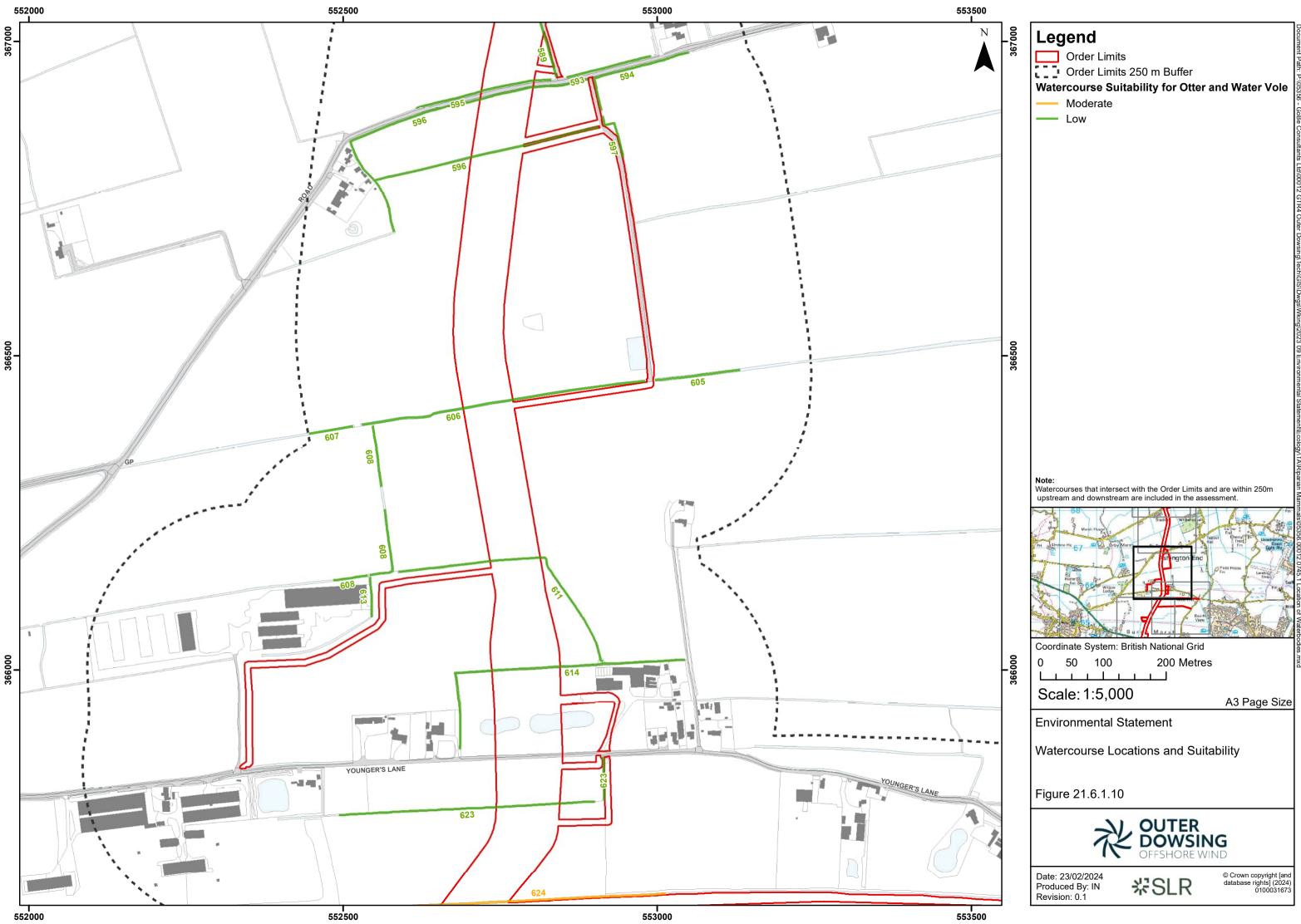


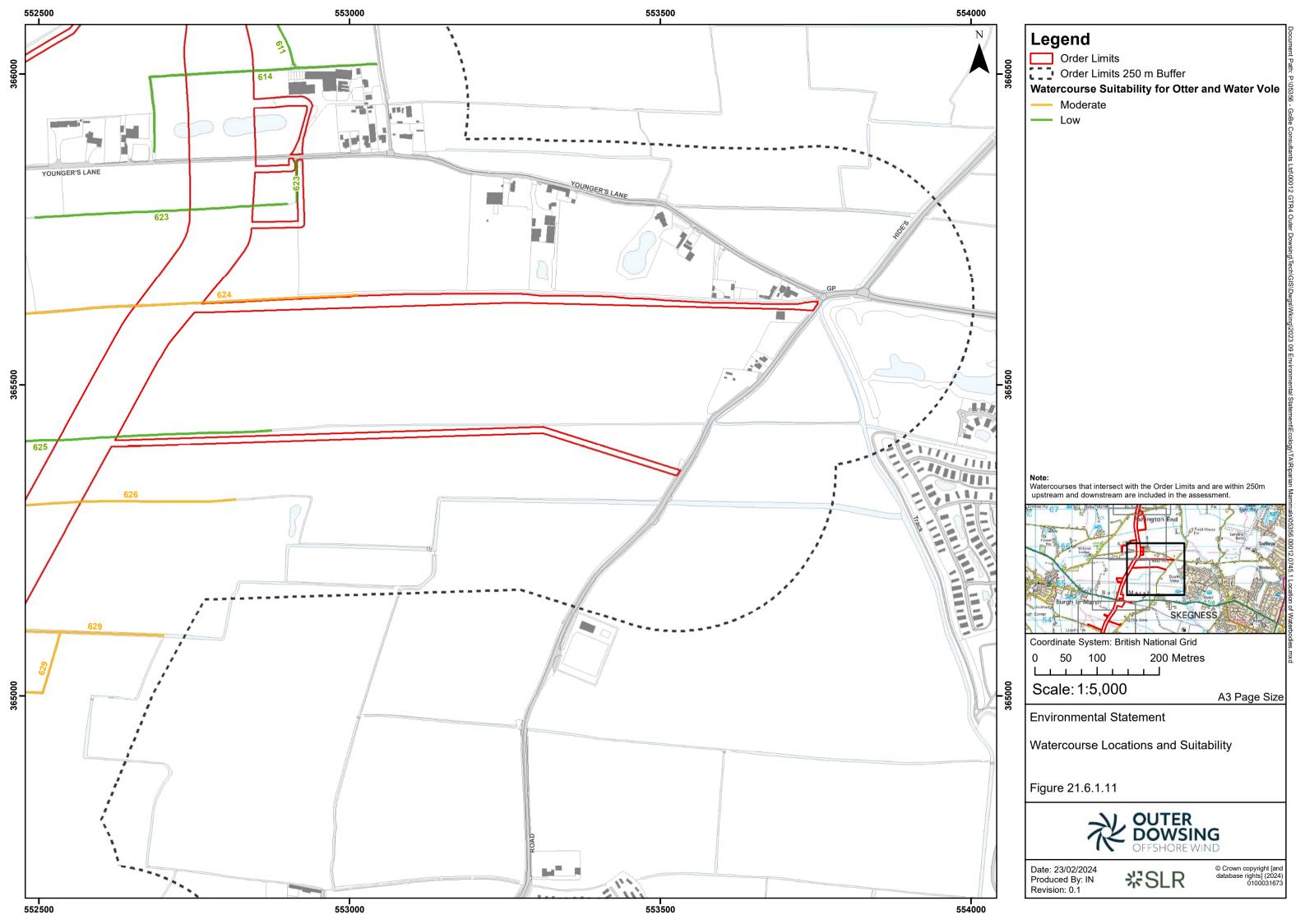


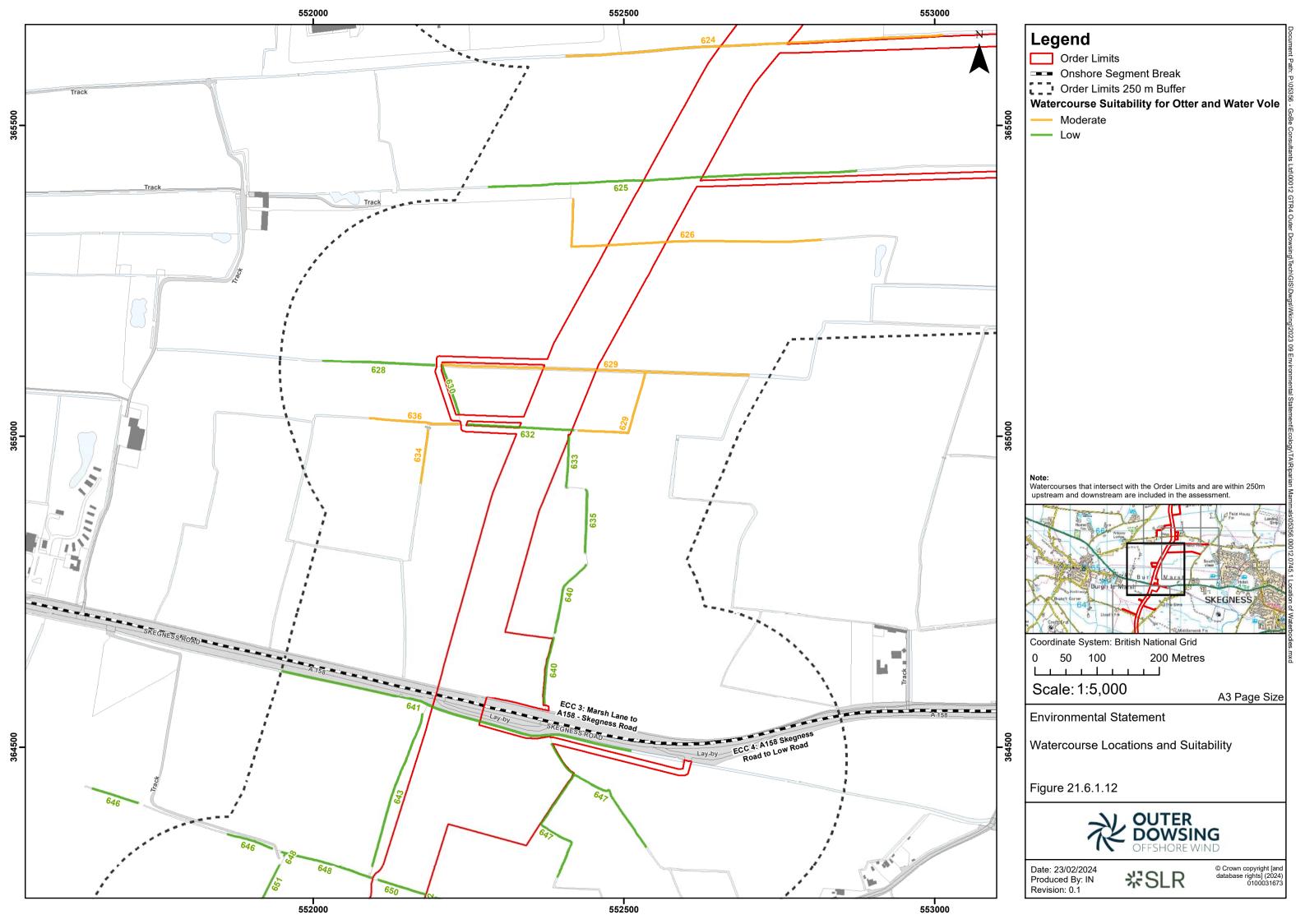


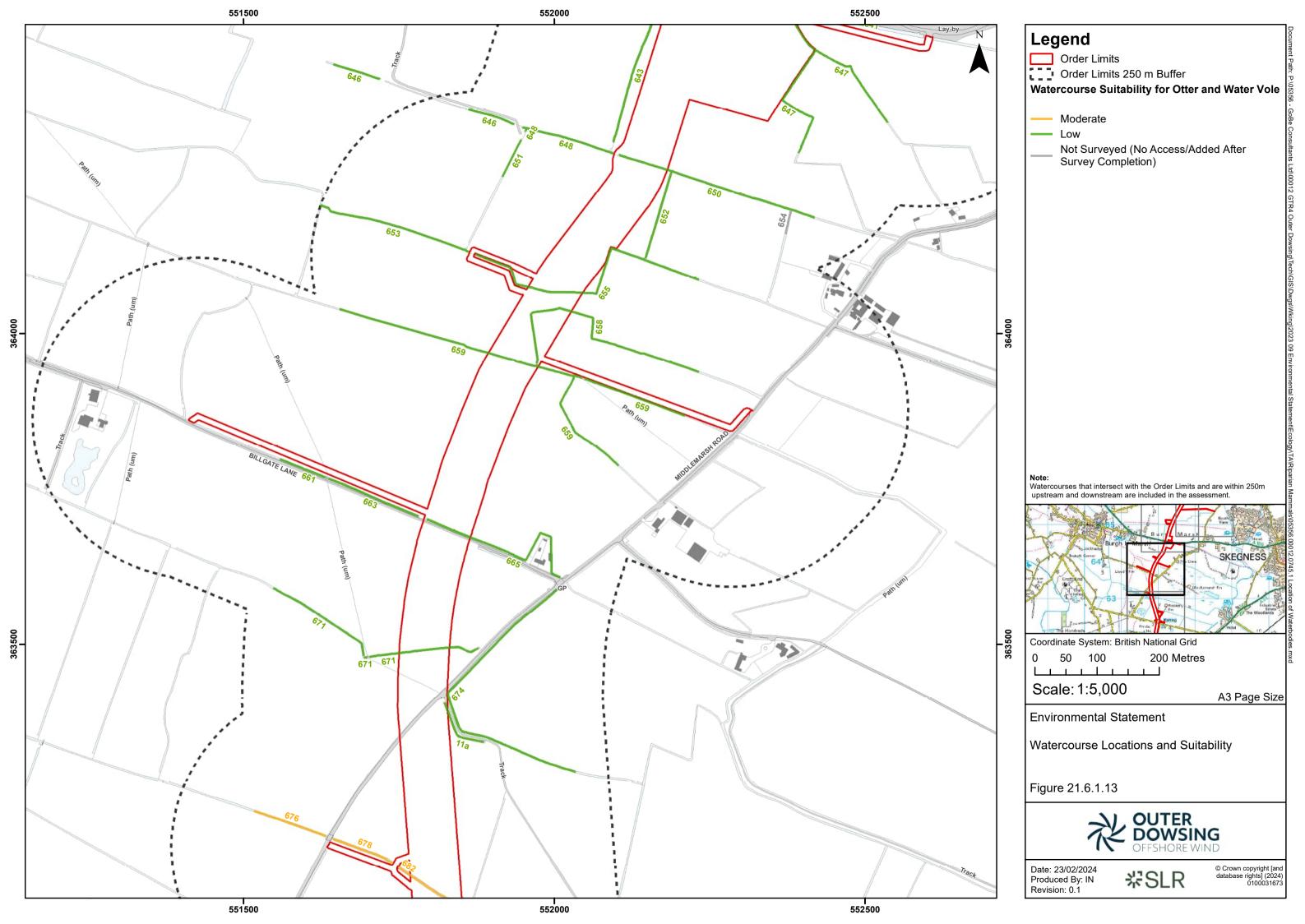


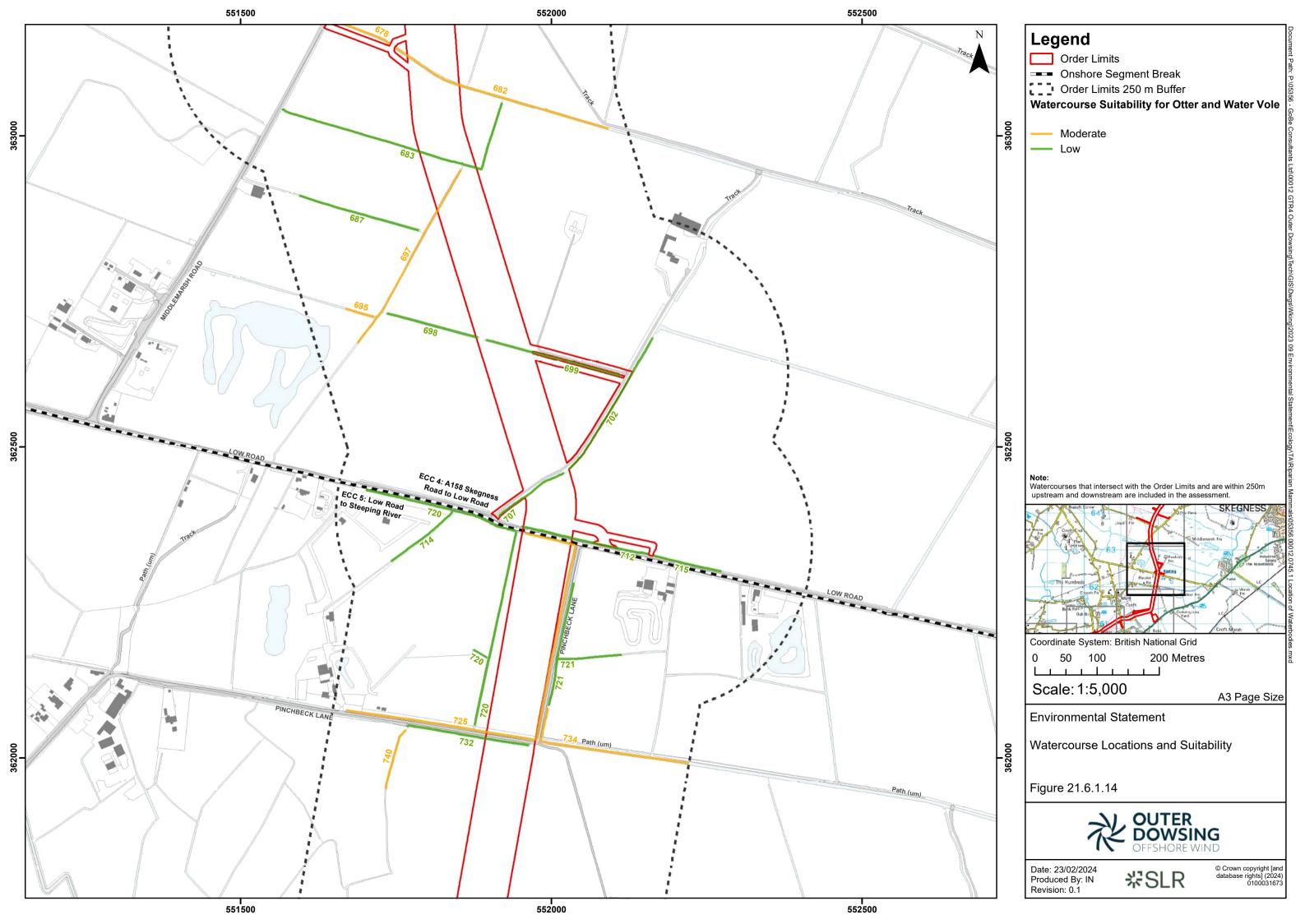


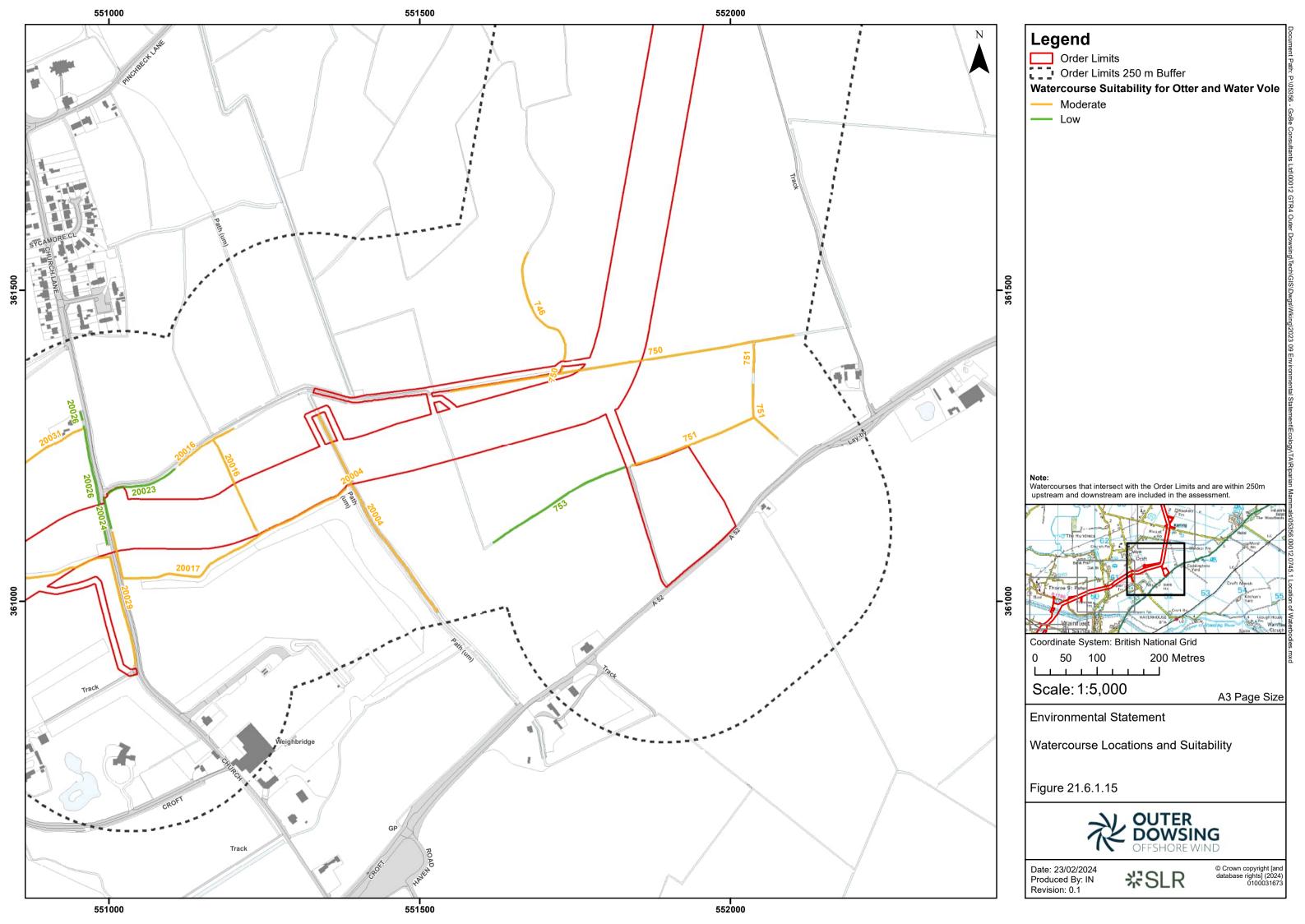


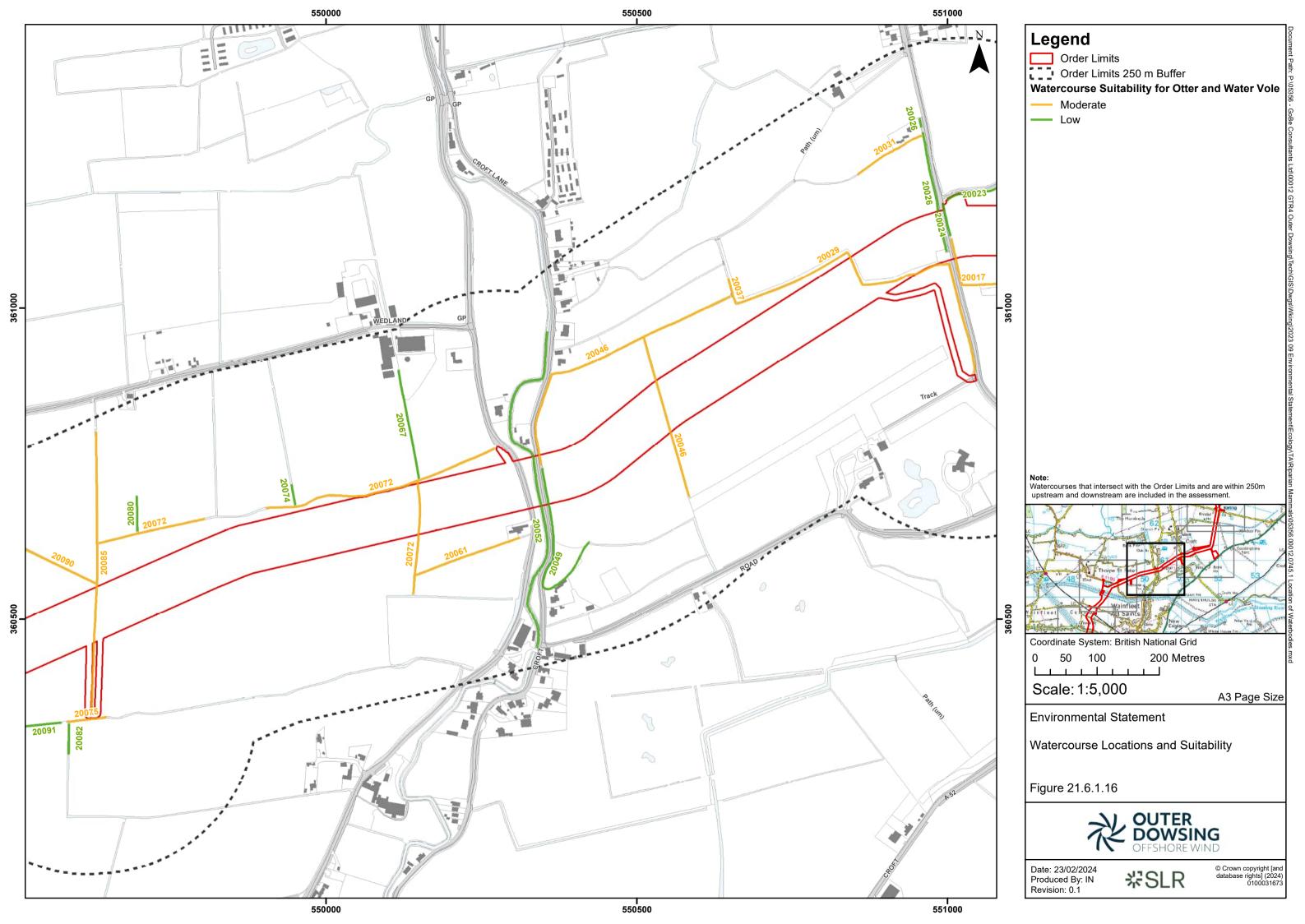


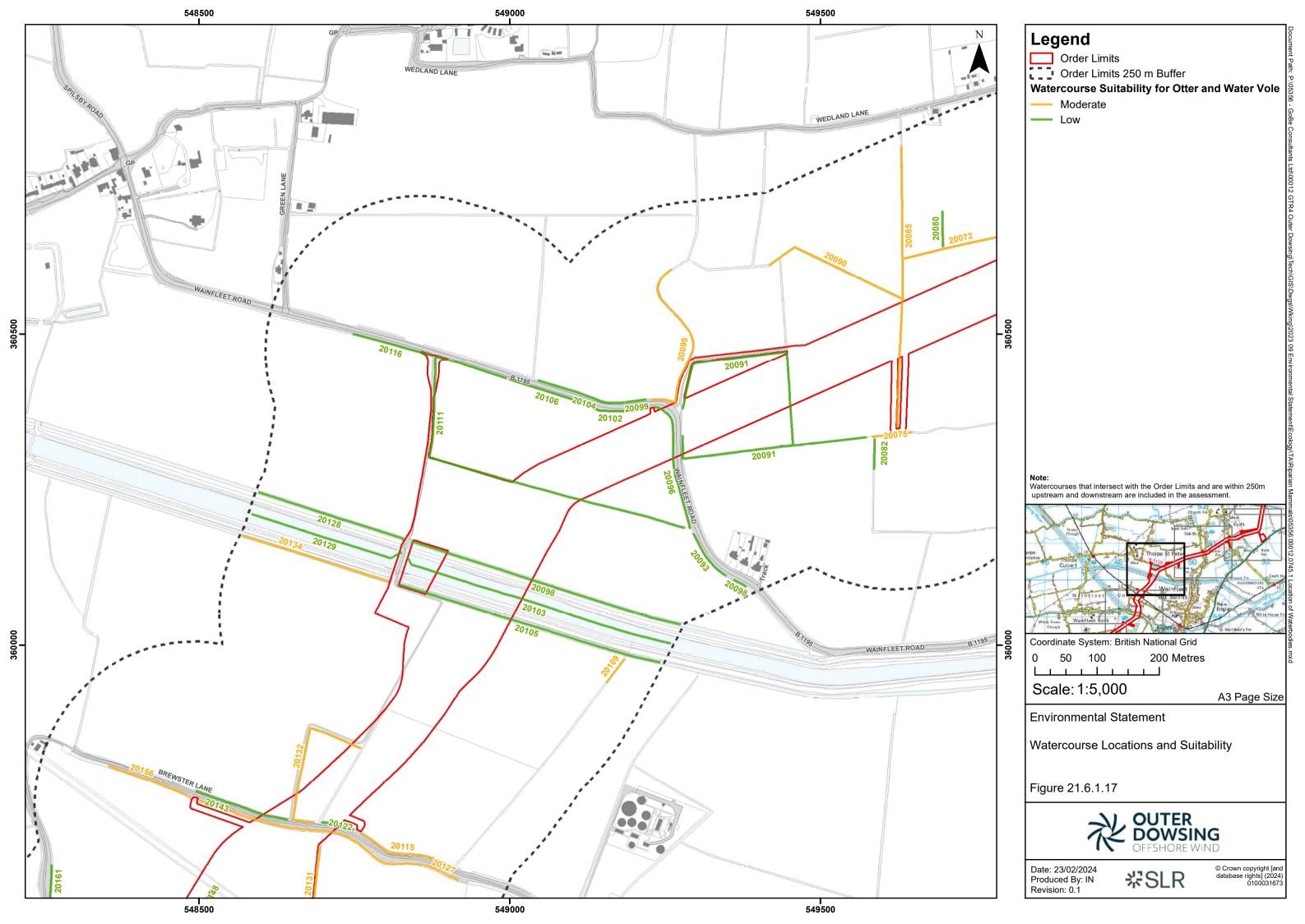


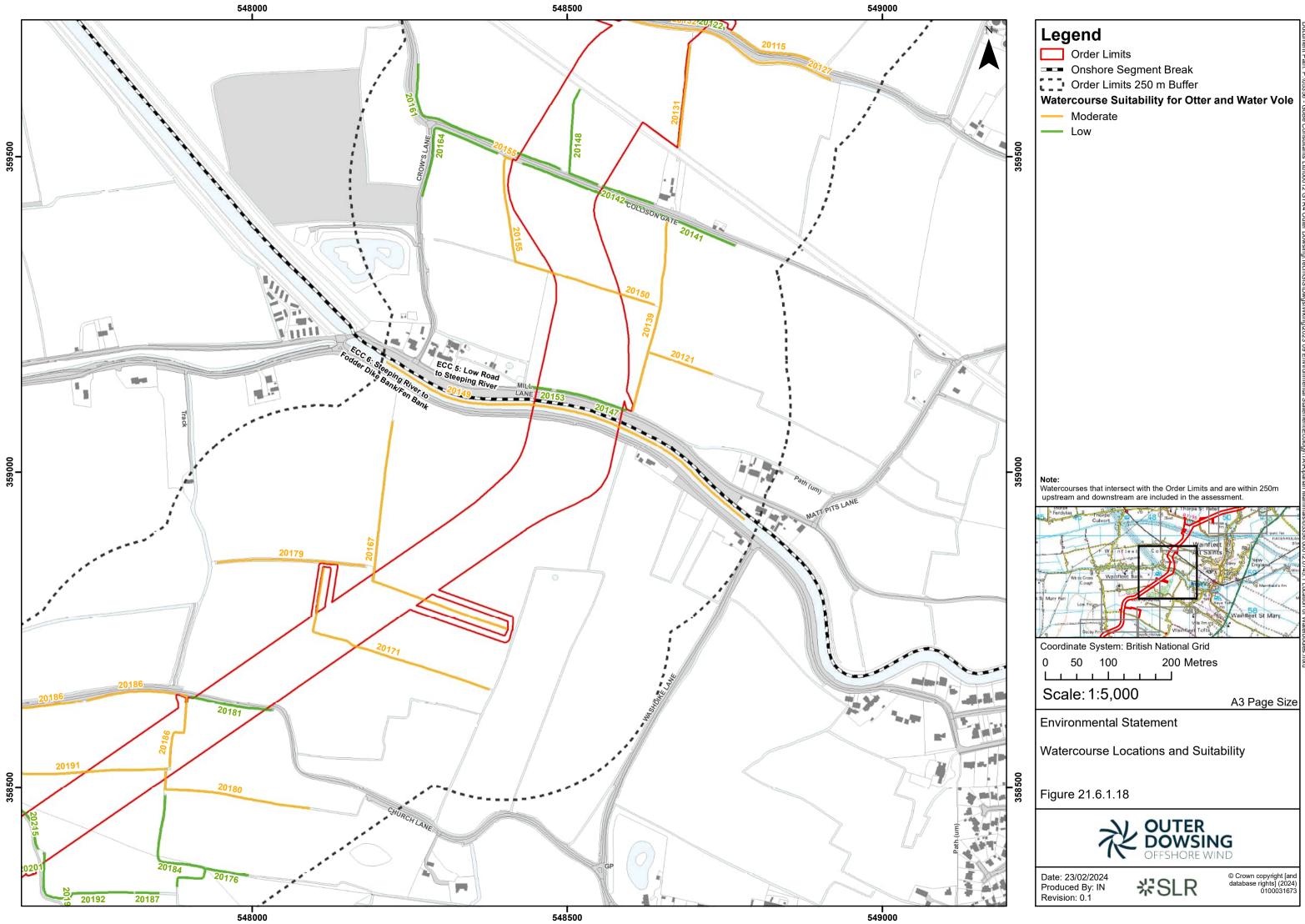


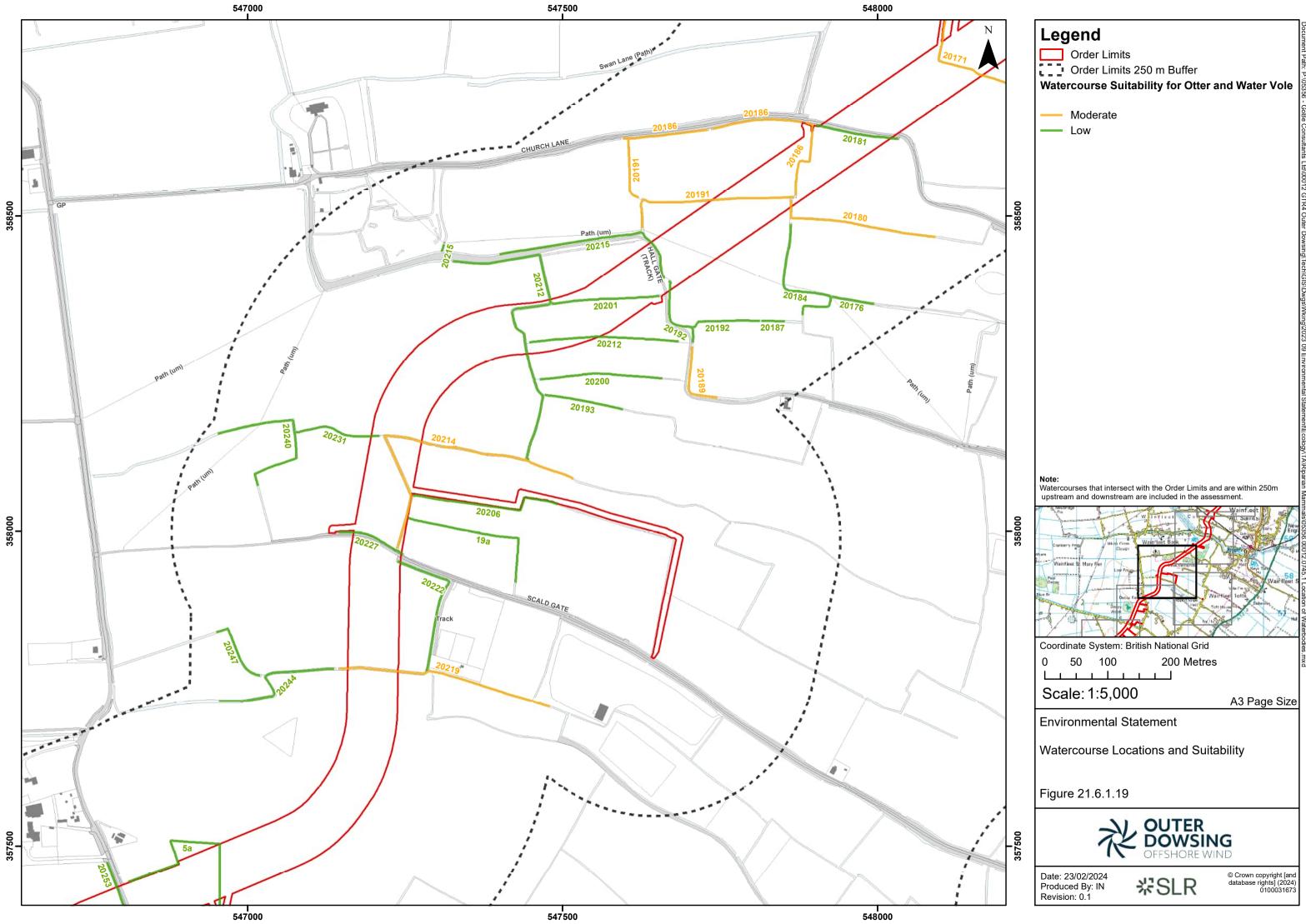


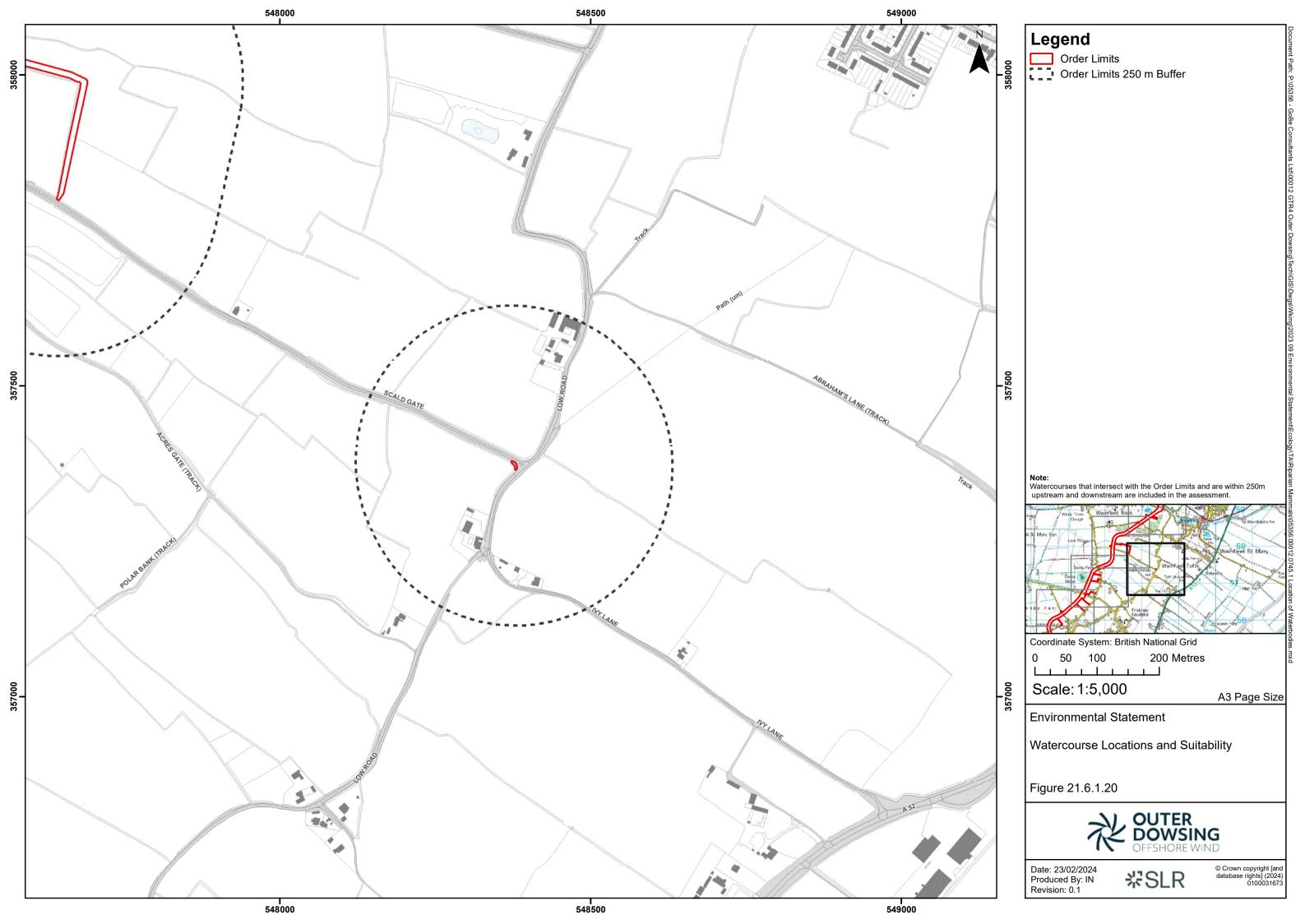


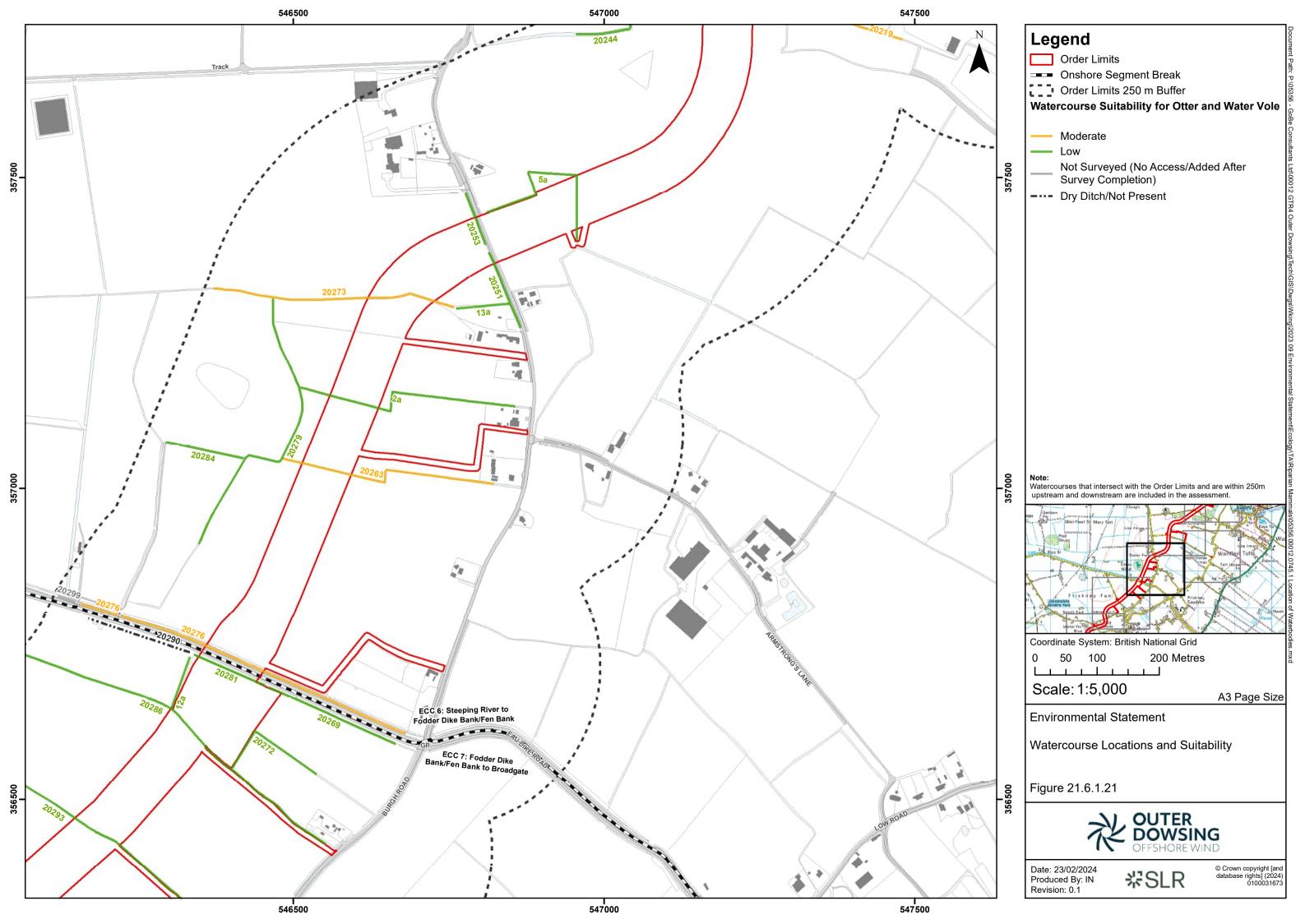


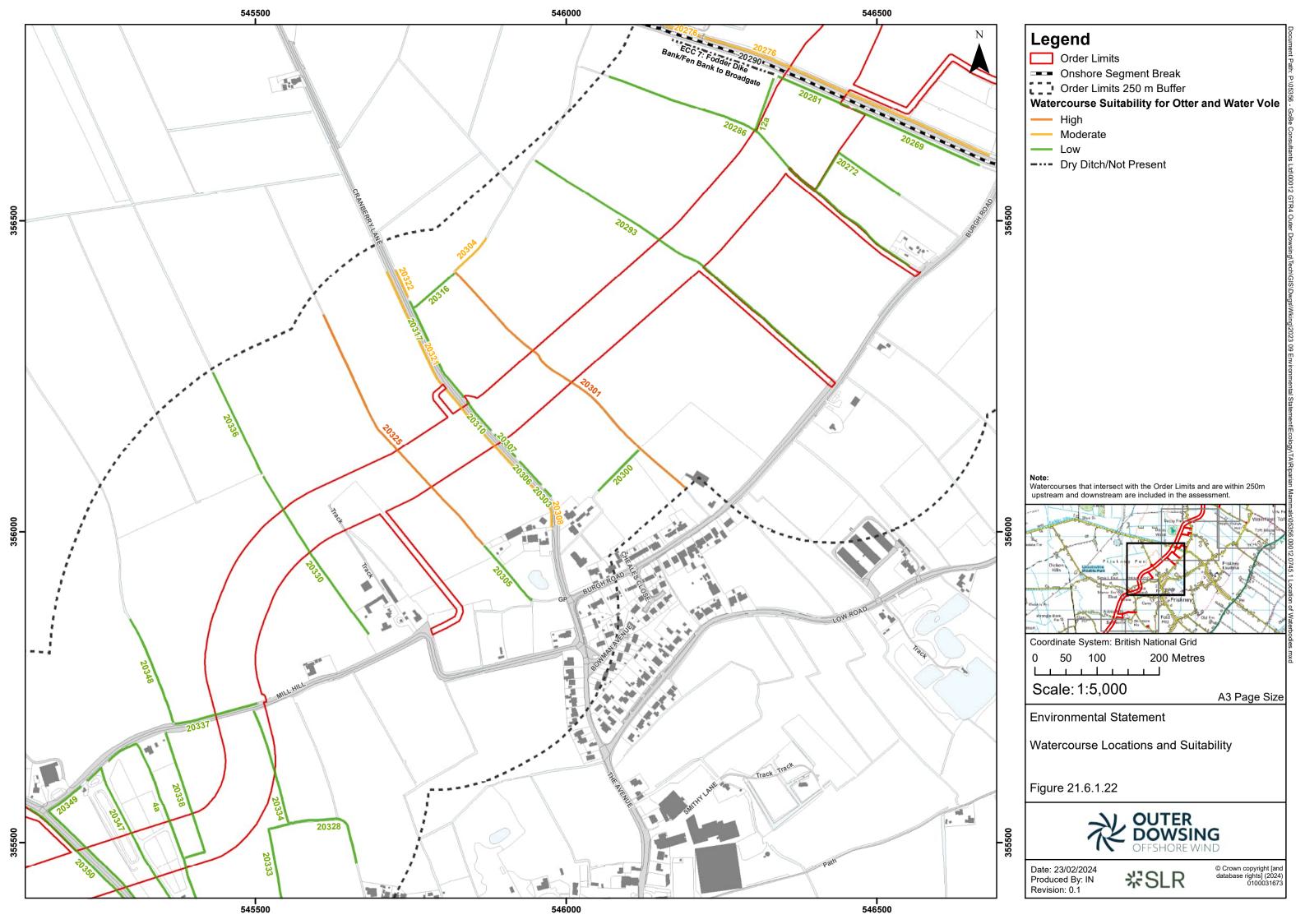


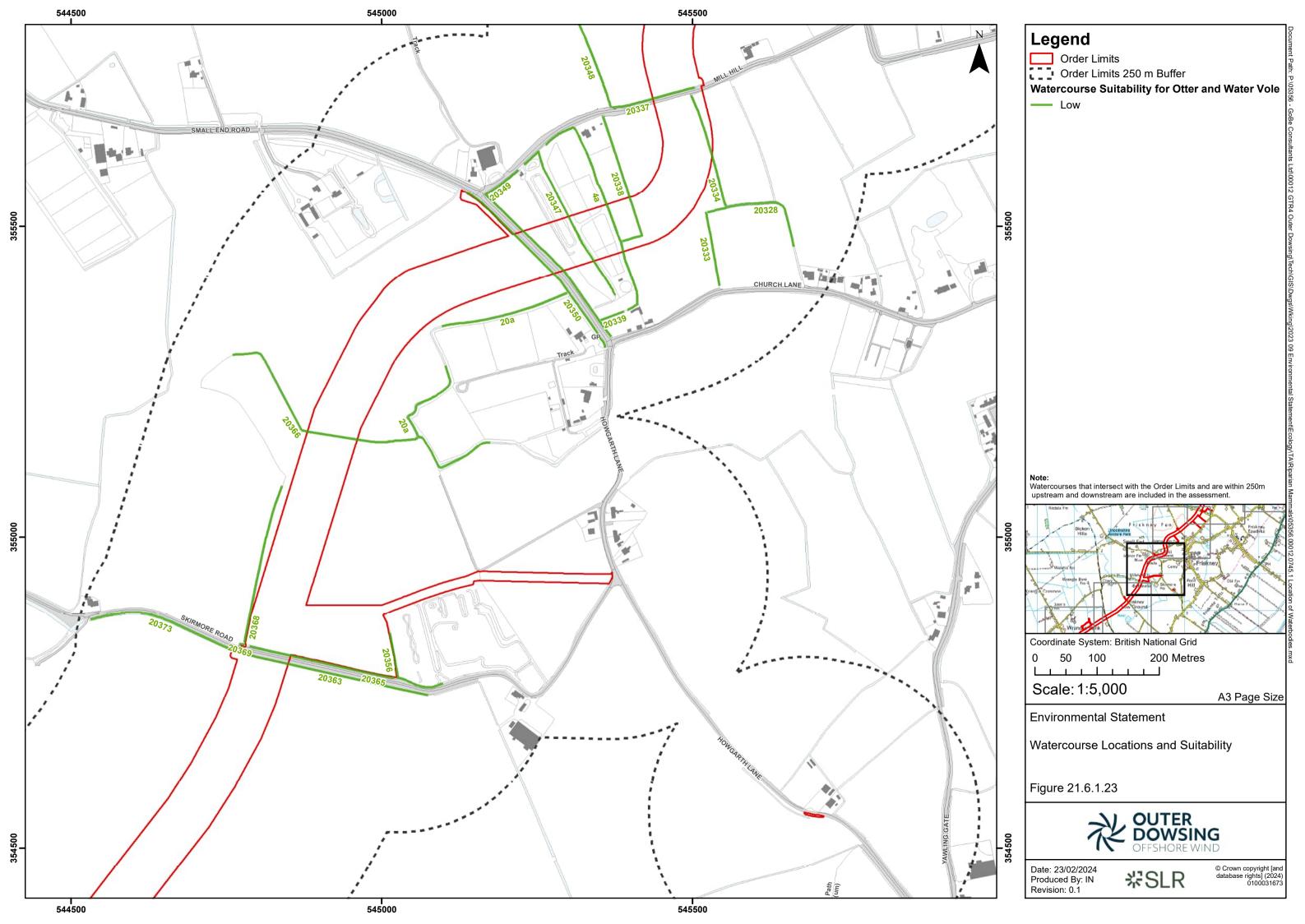


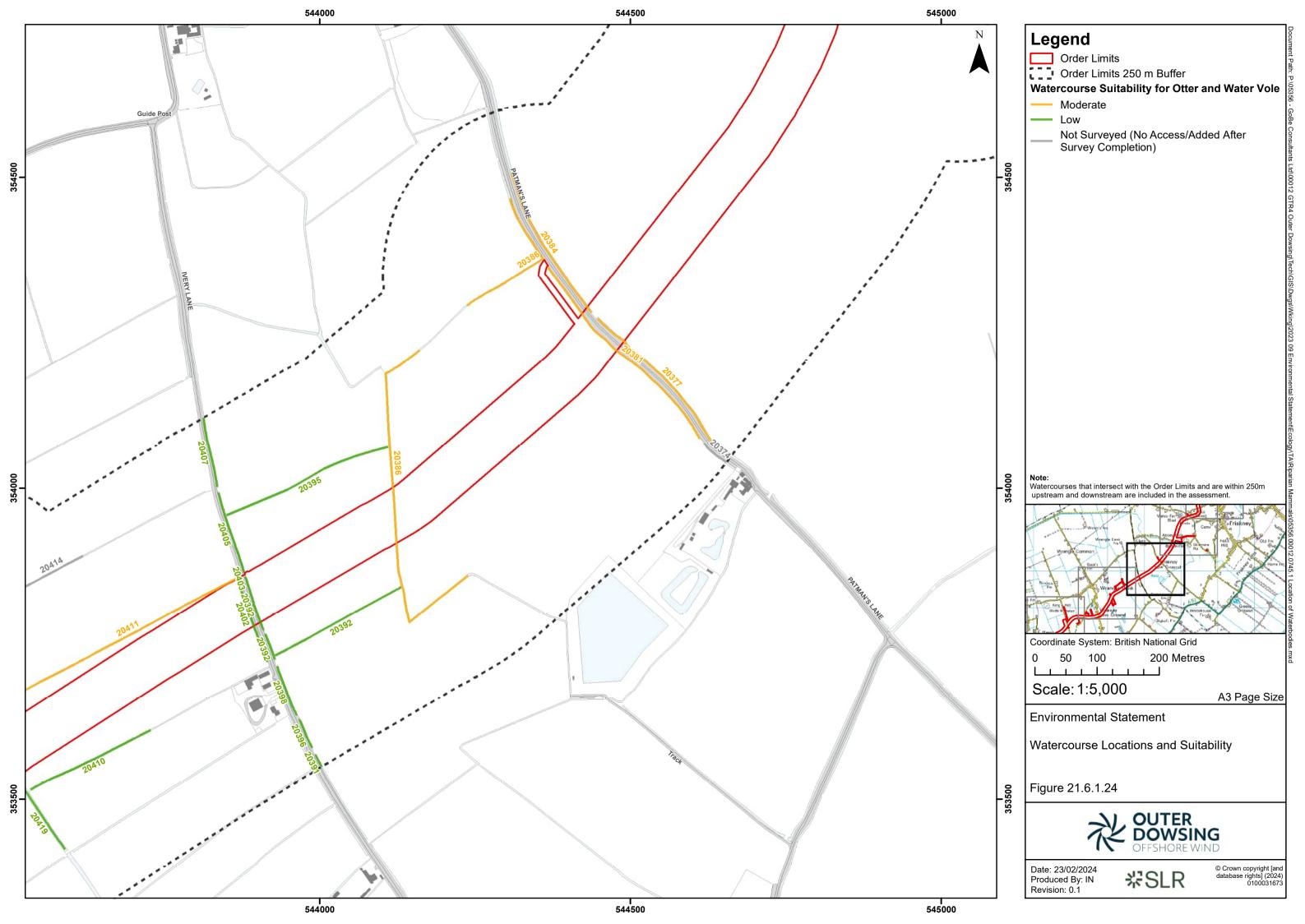


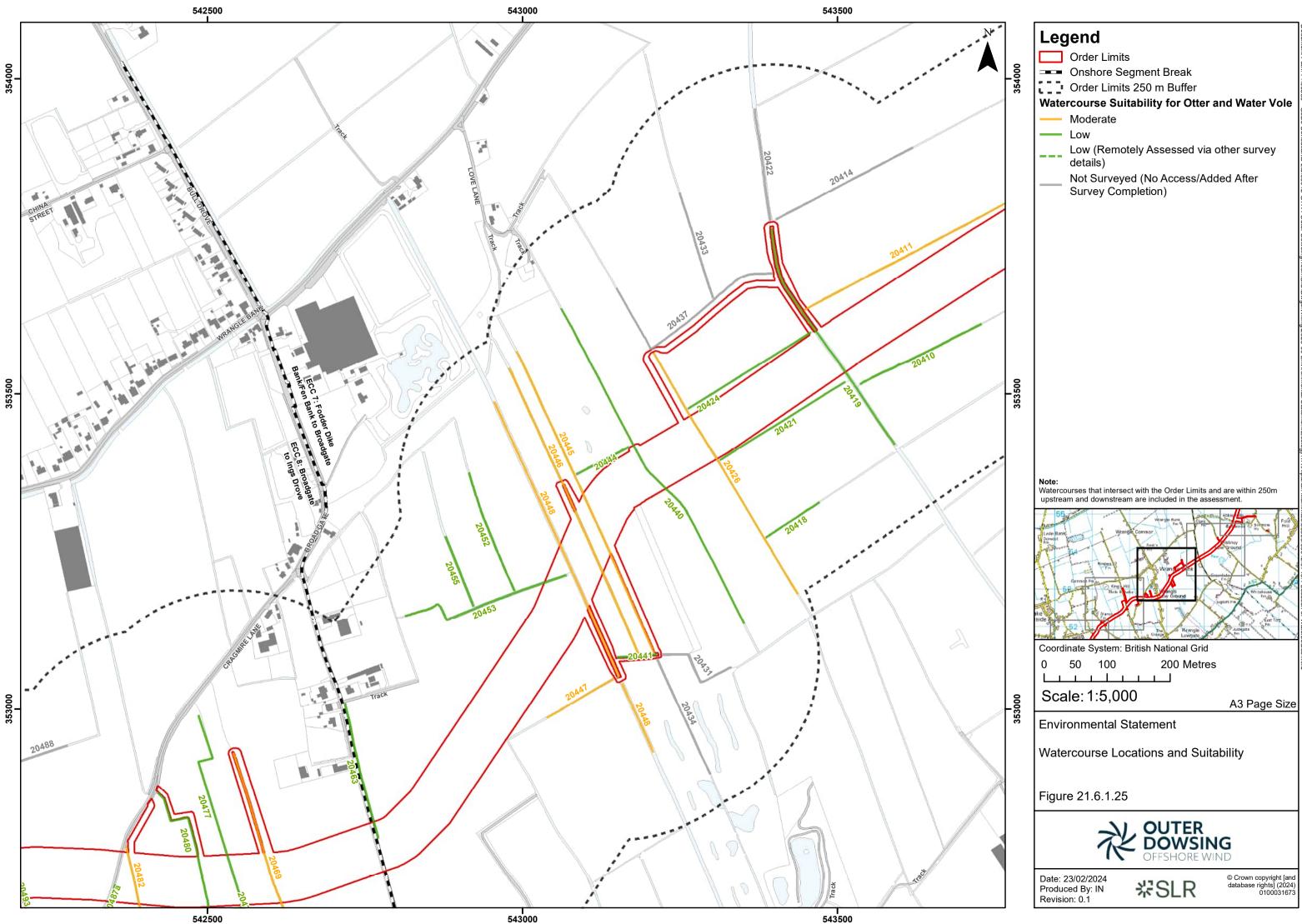


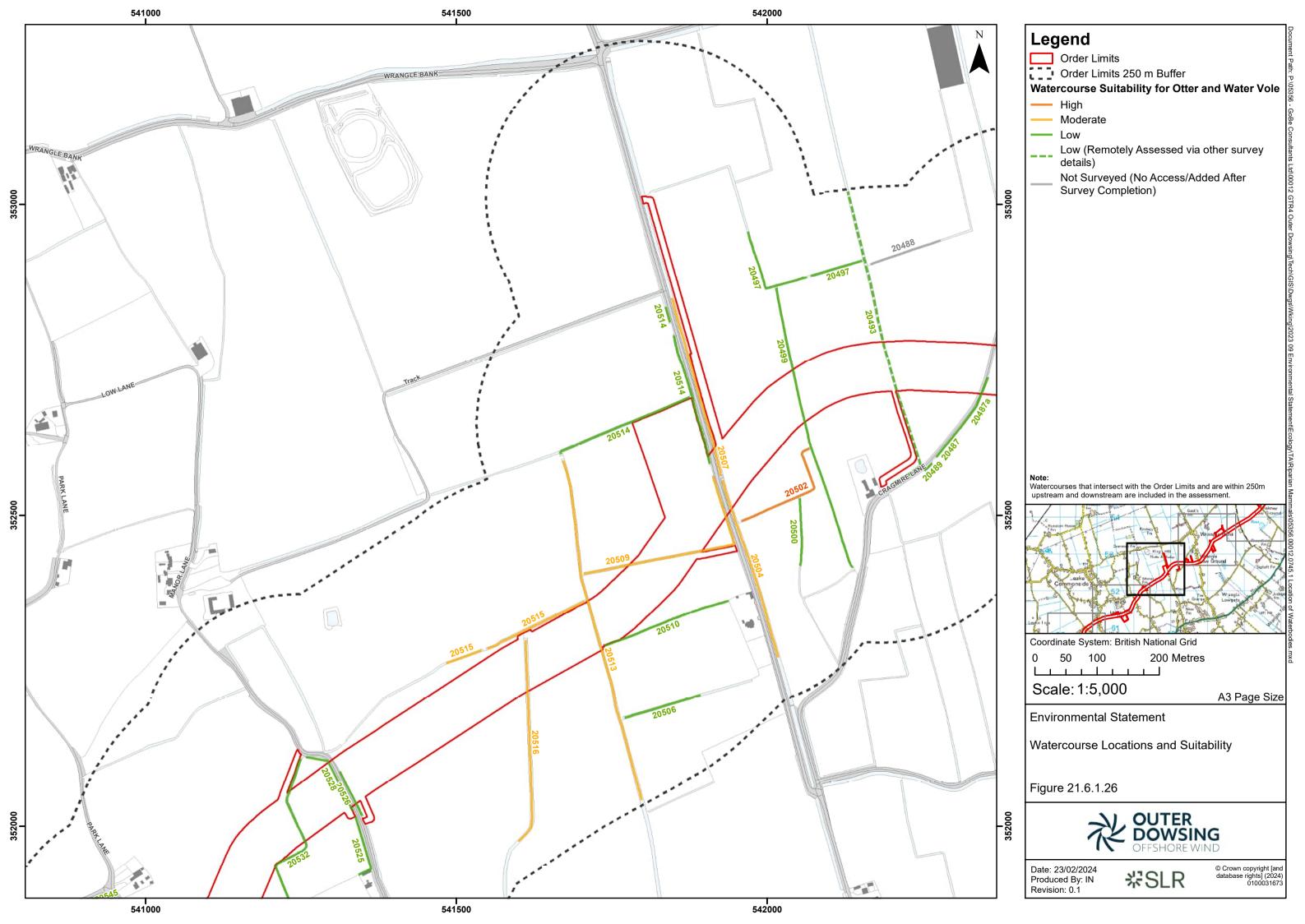


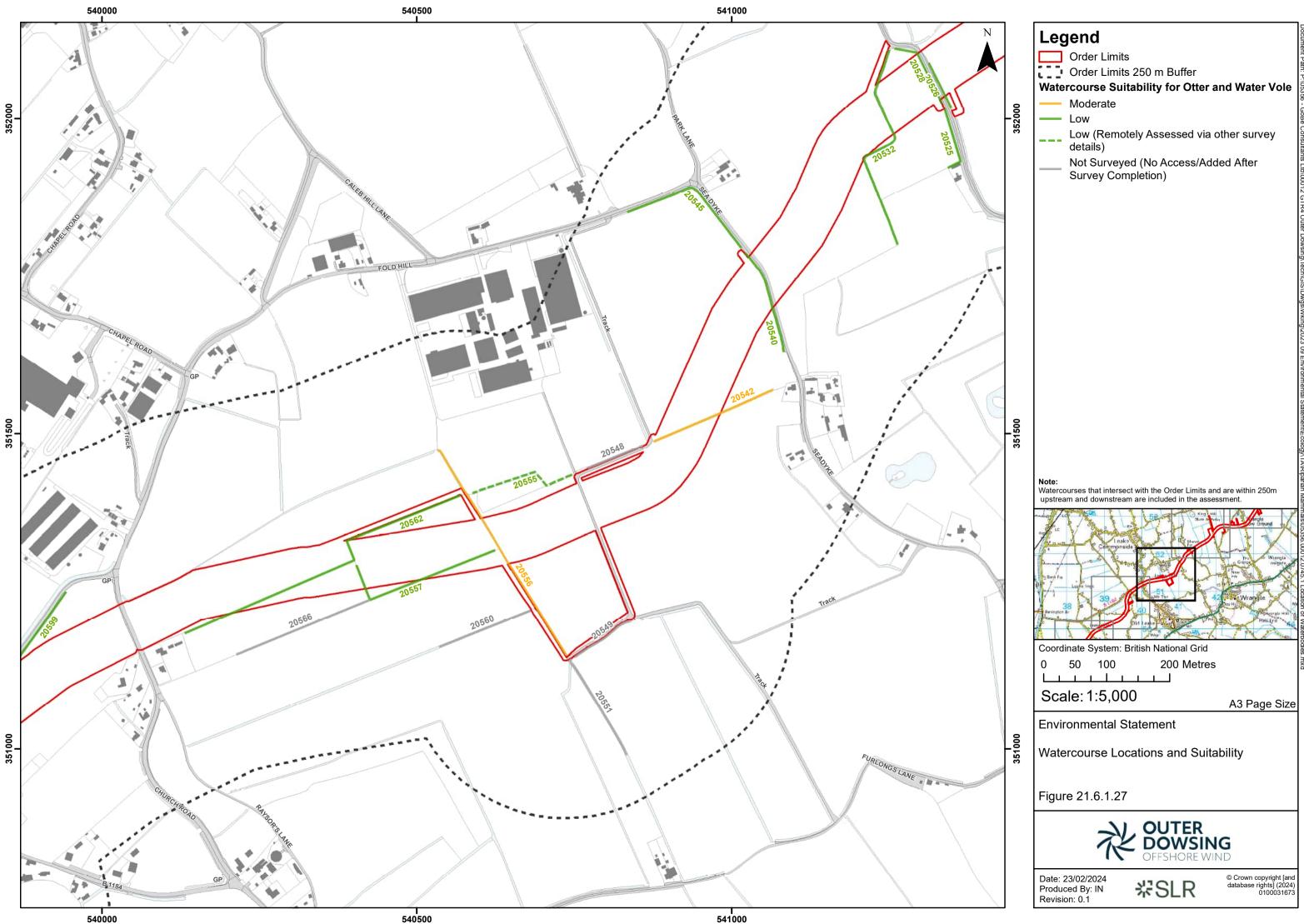


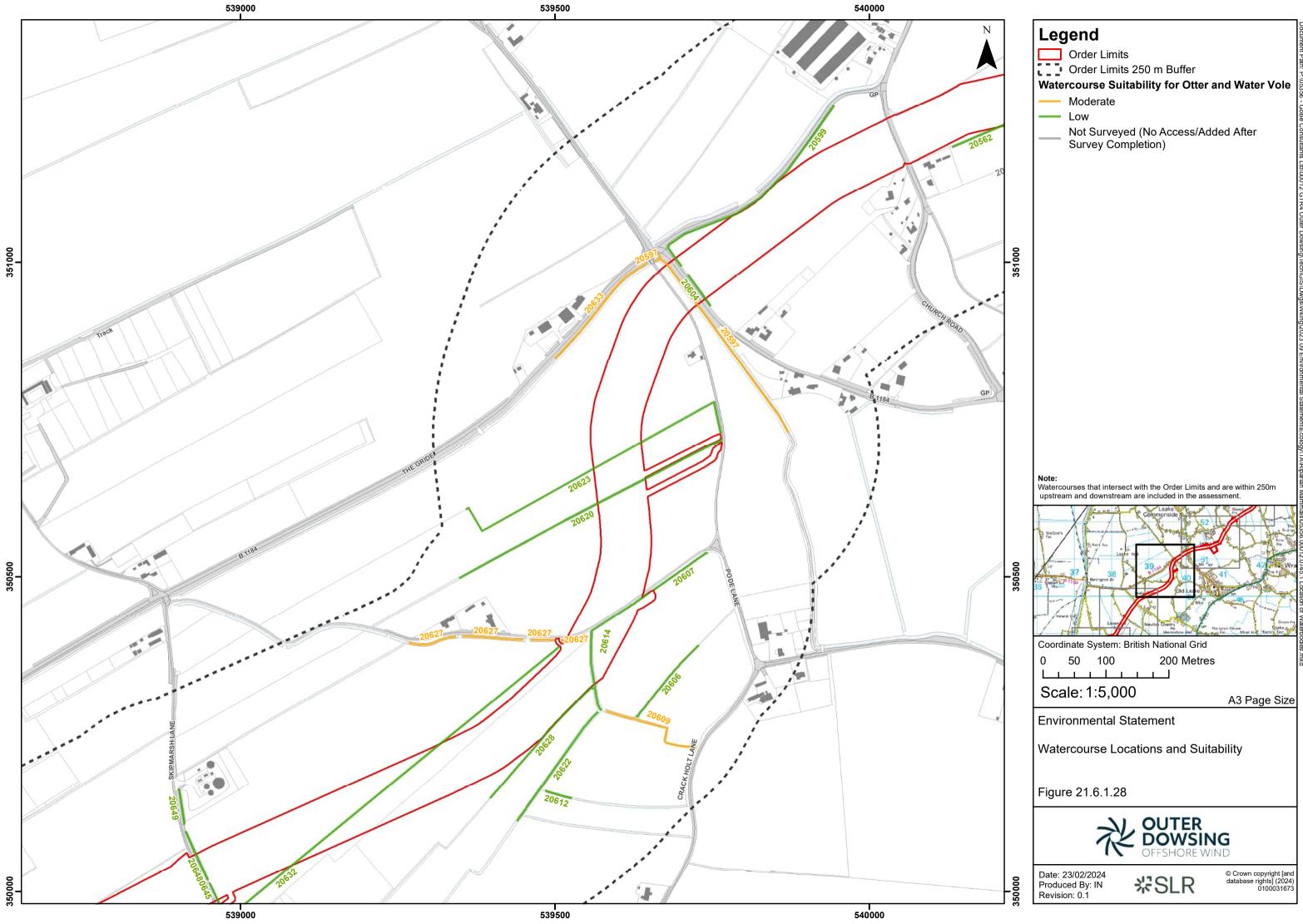


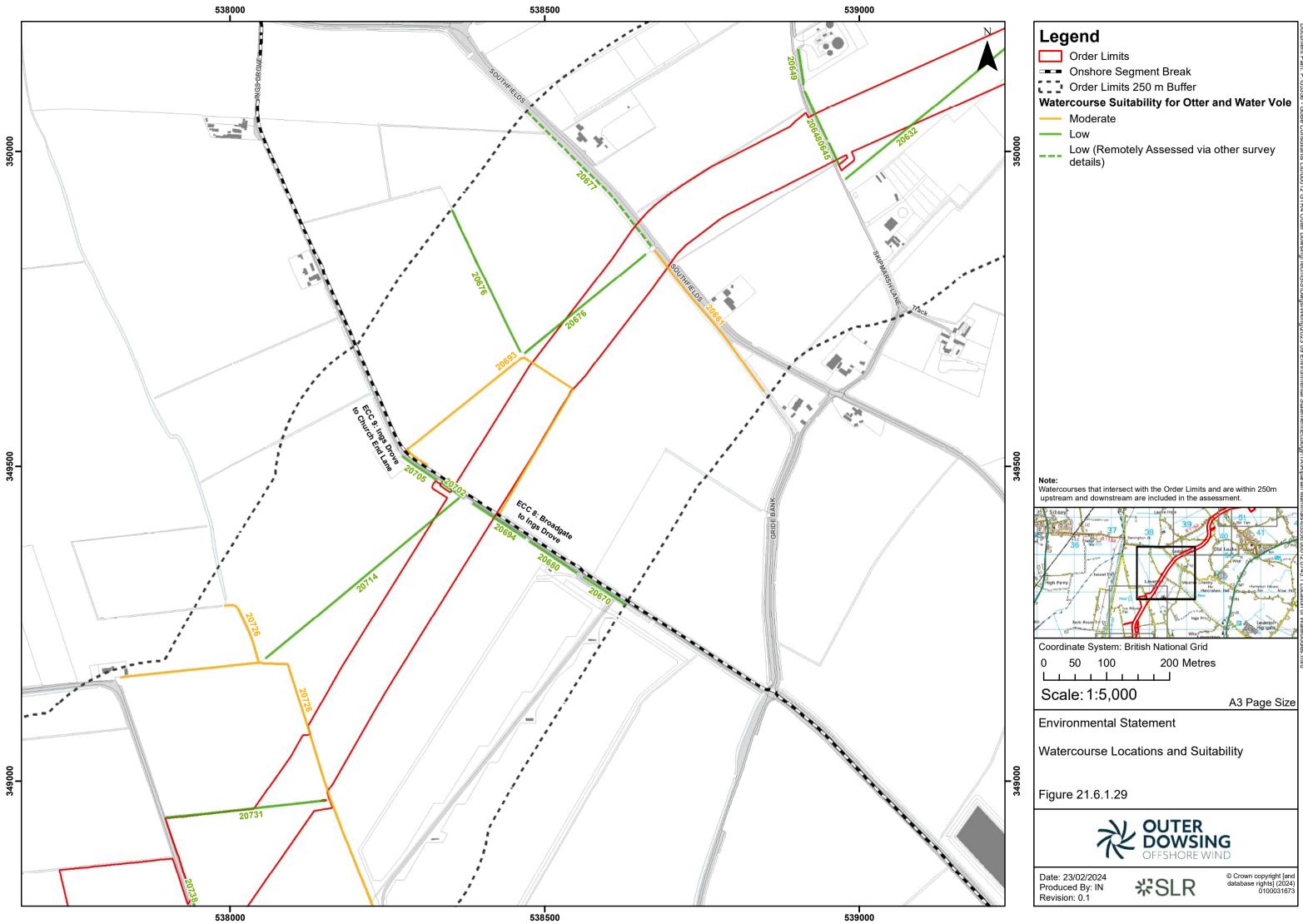


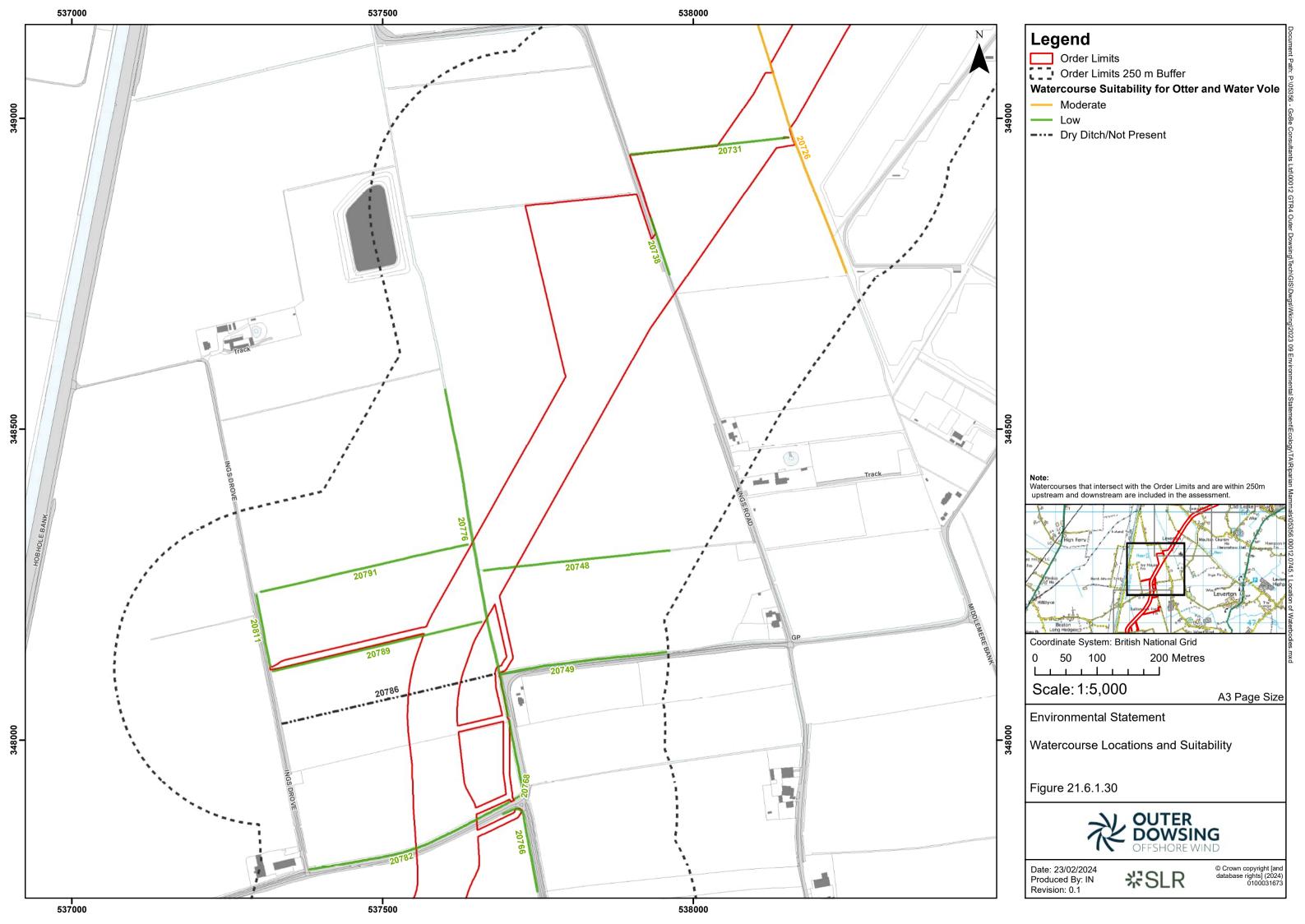


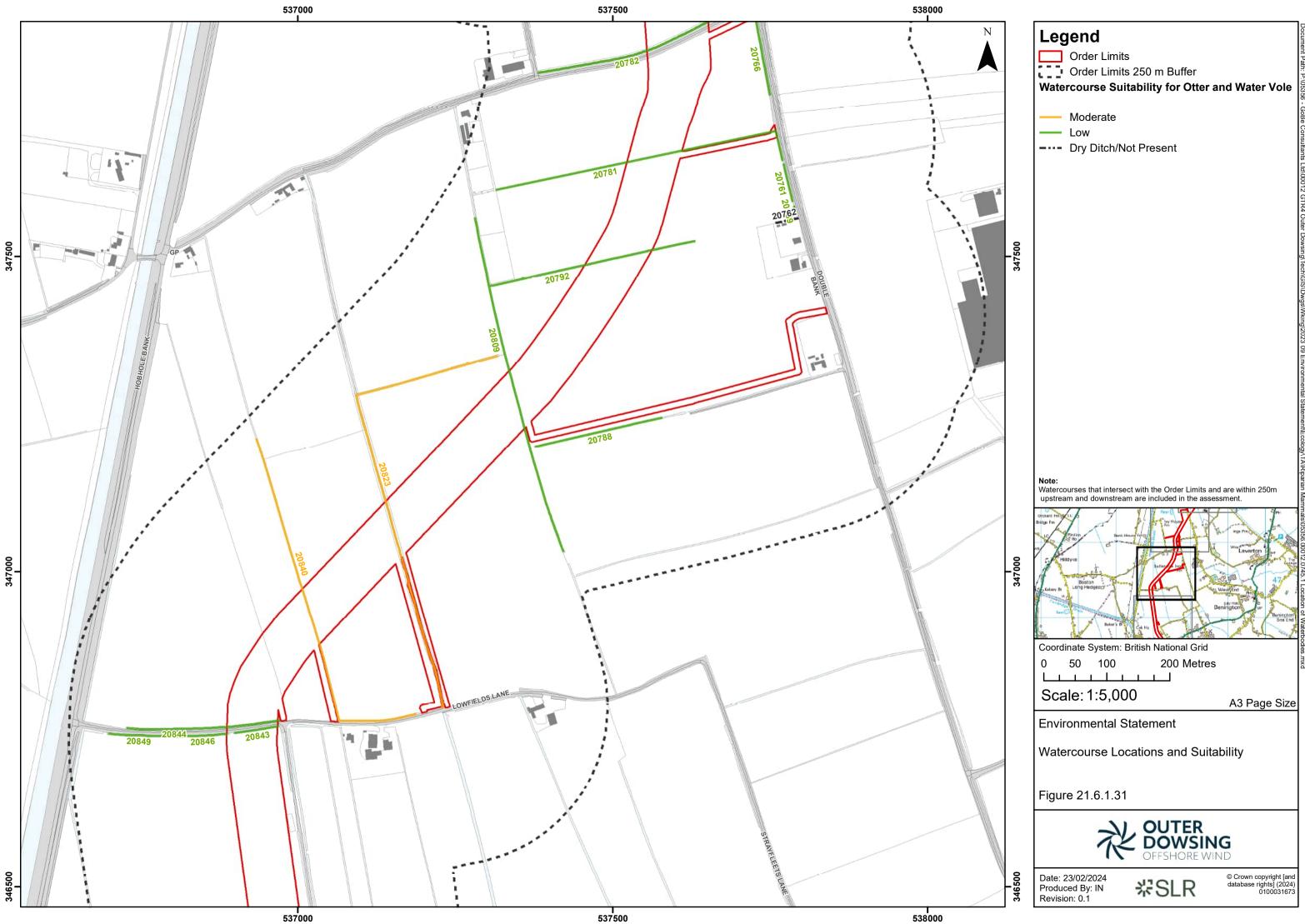


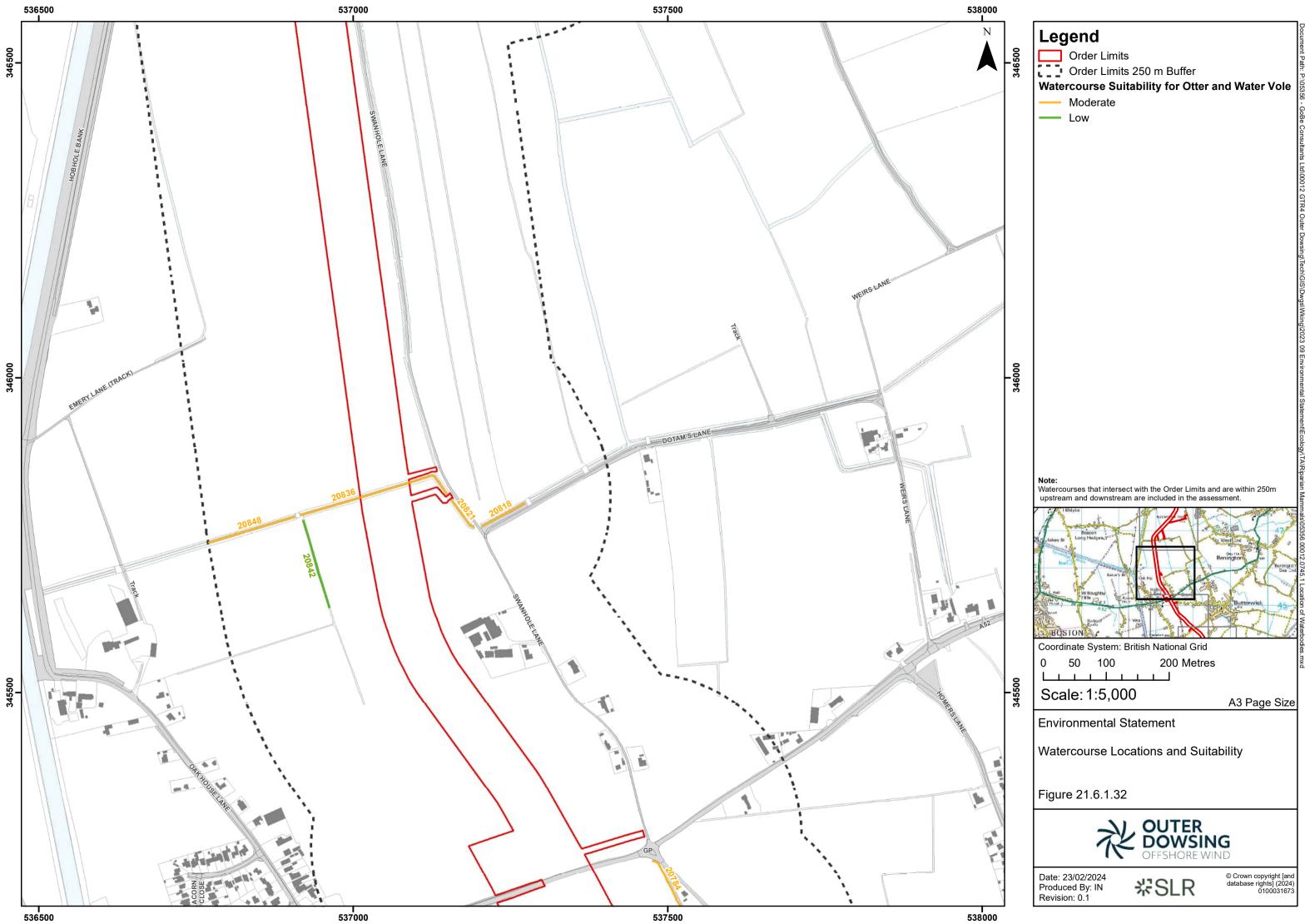


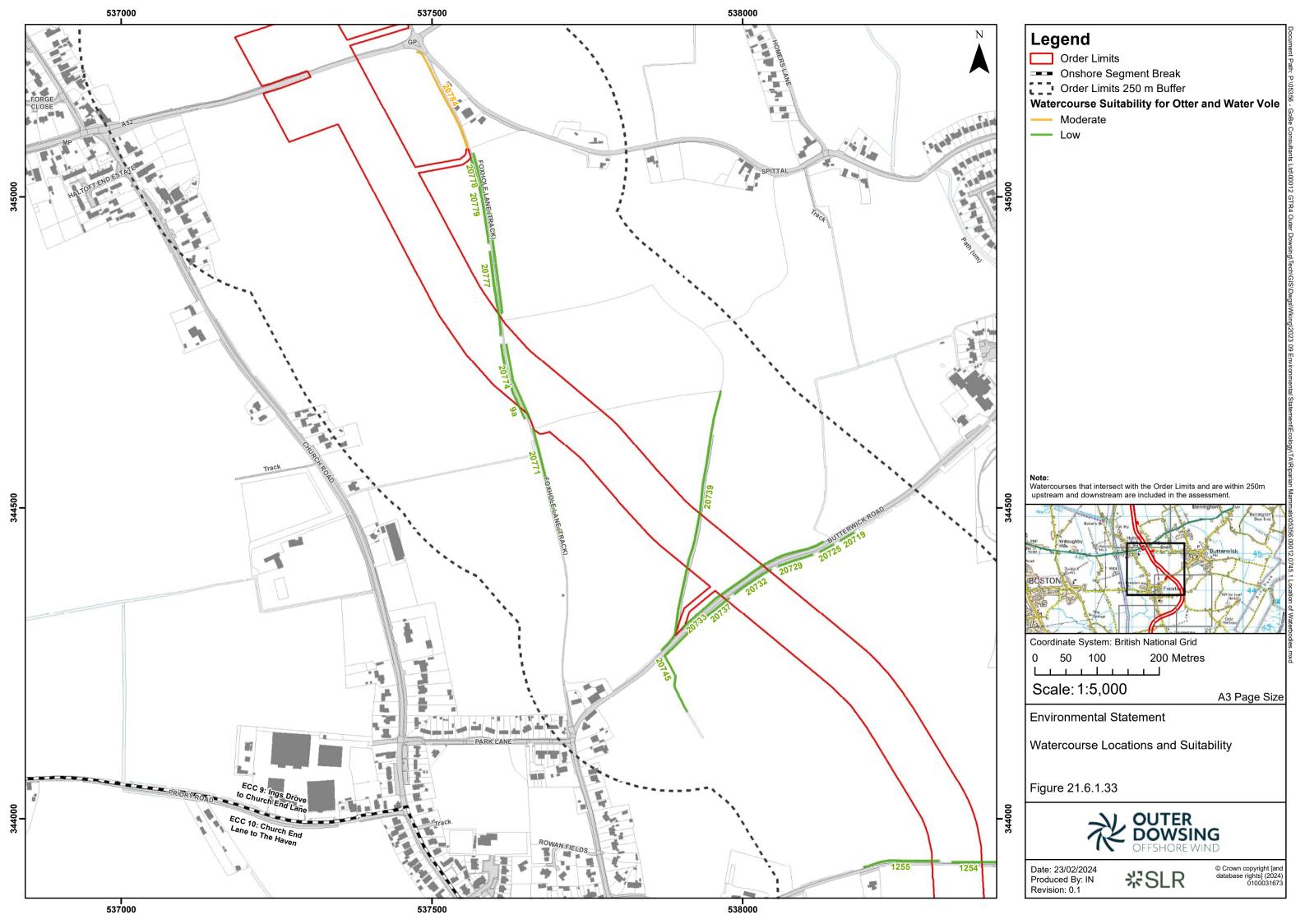


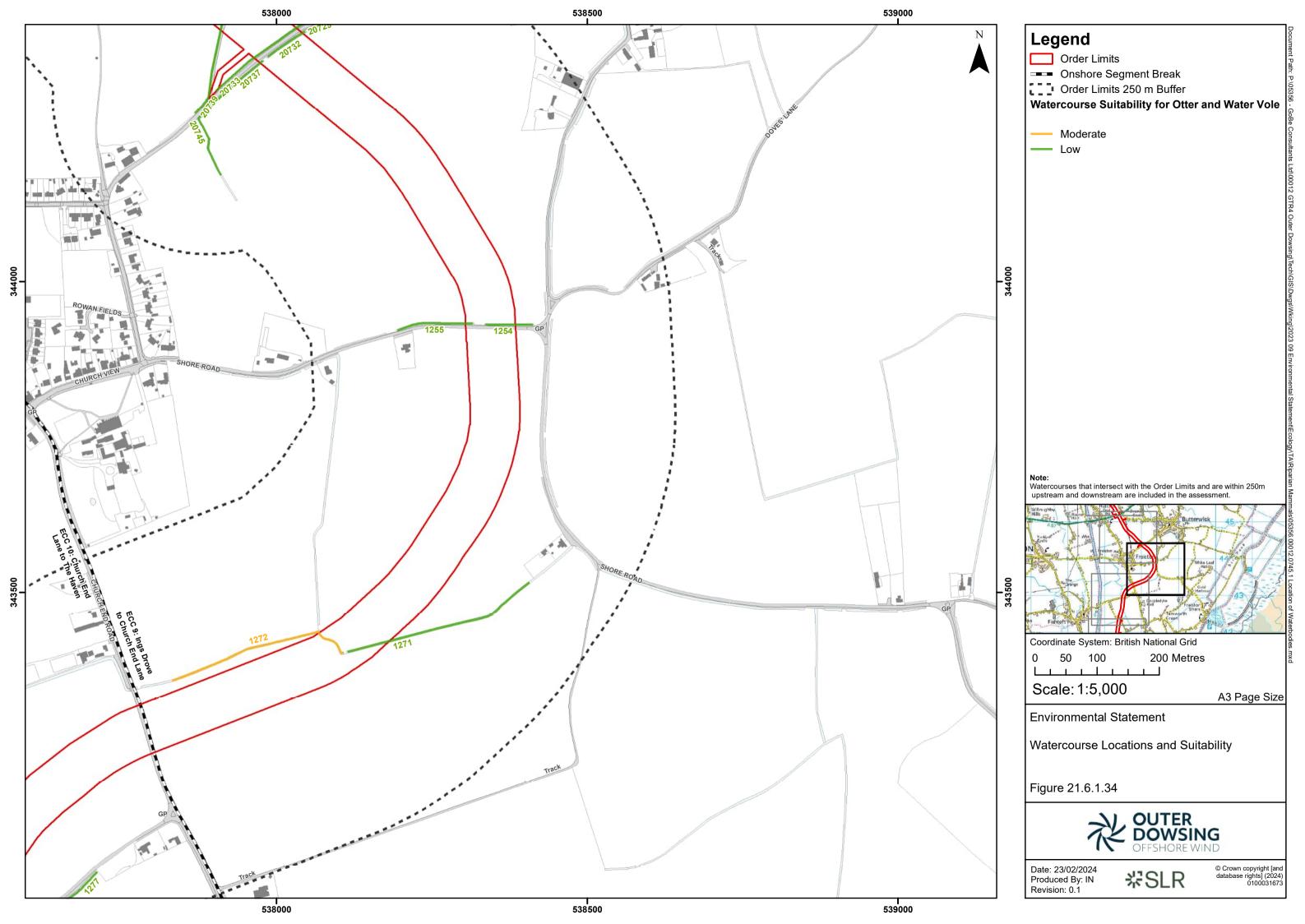


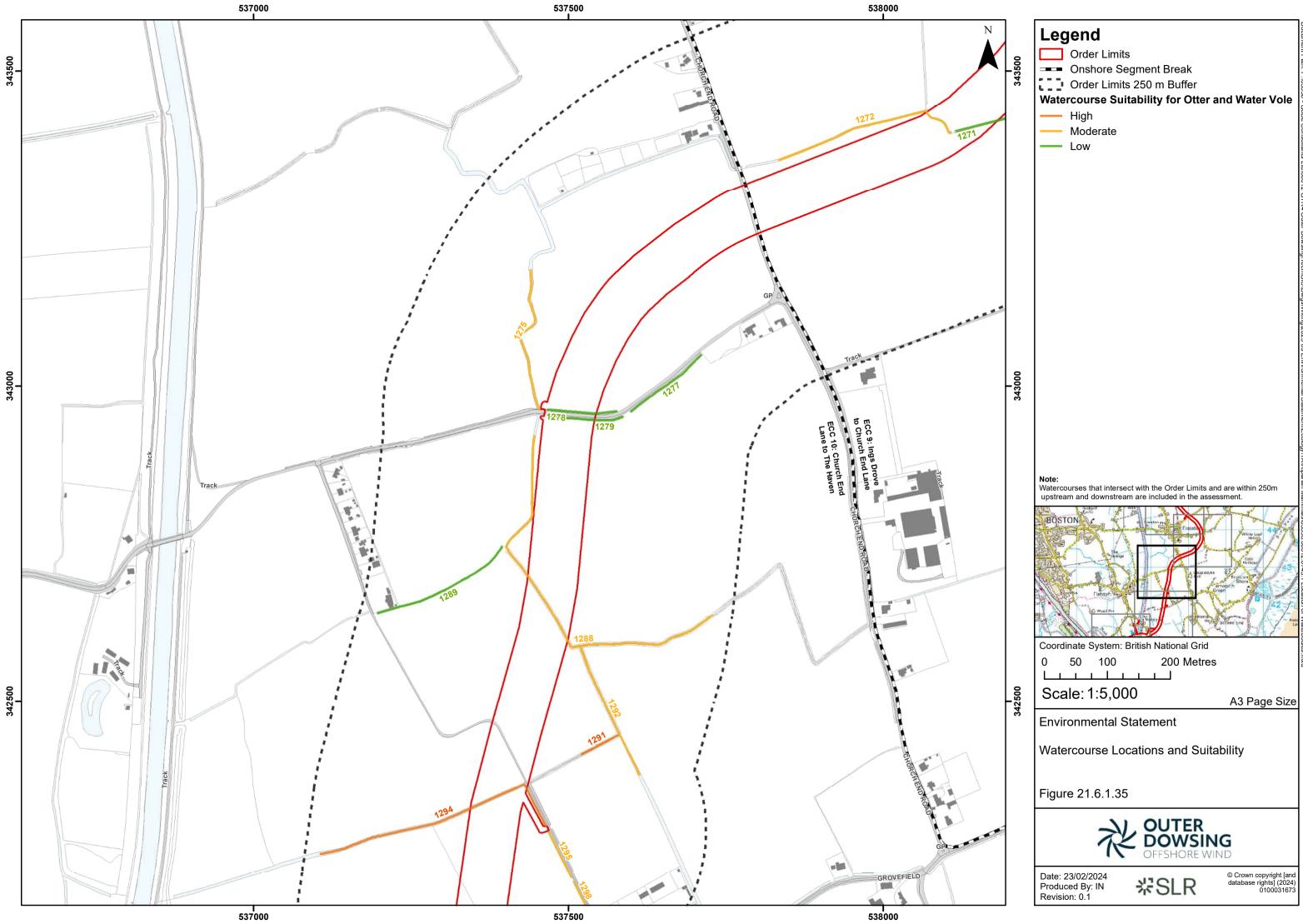


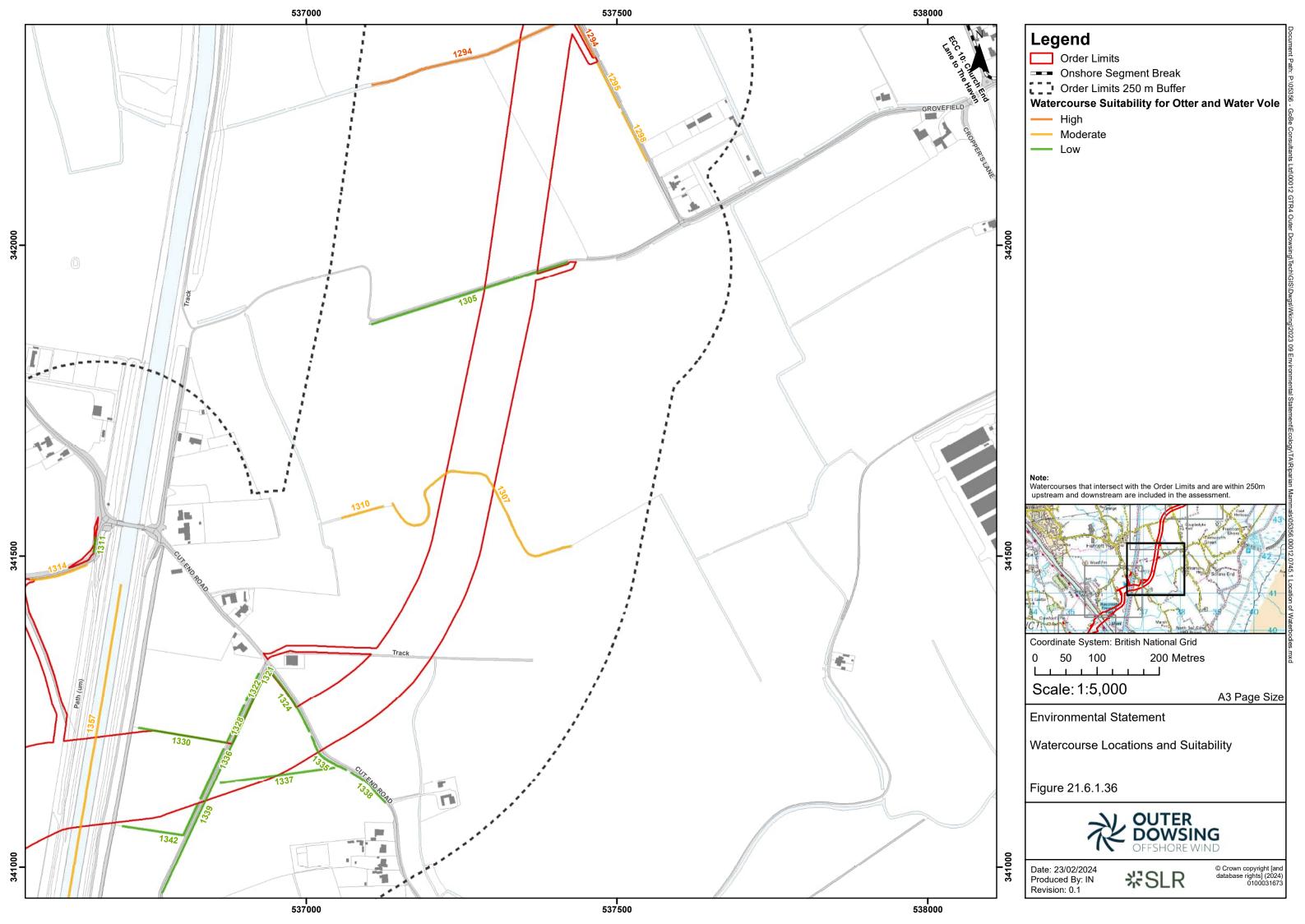


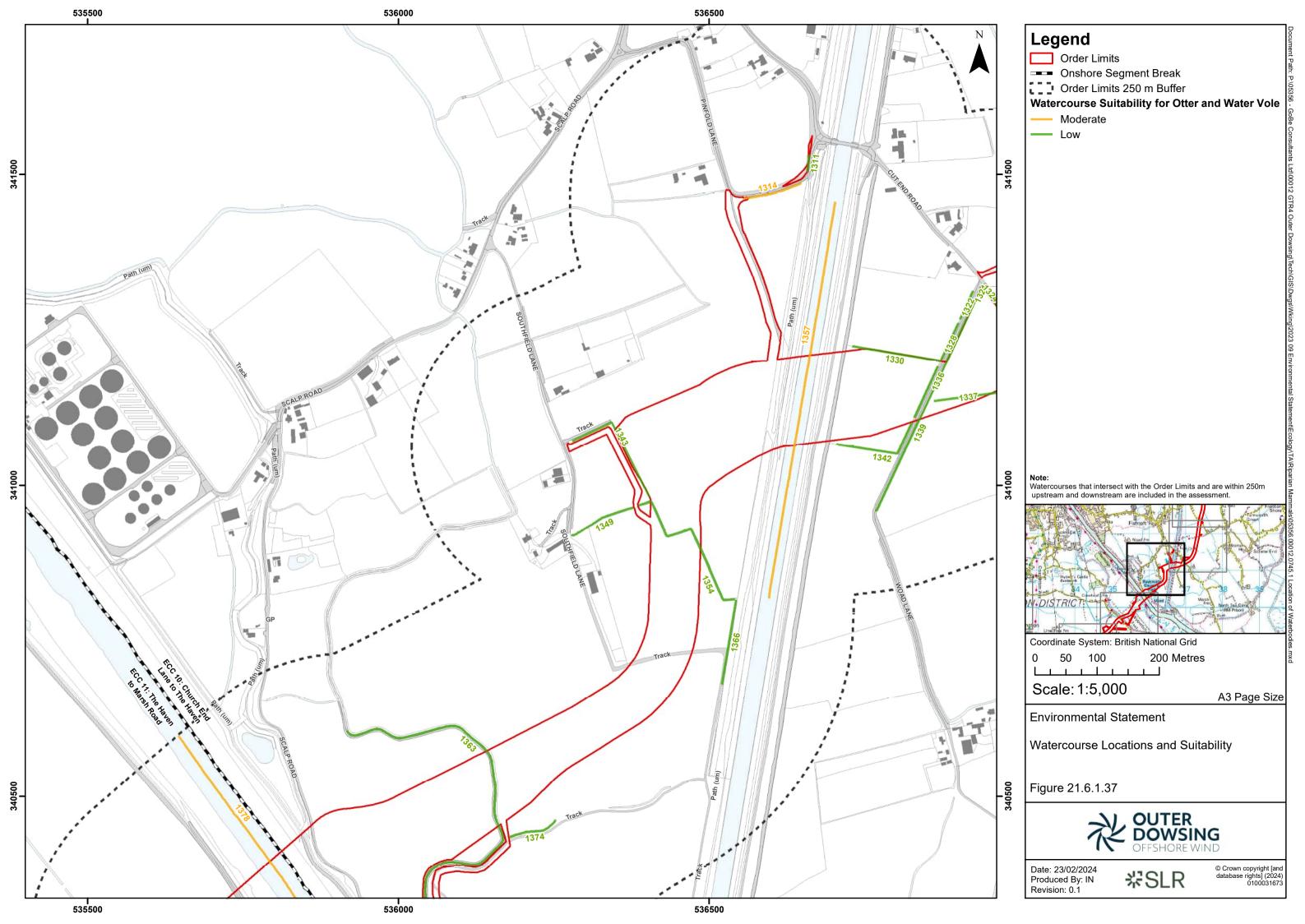


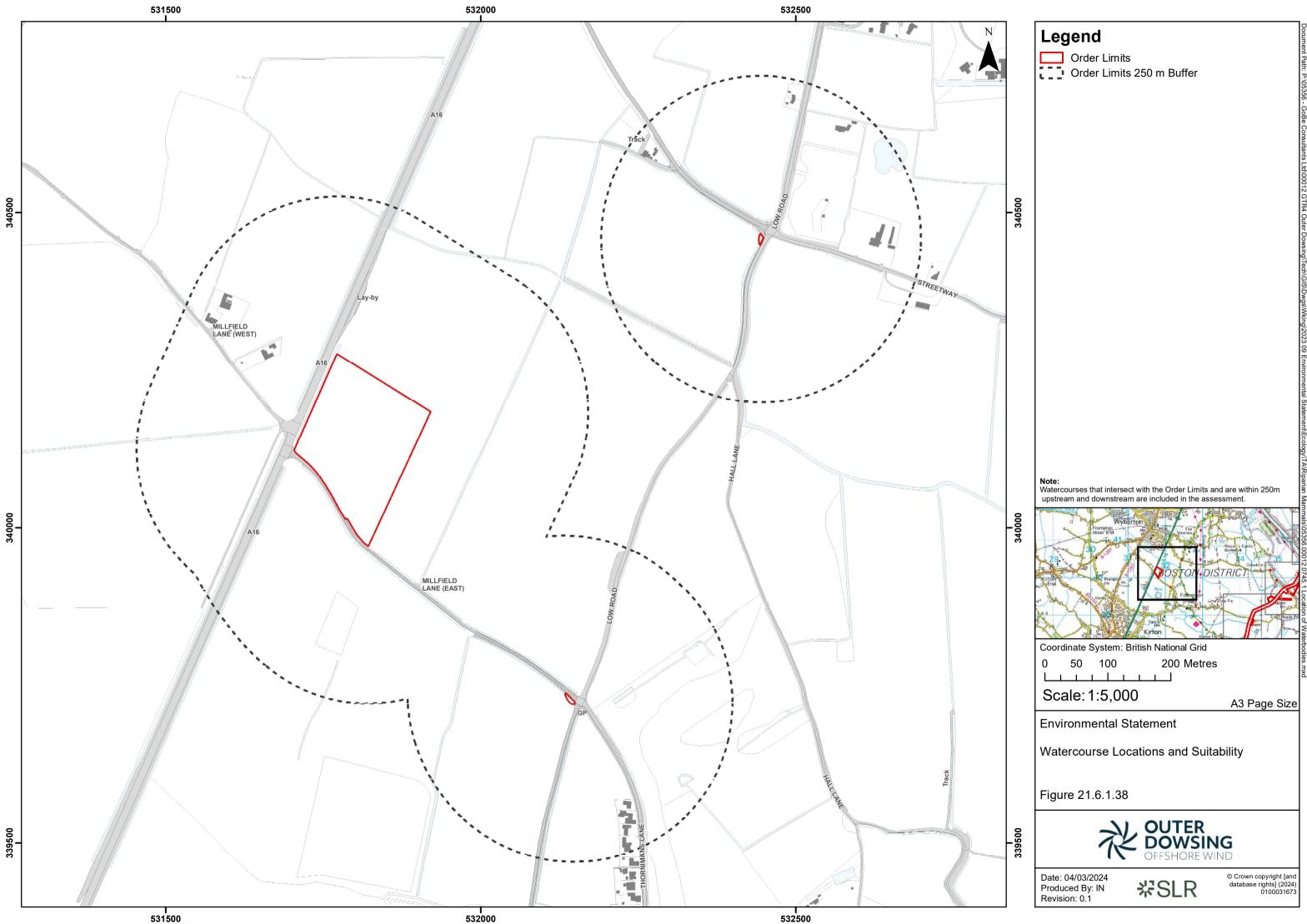


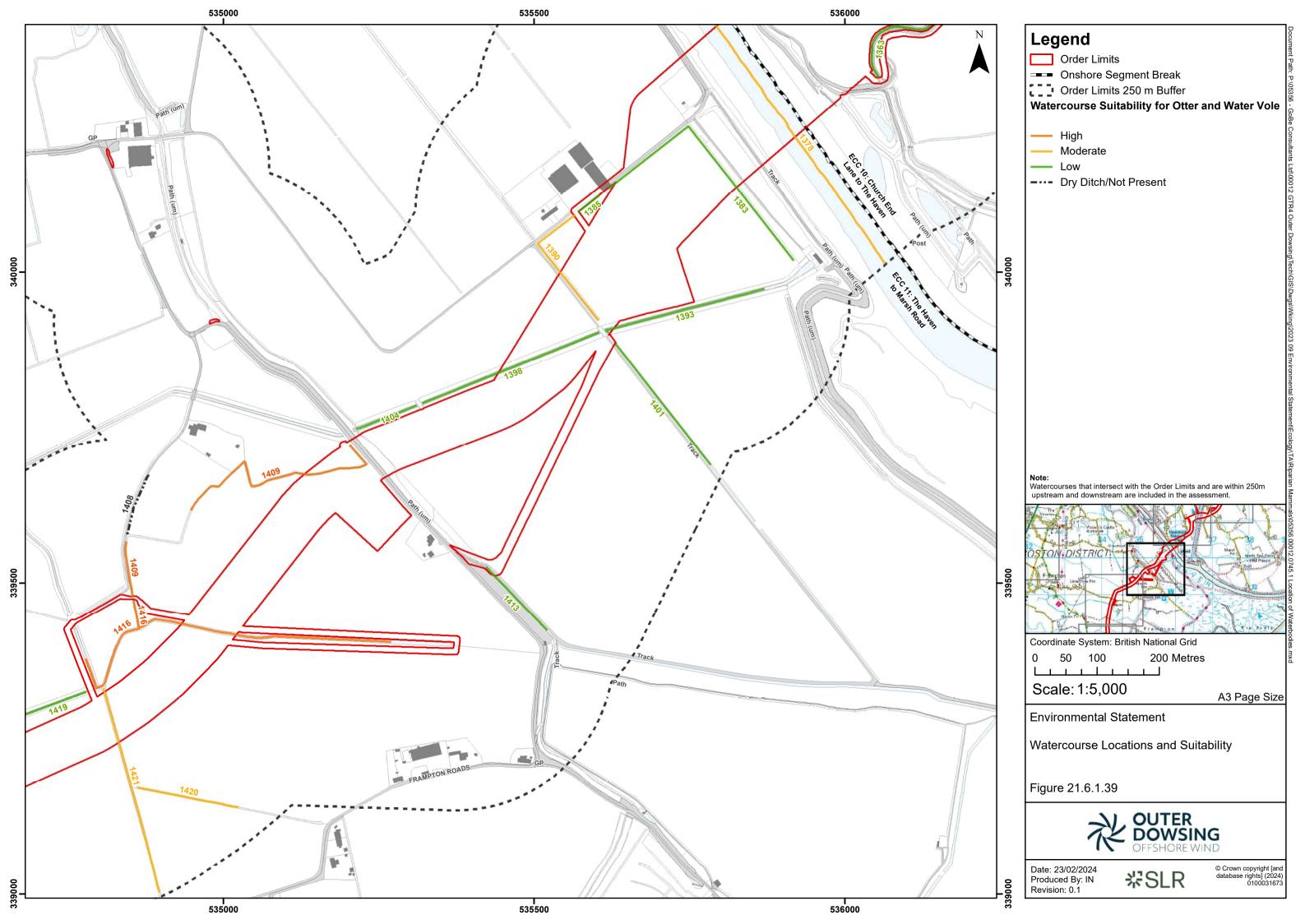


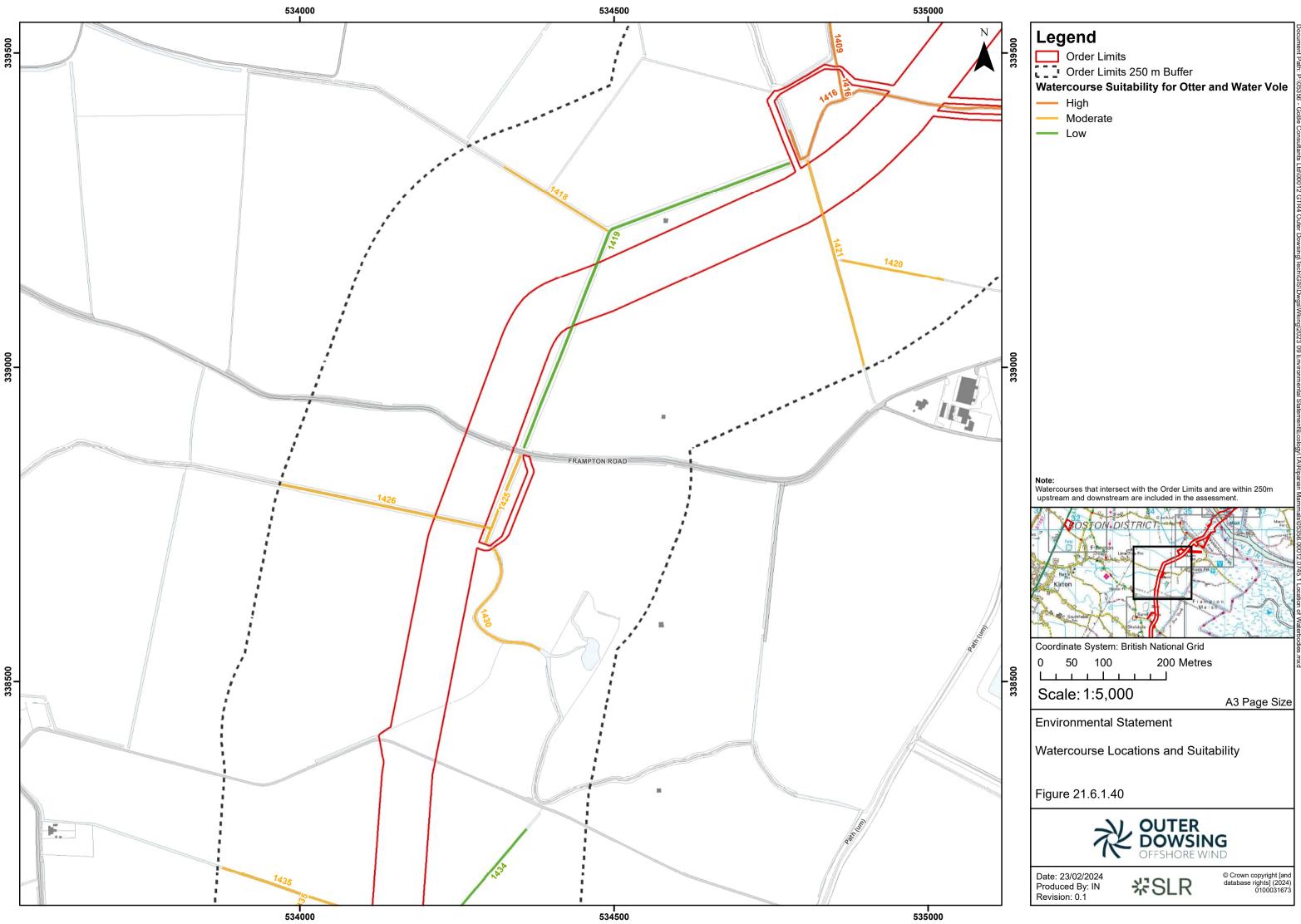


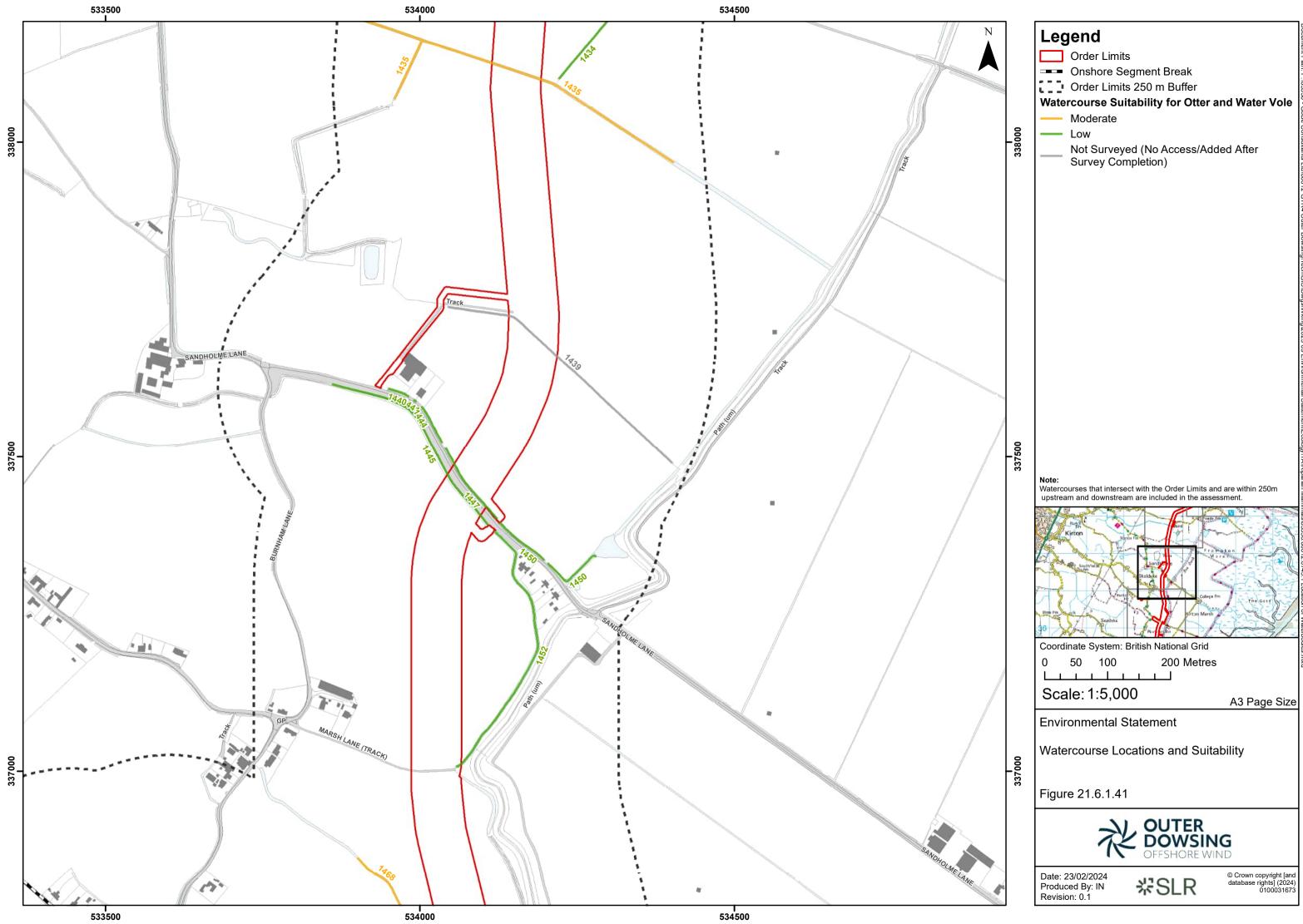


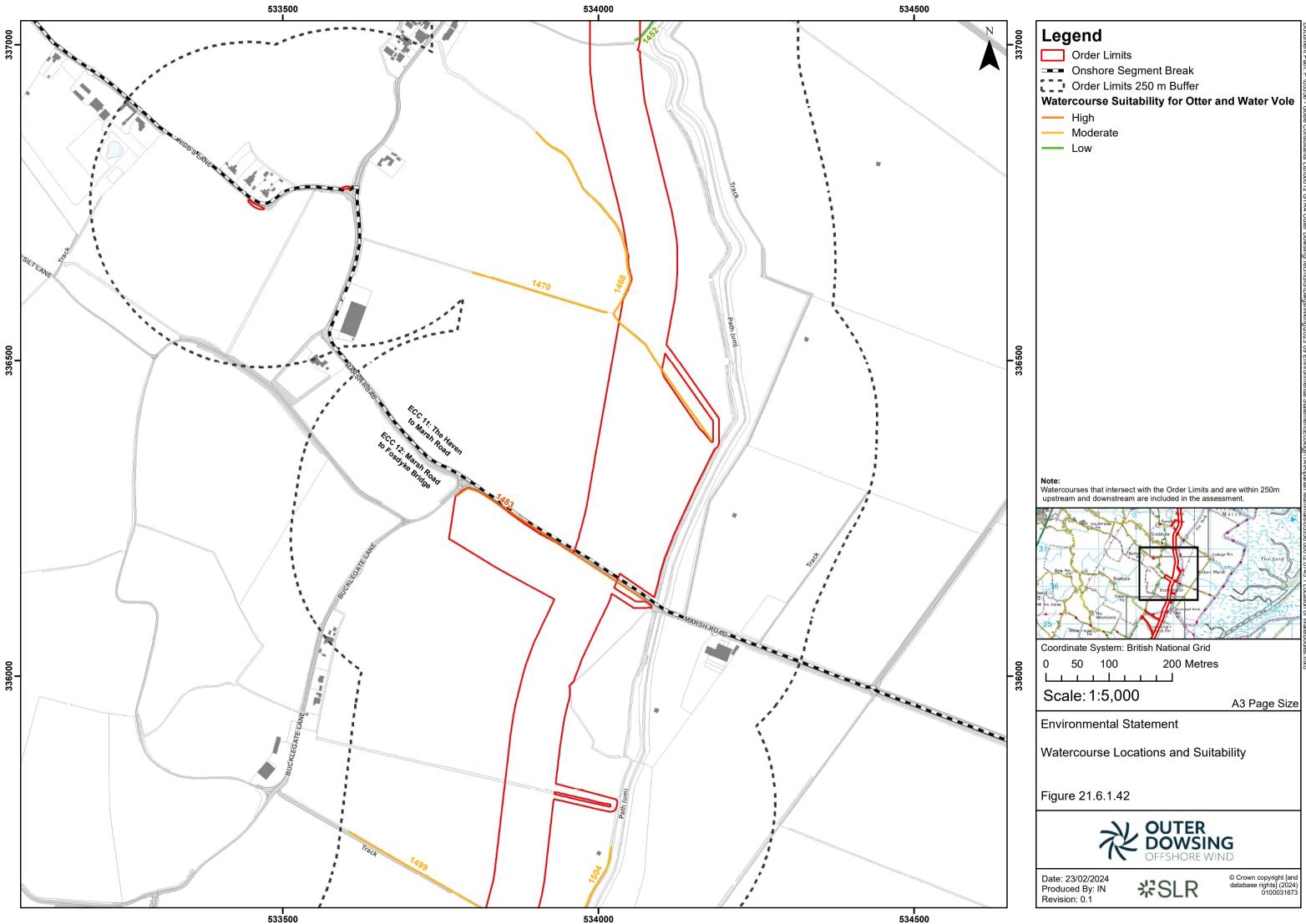


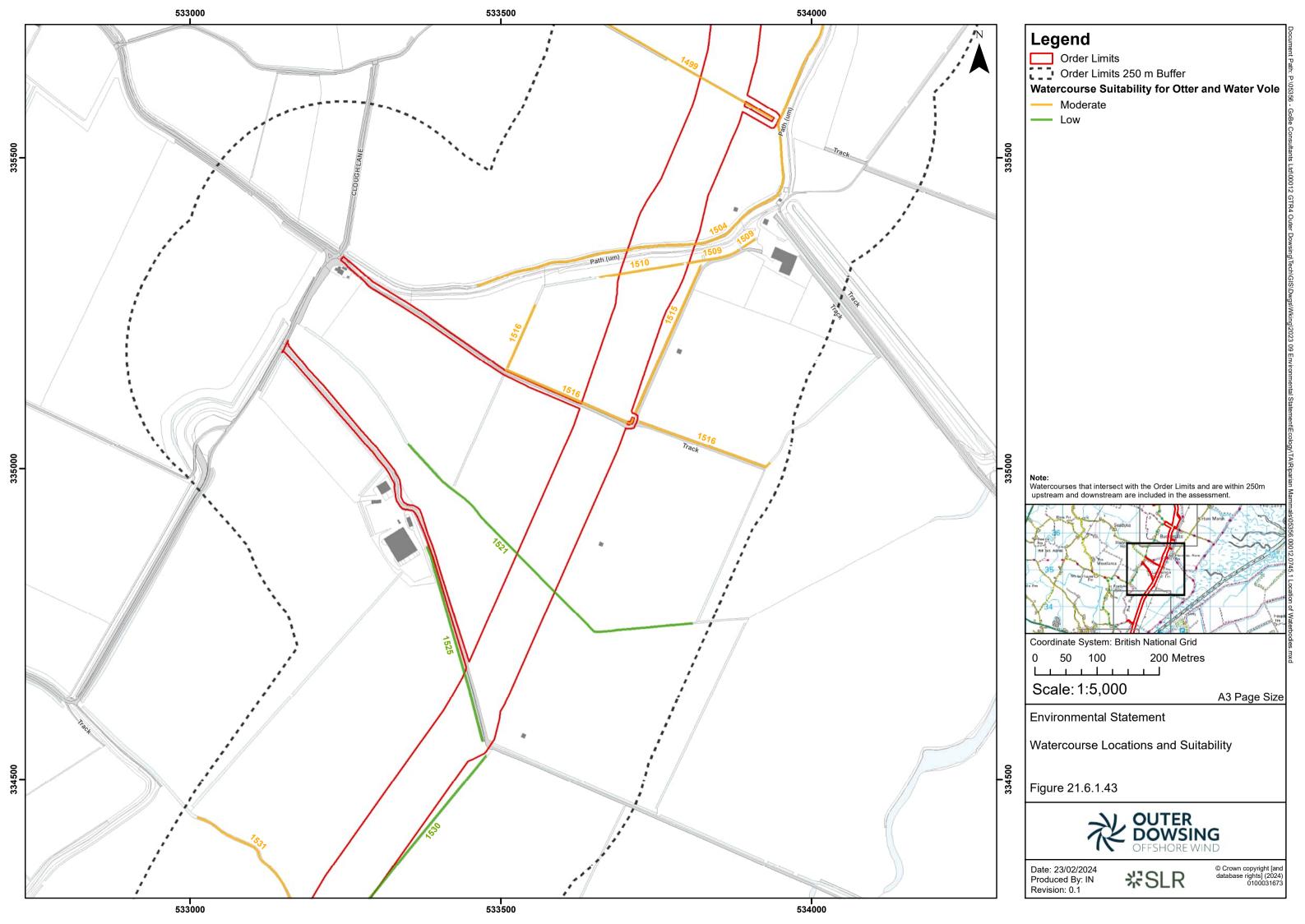


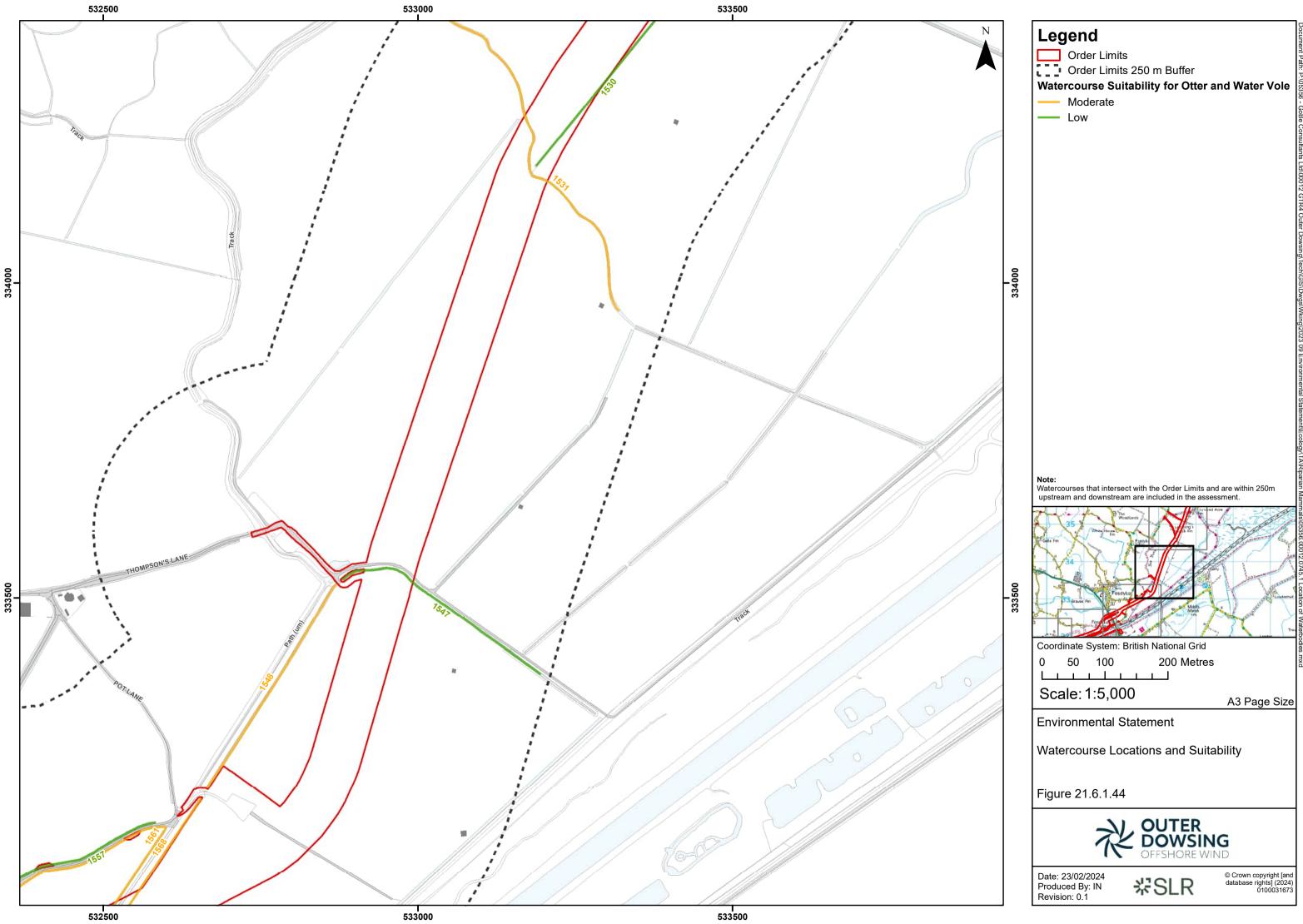


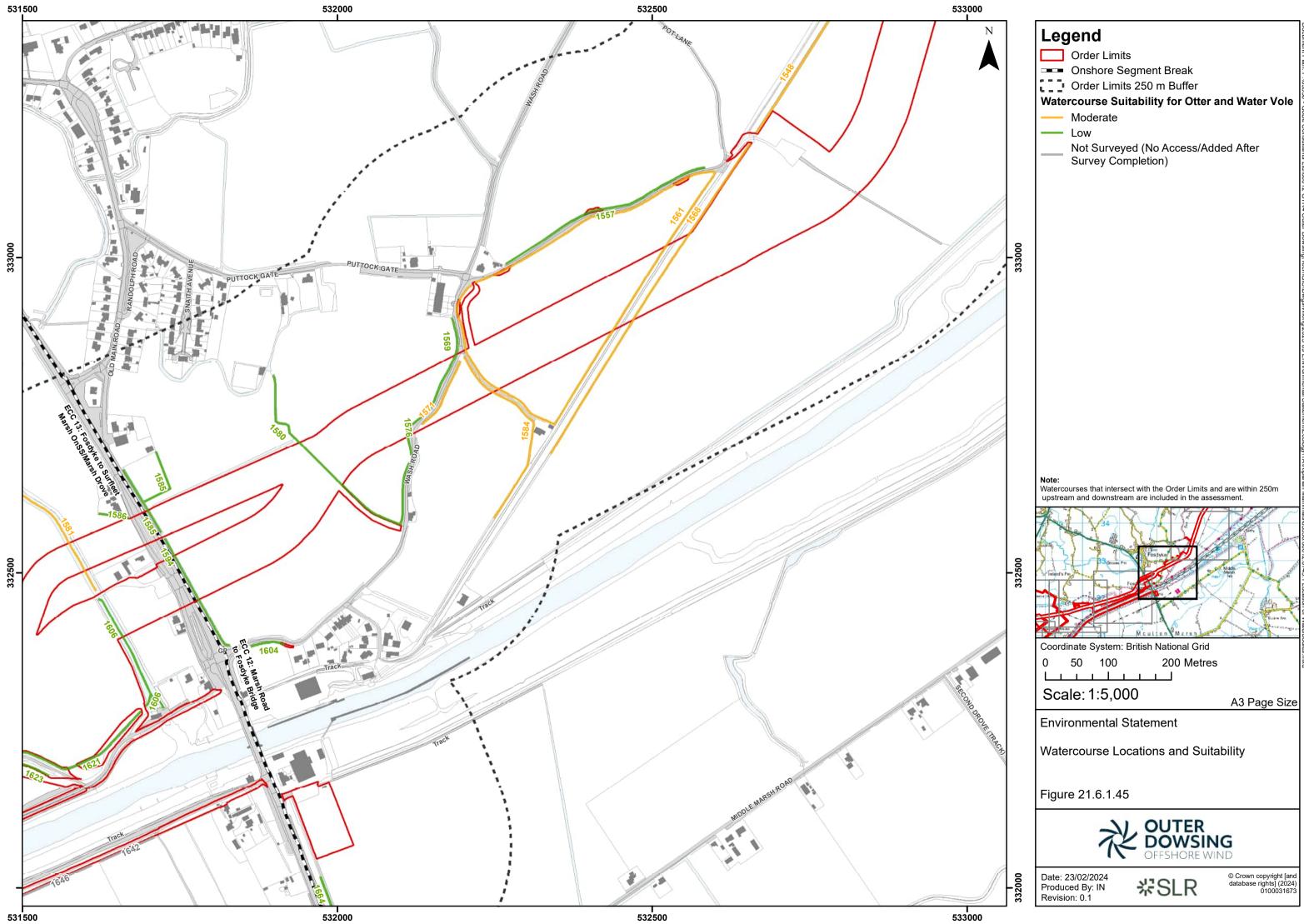


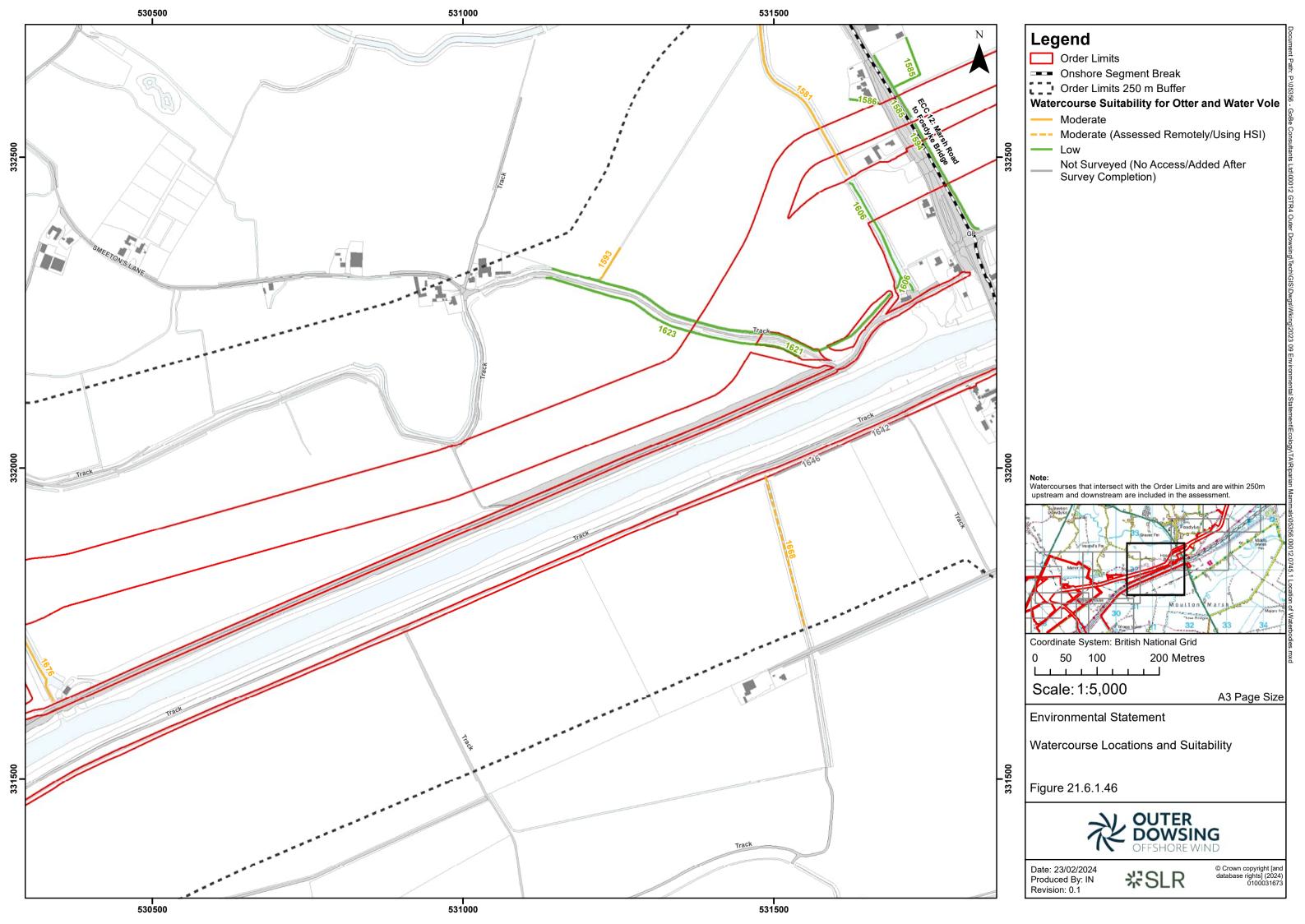


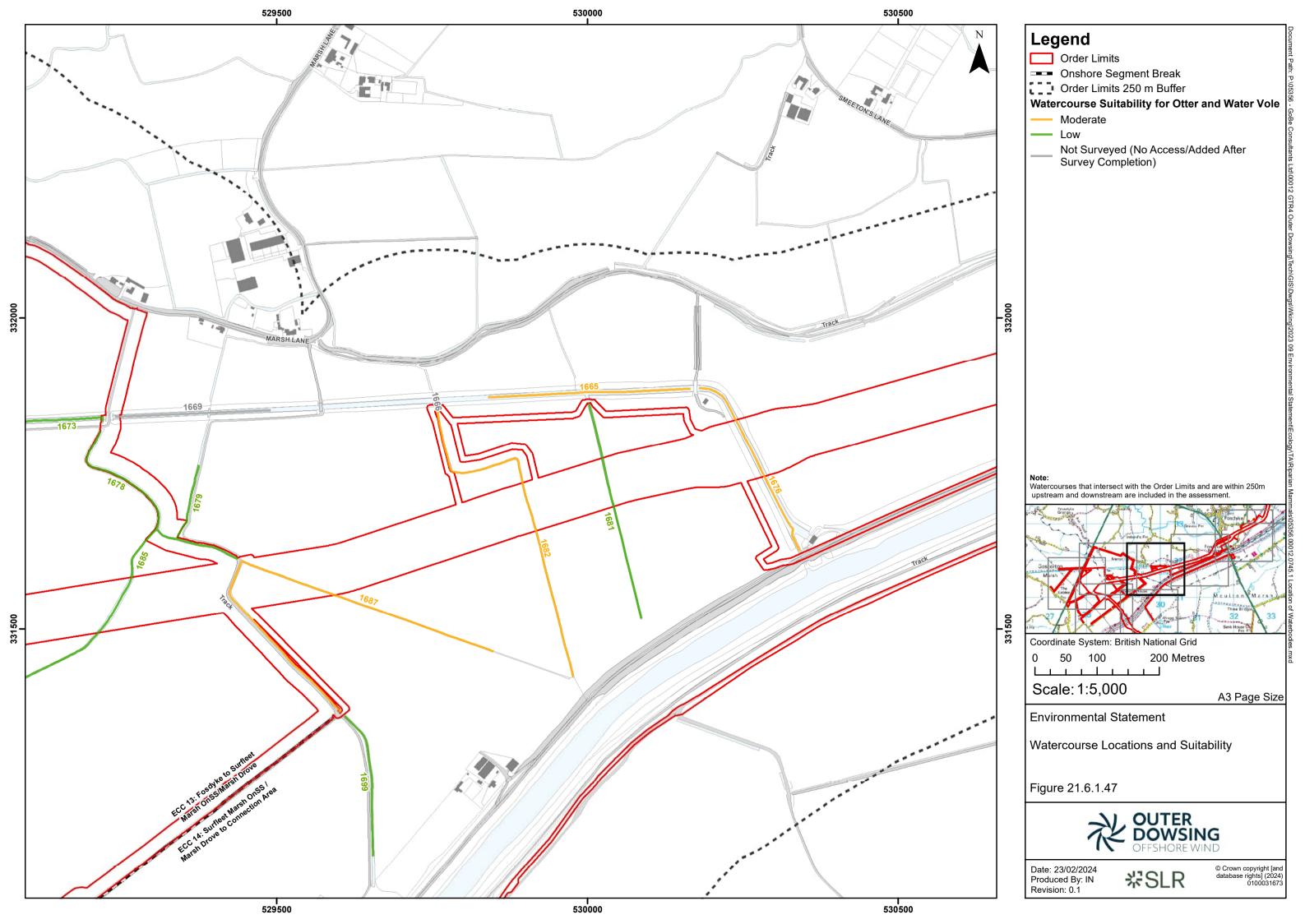


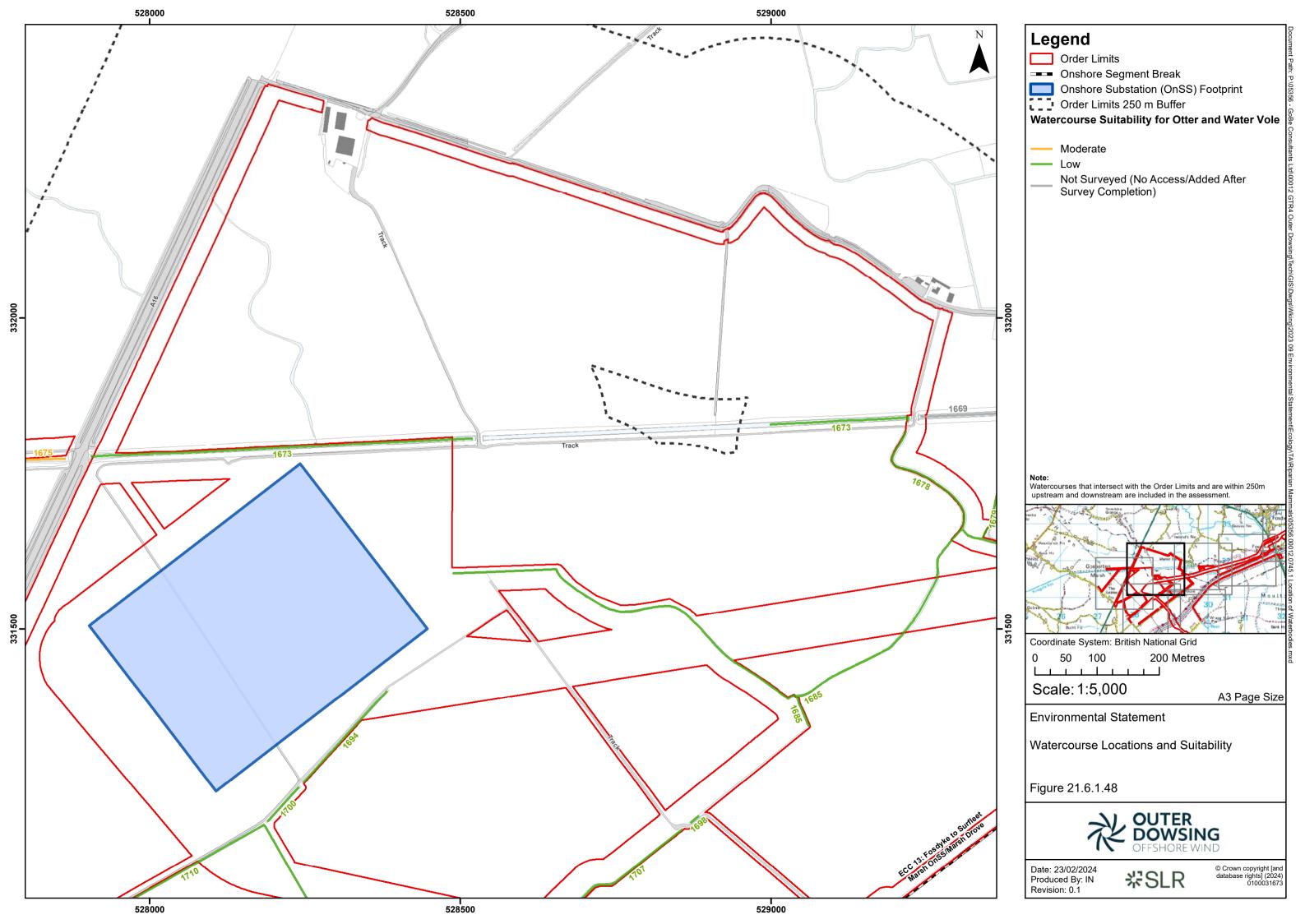


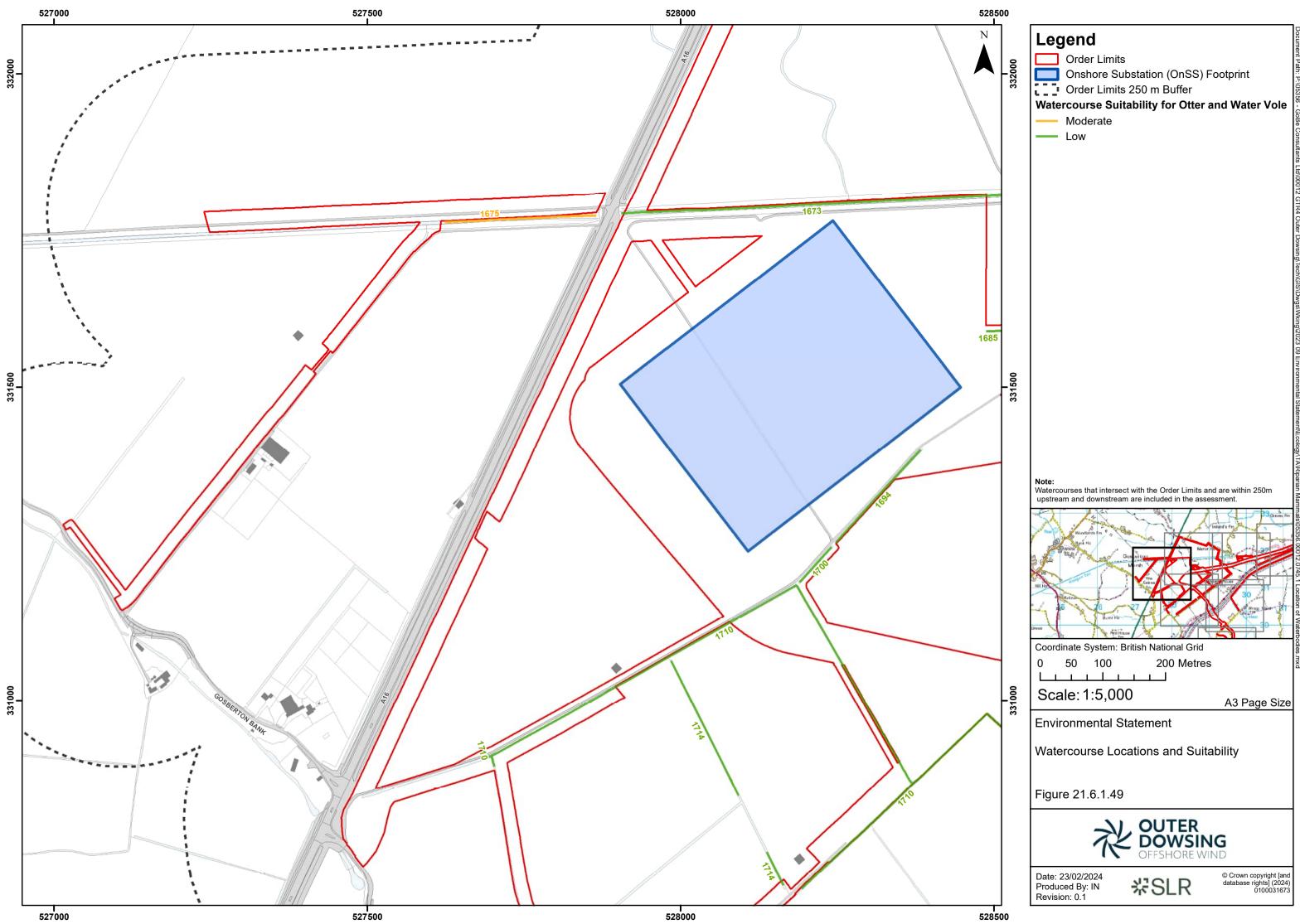


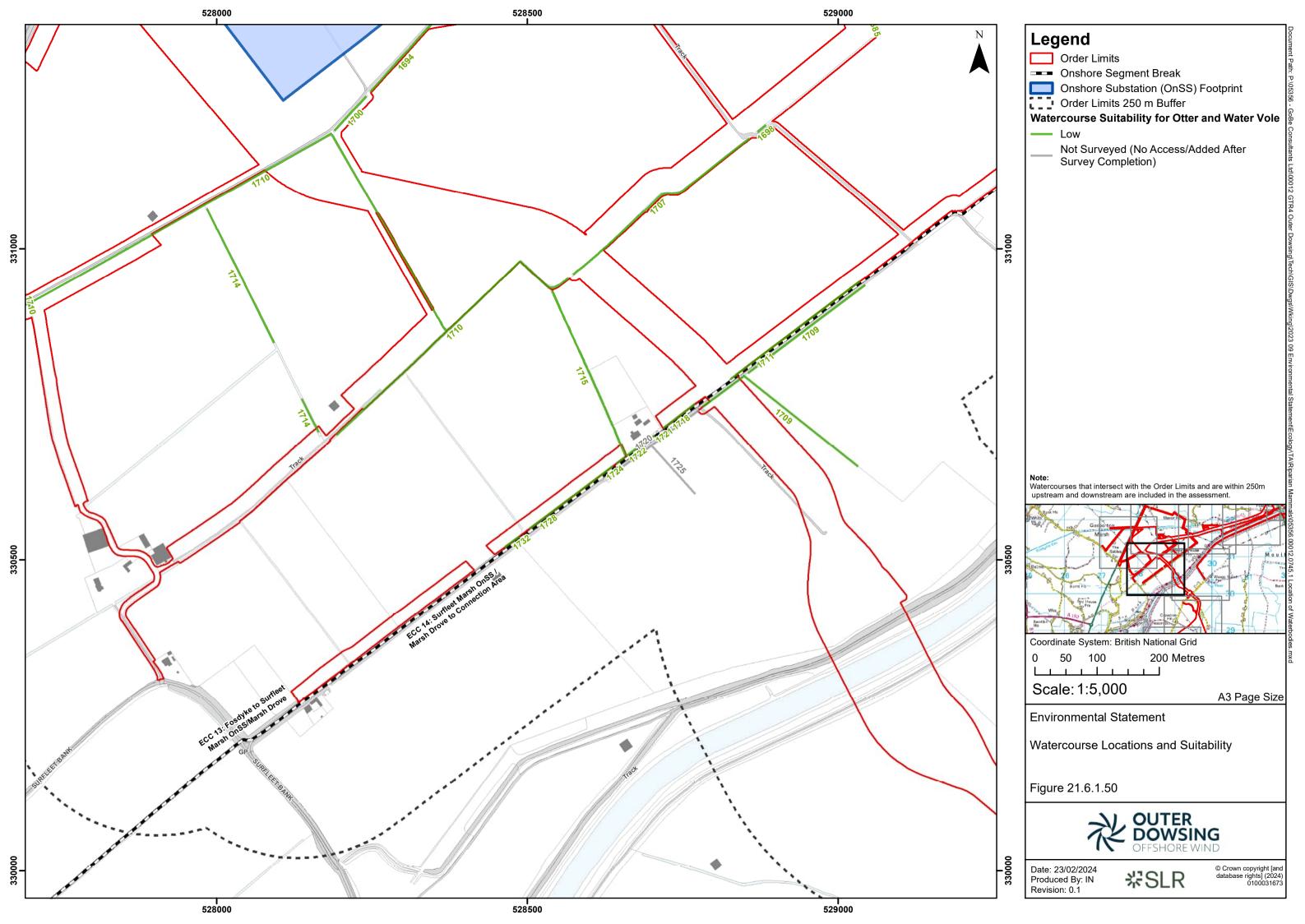


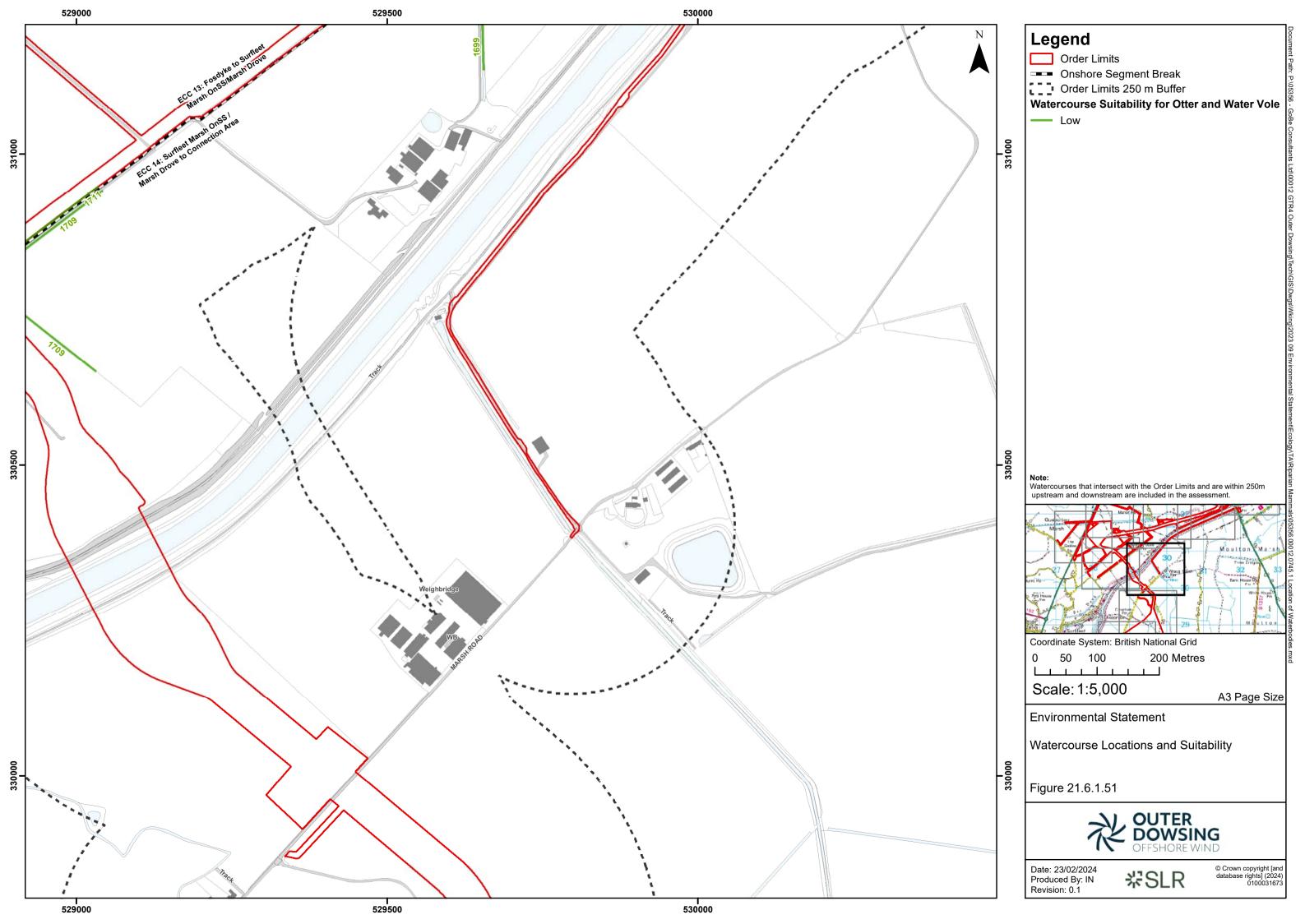


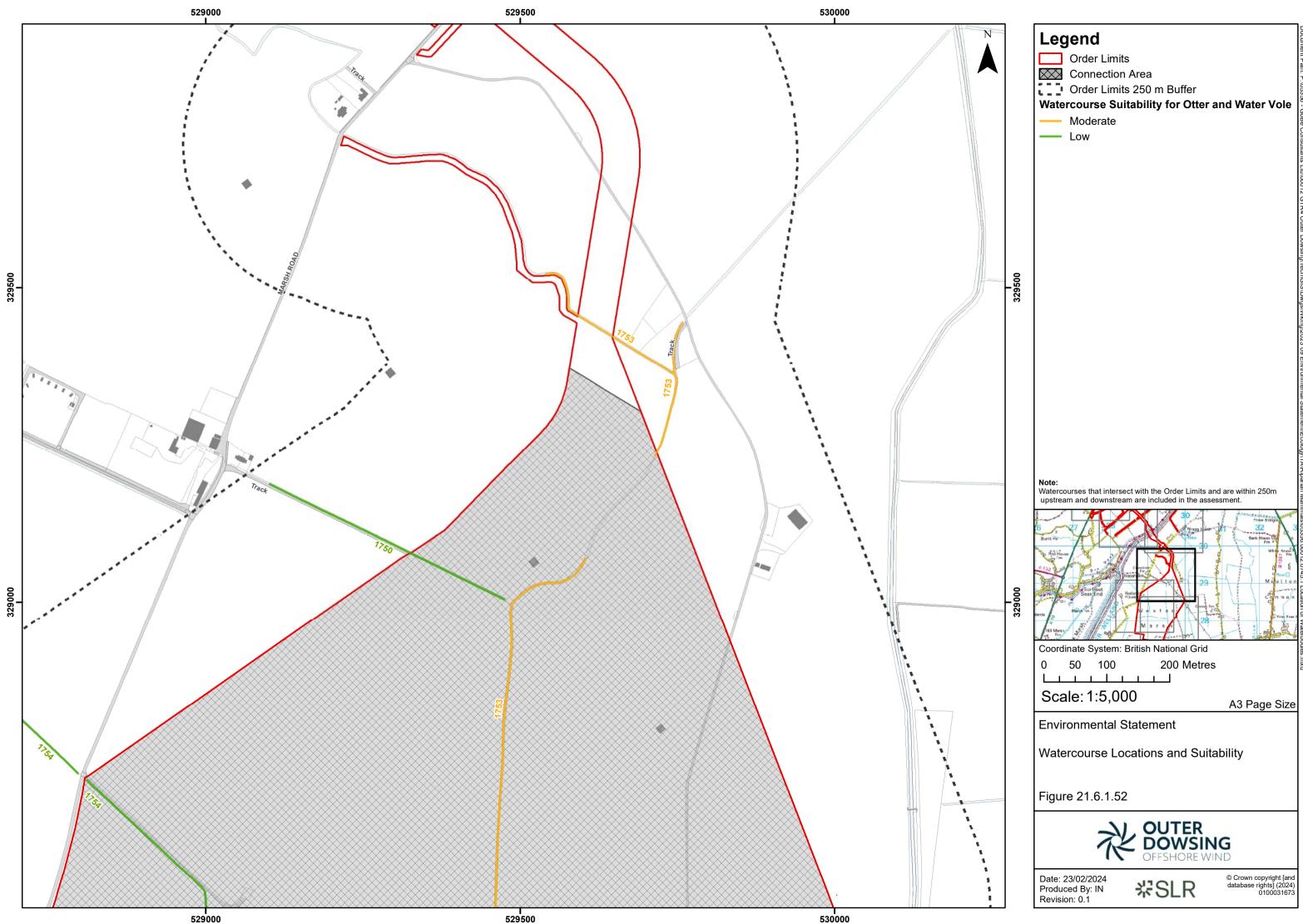


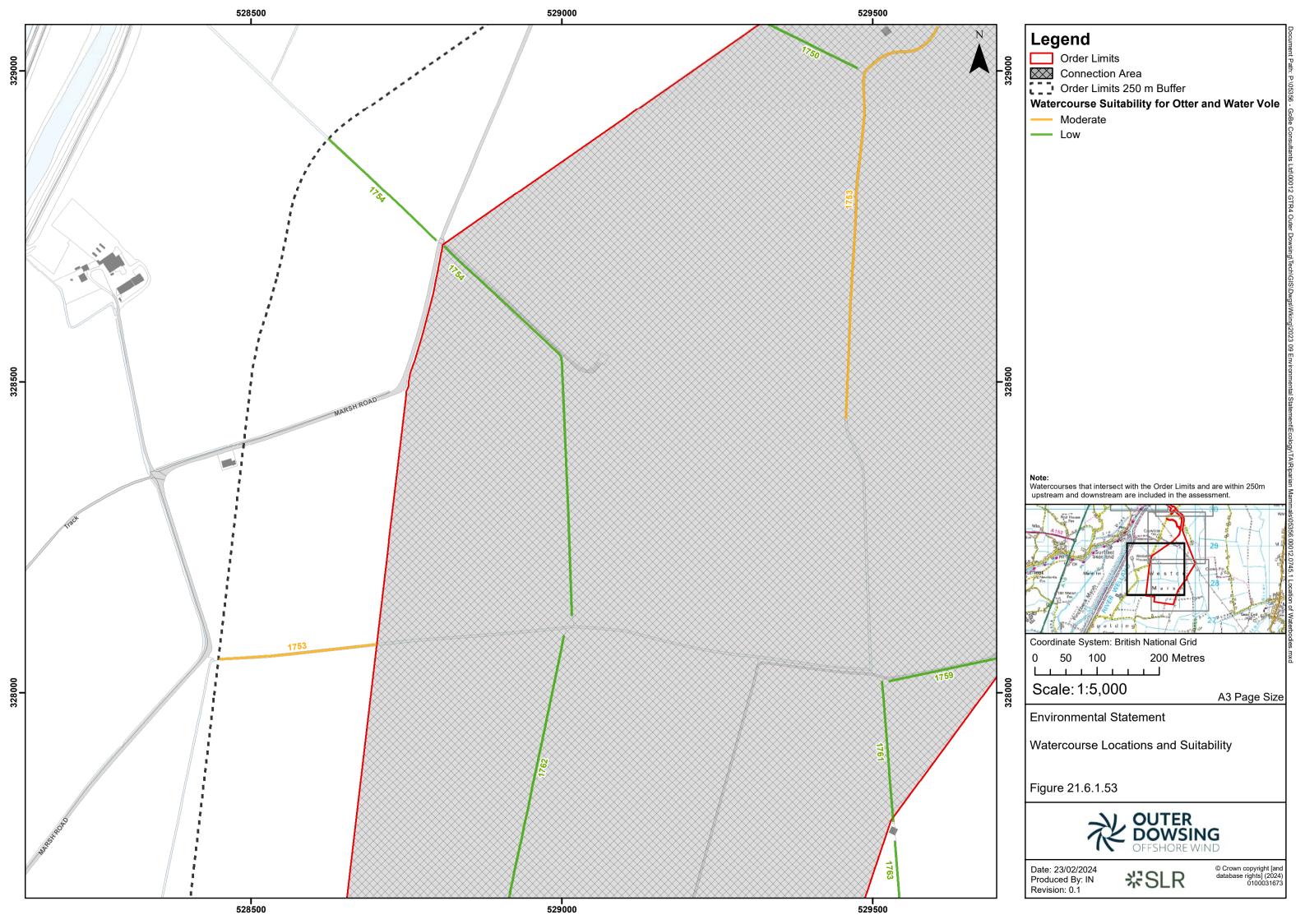












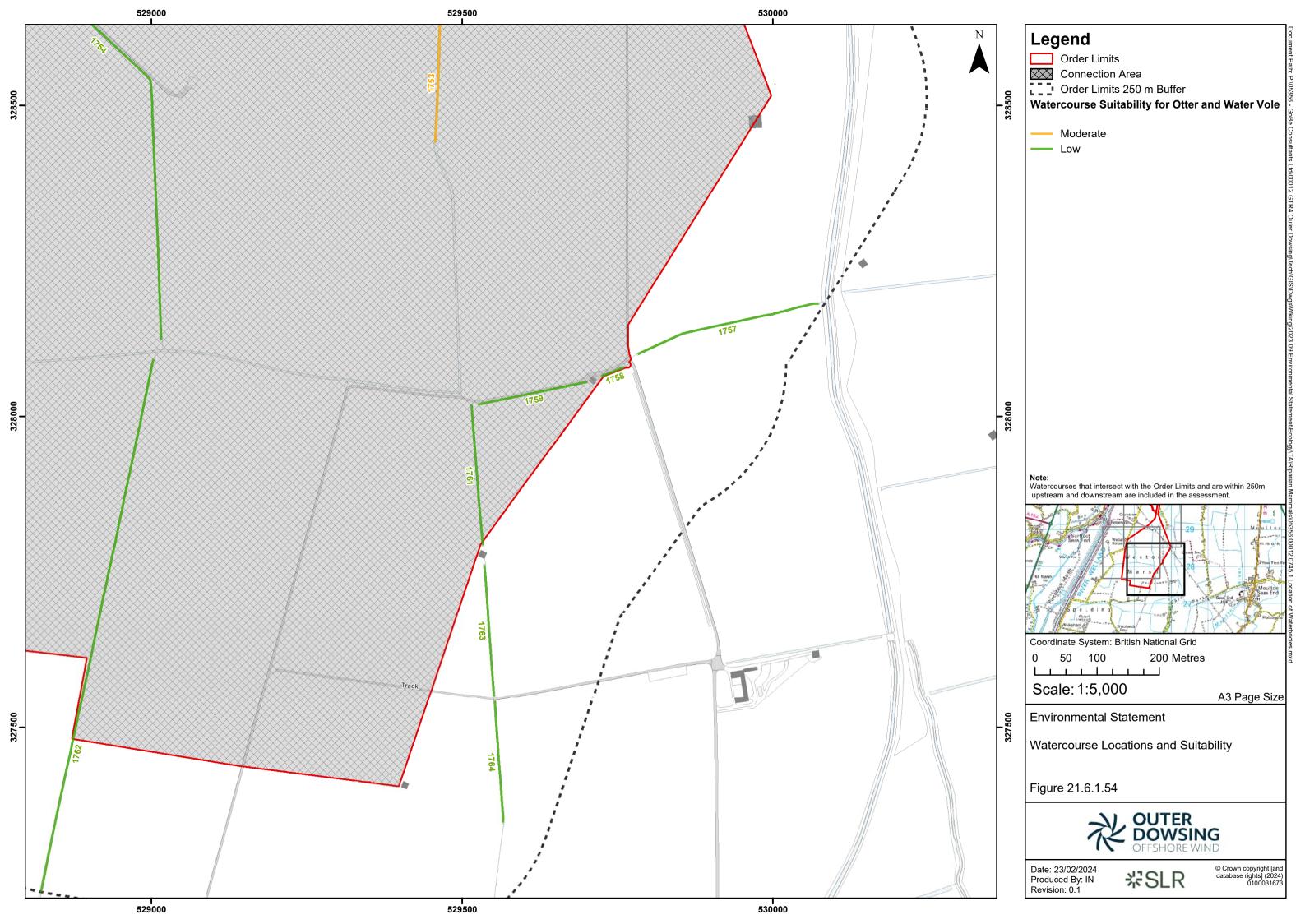
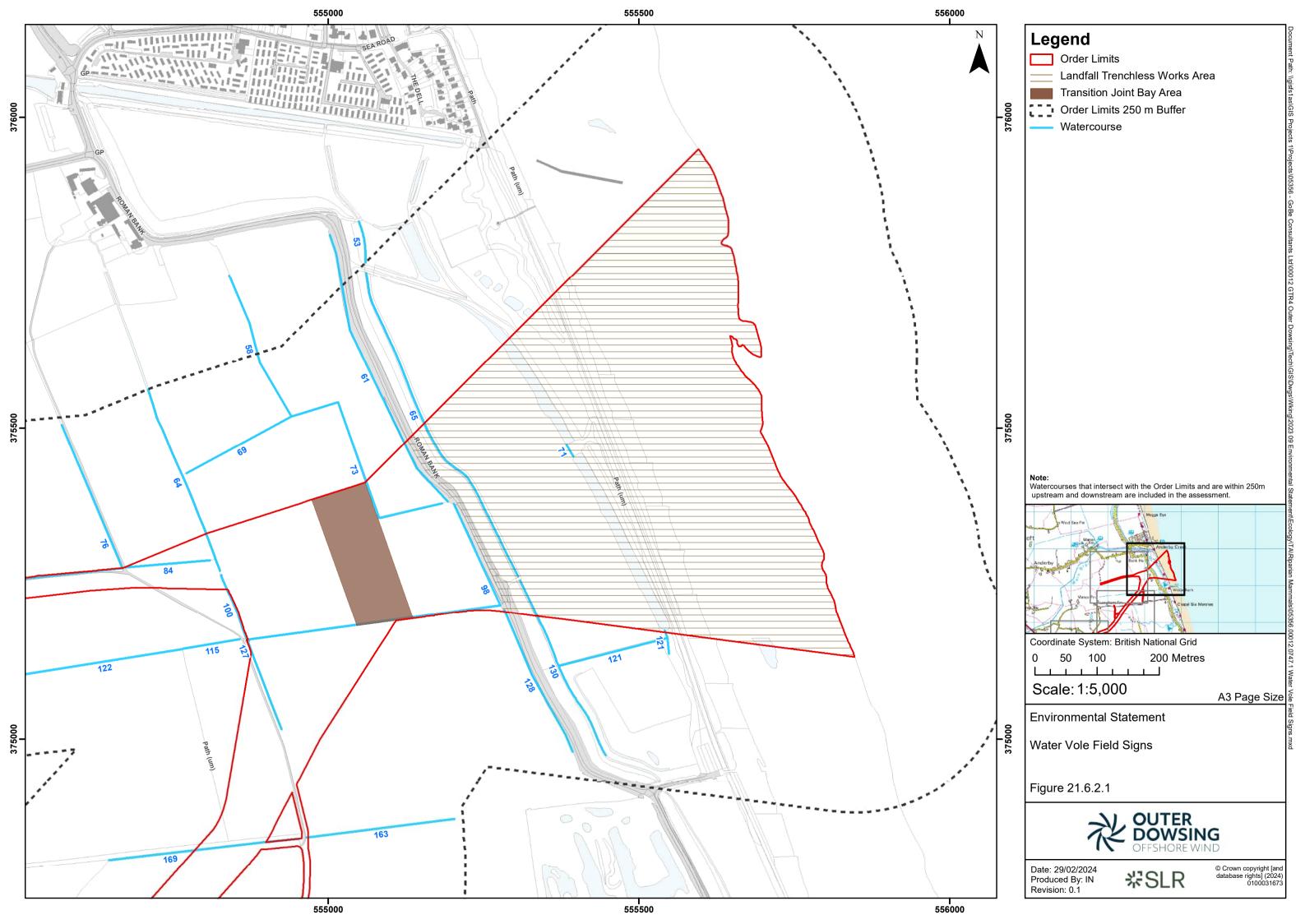
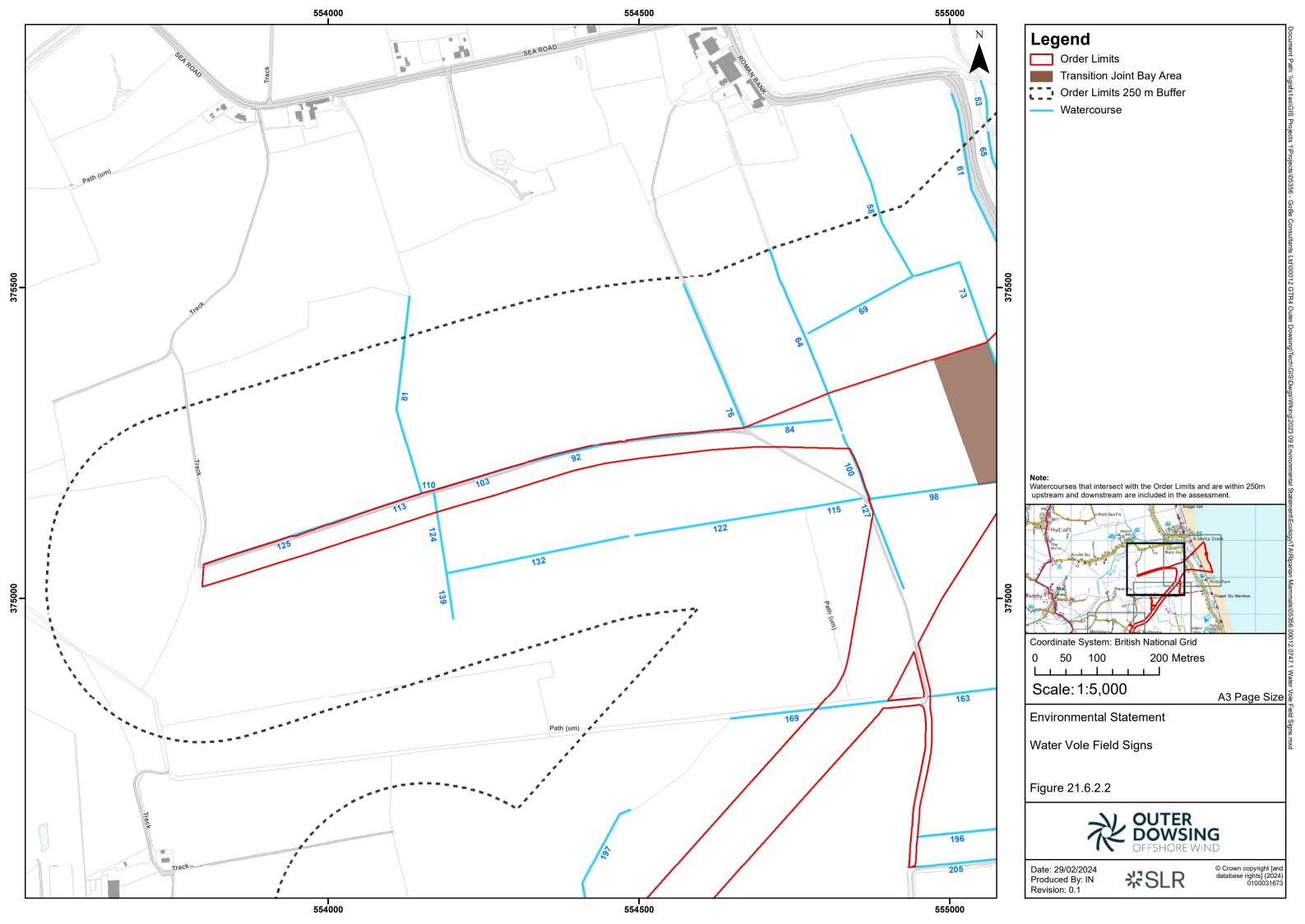
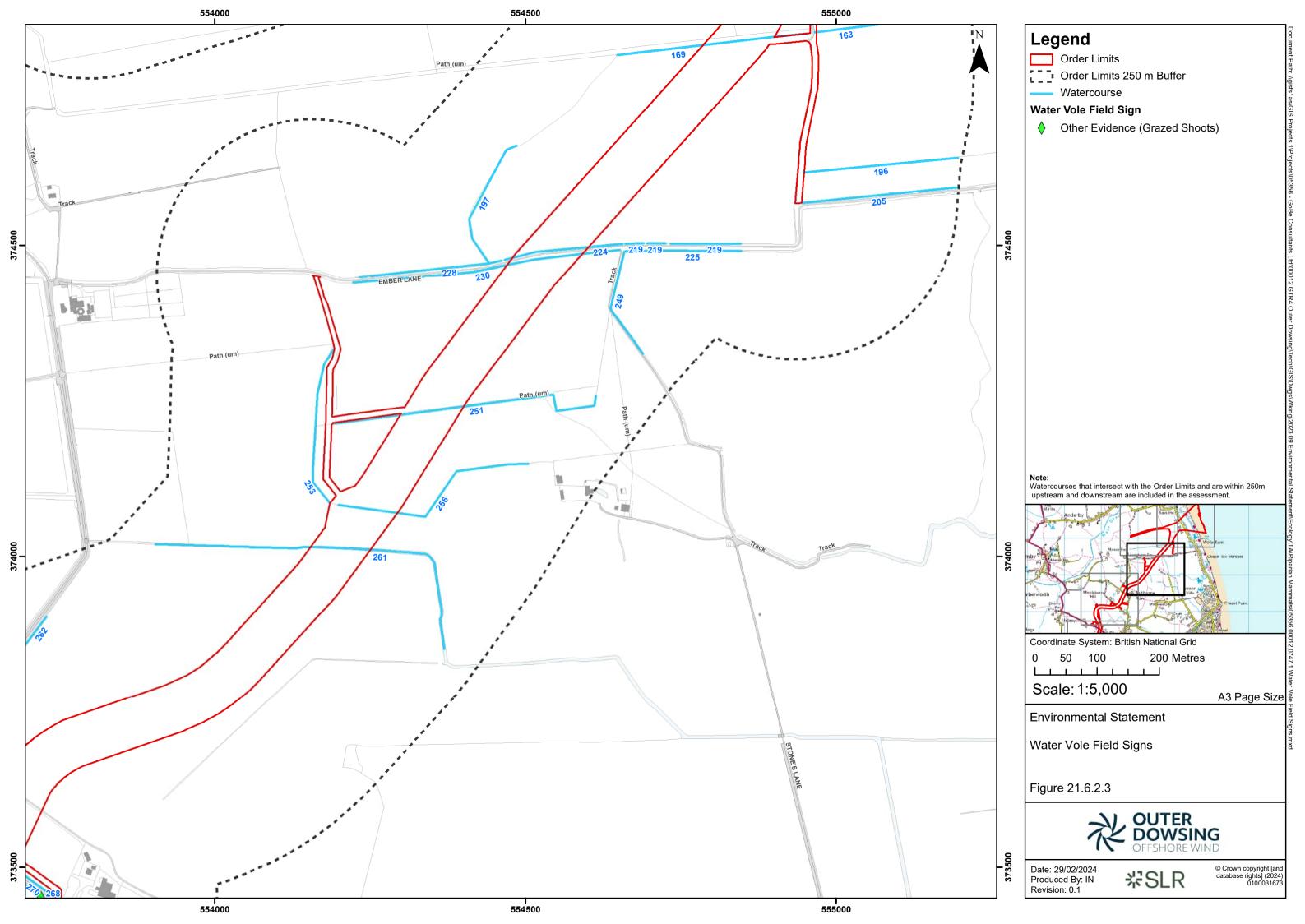
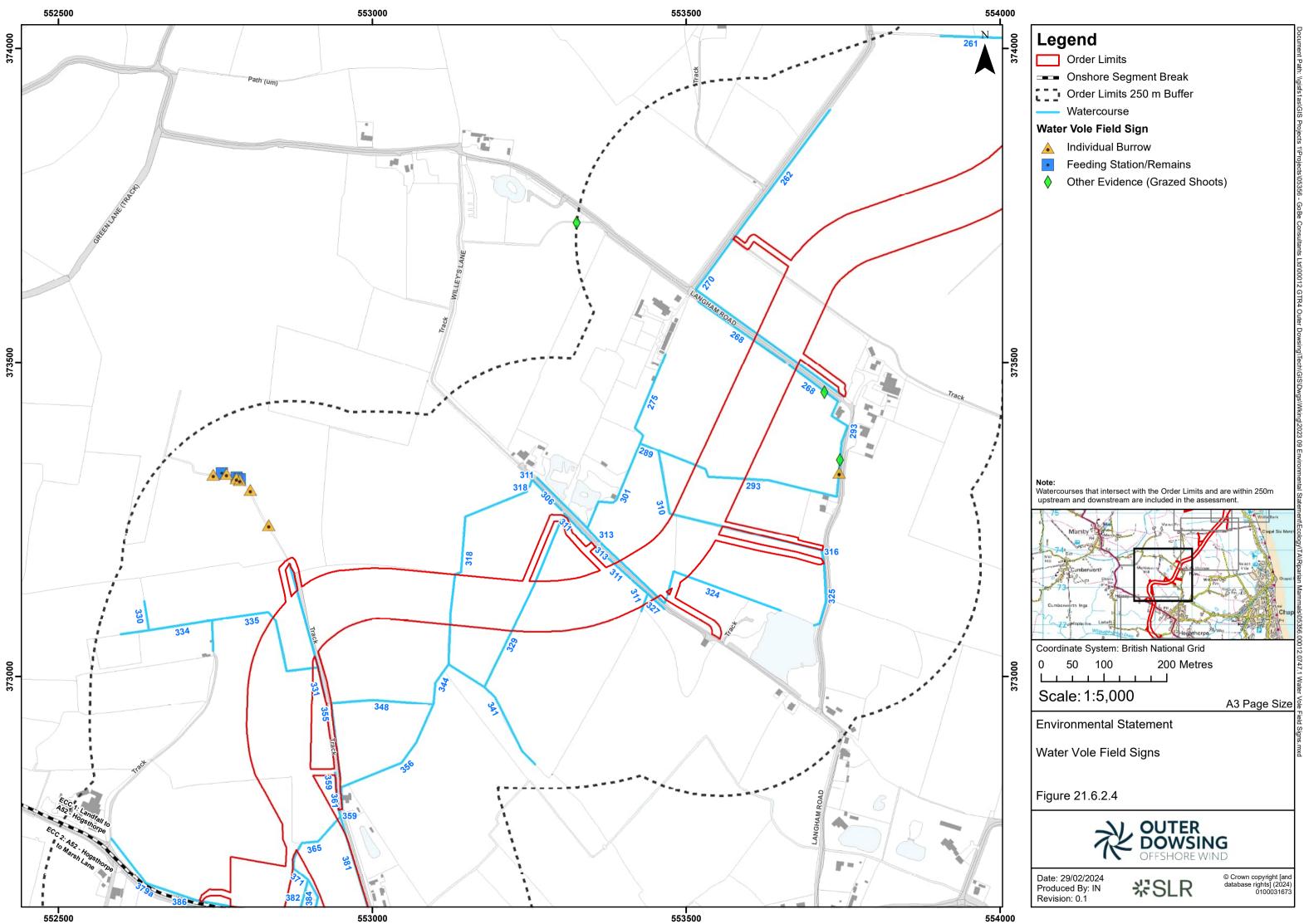


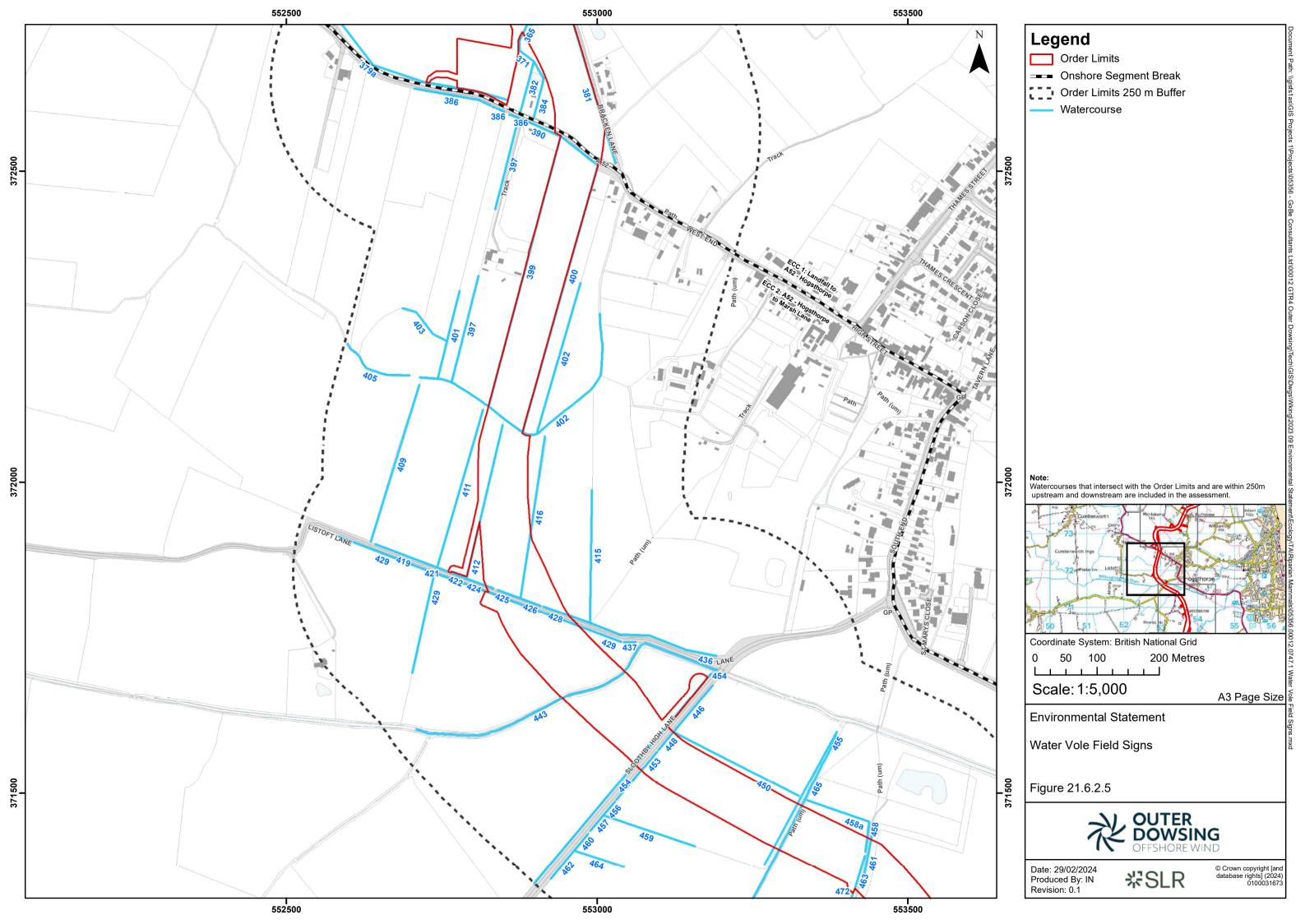
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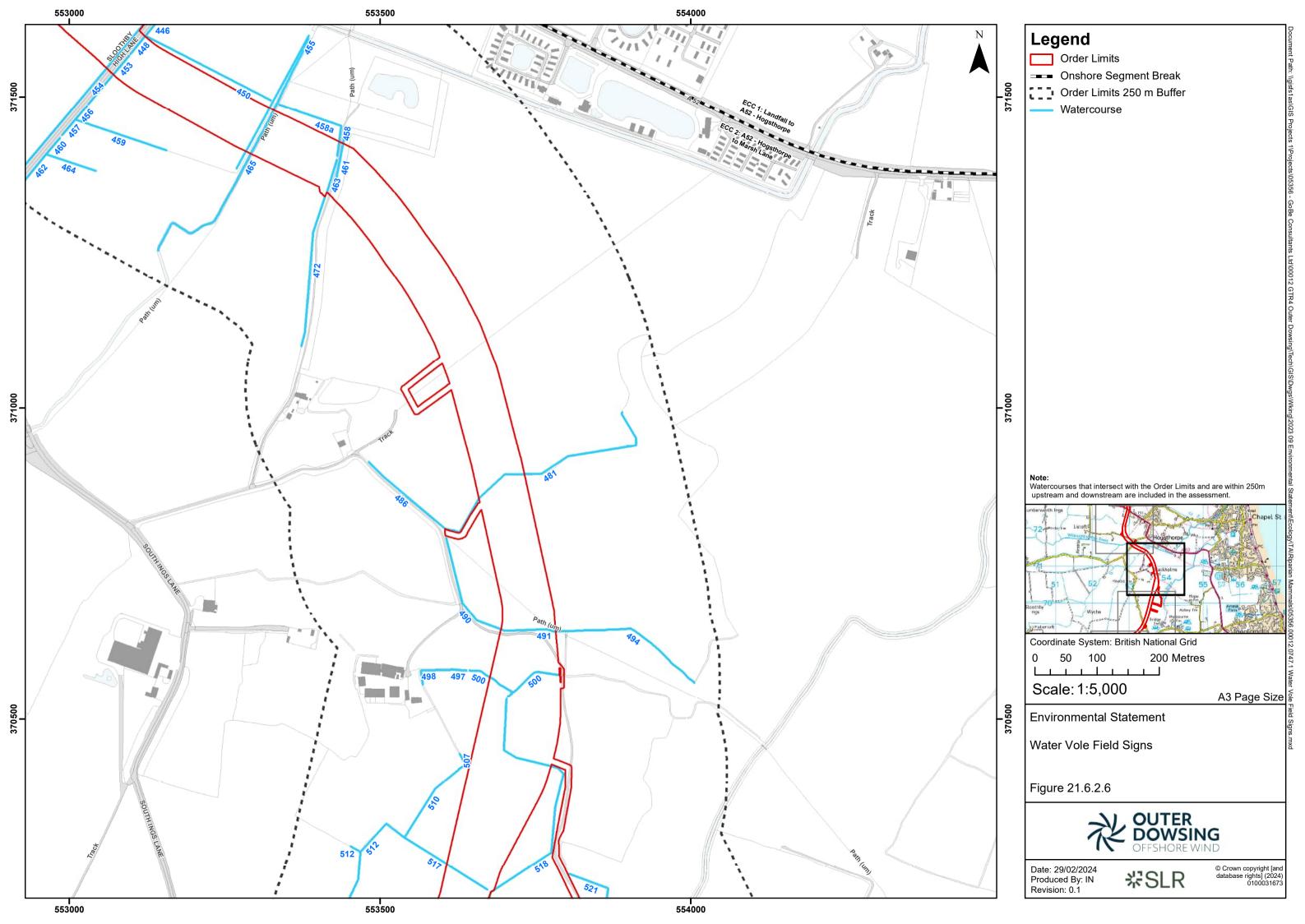


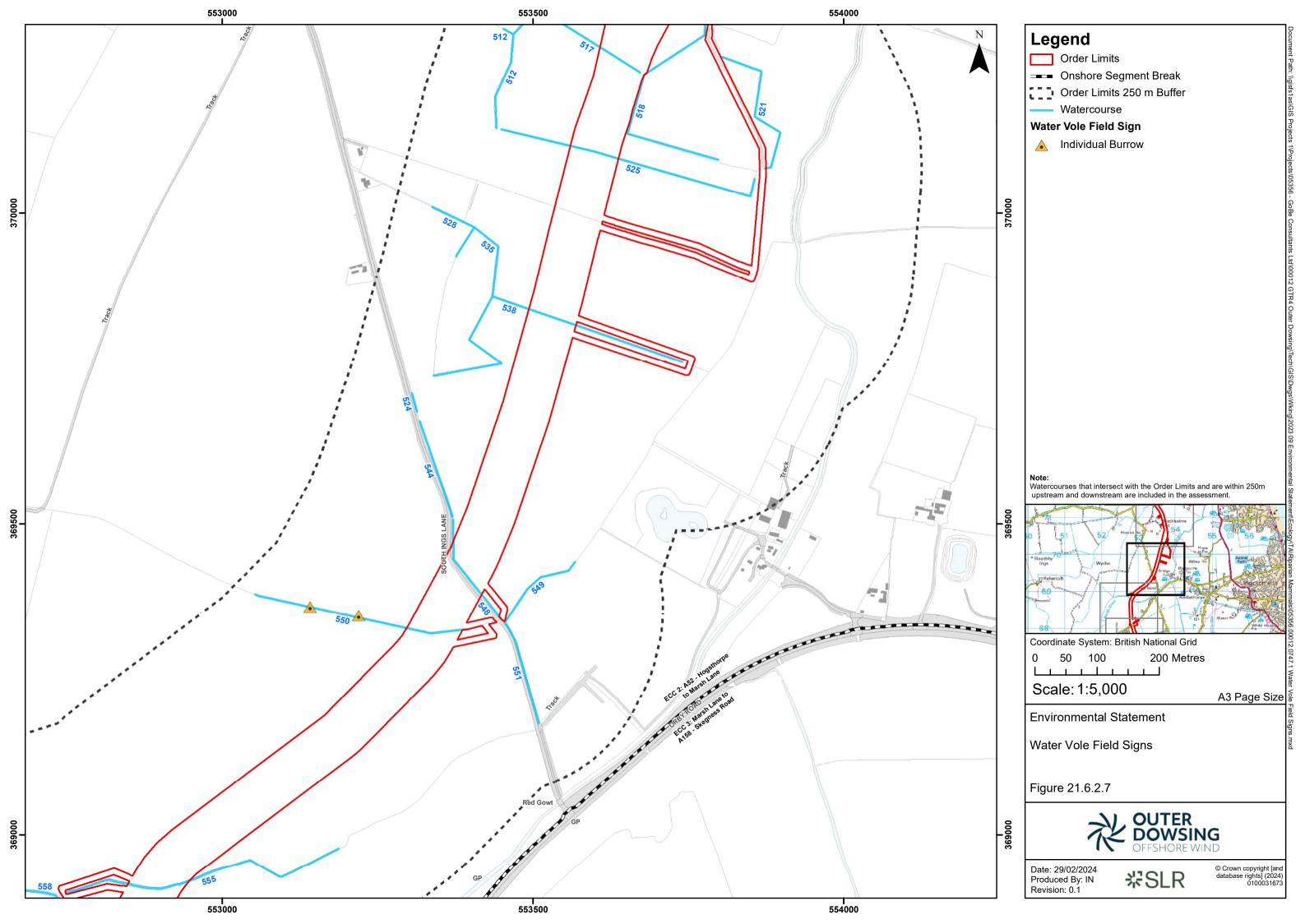


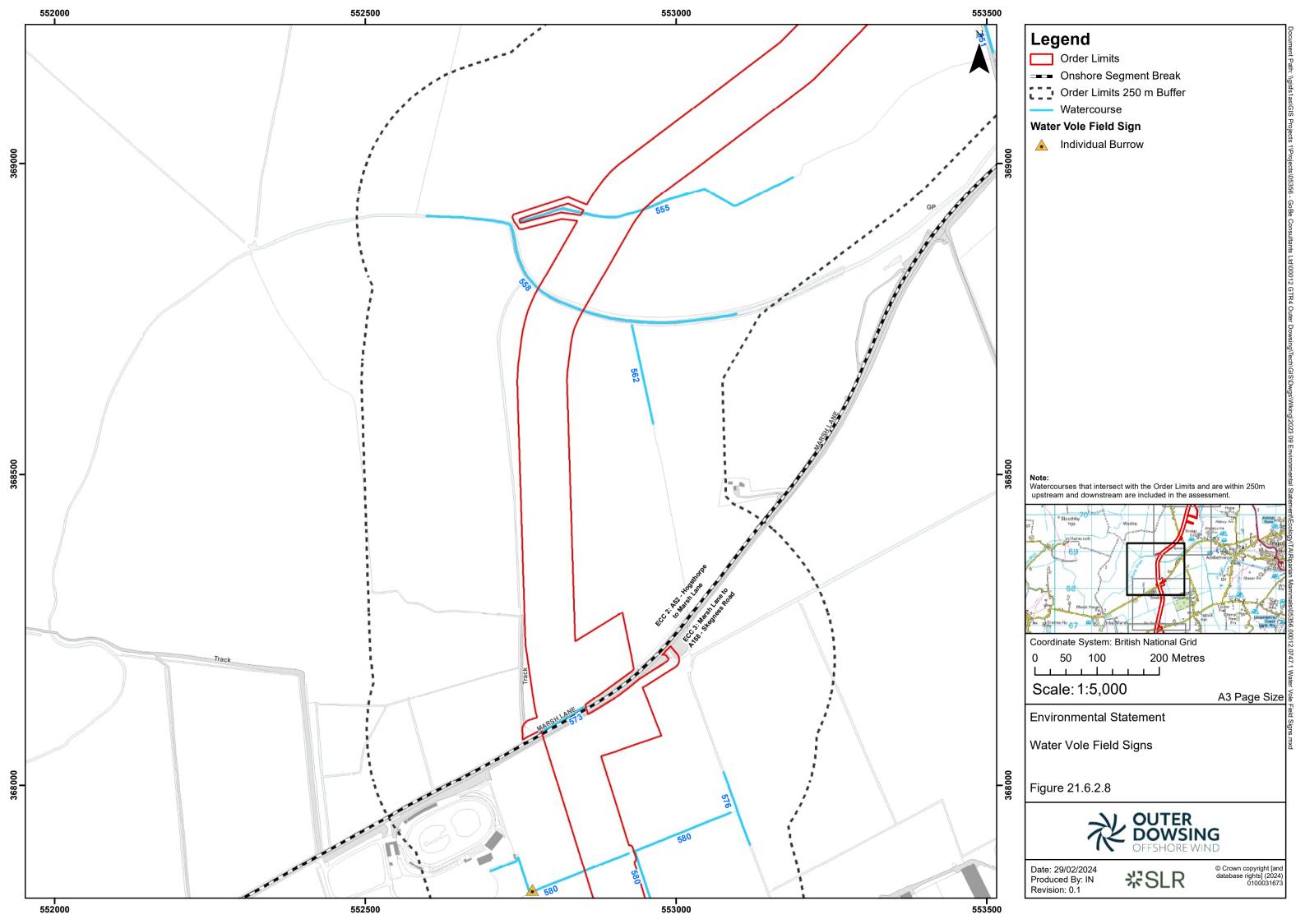


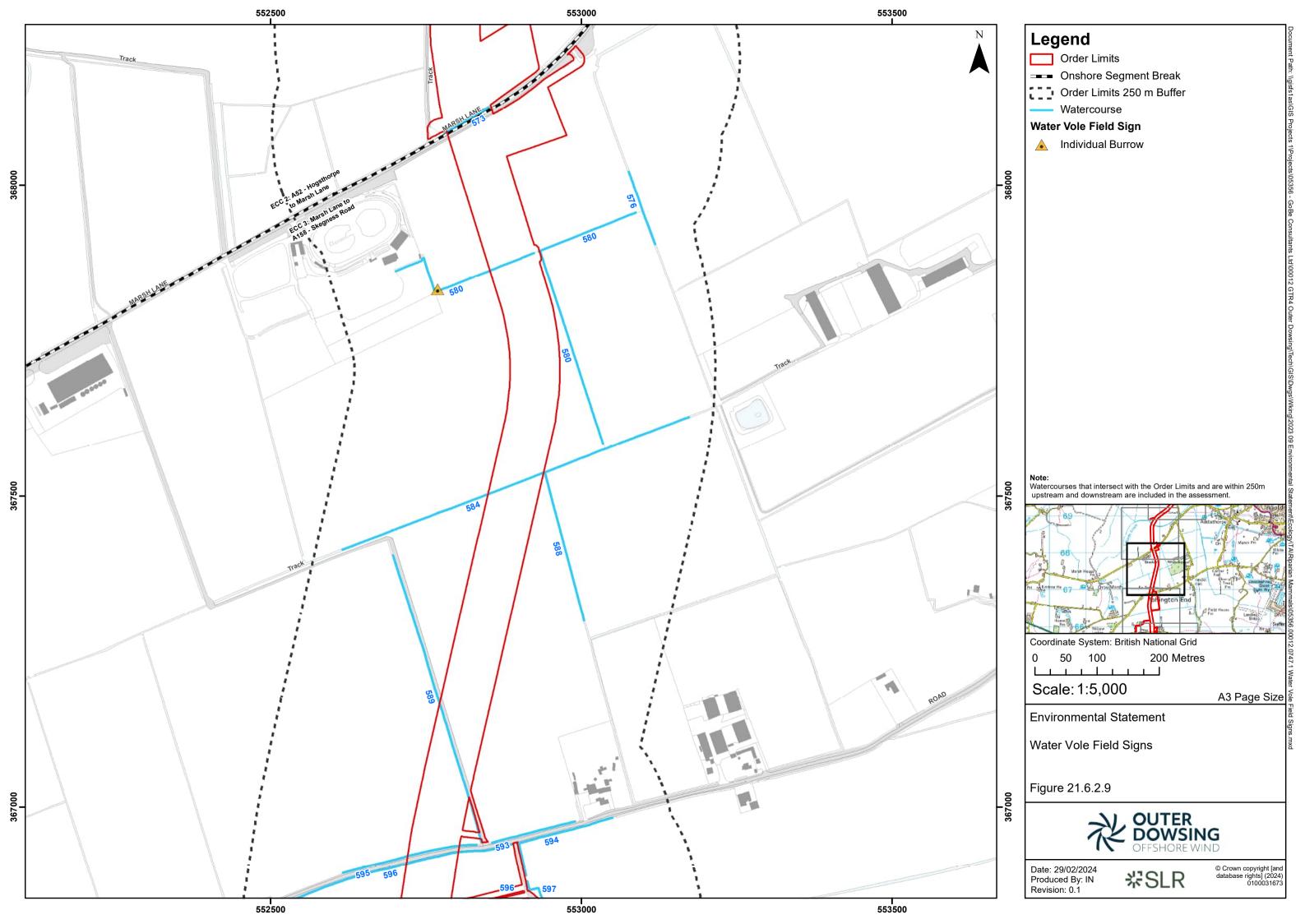


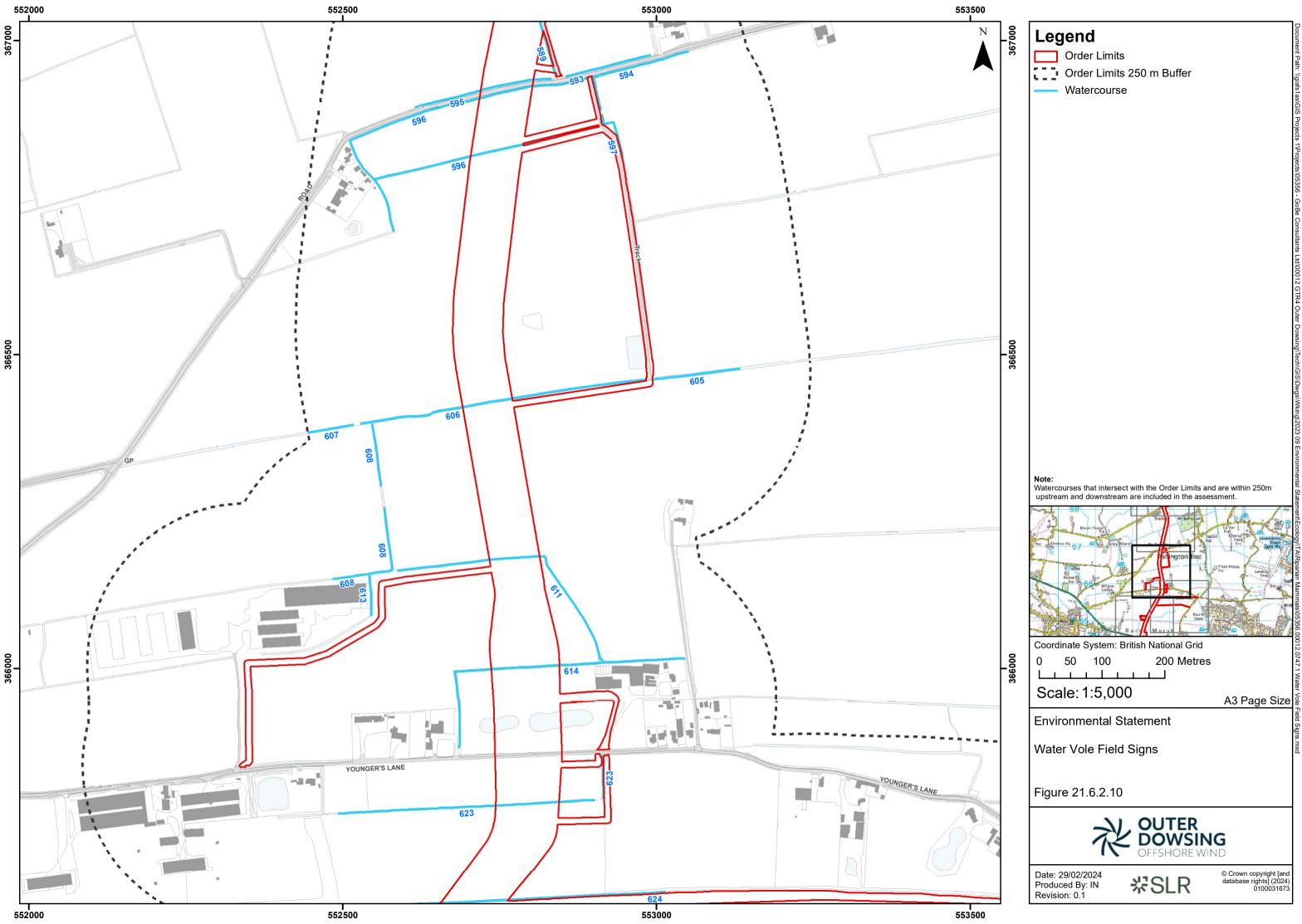


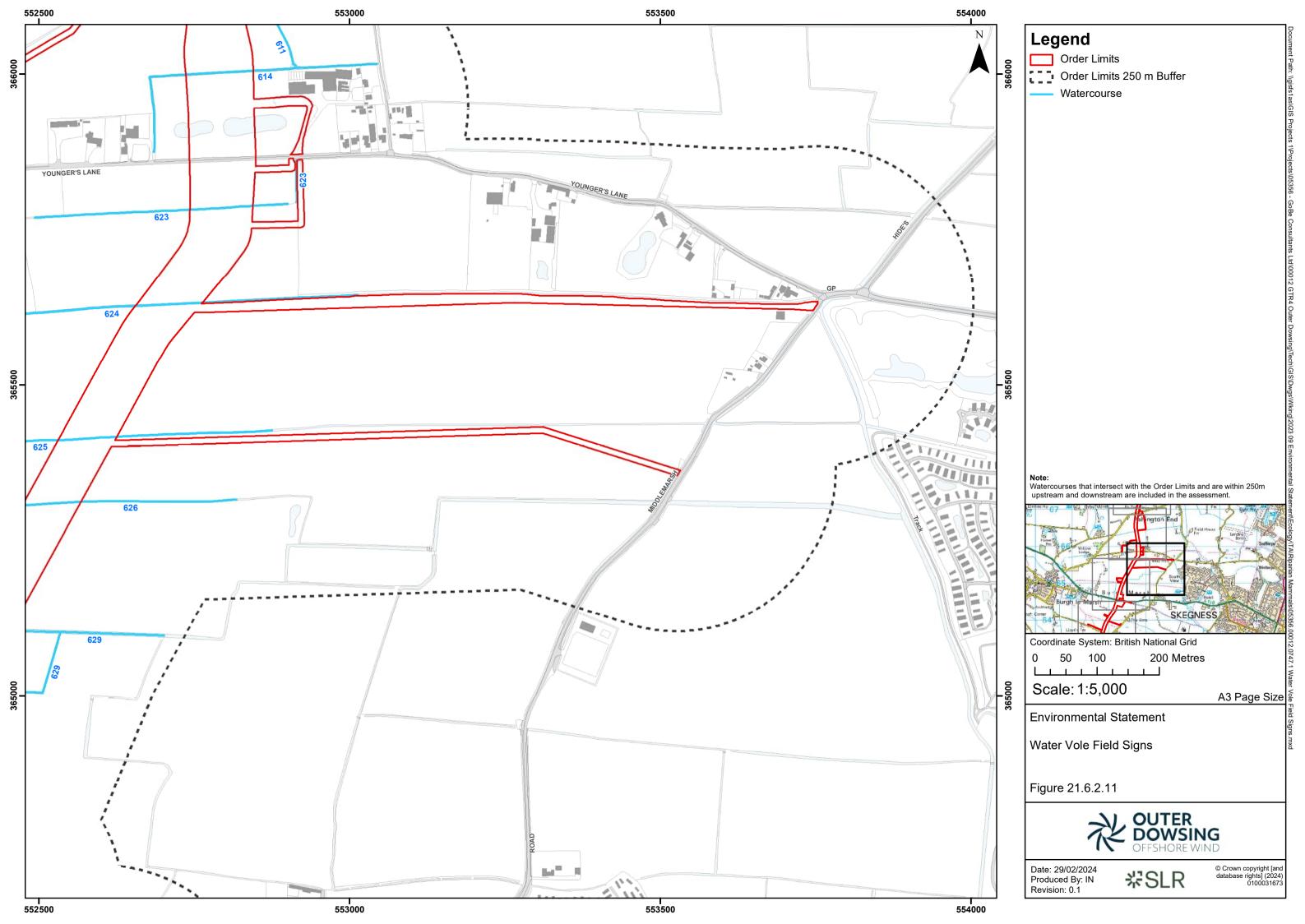


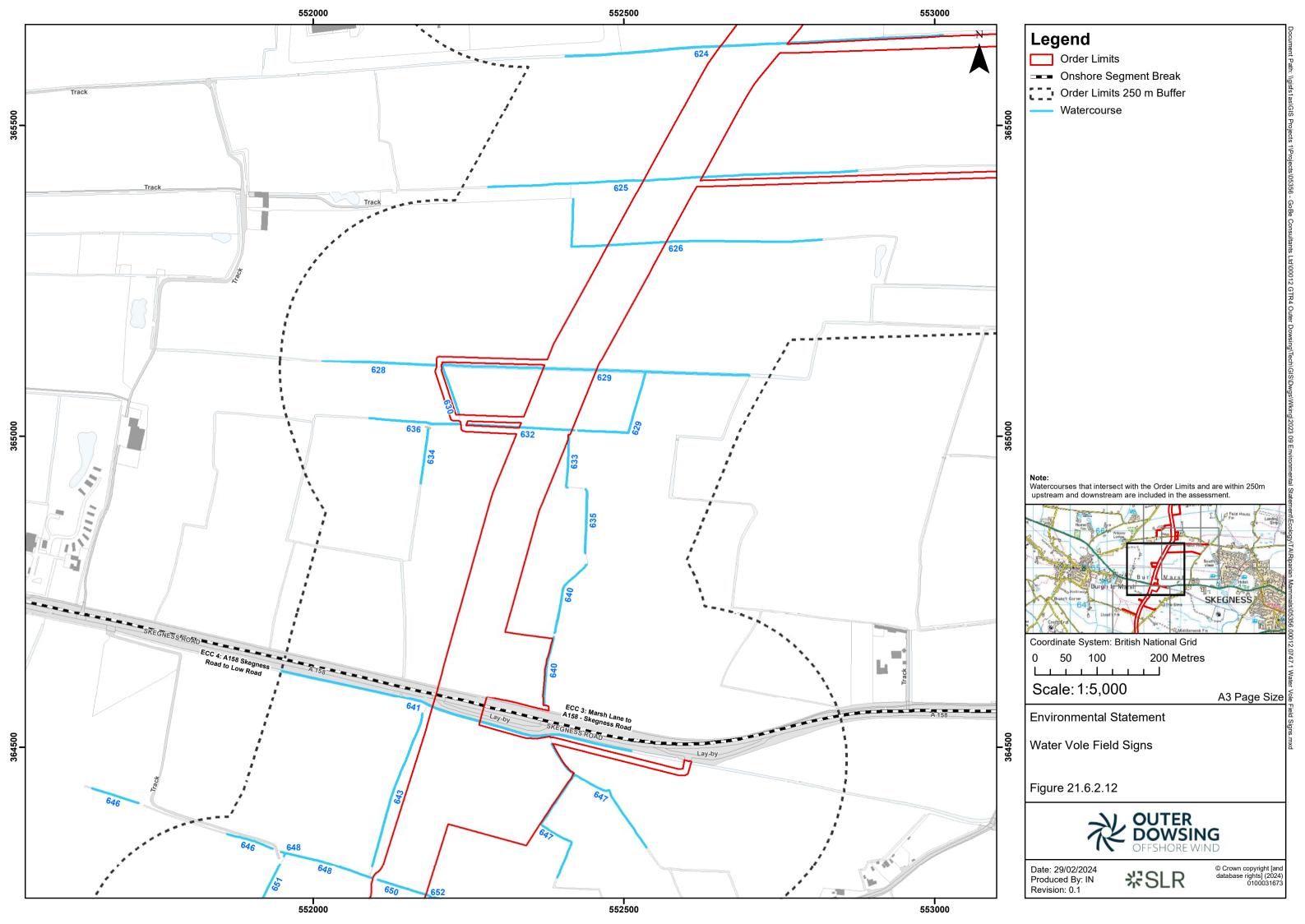


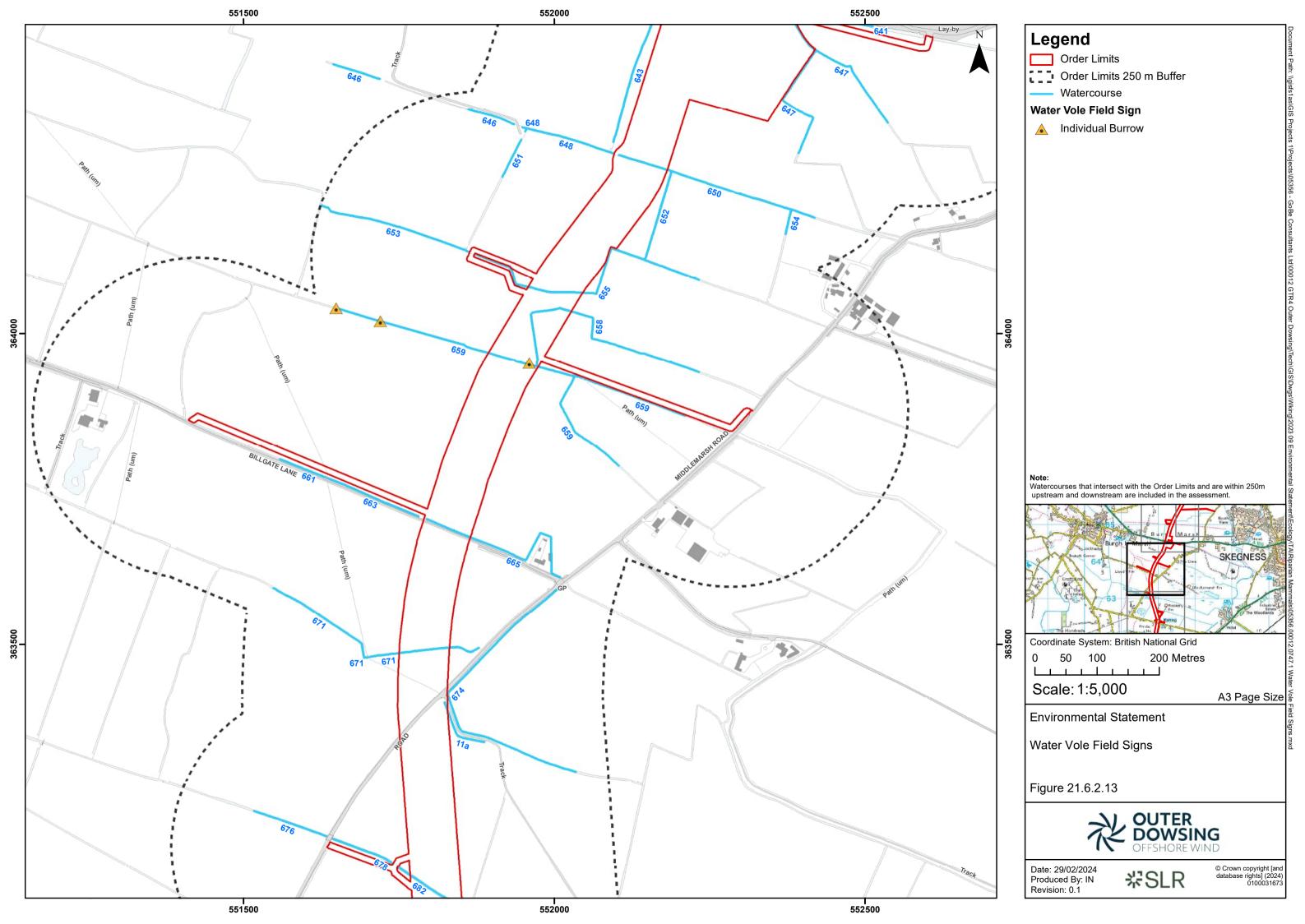


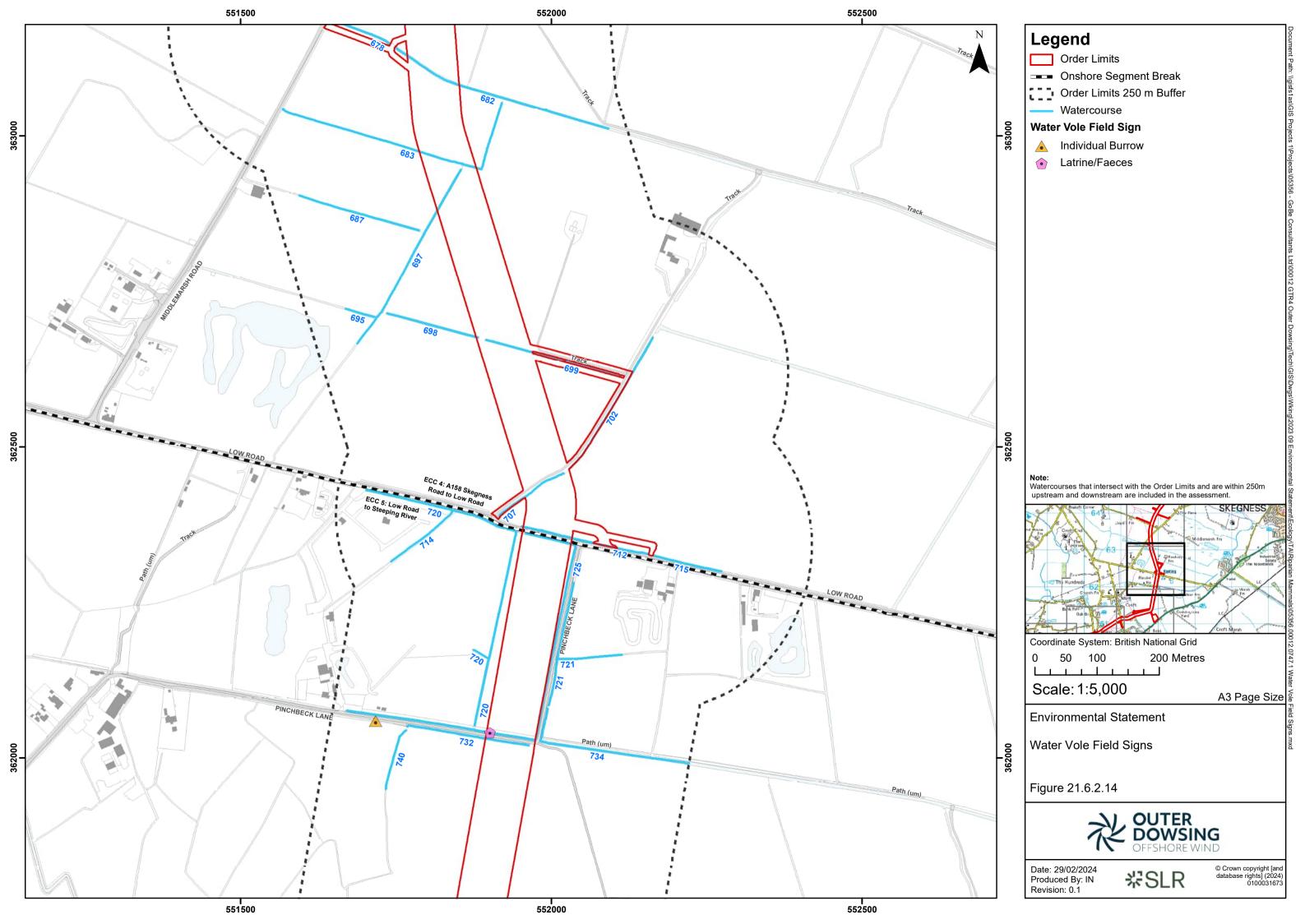


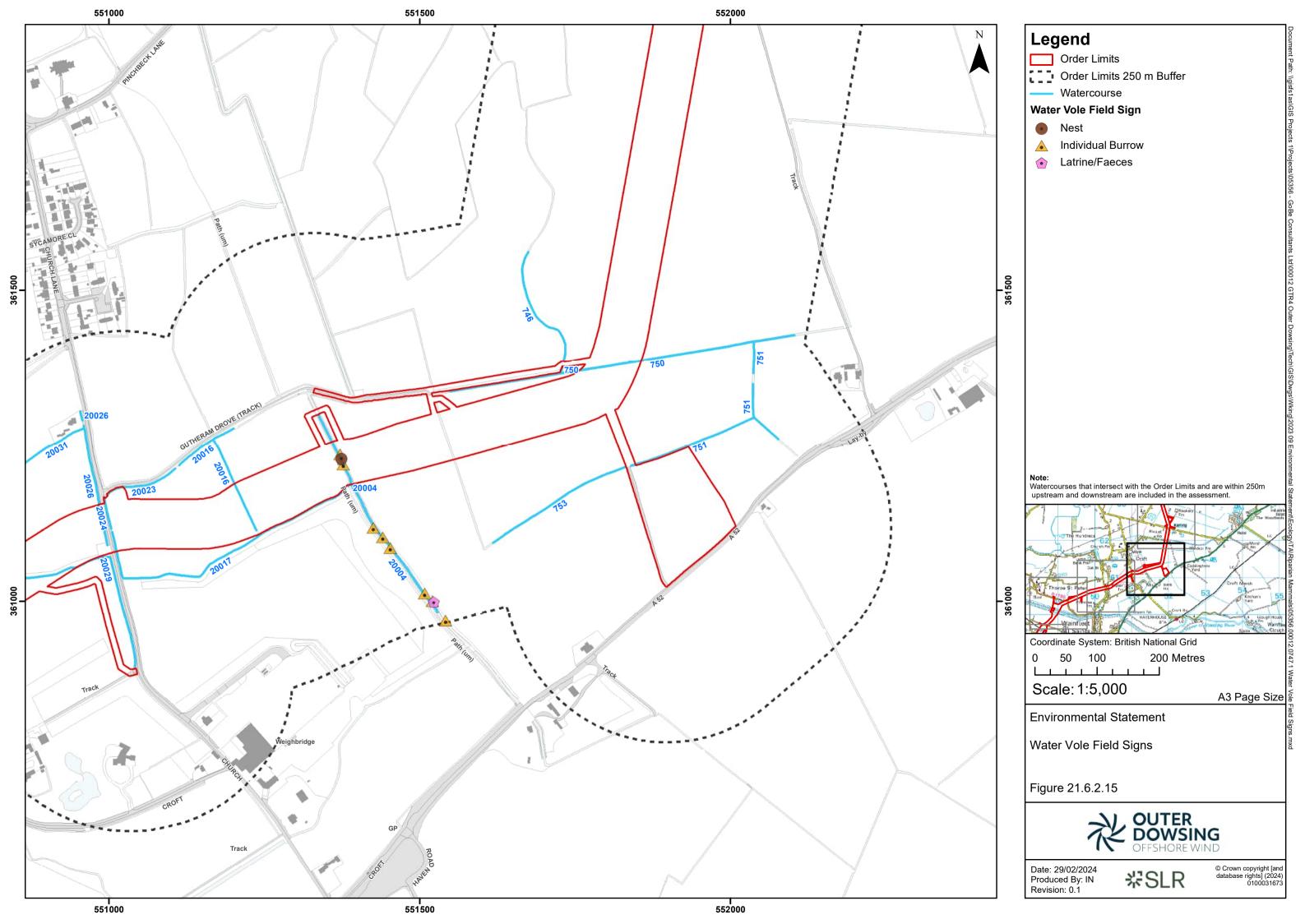


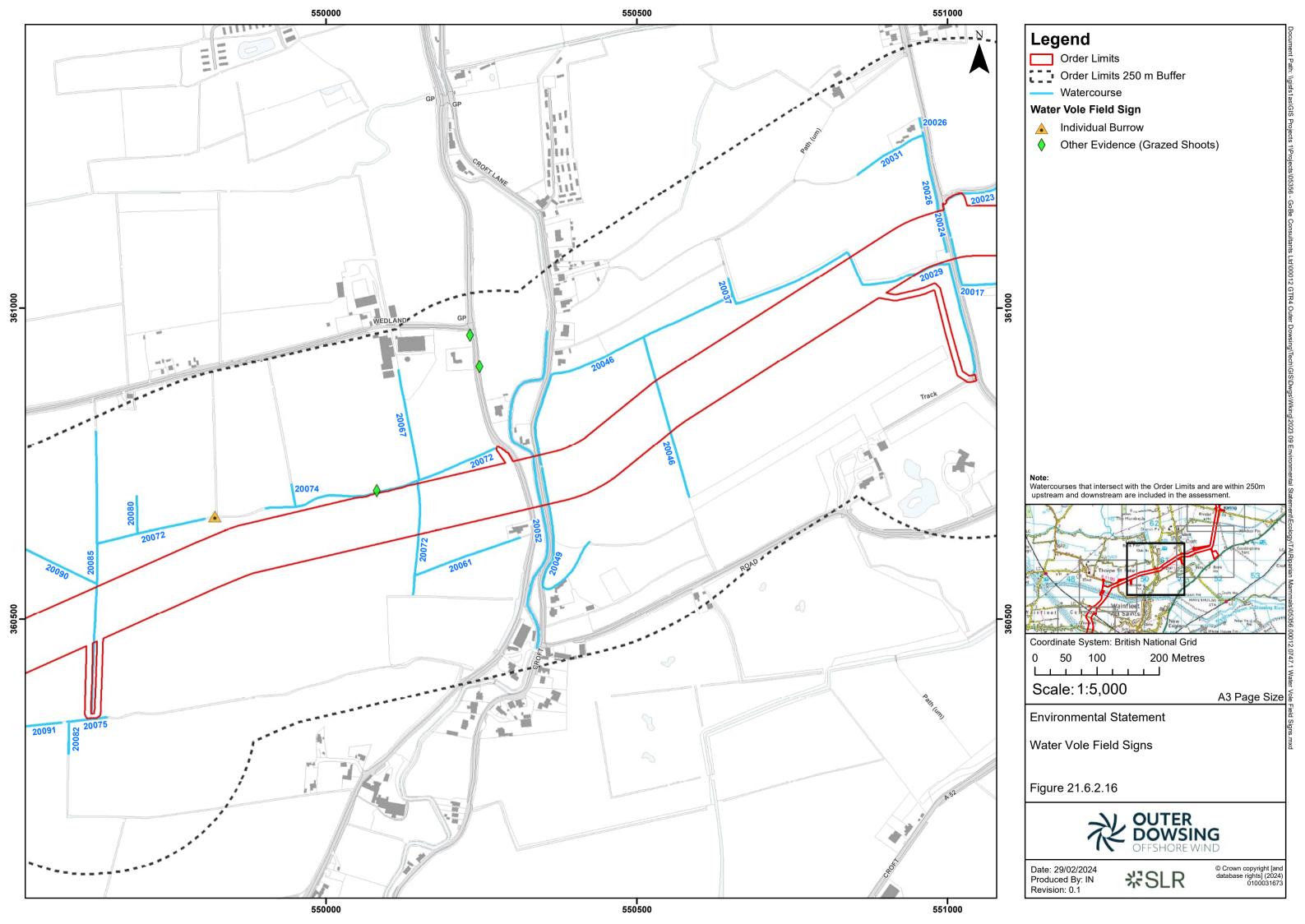


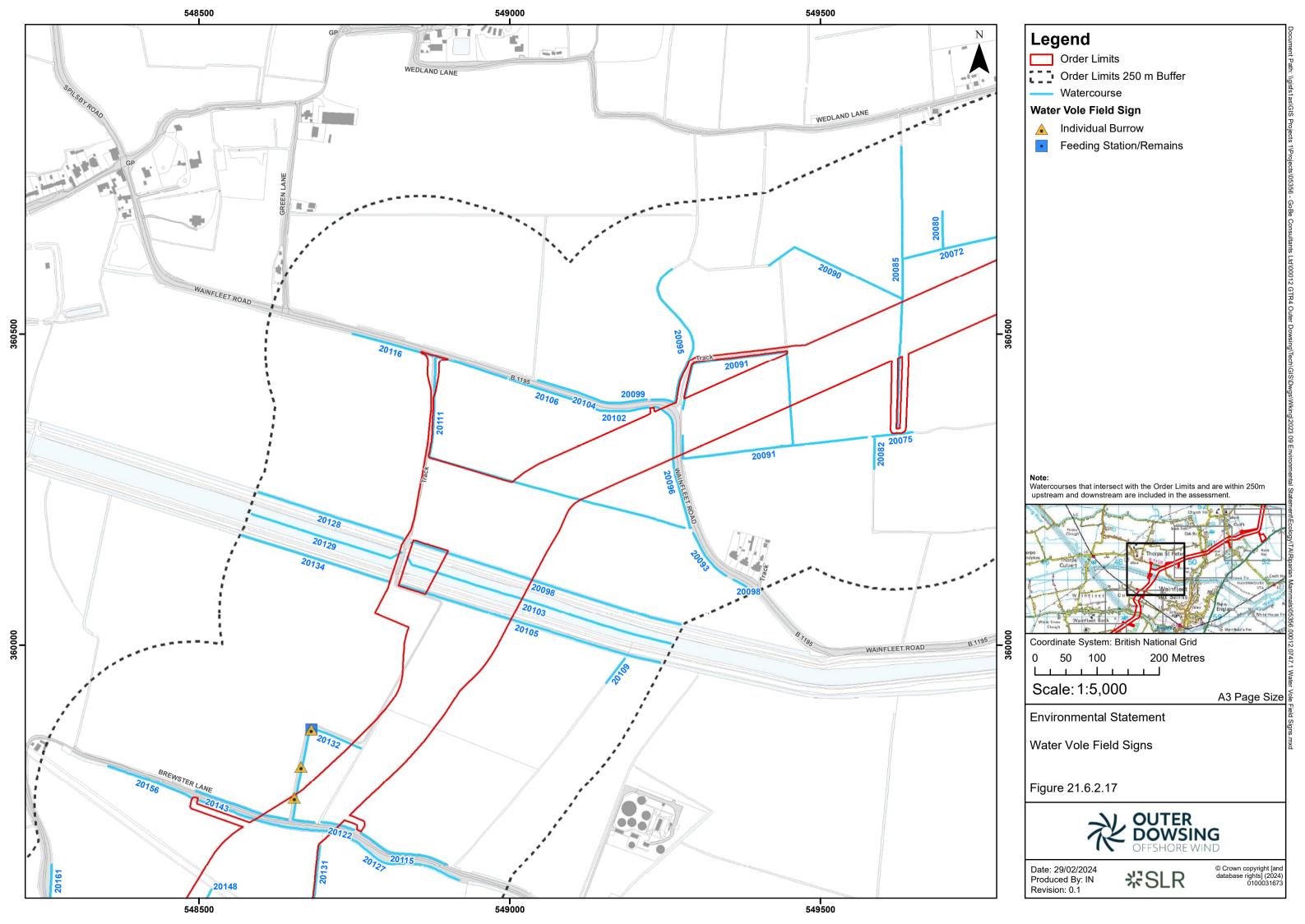


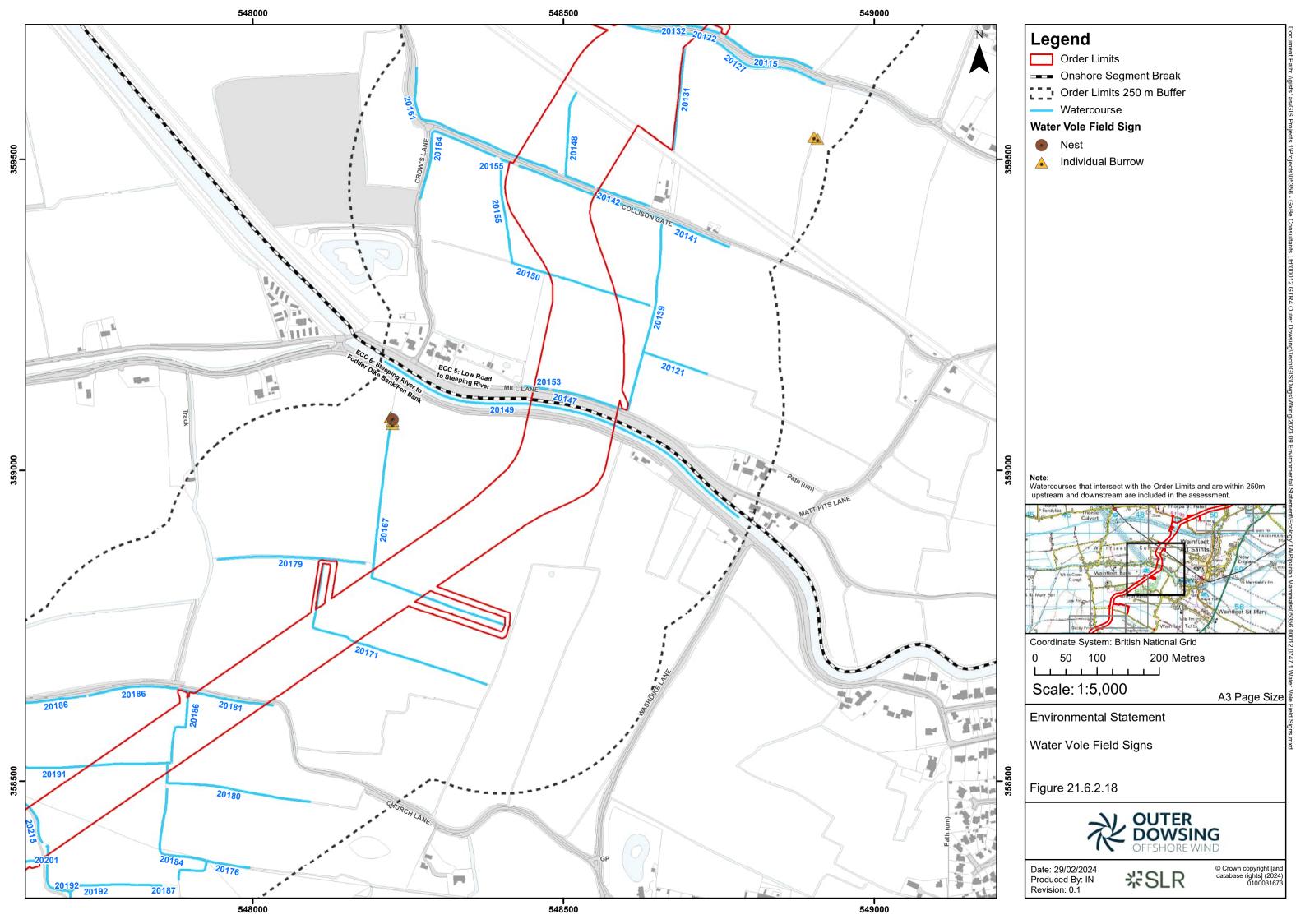


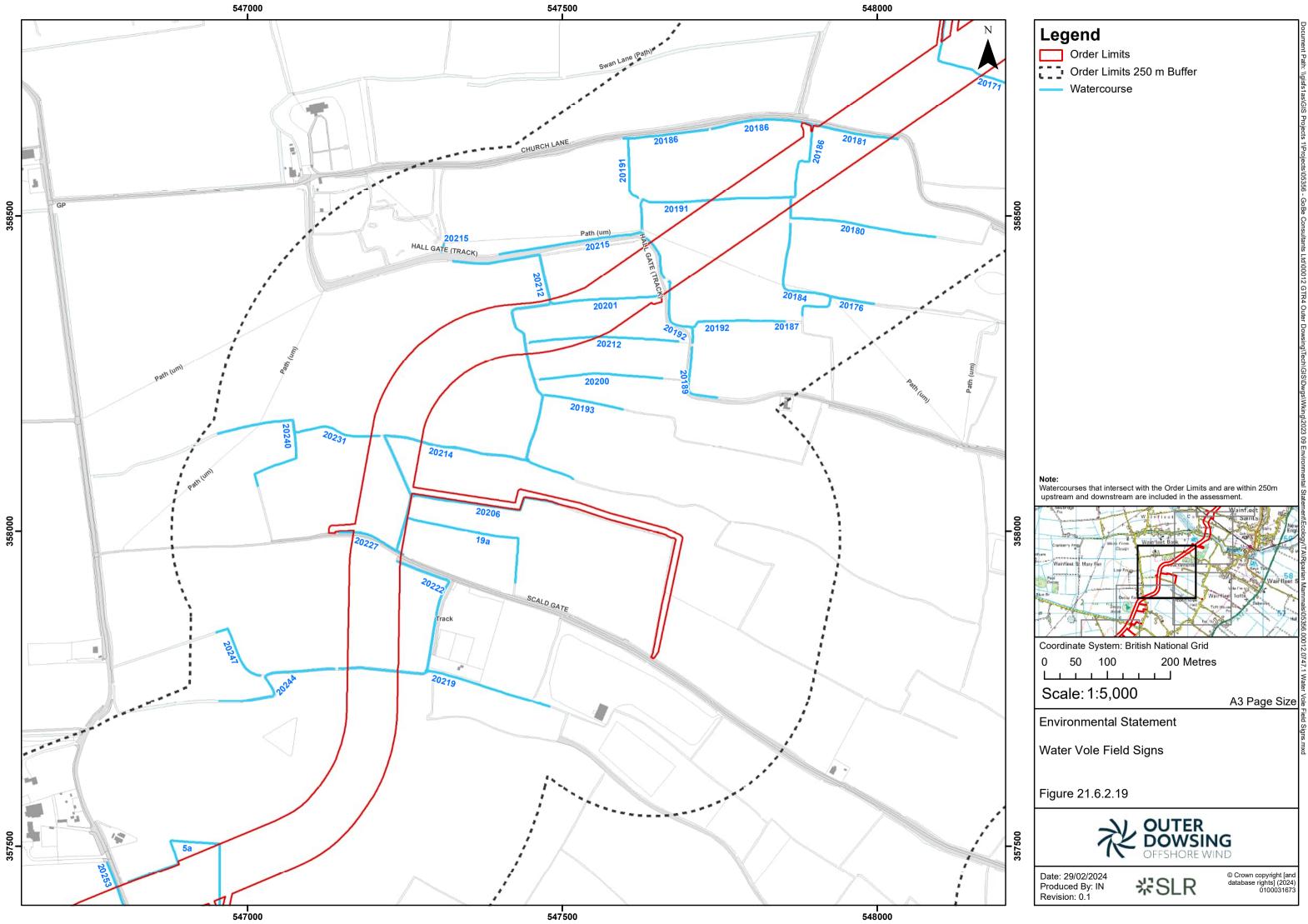


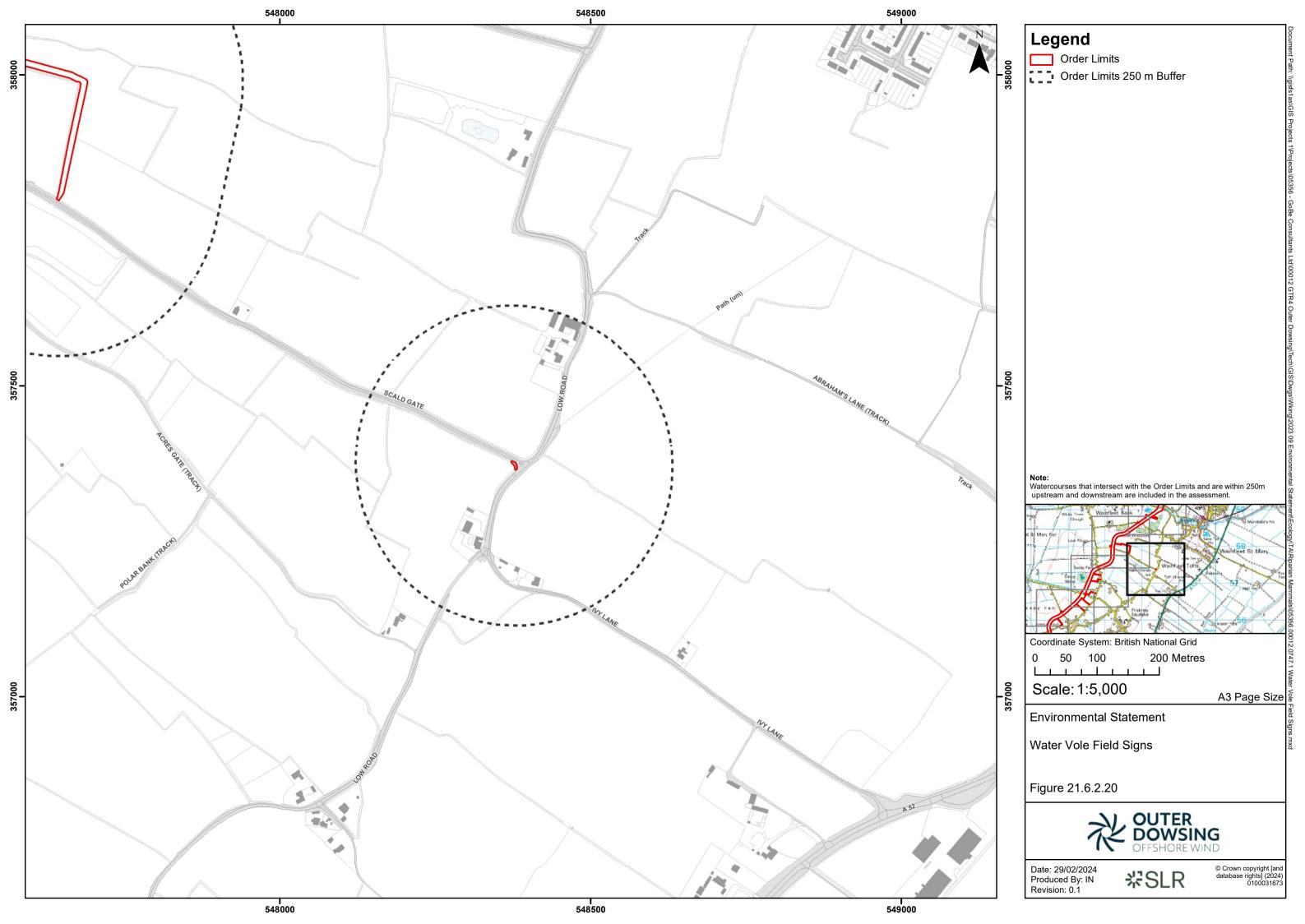


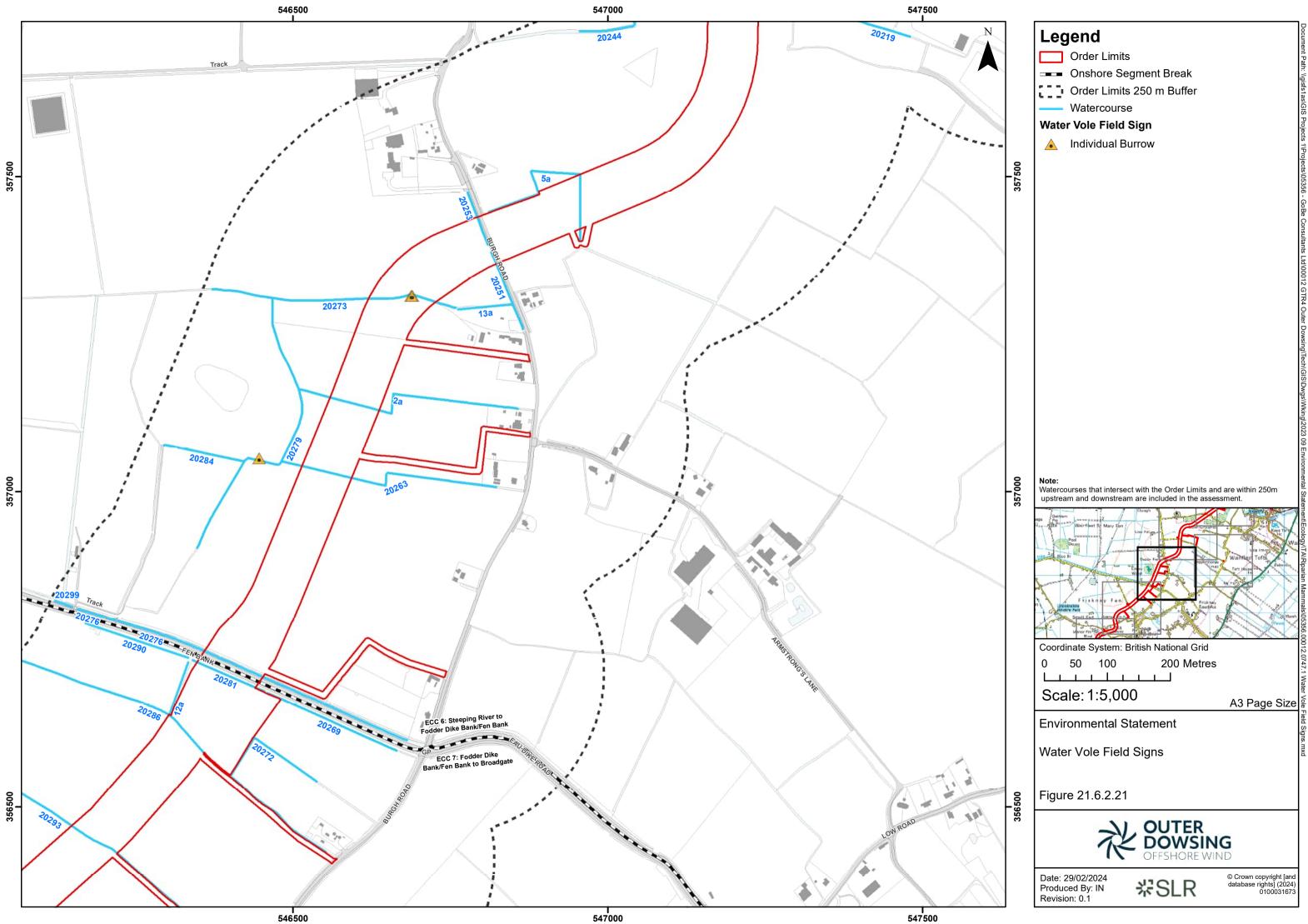


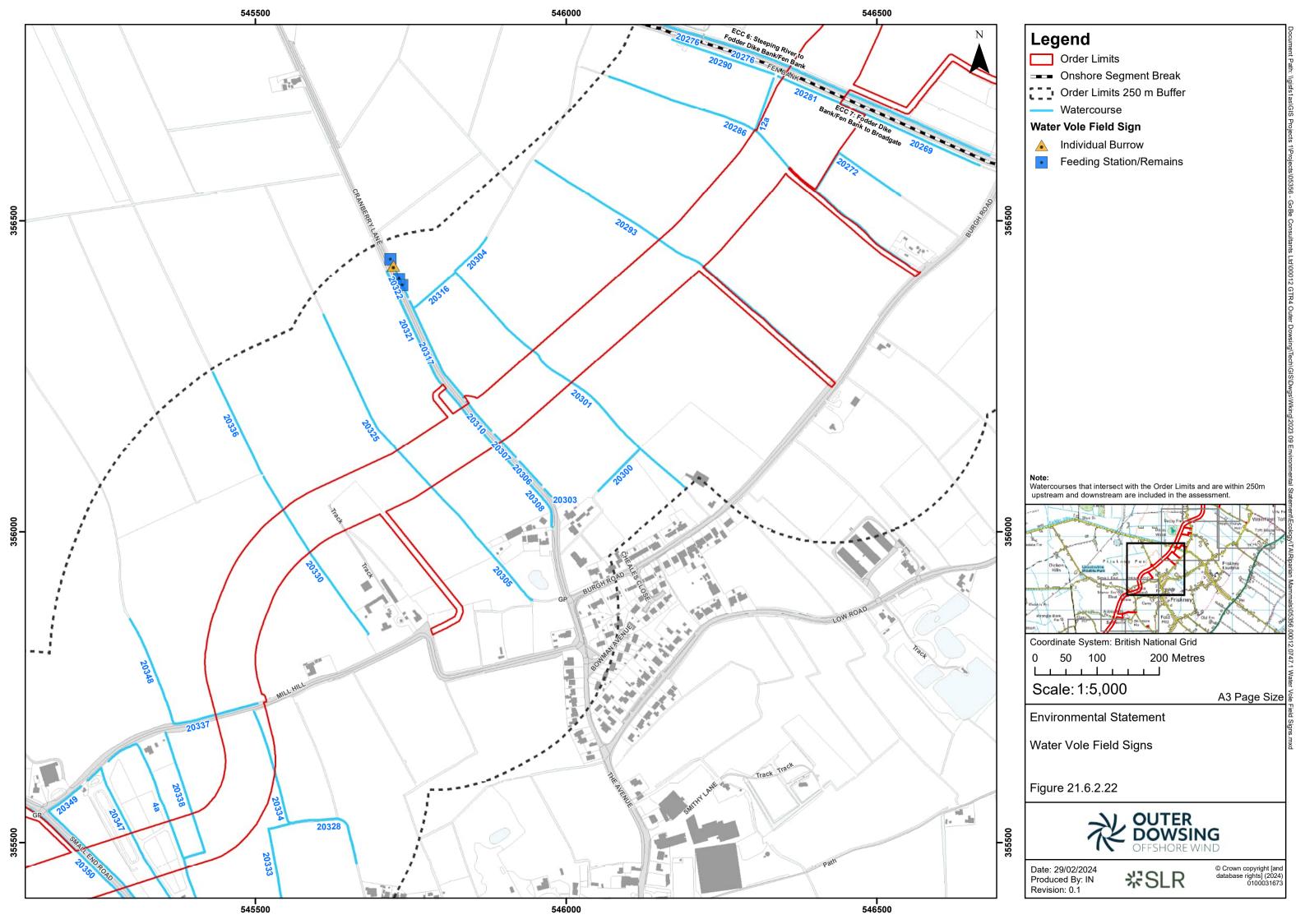


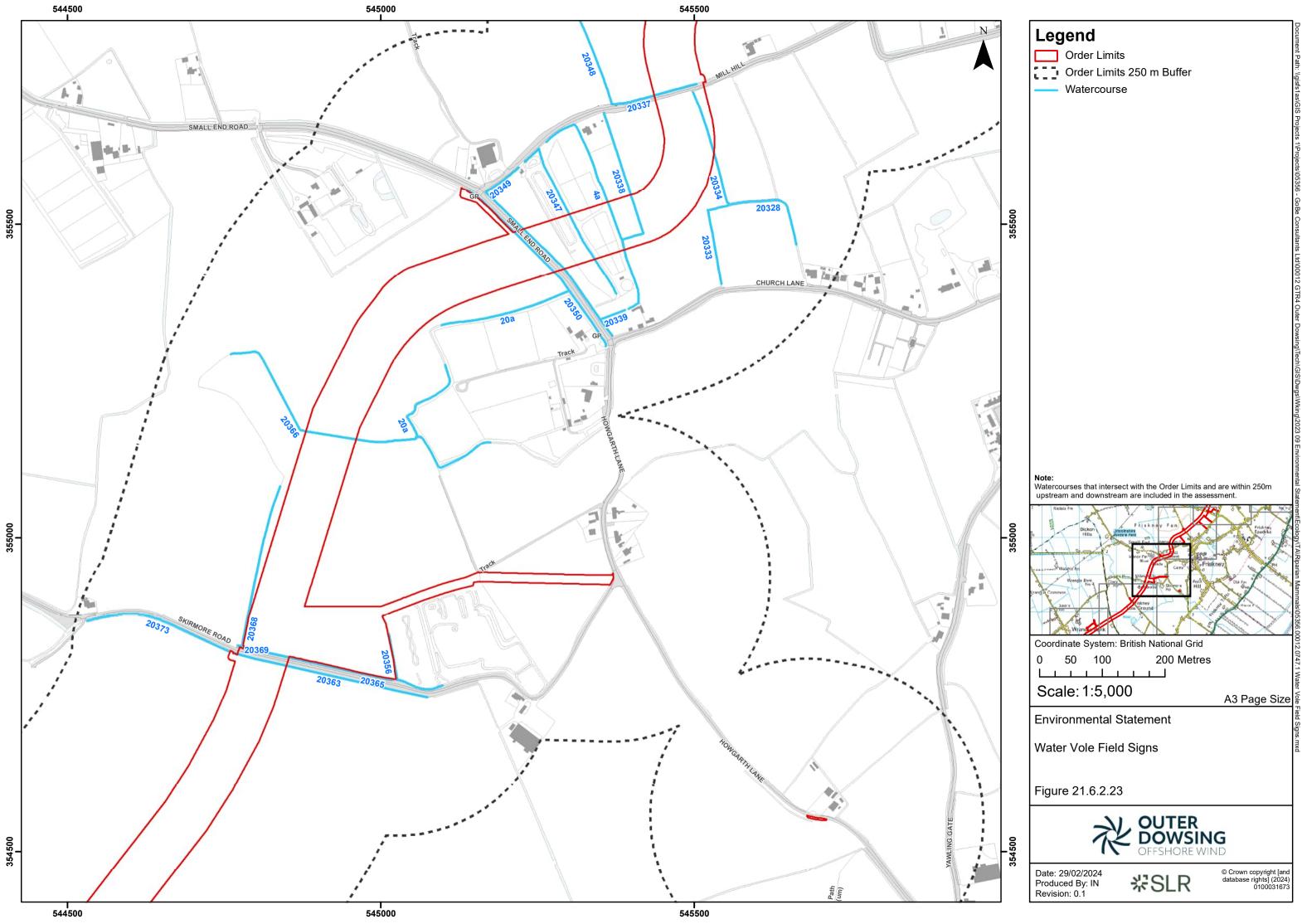


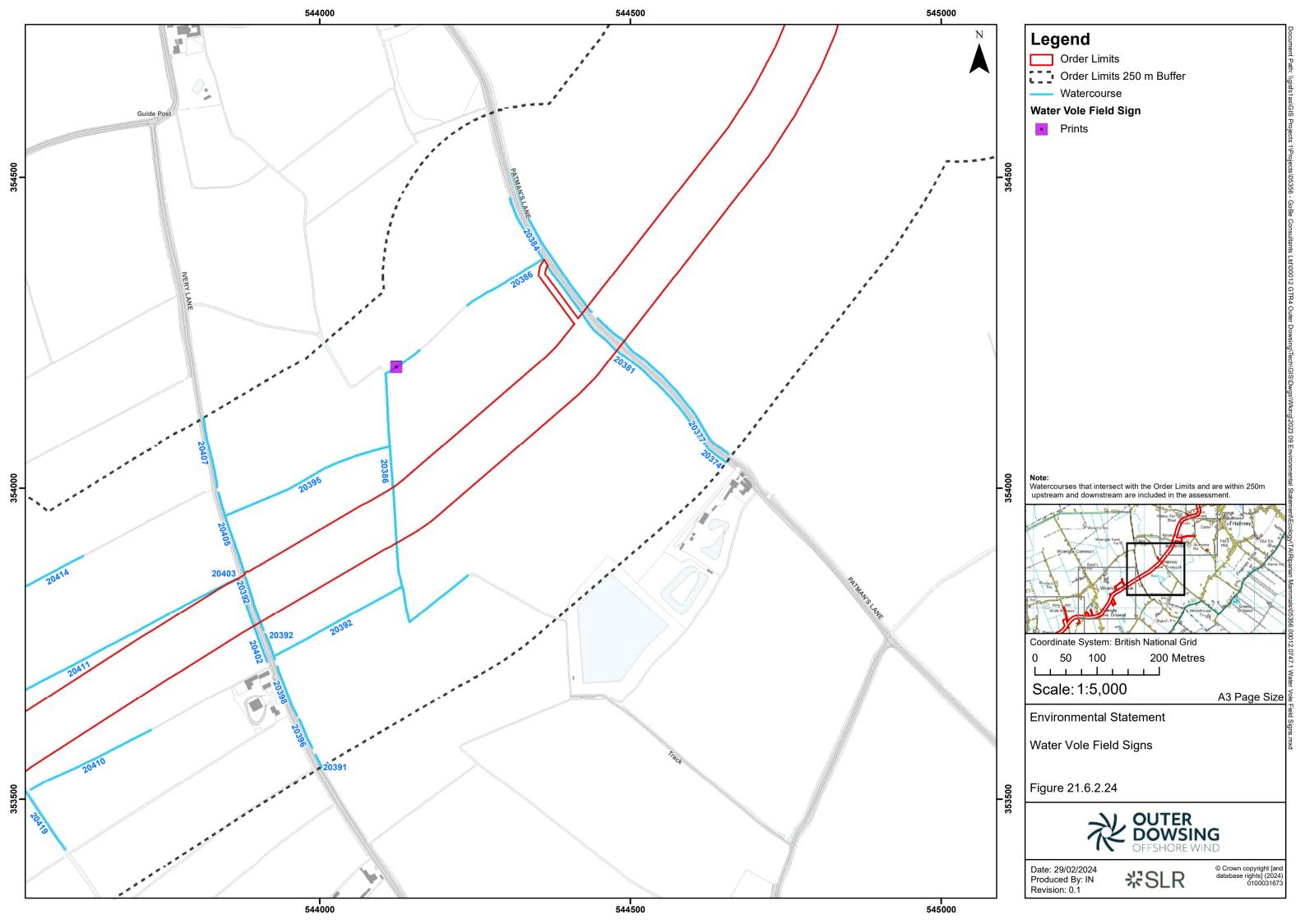


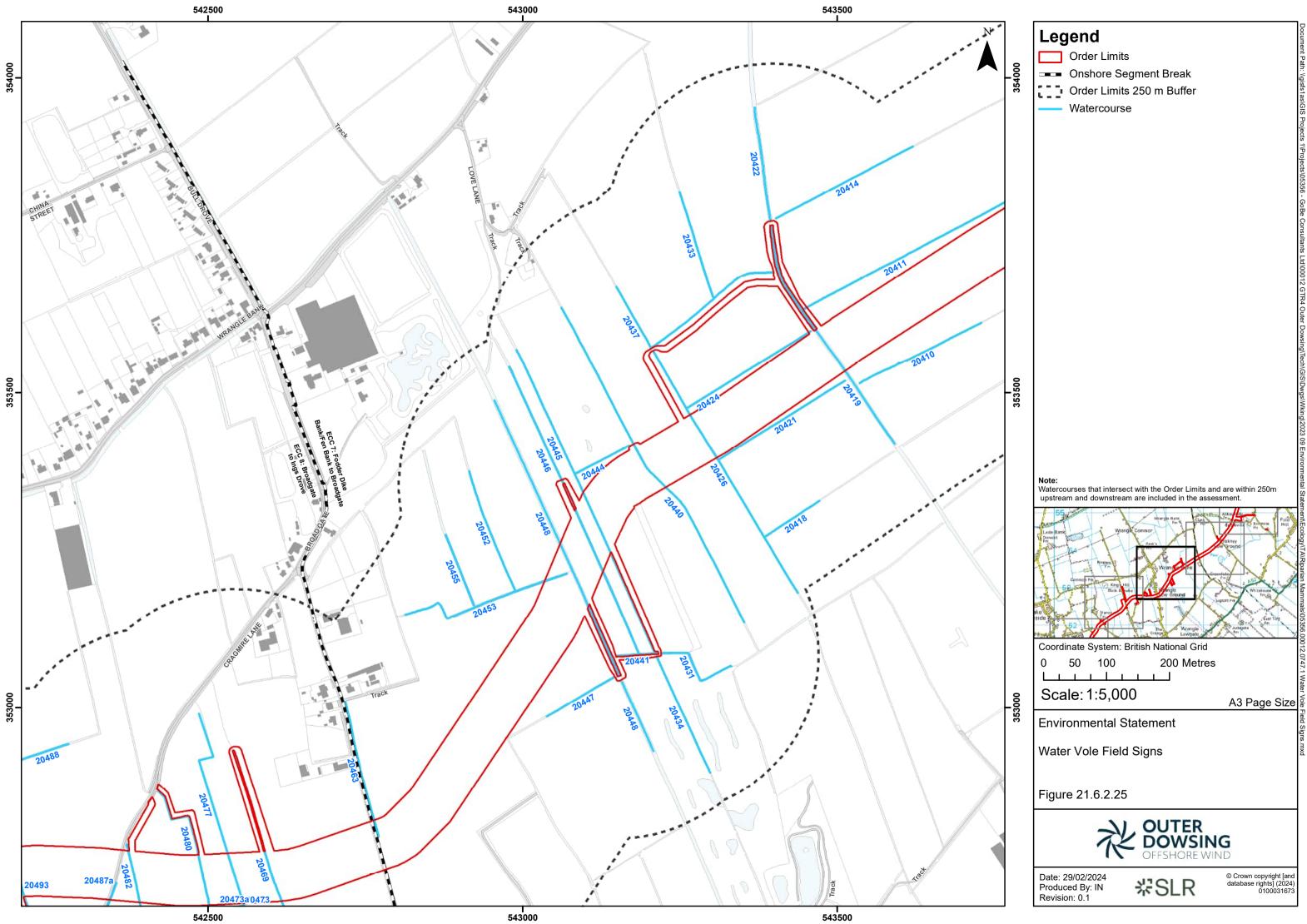


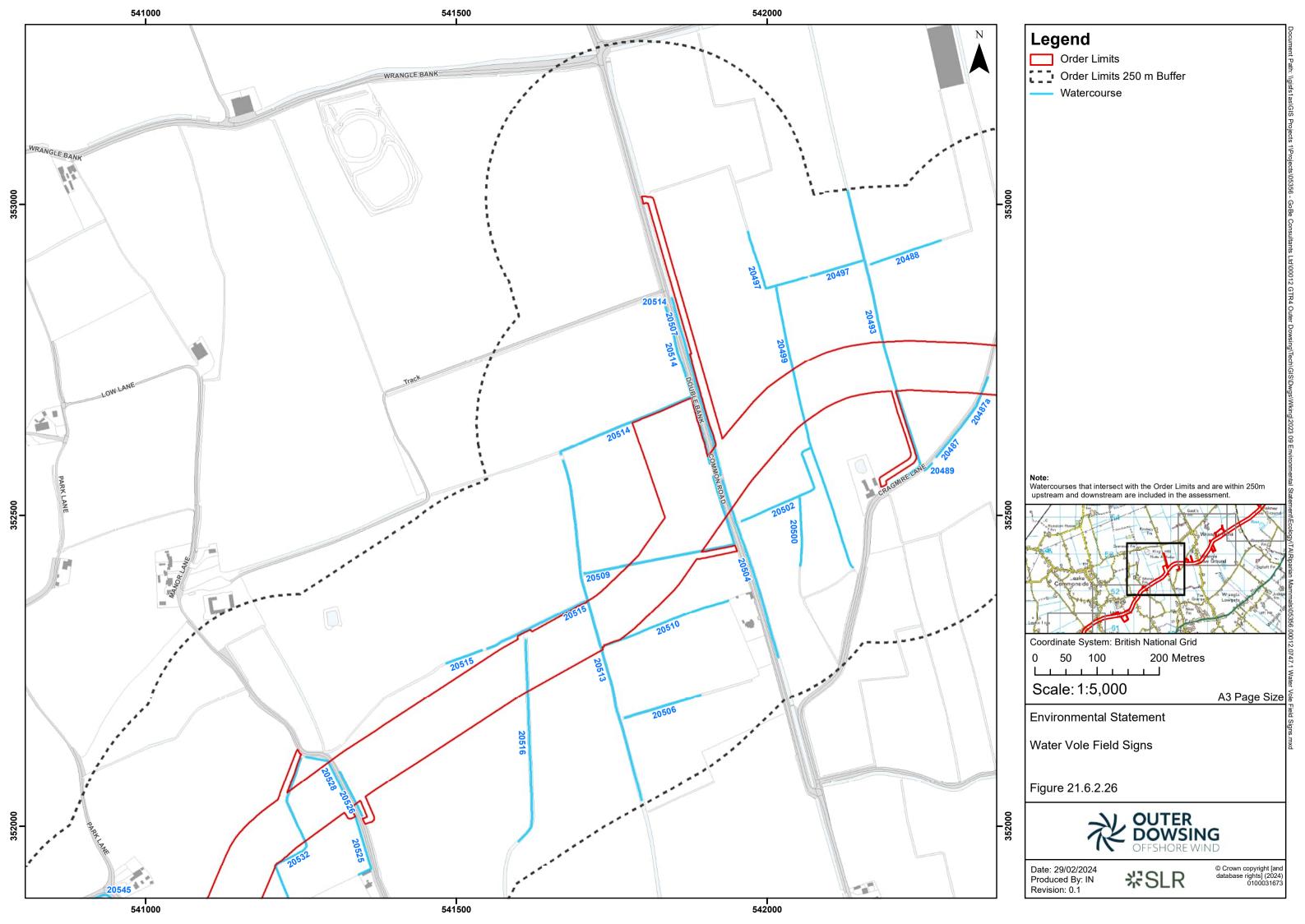


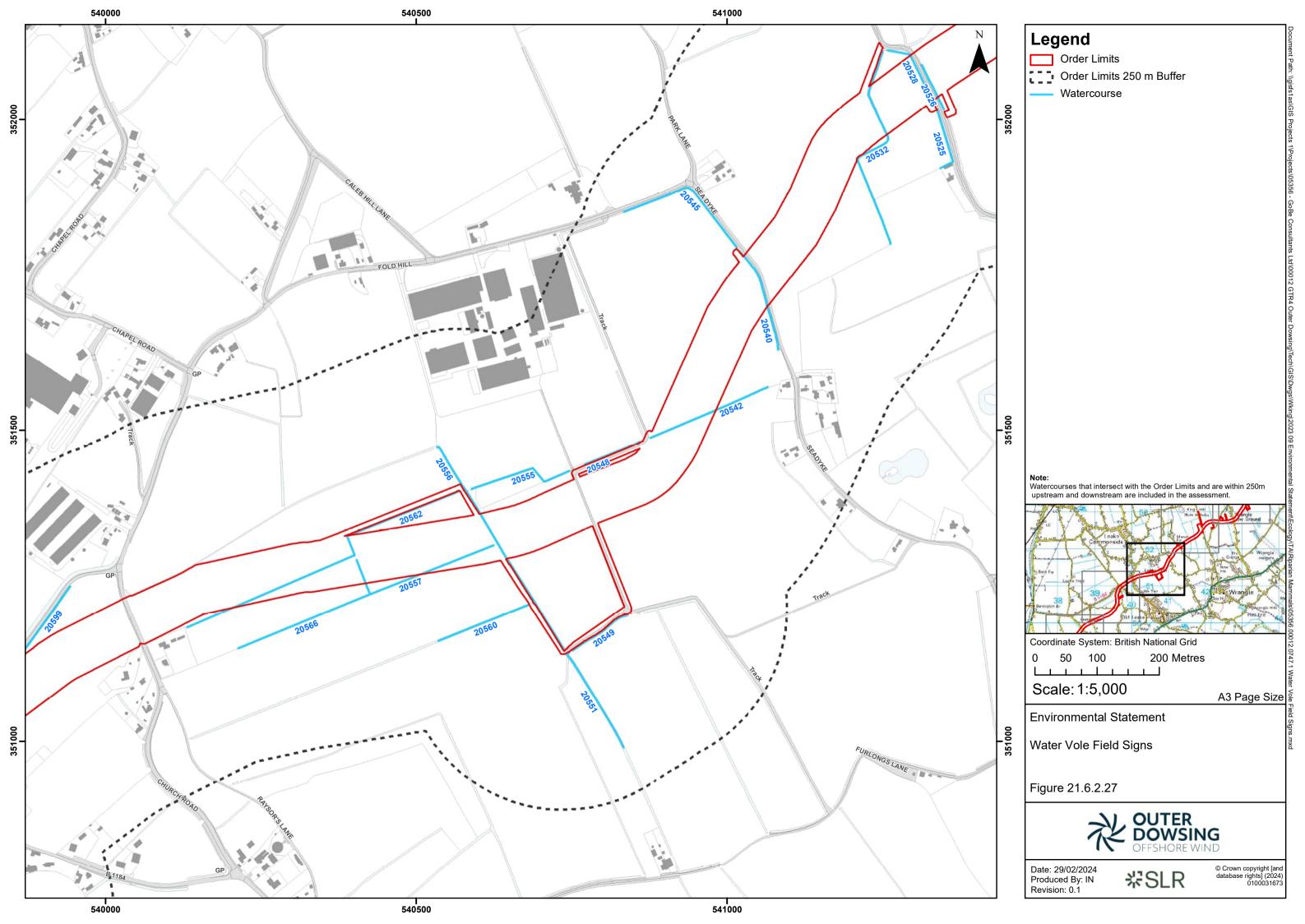


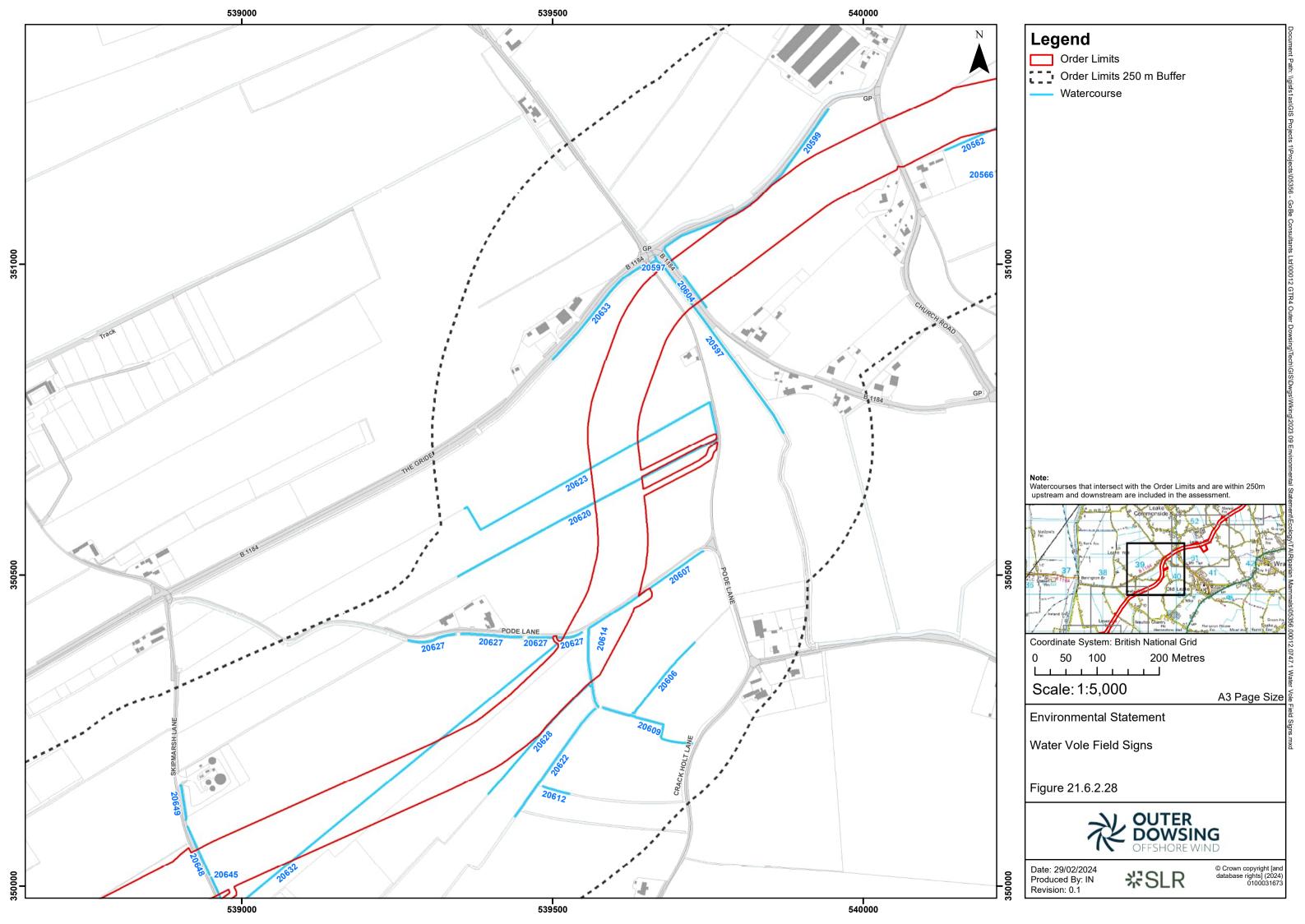


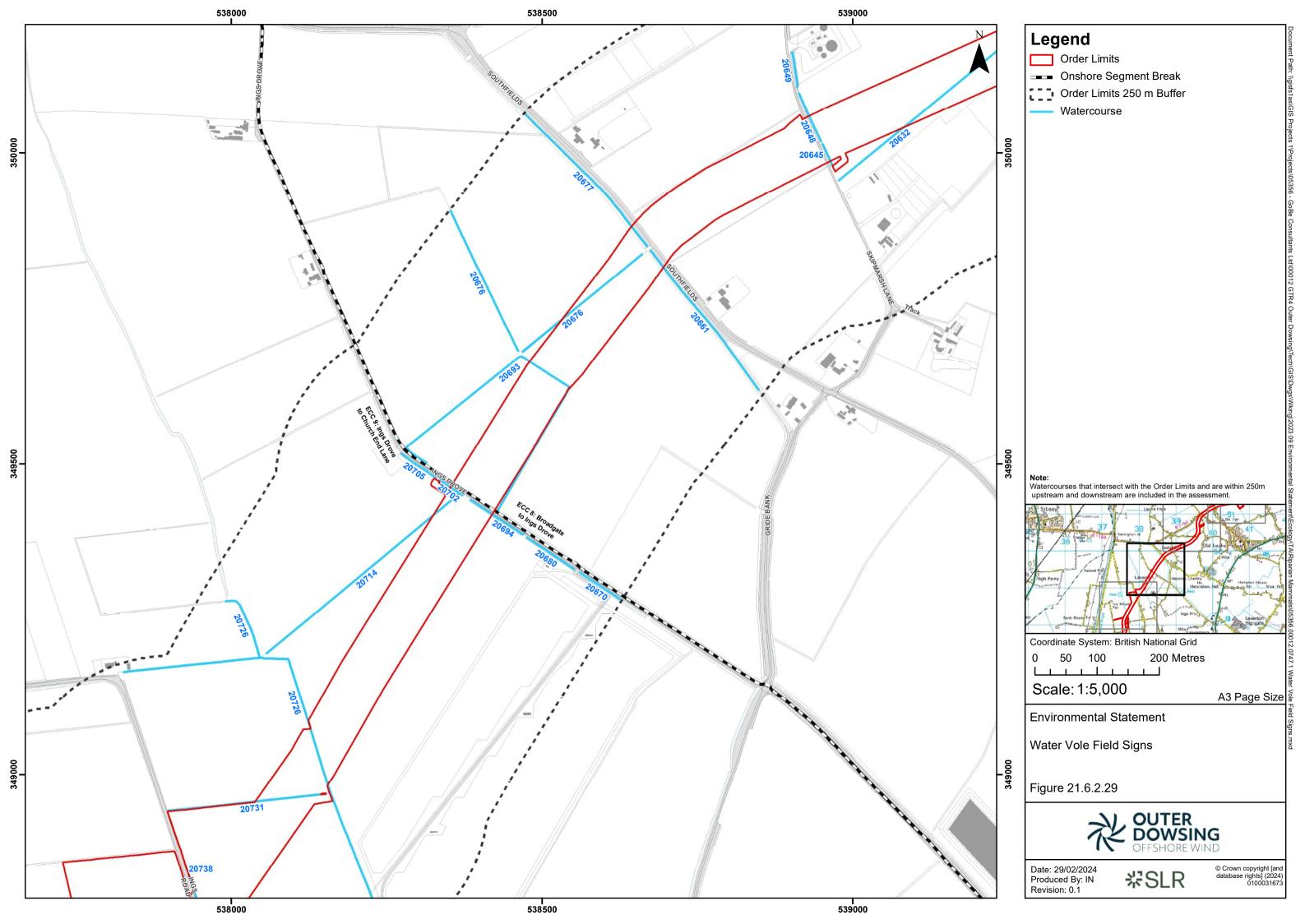


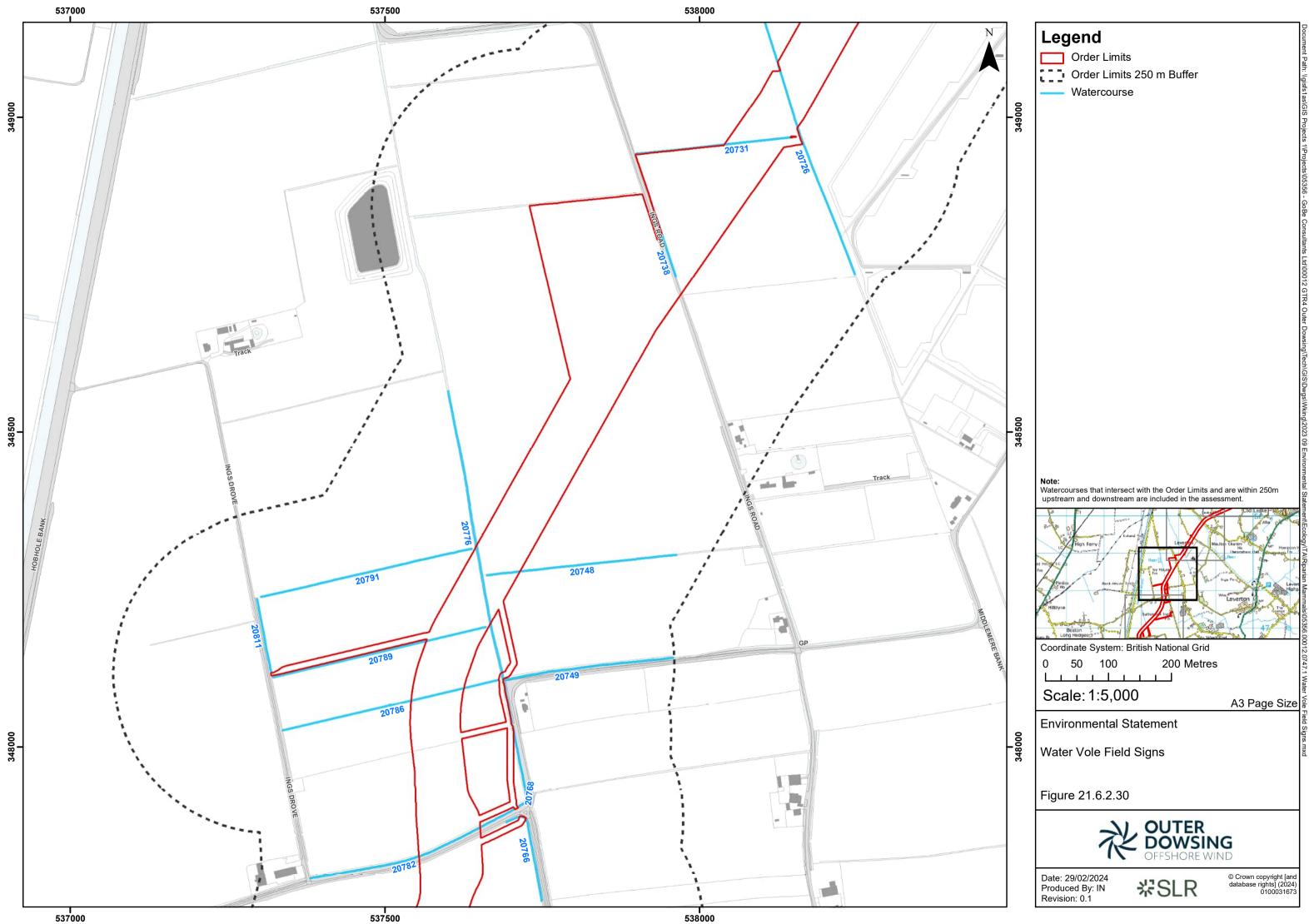


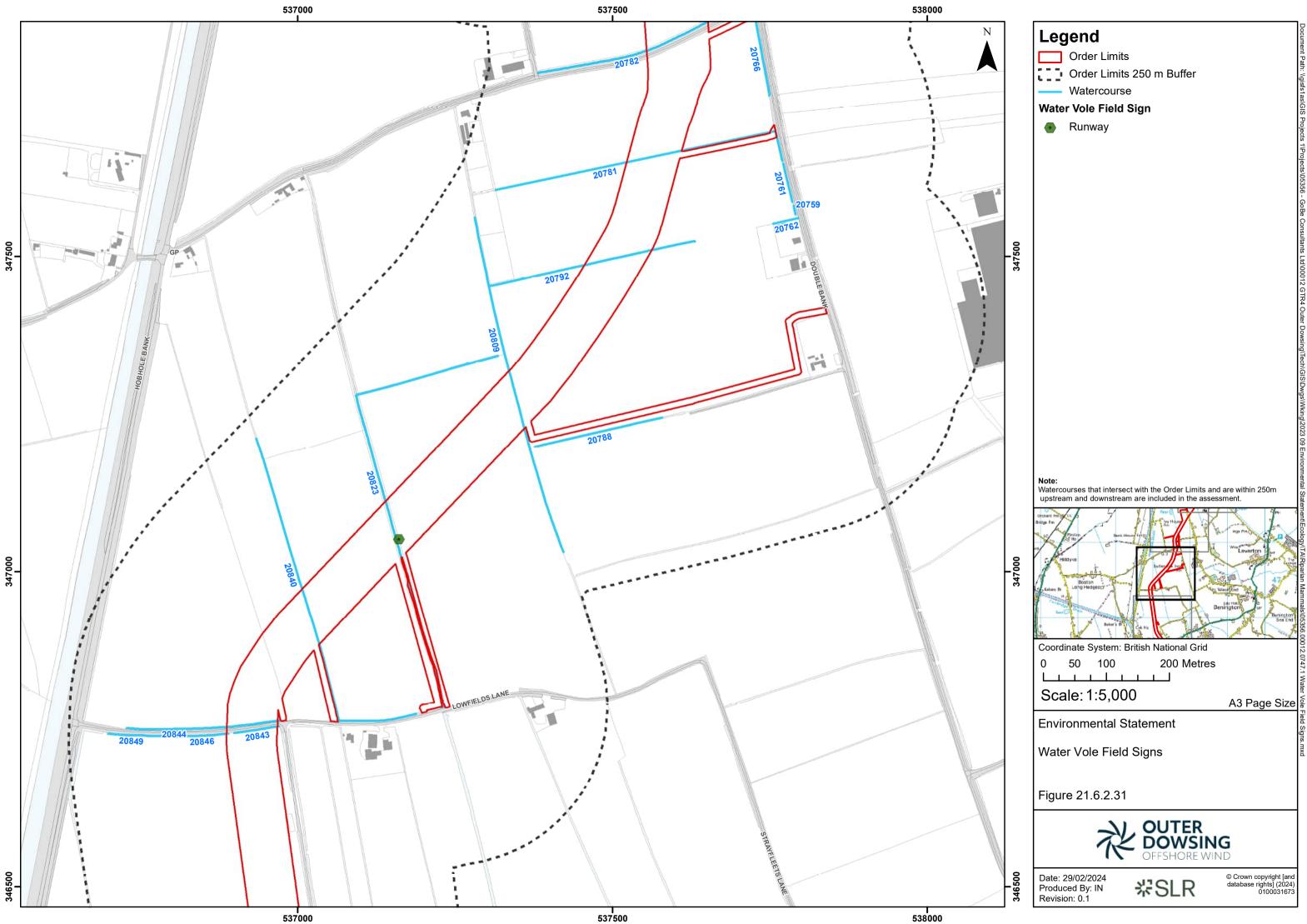


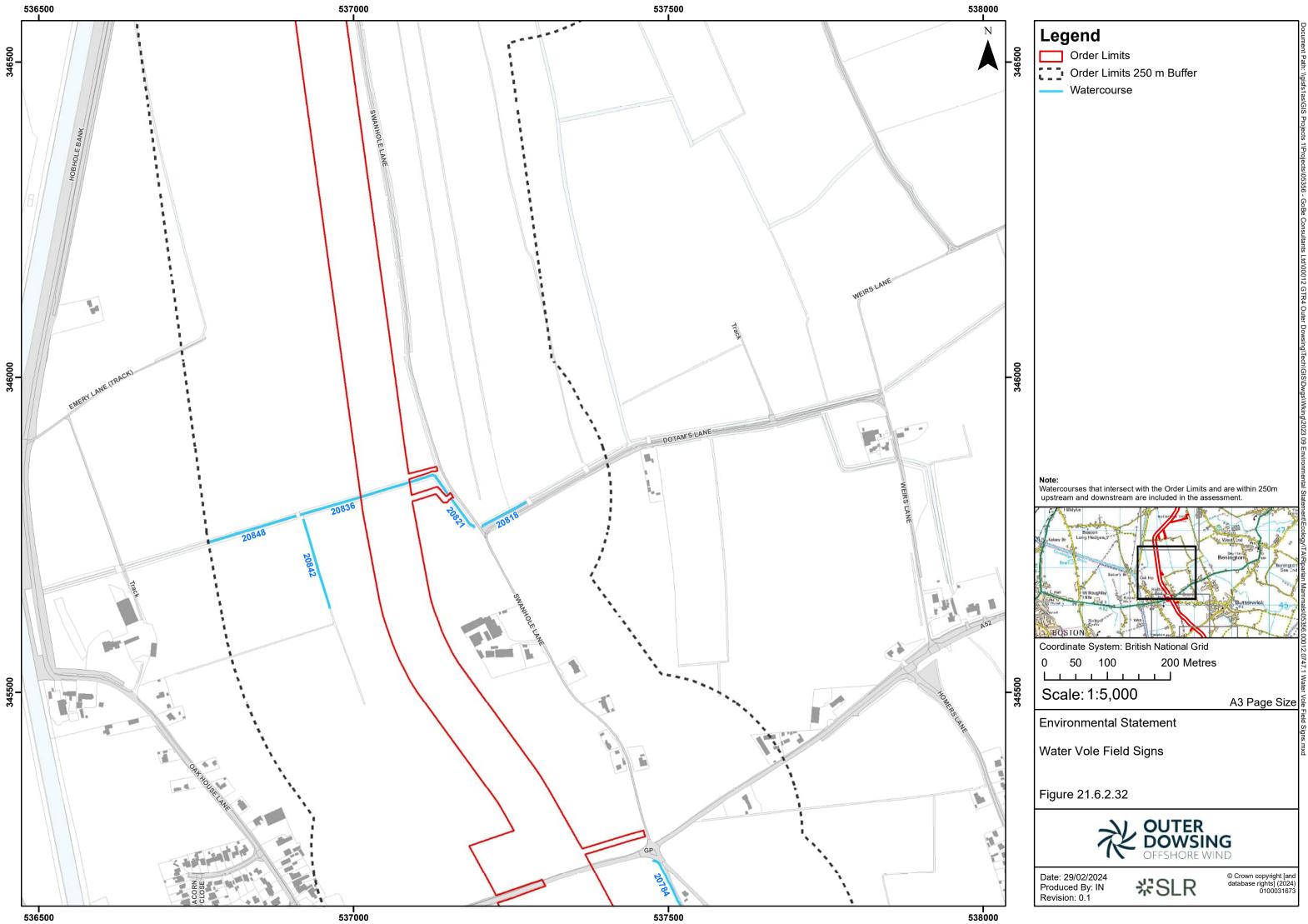


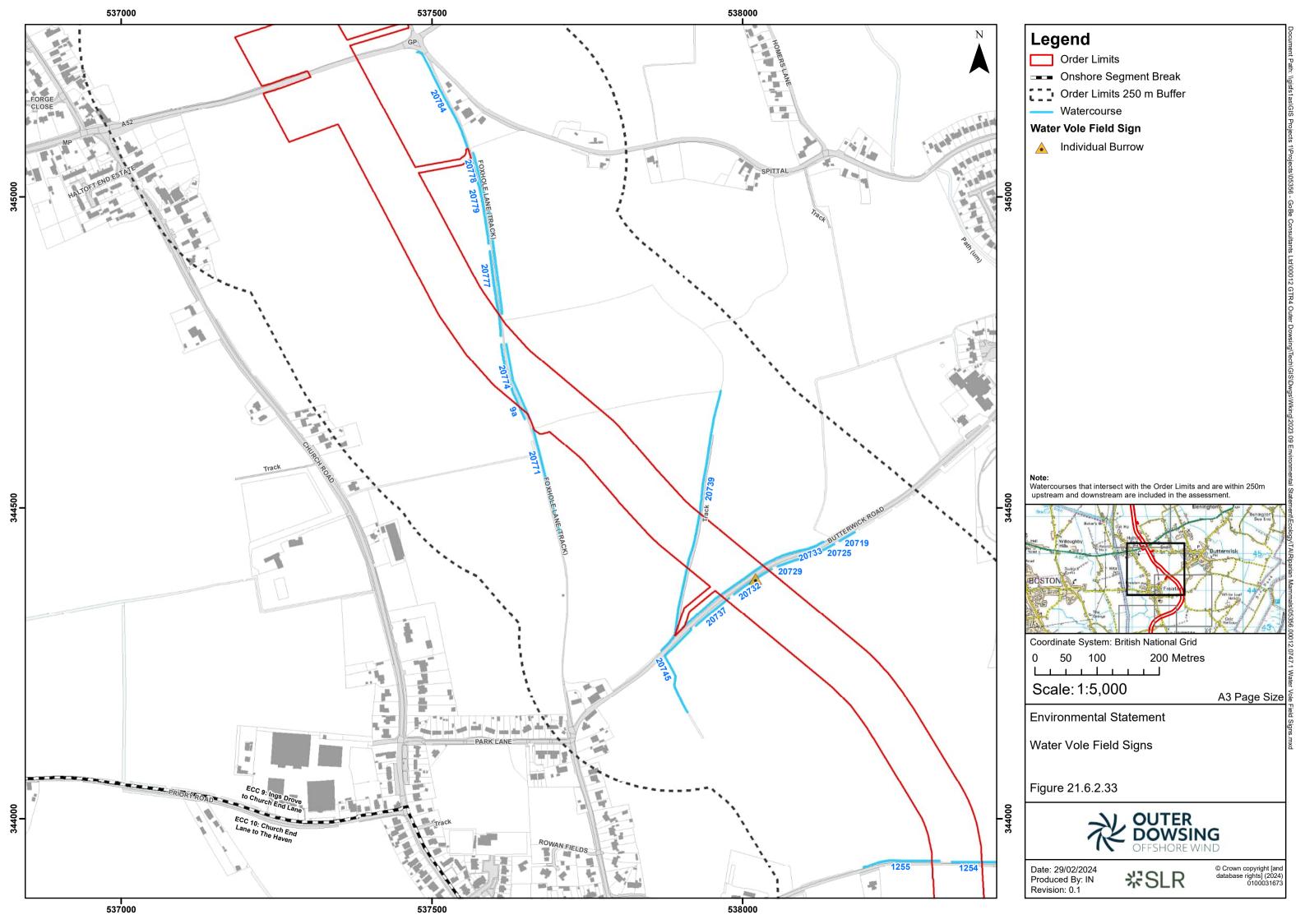


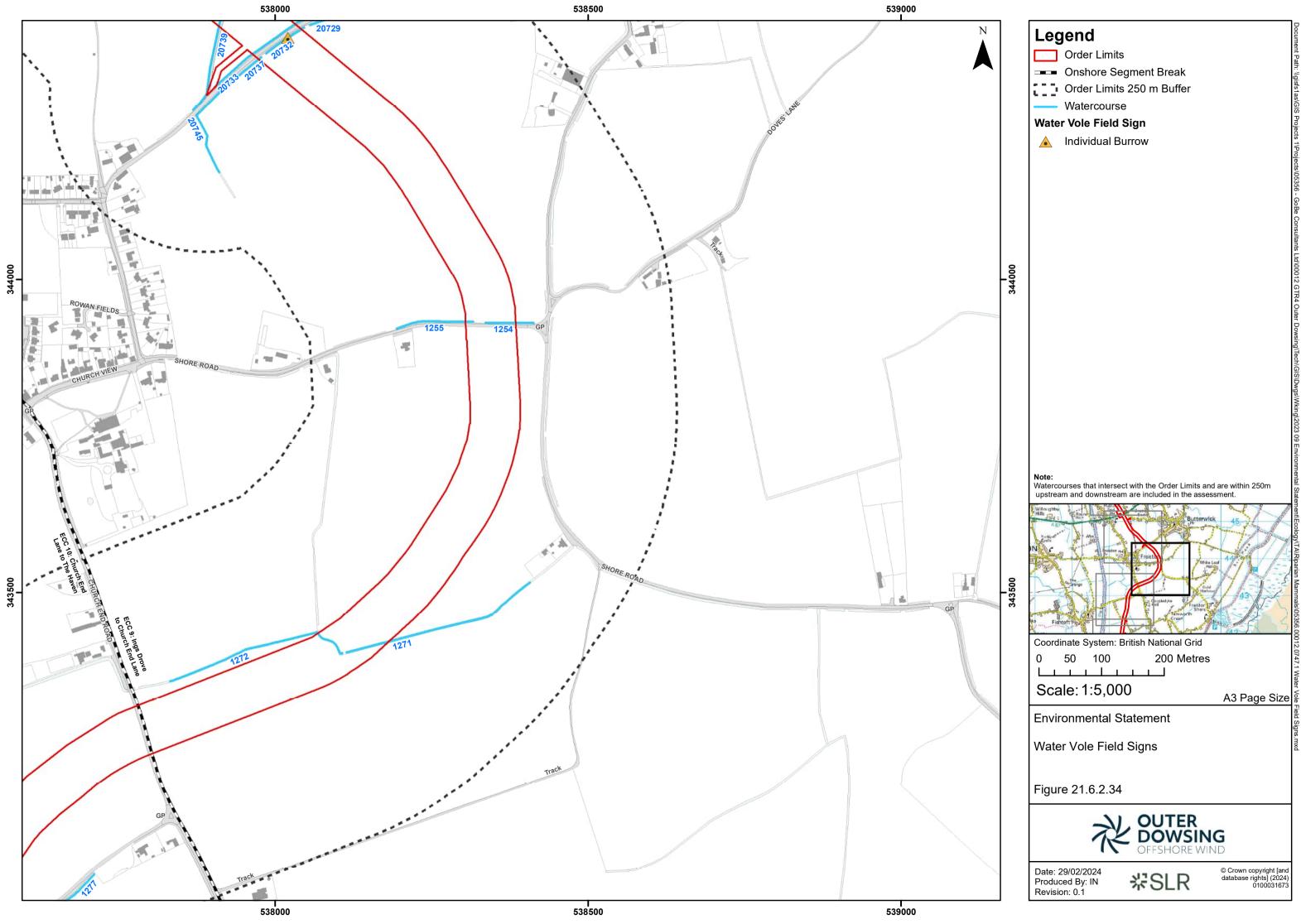


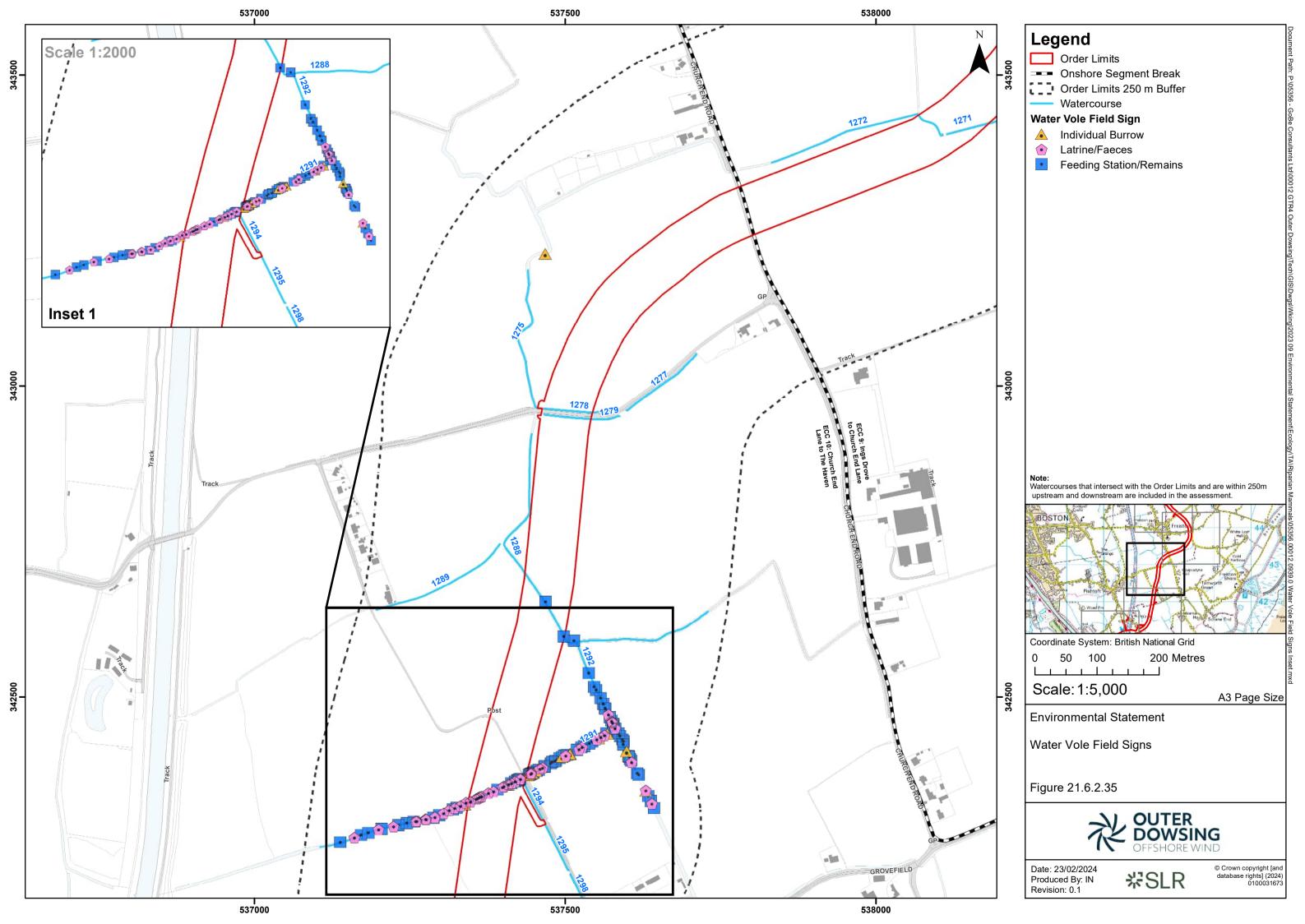


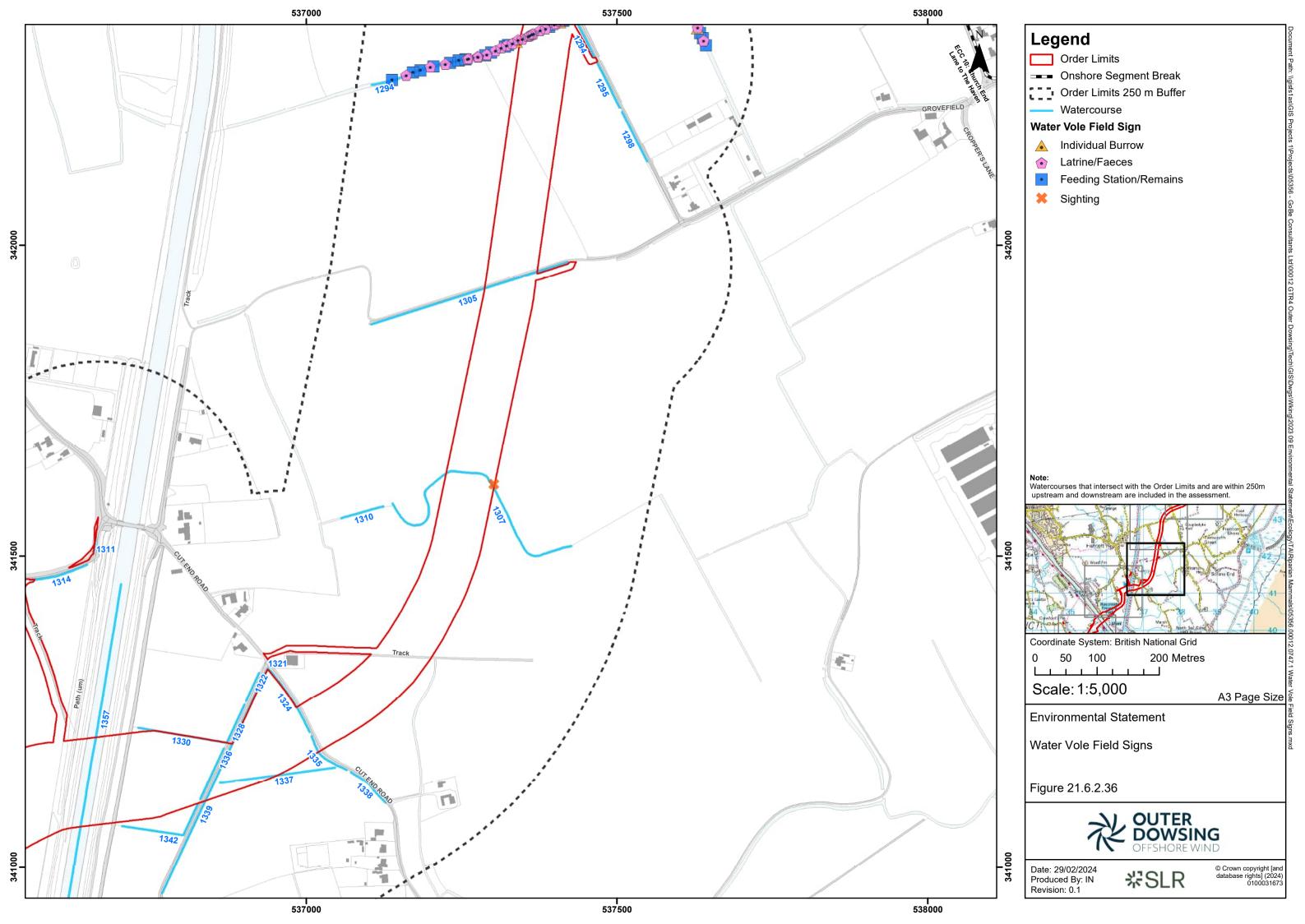


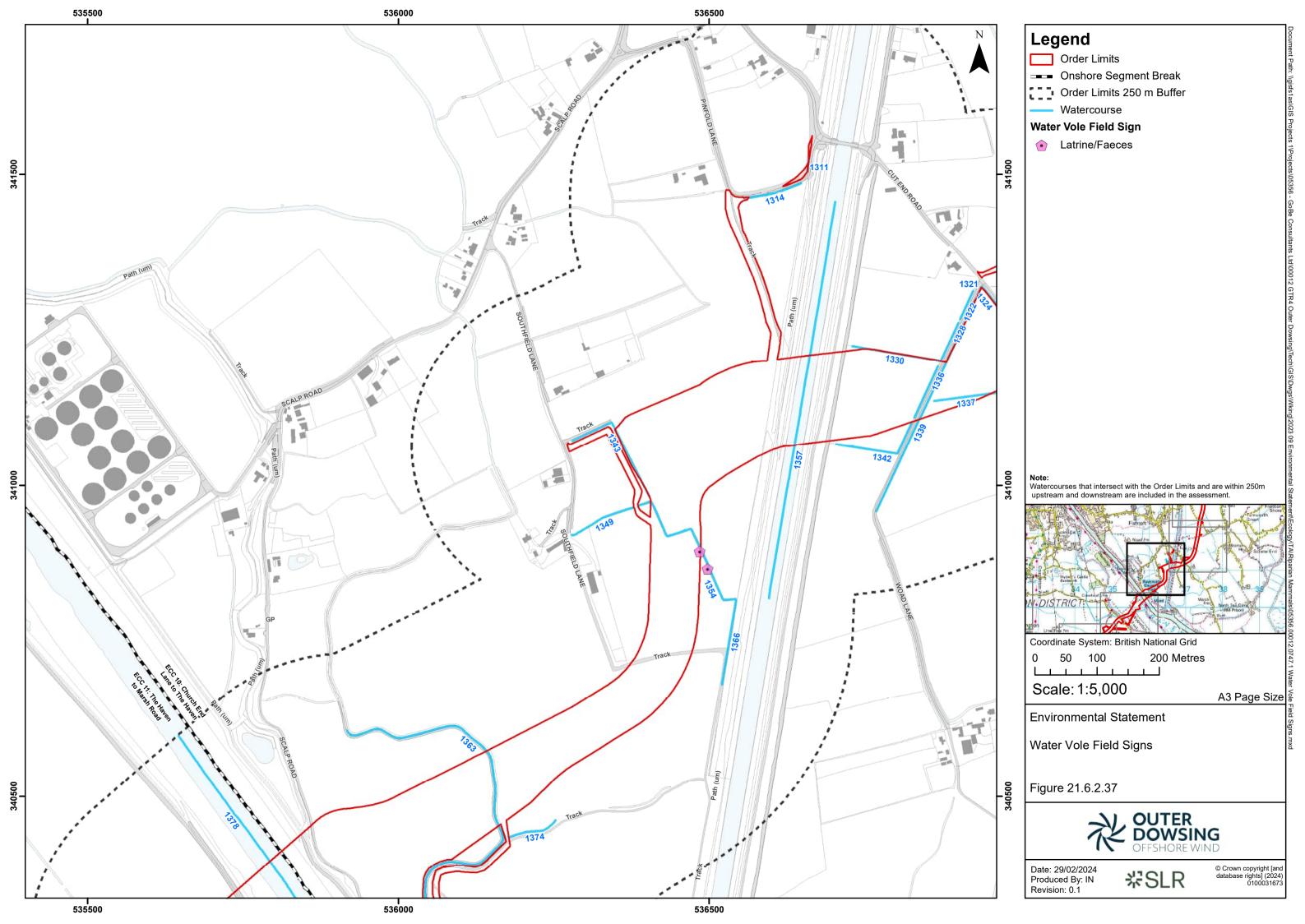


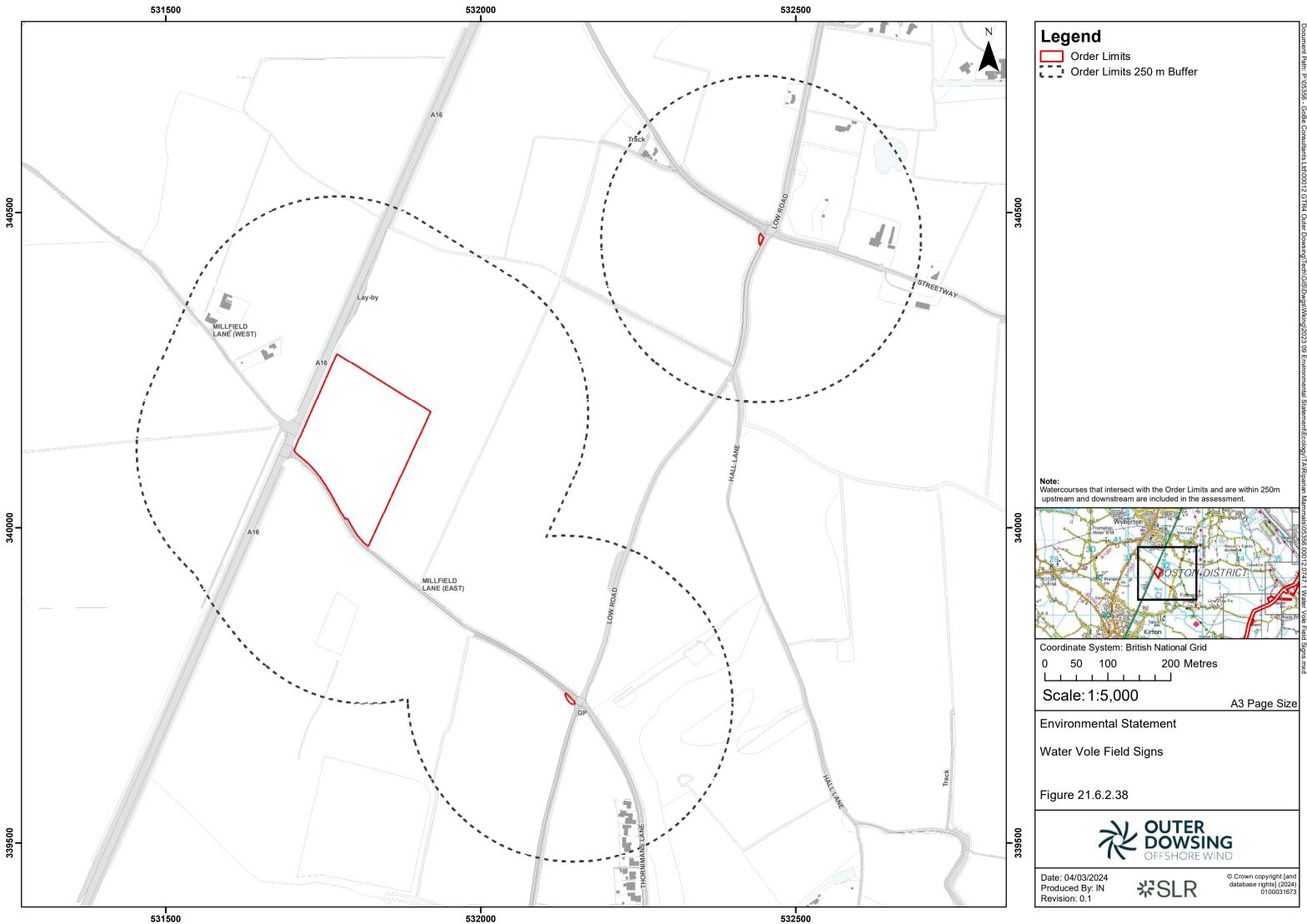


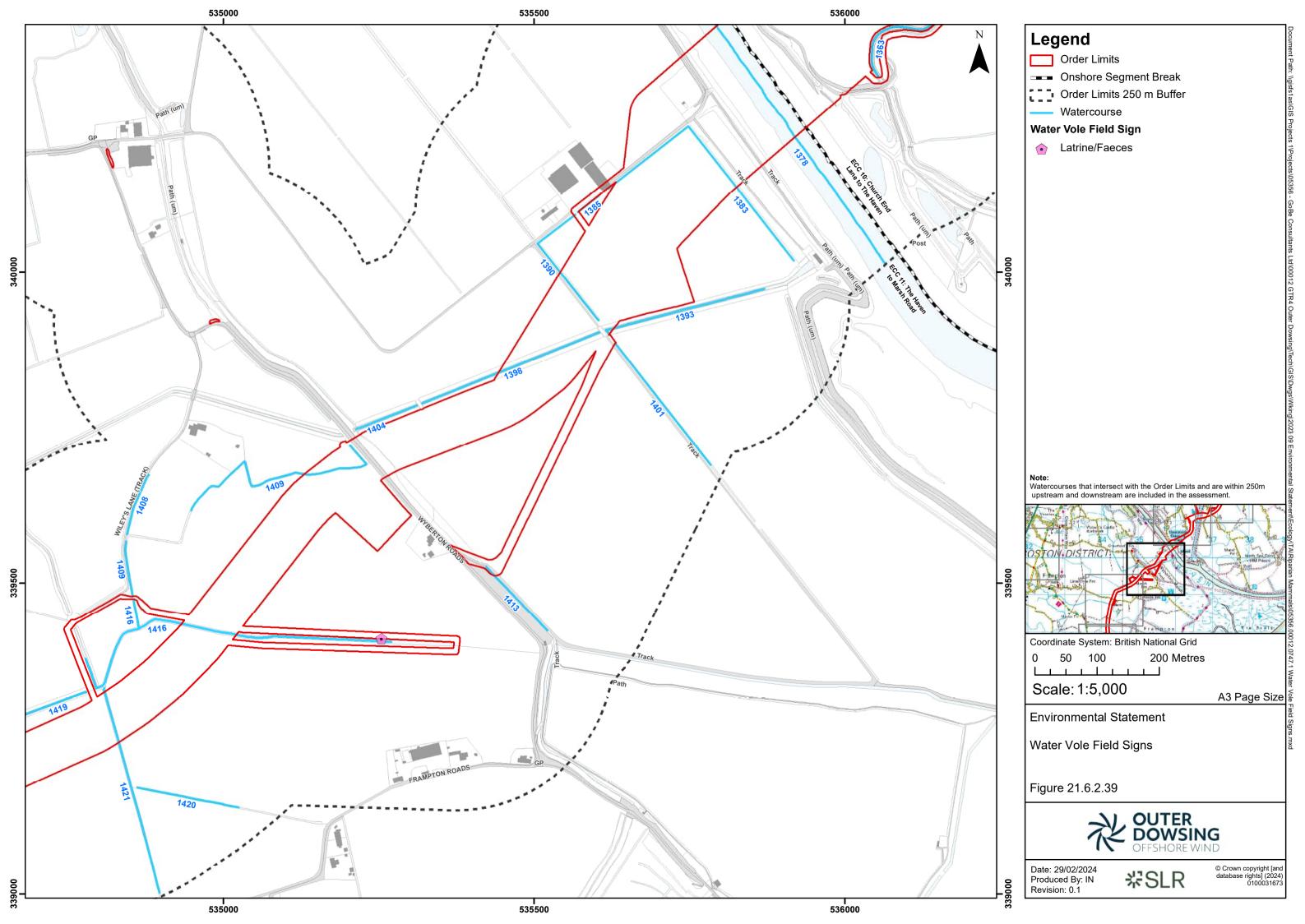


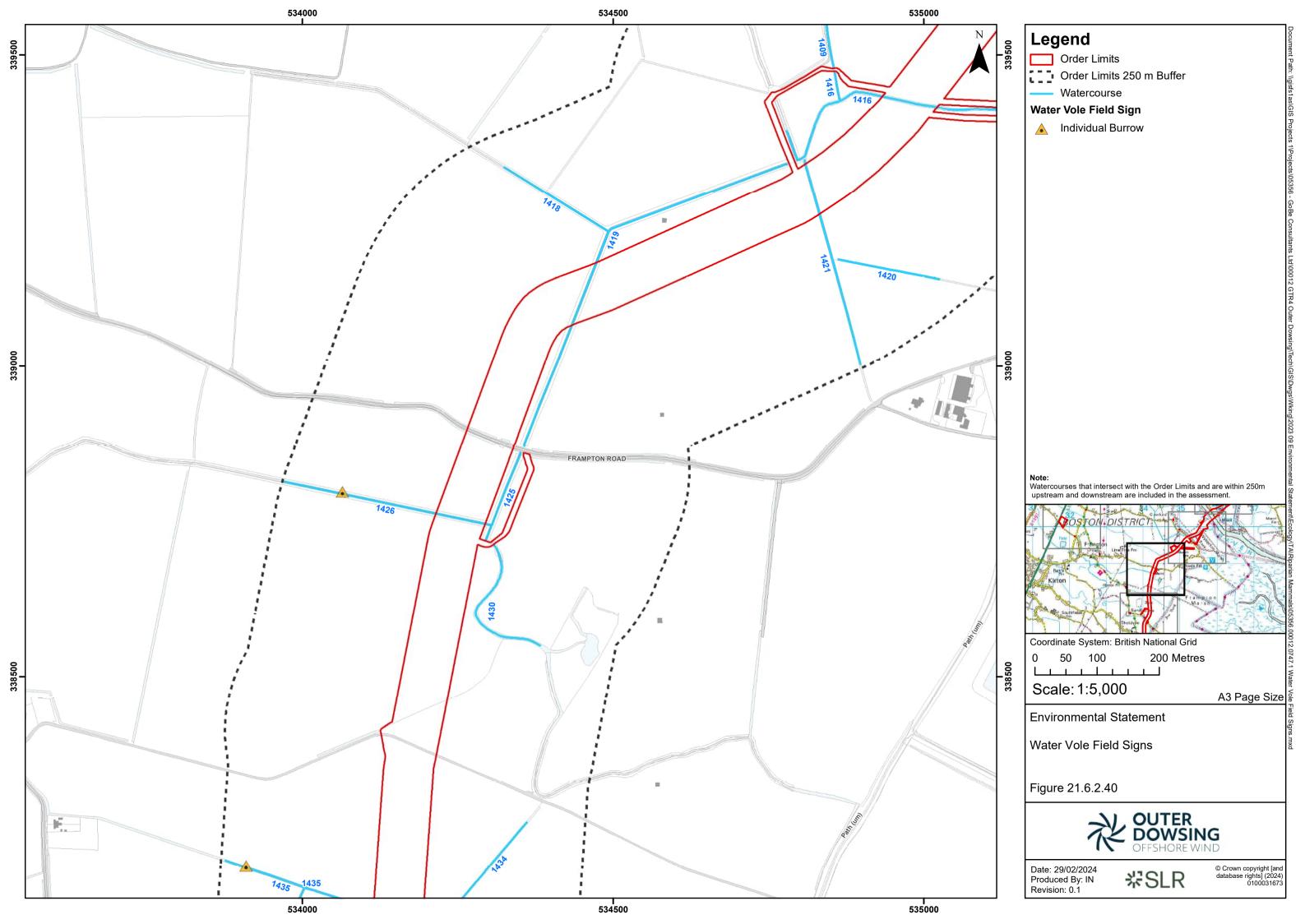


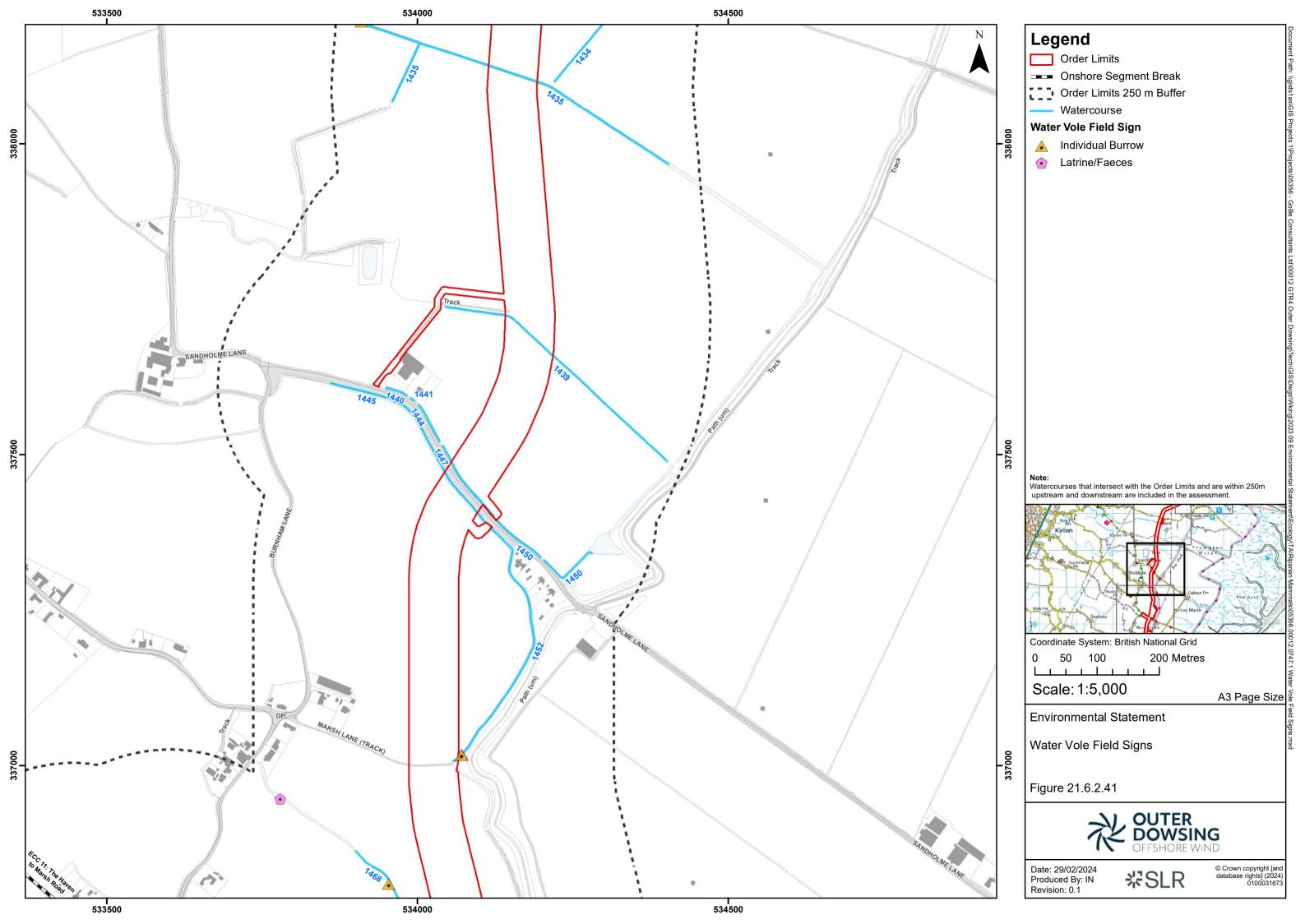


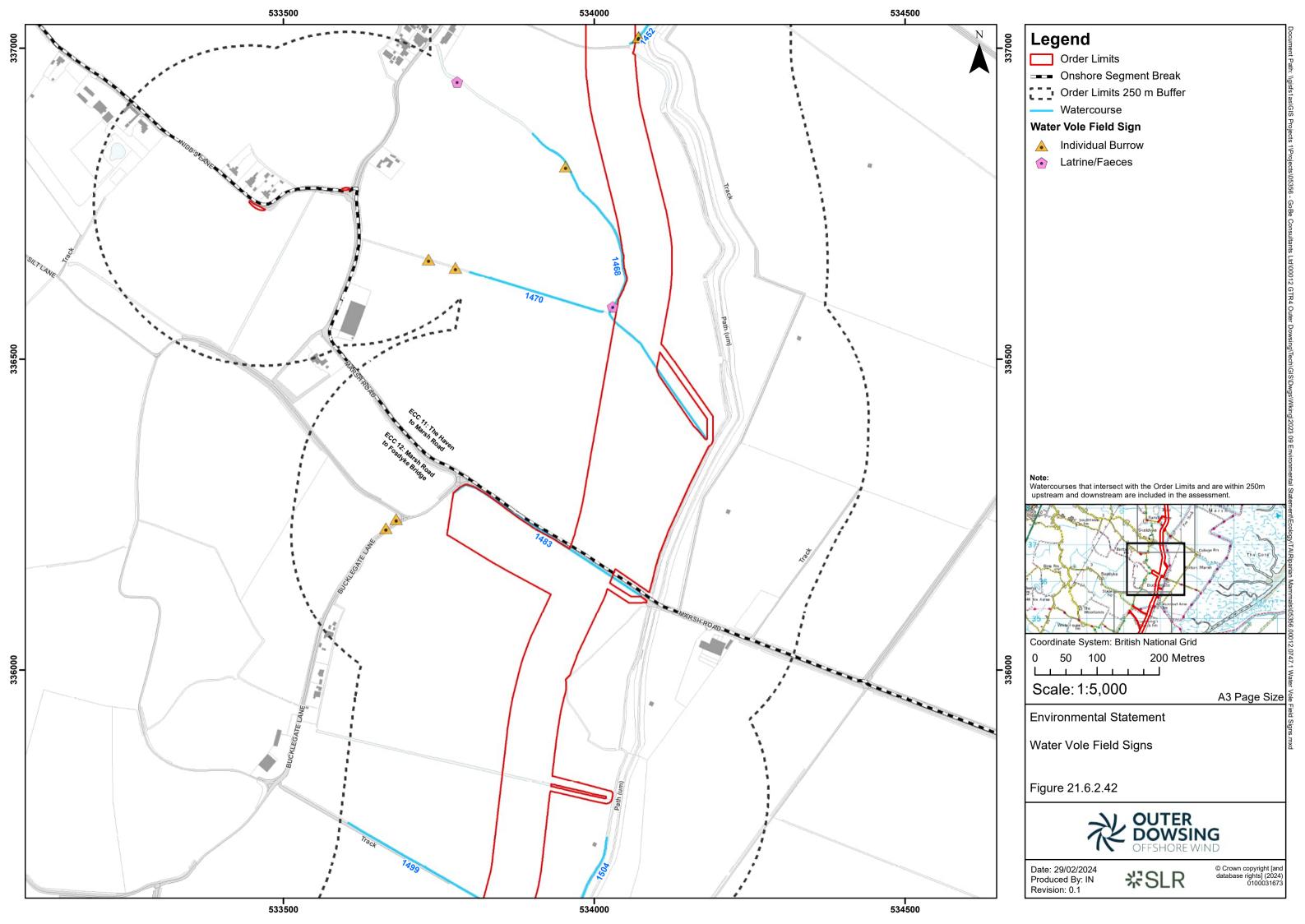


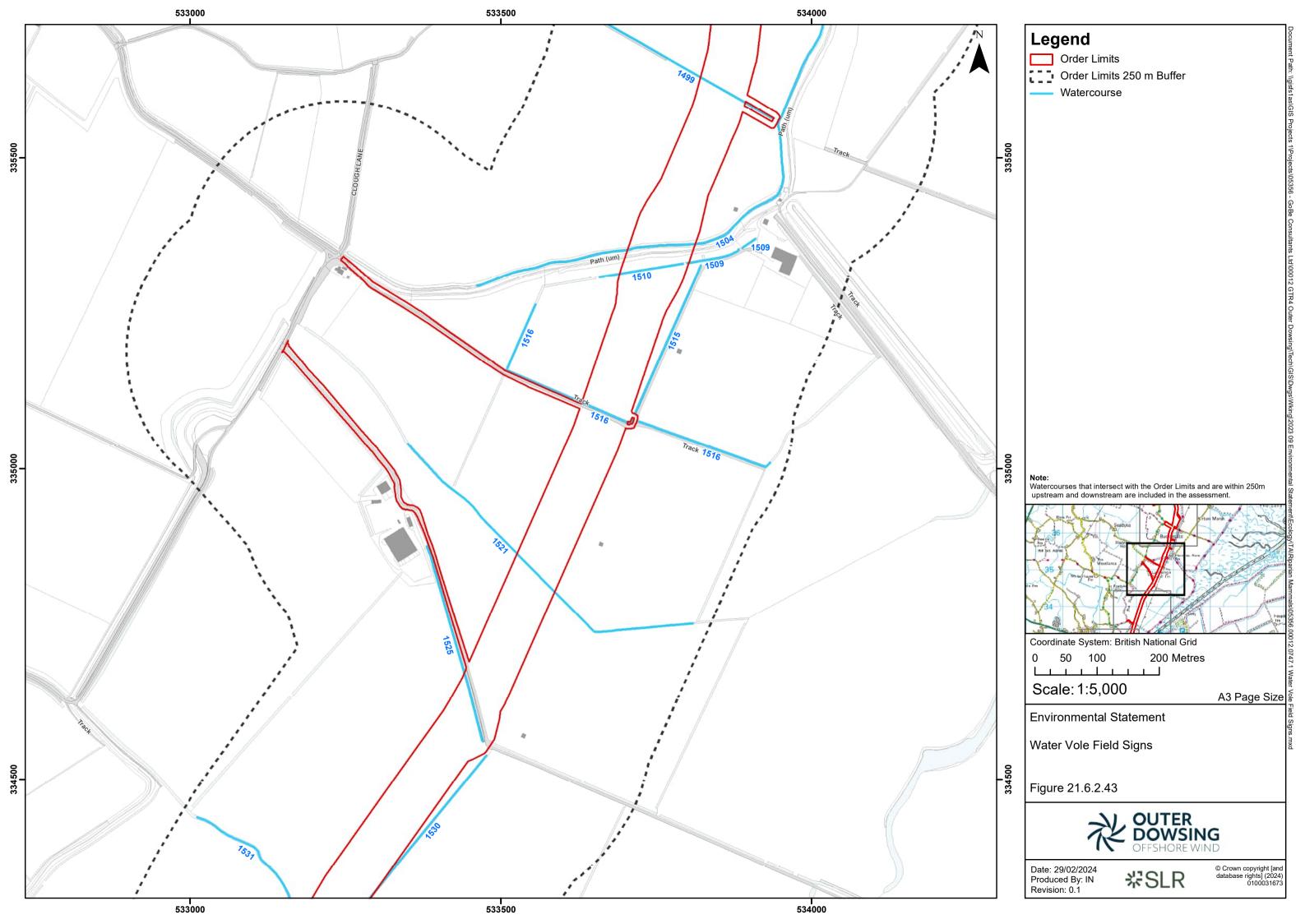


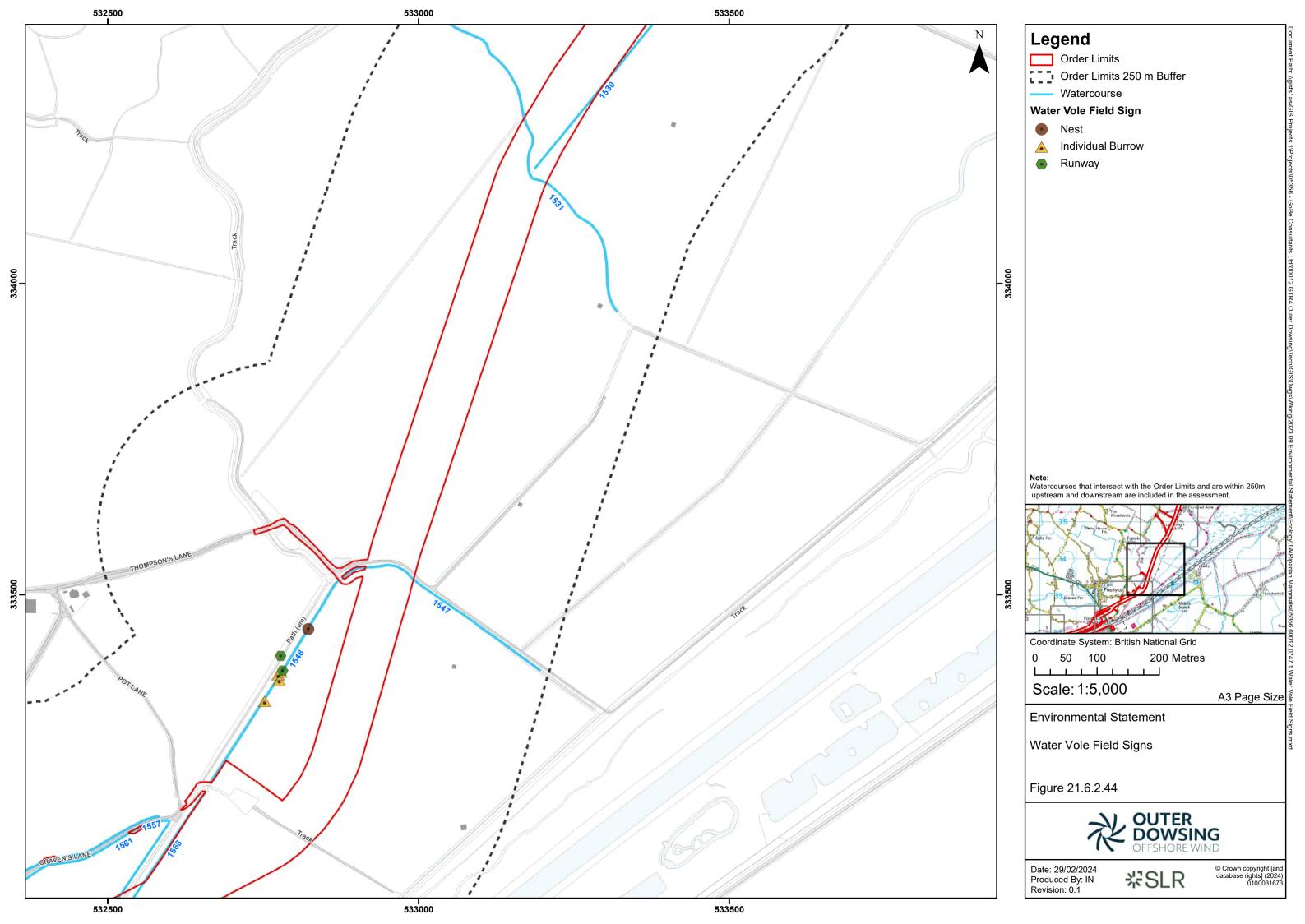


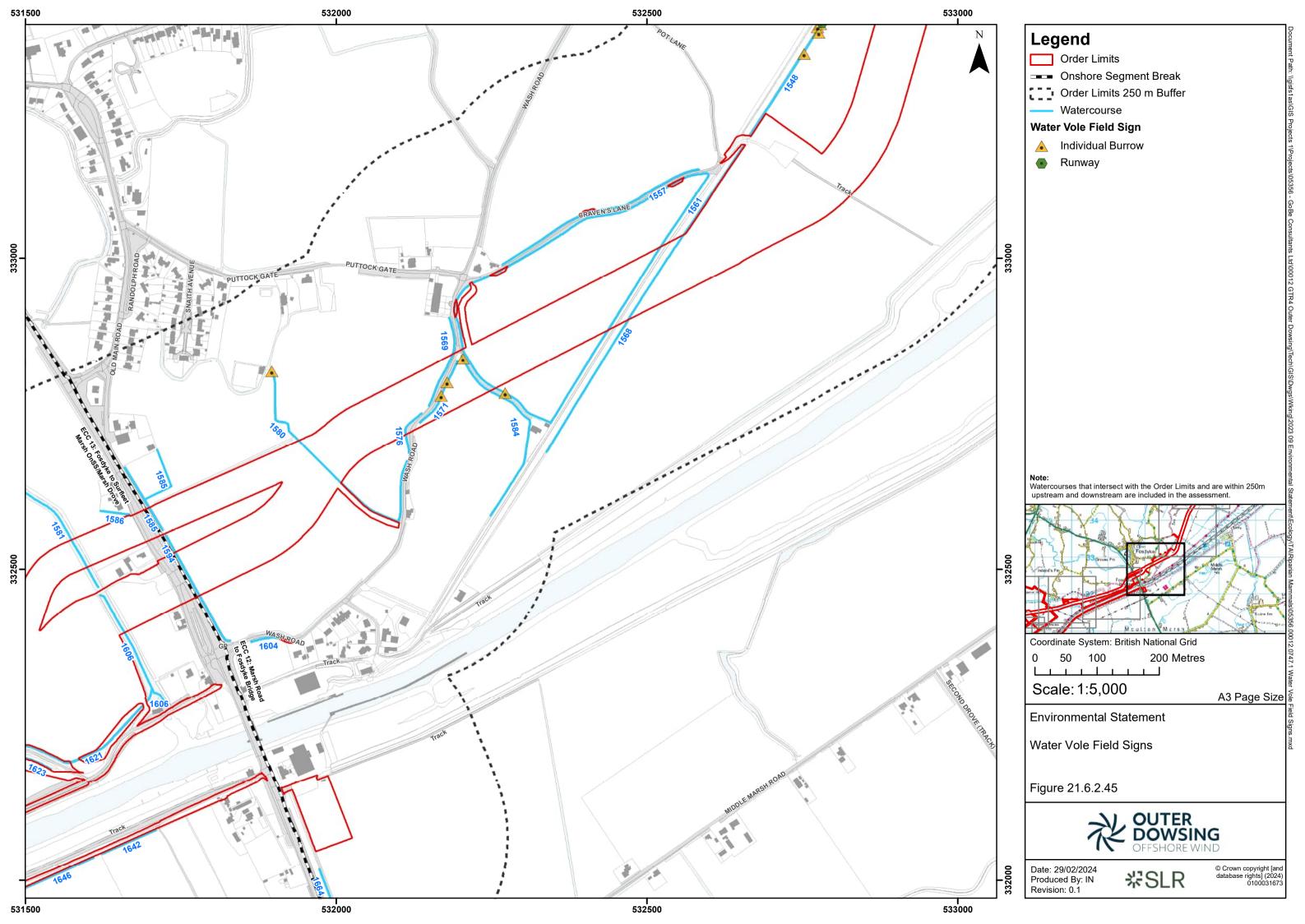


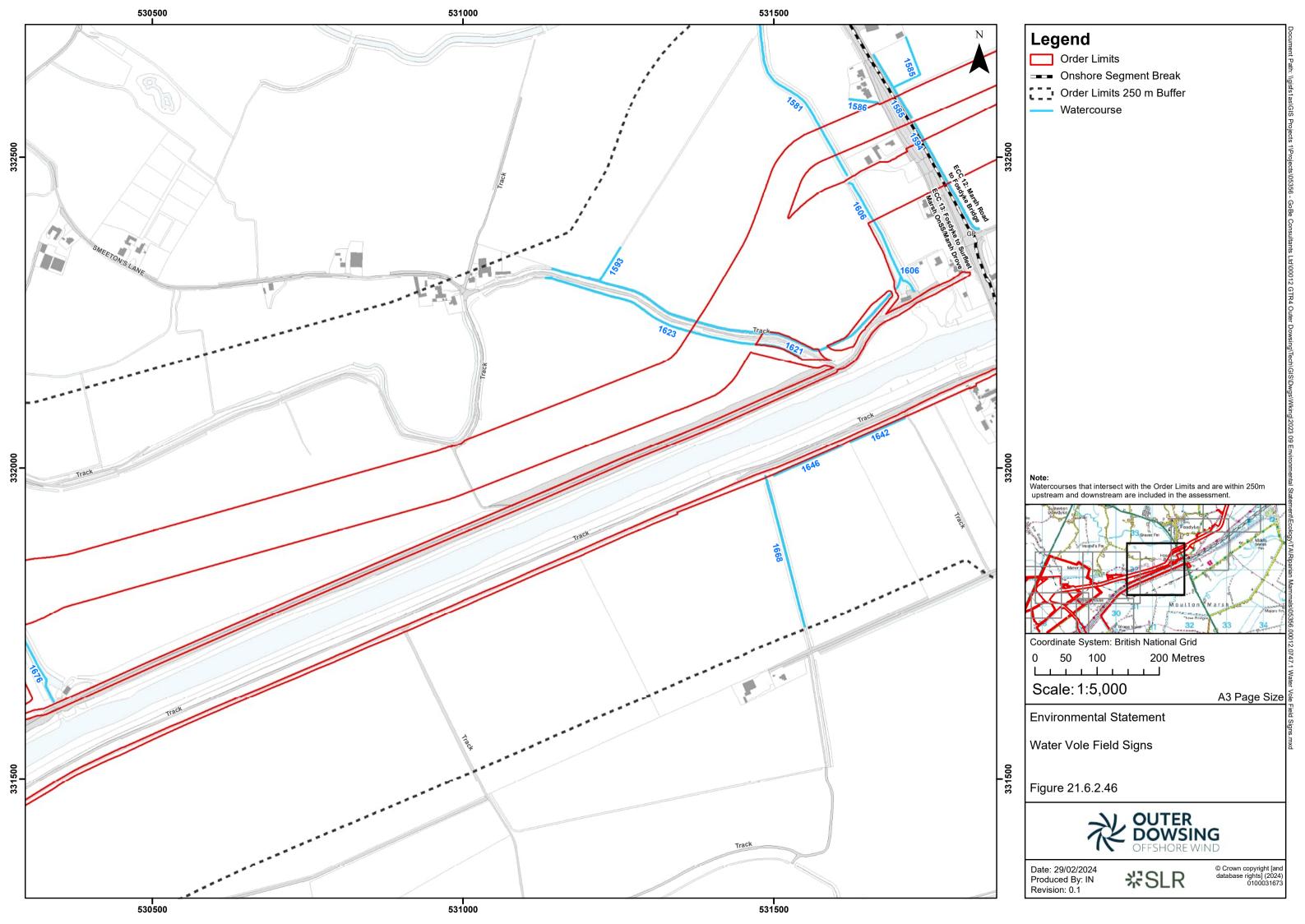


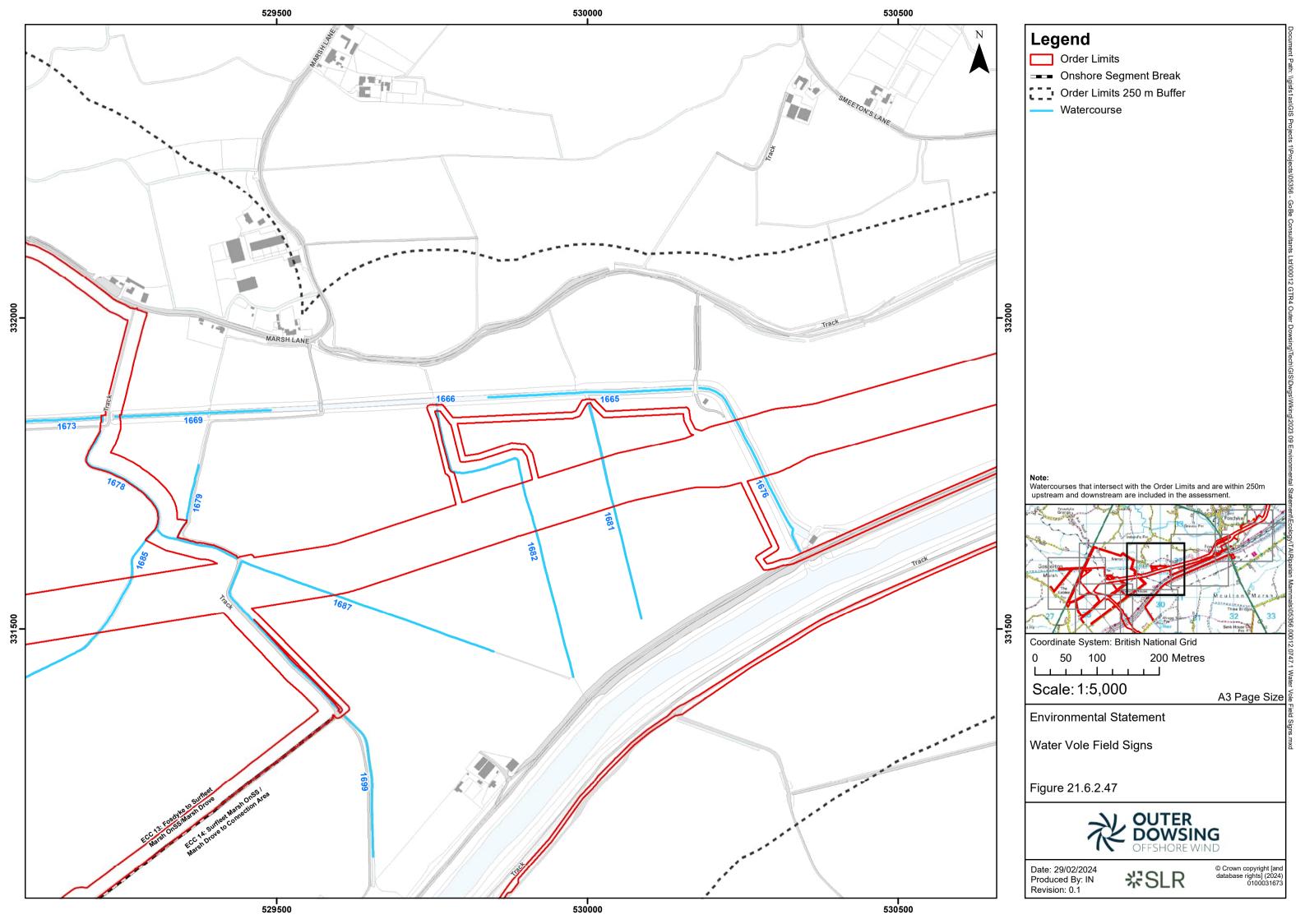


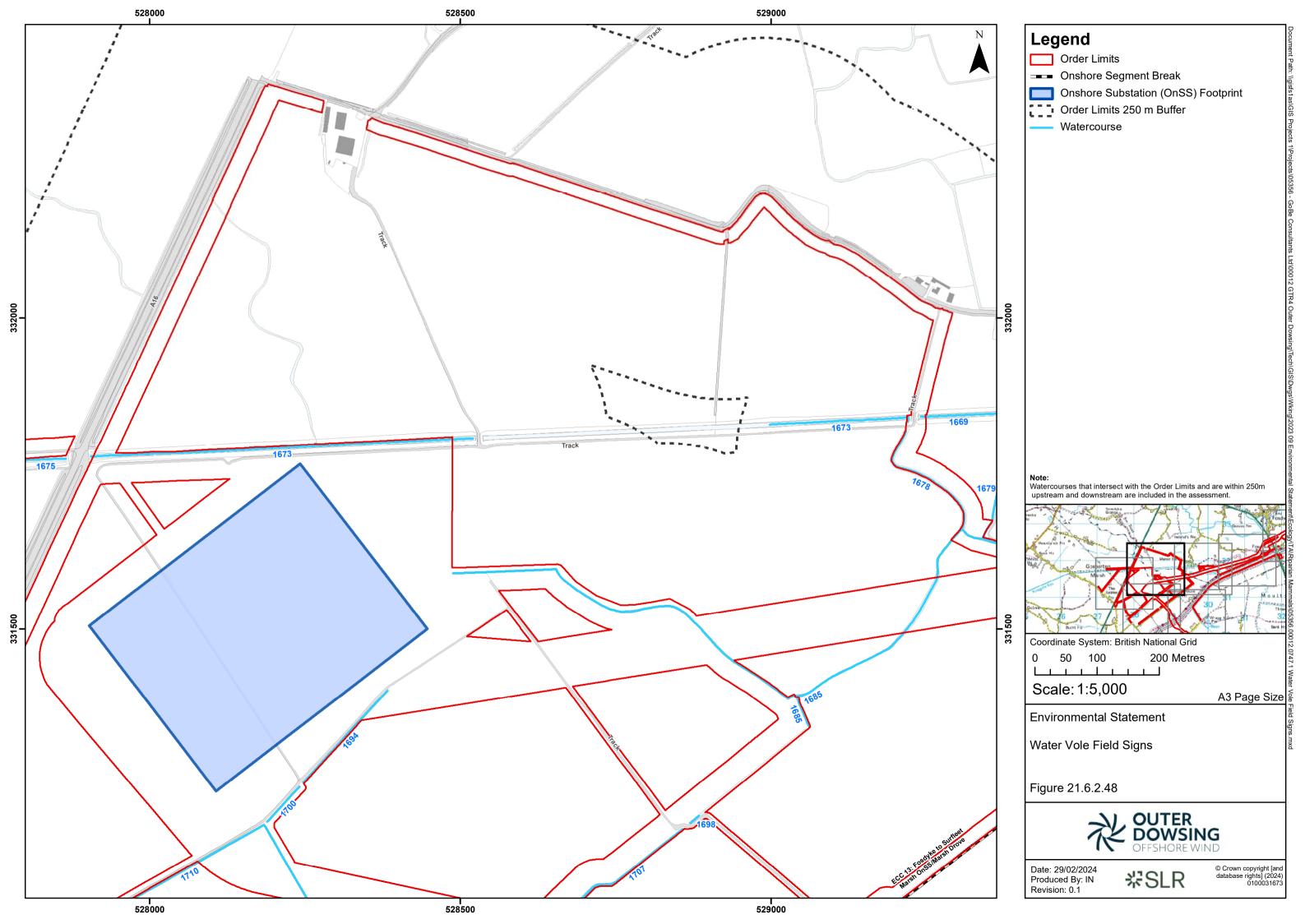


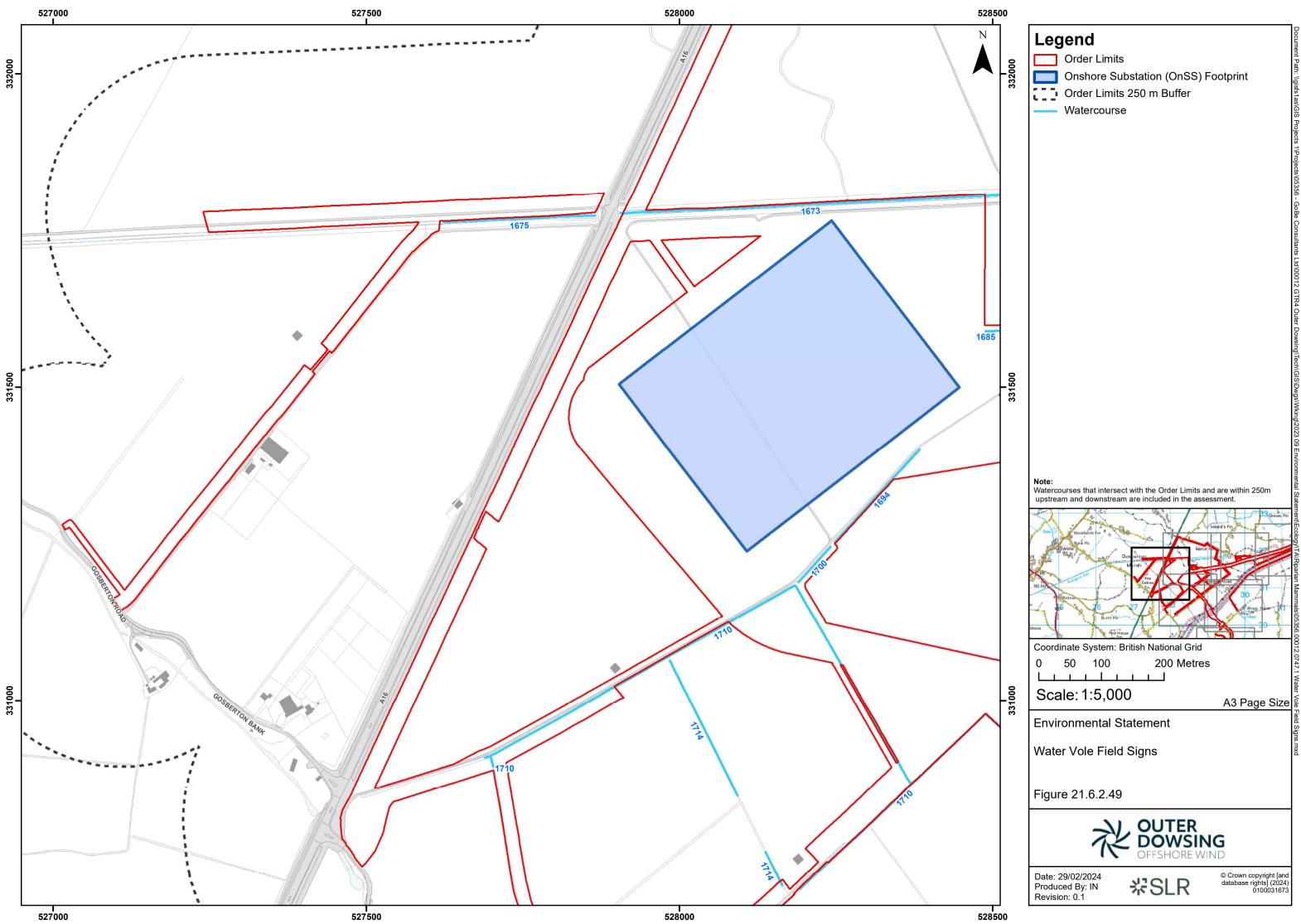


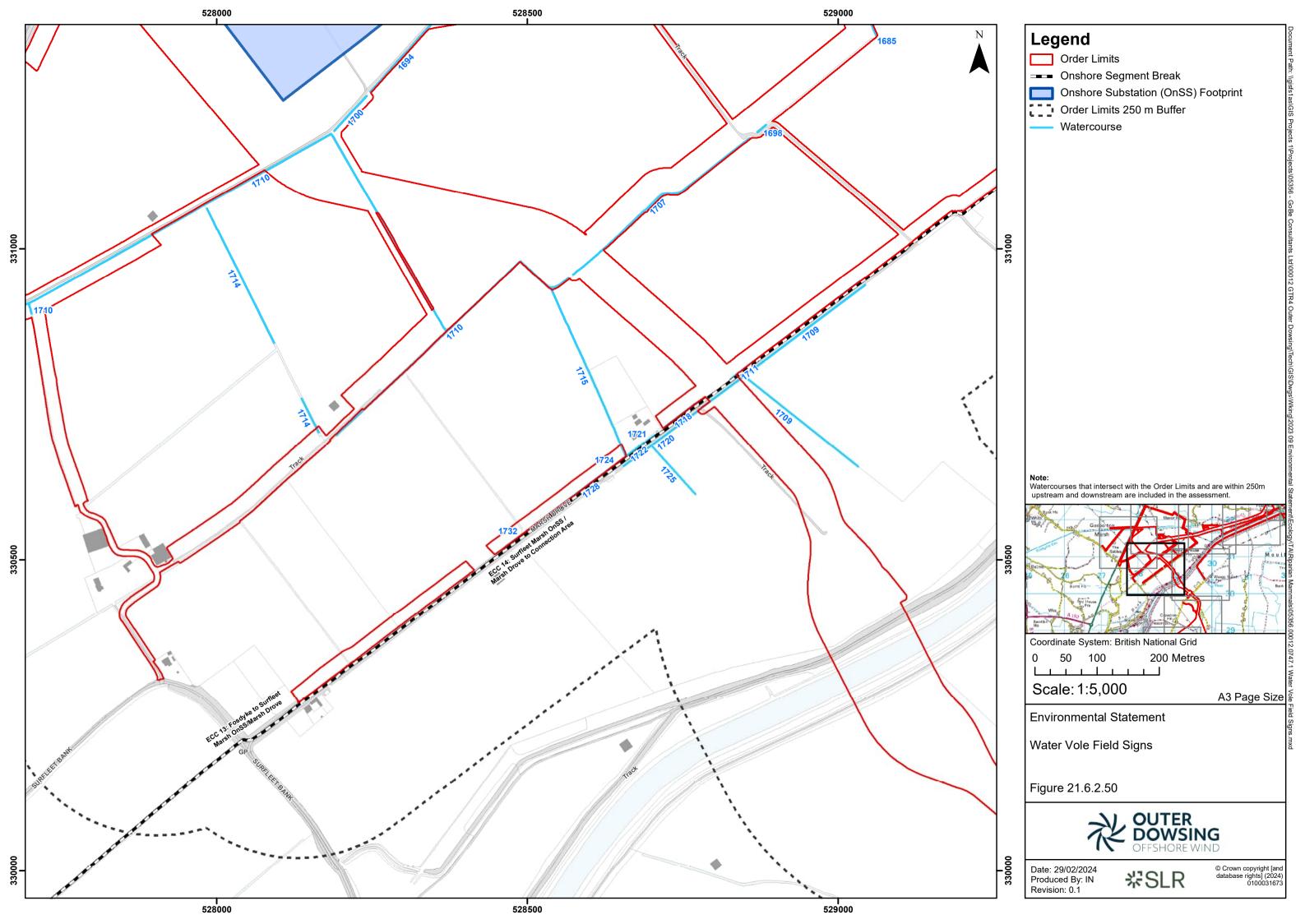


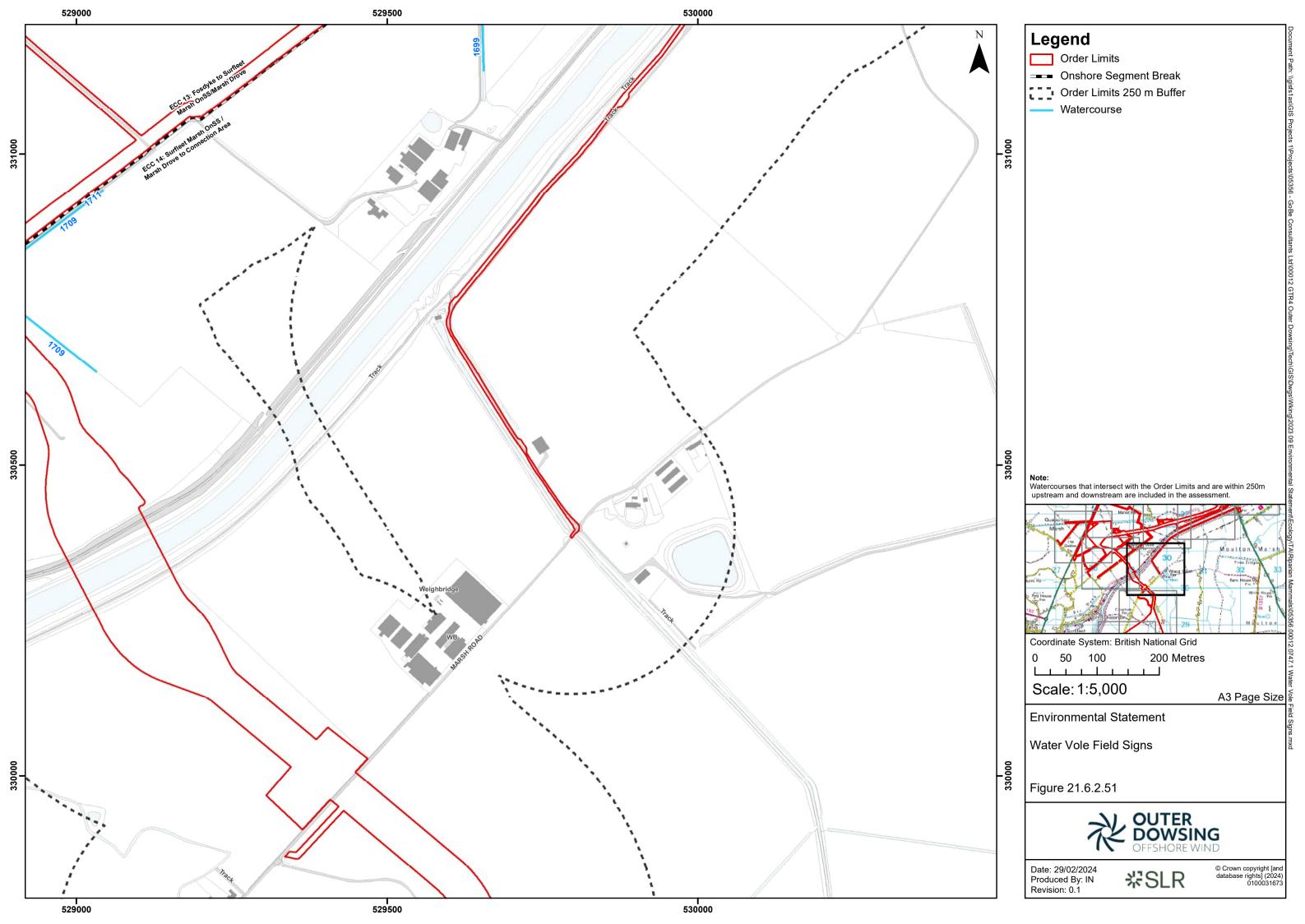


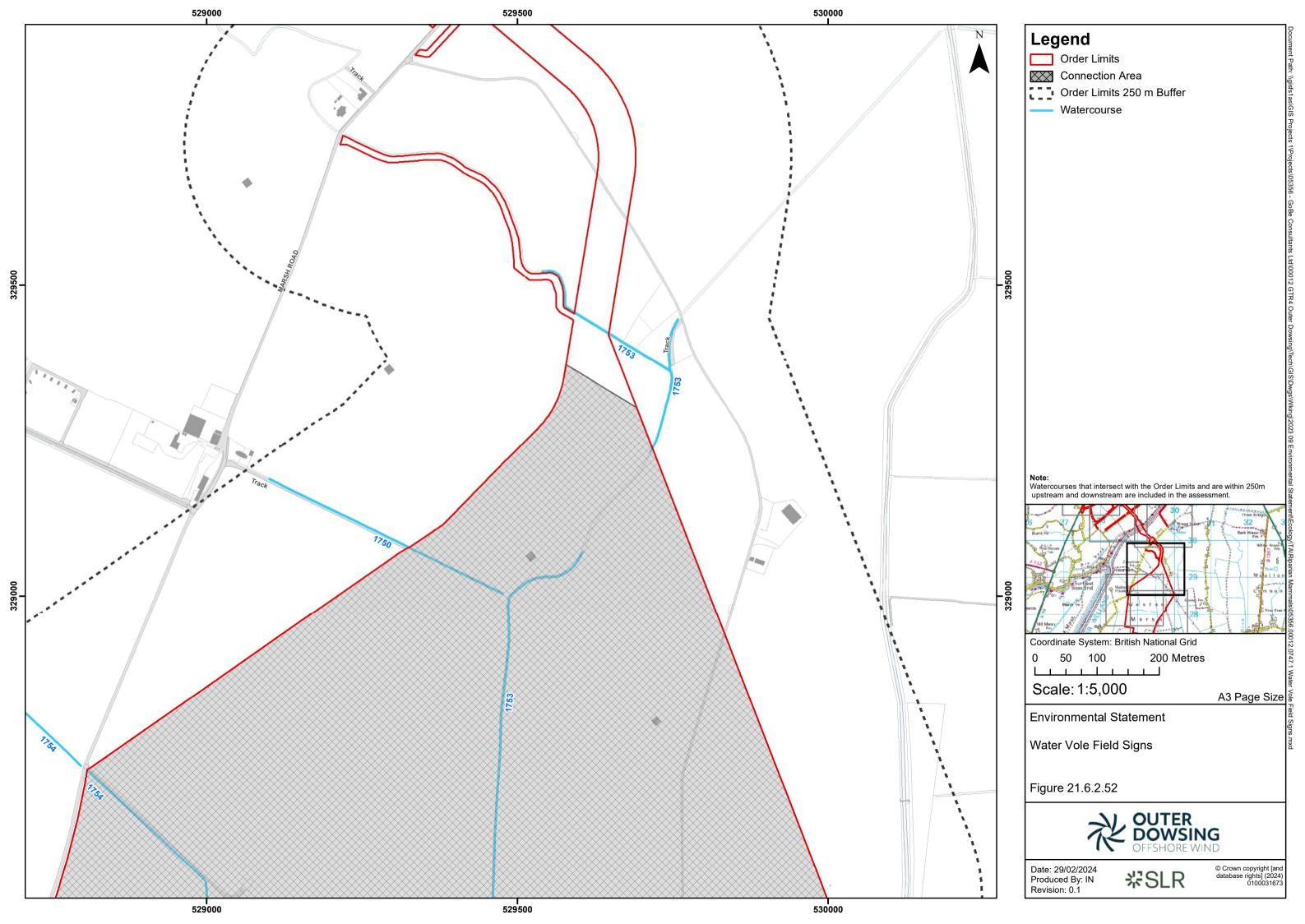


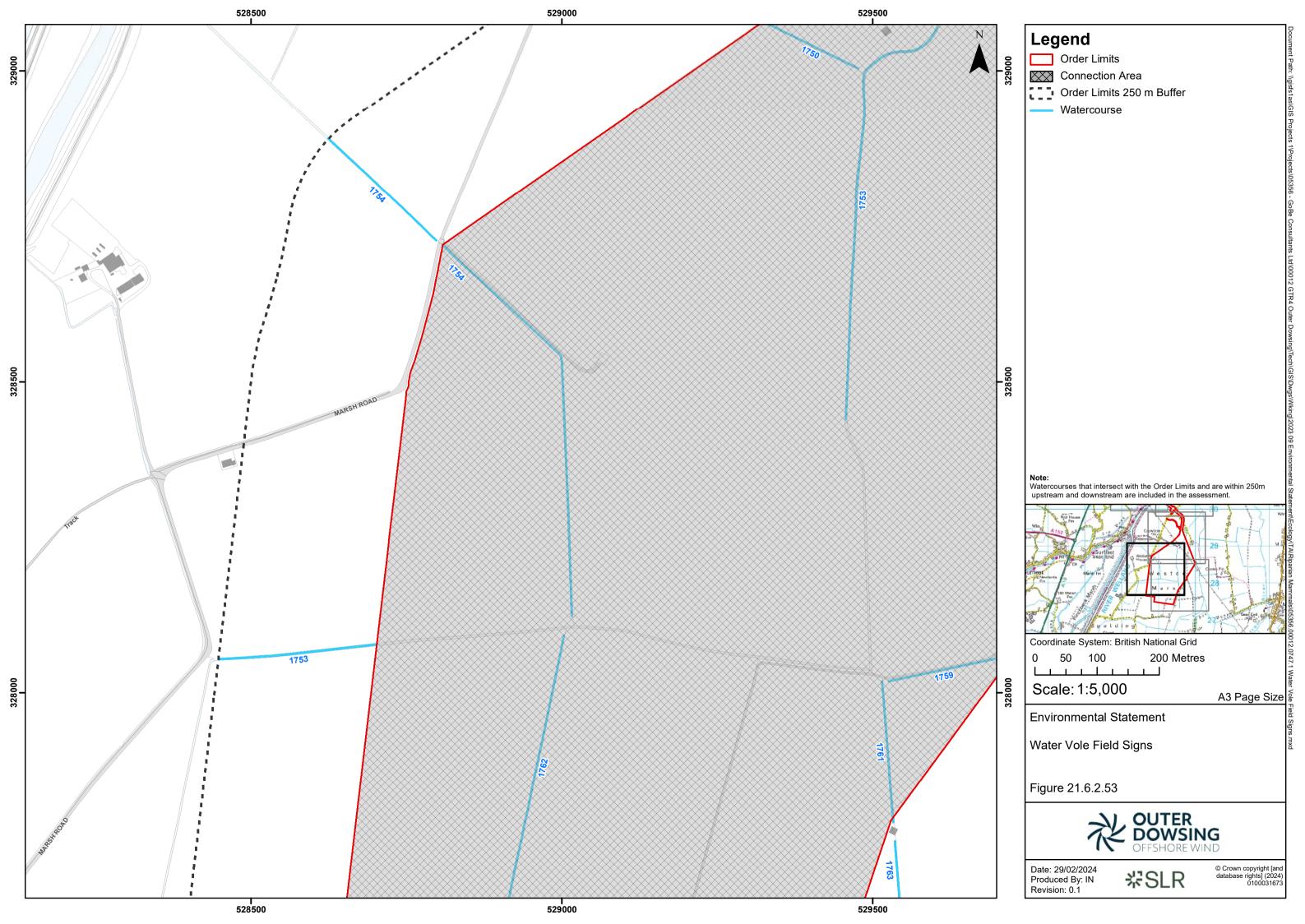












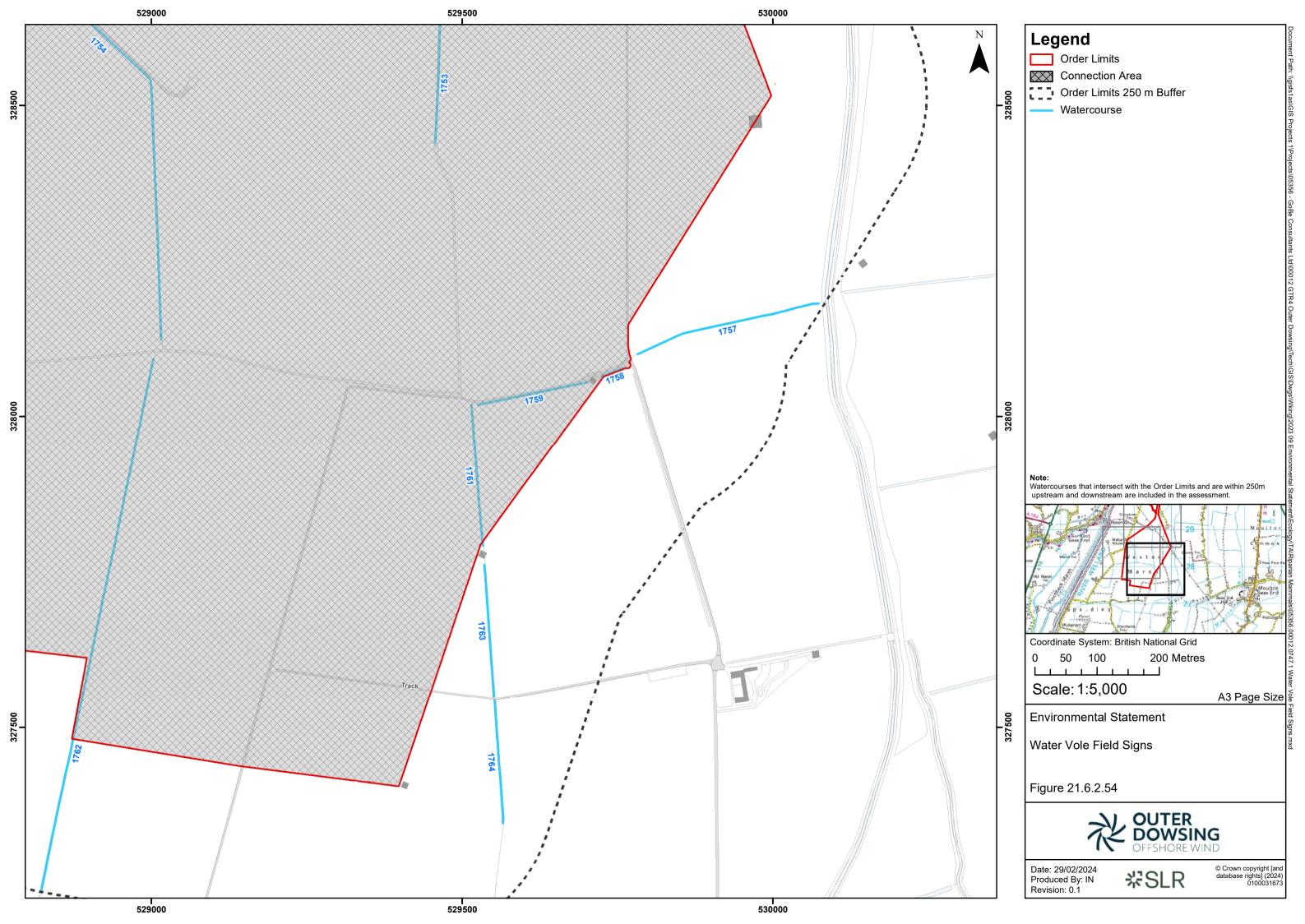
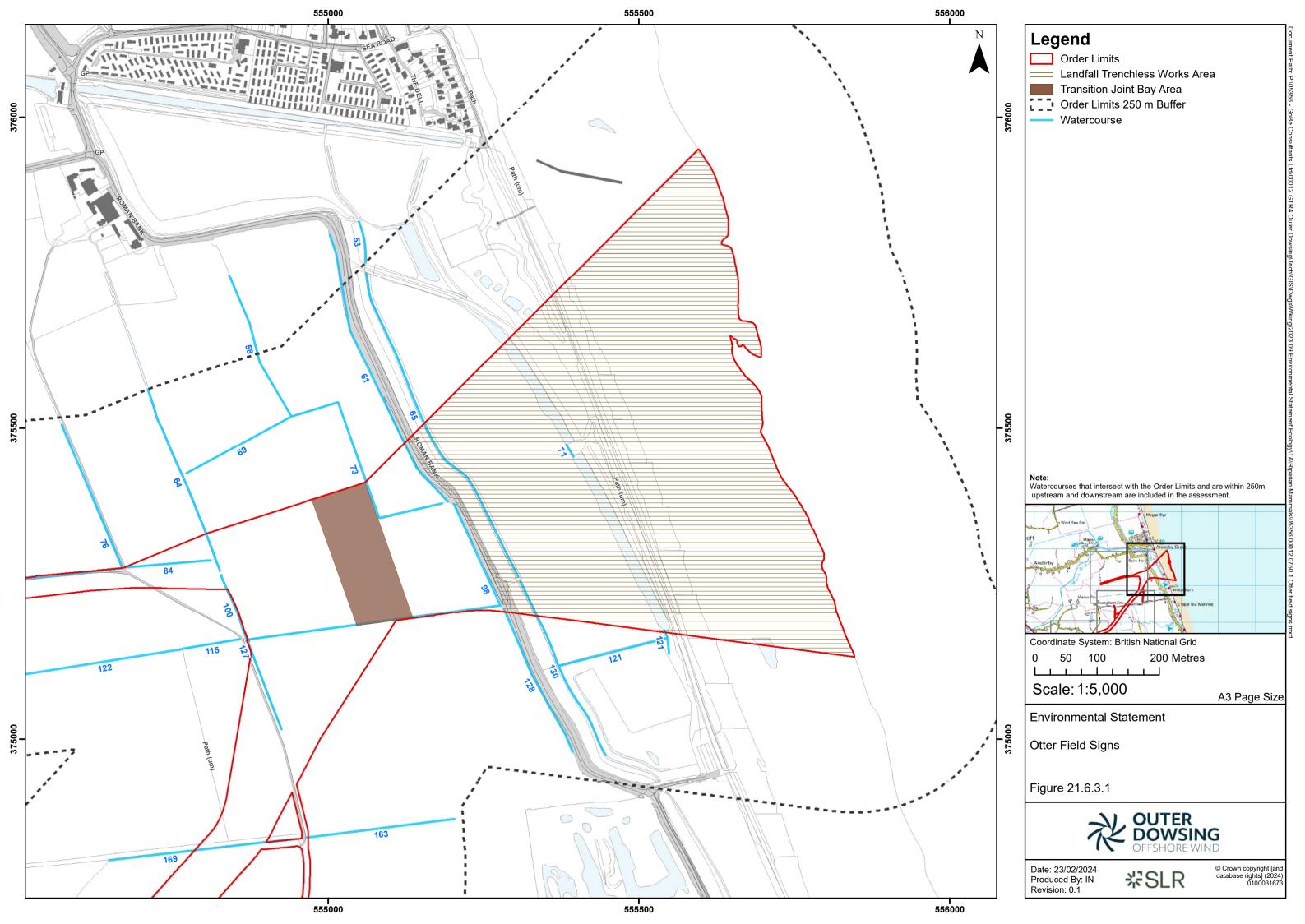
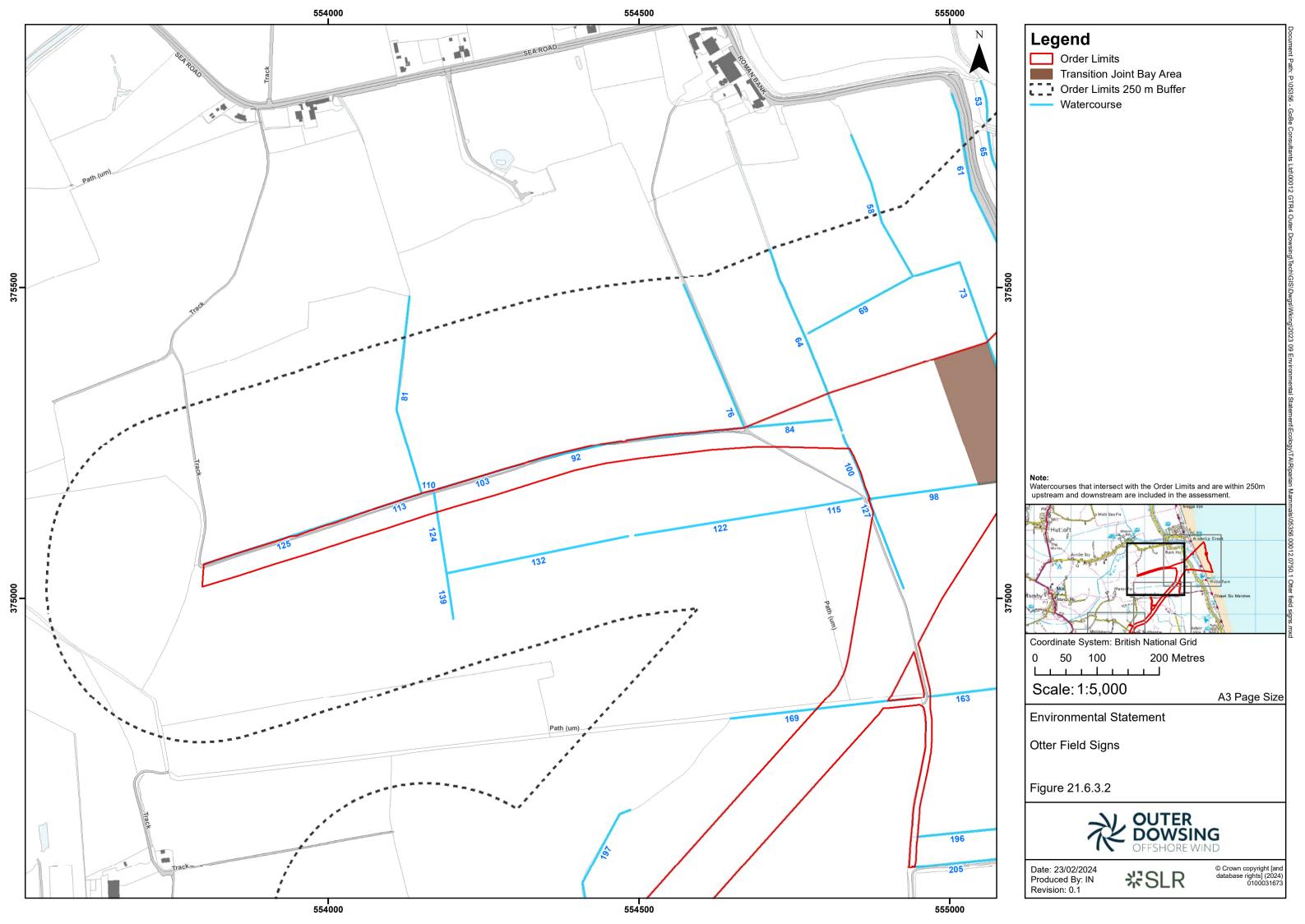
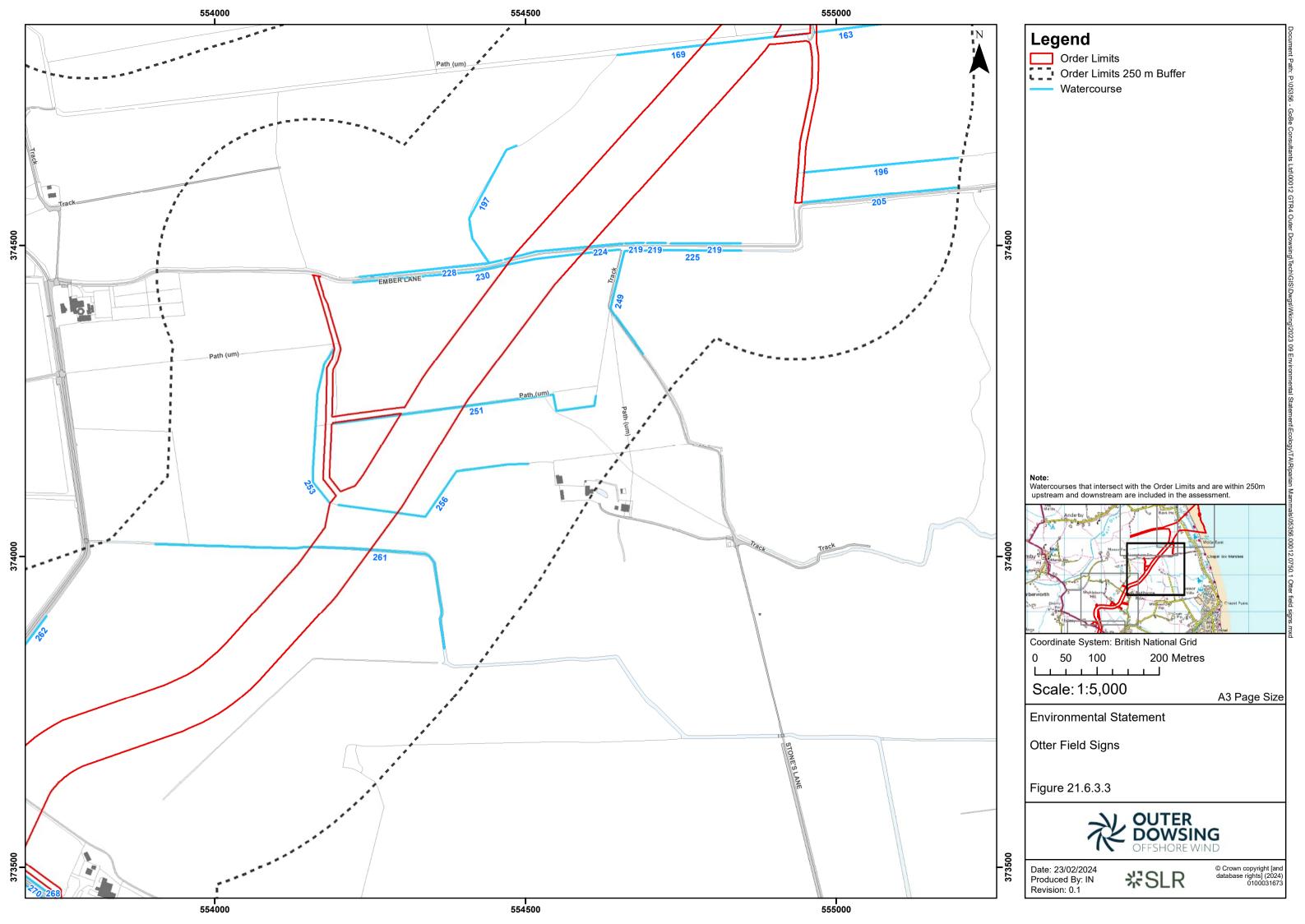
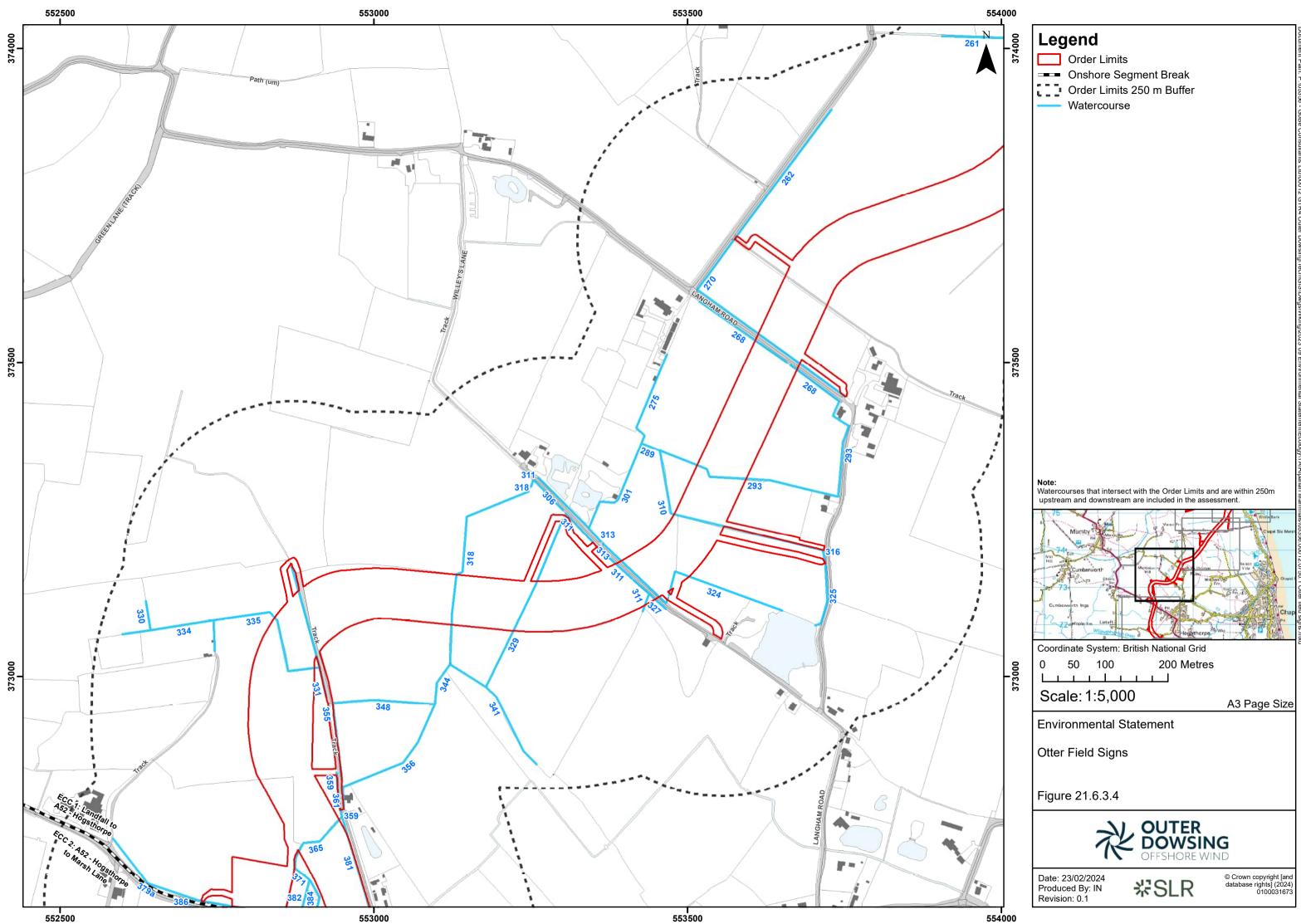


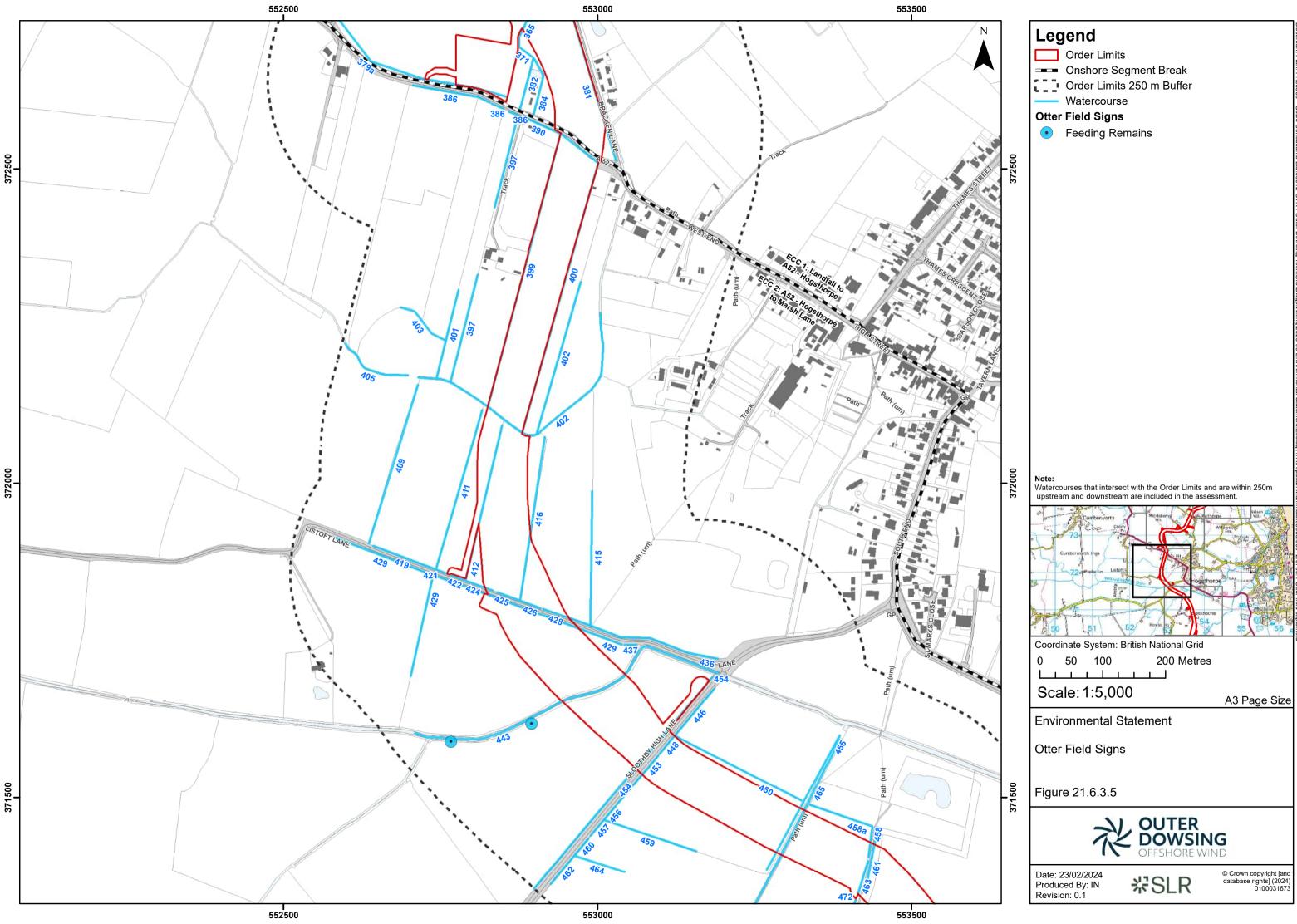
Figure 21.6.3: Otter Field Signs

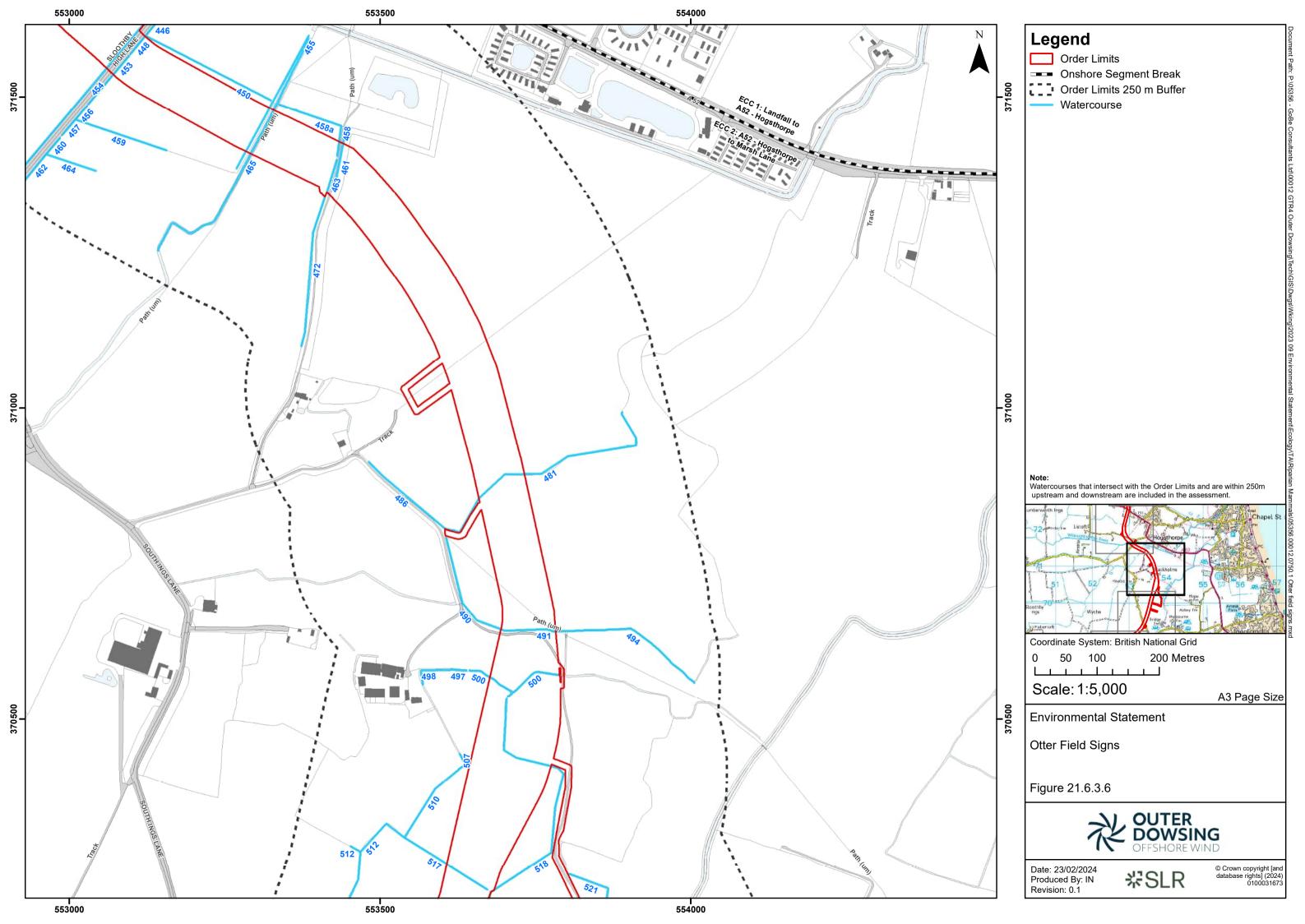


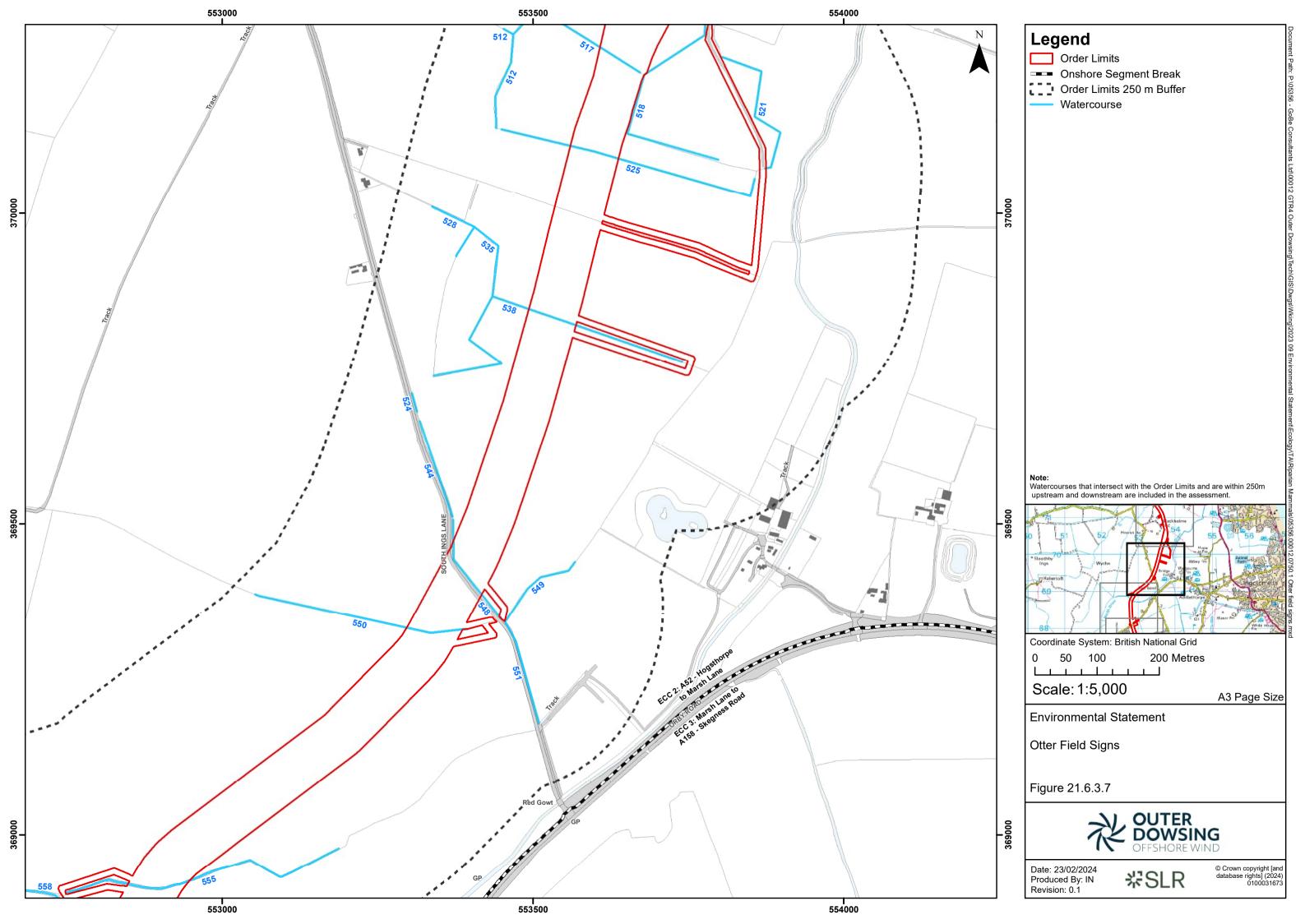


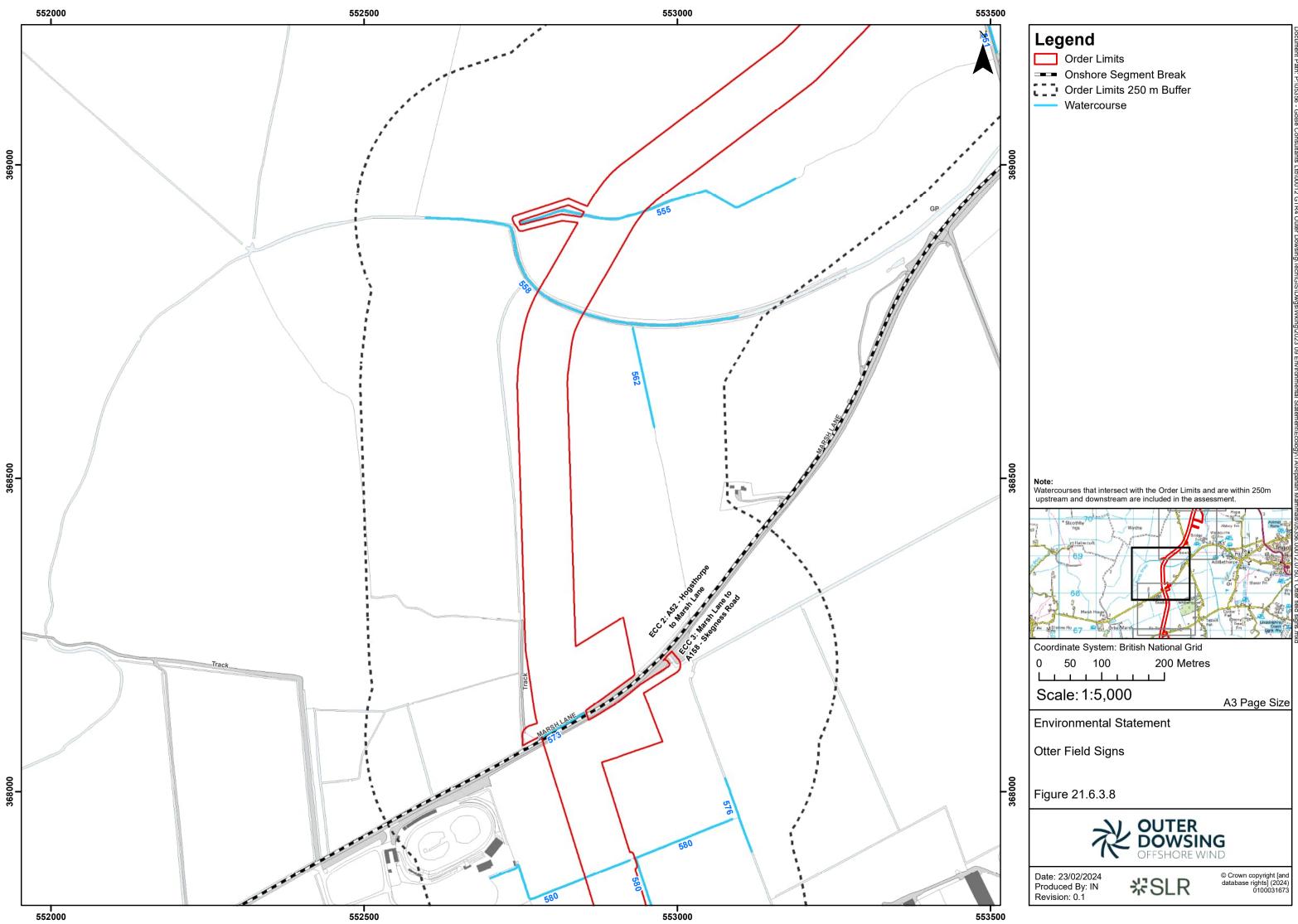


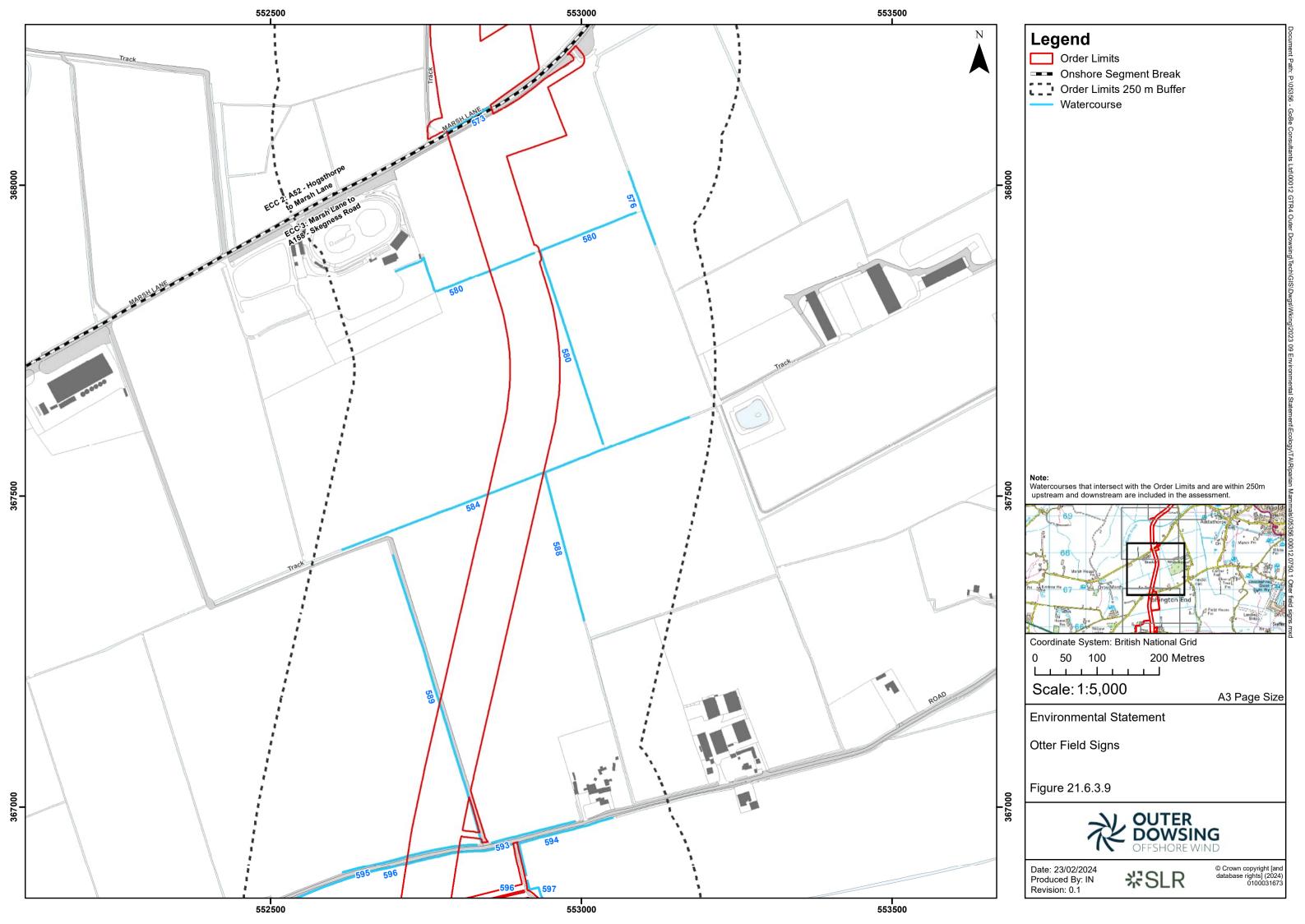


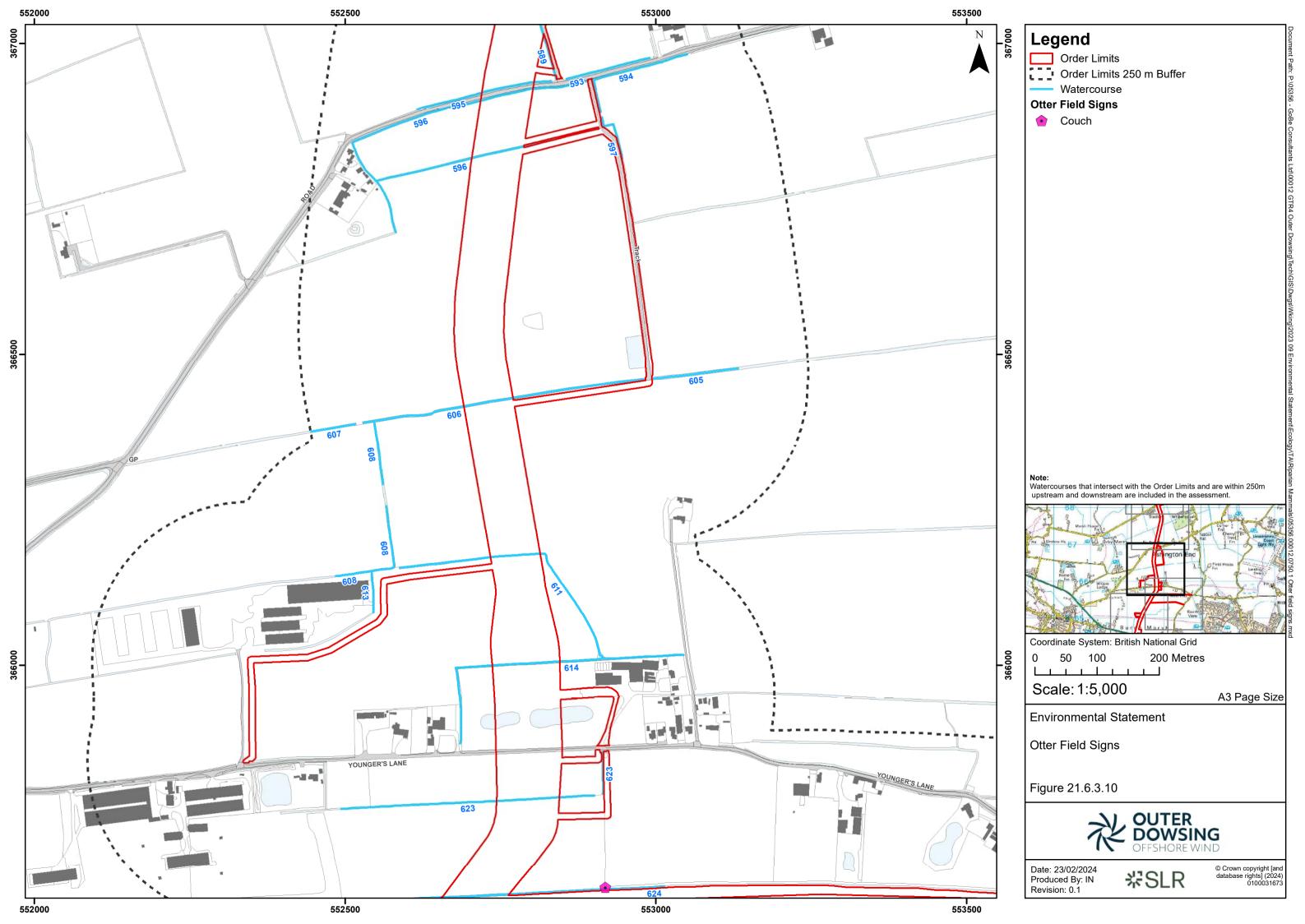


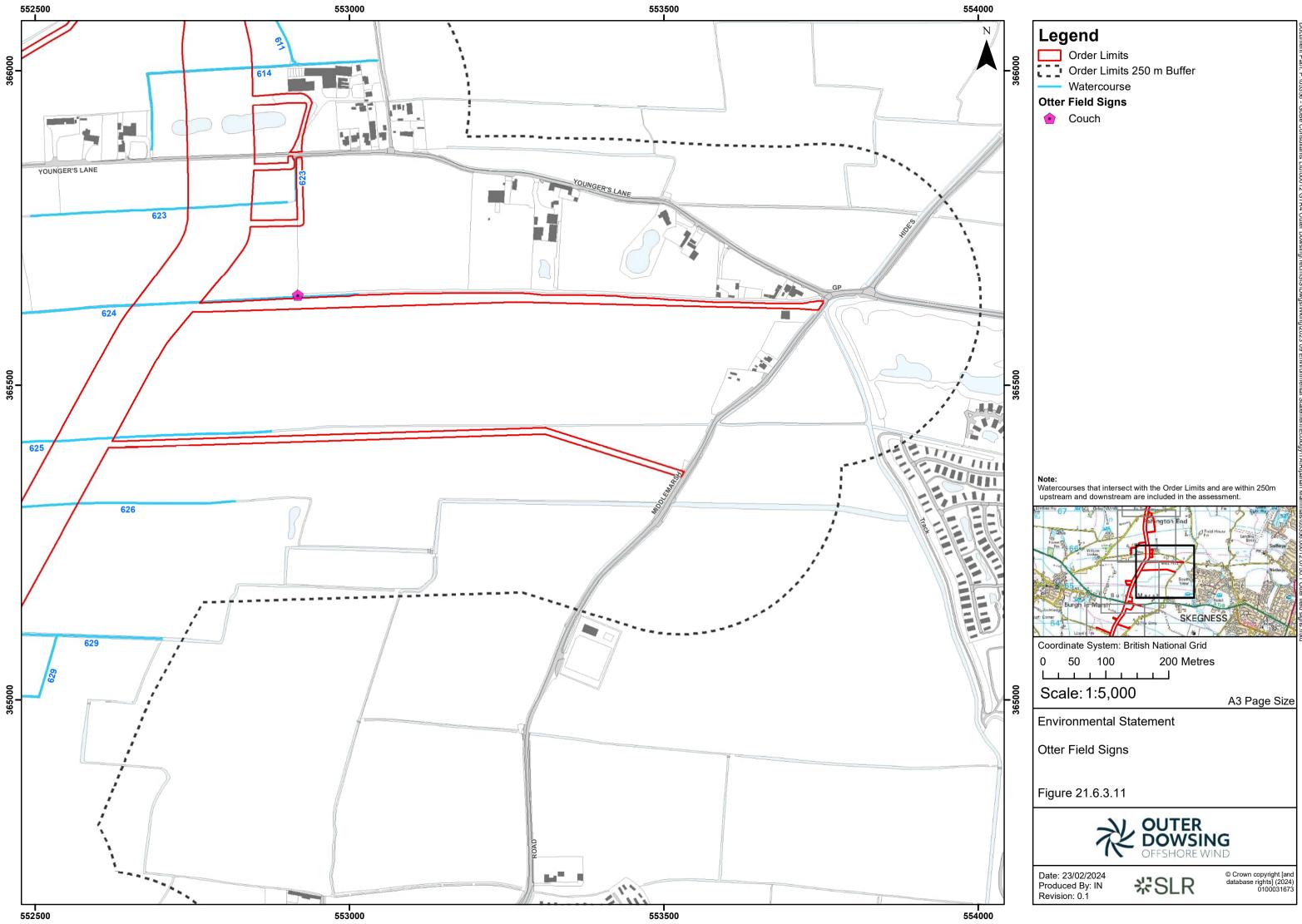


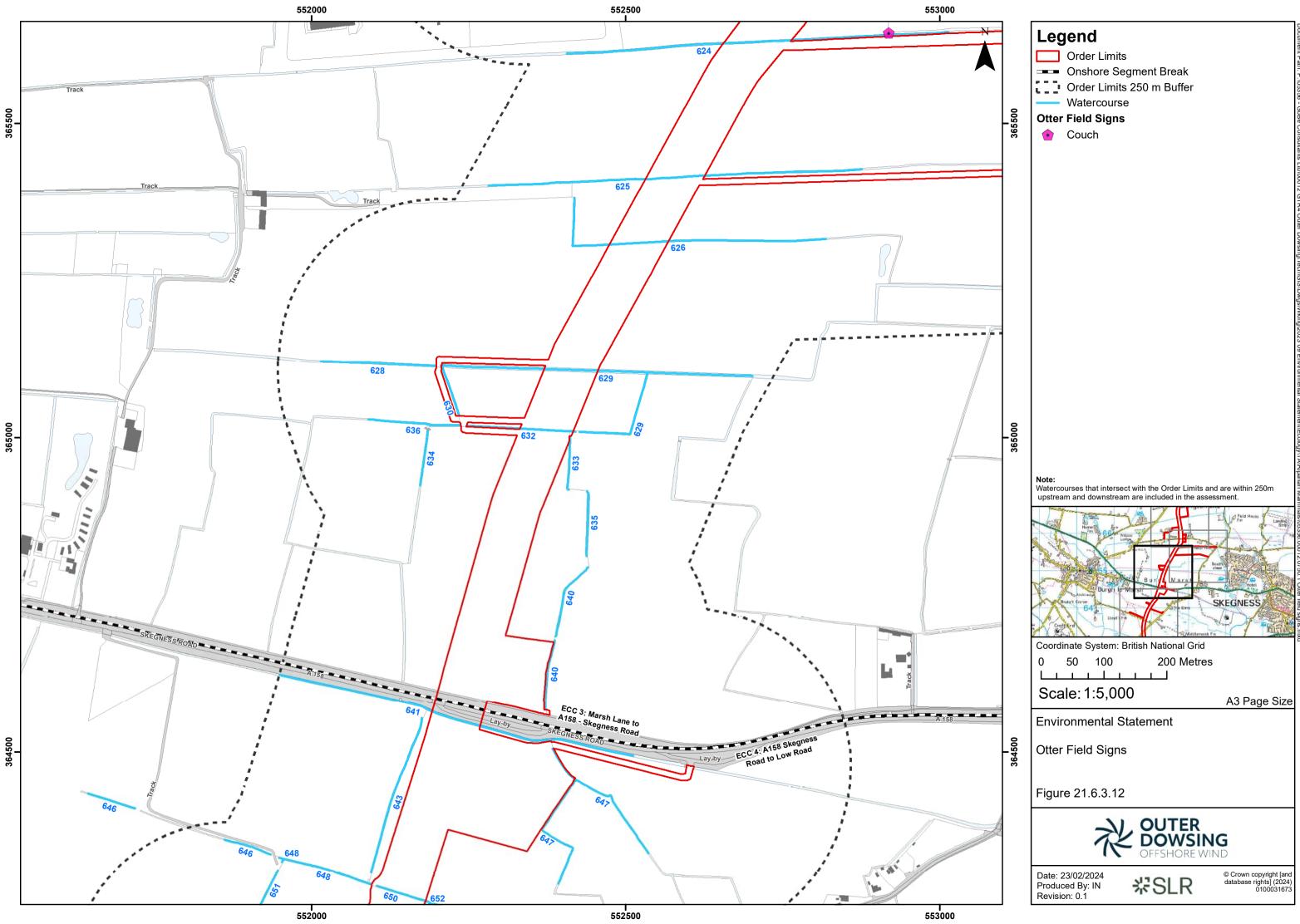


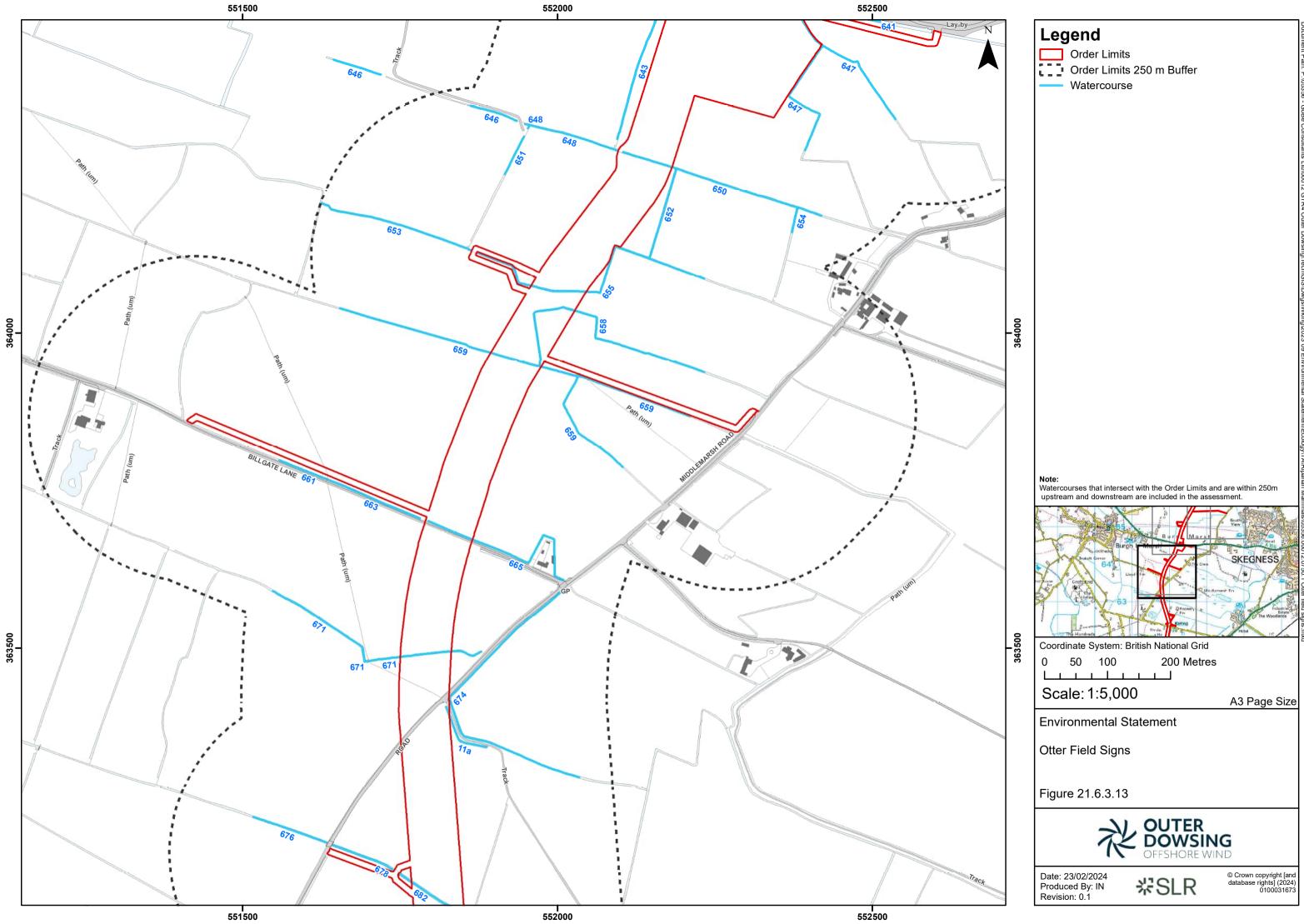


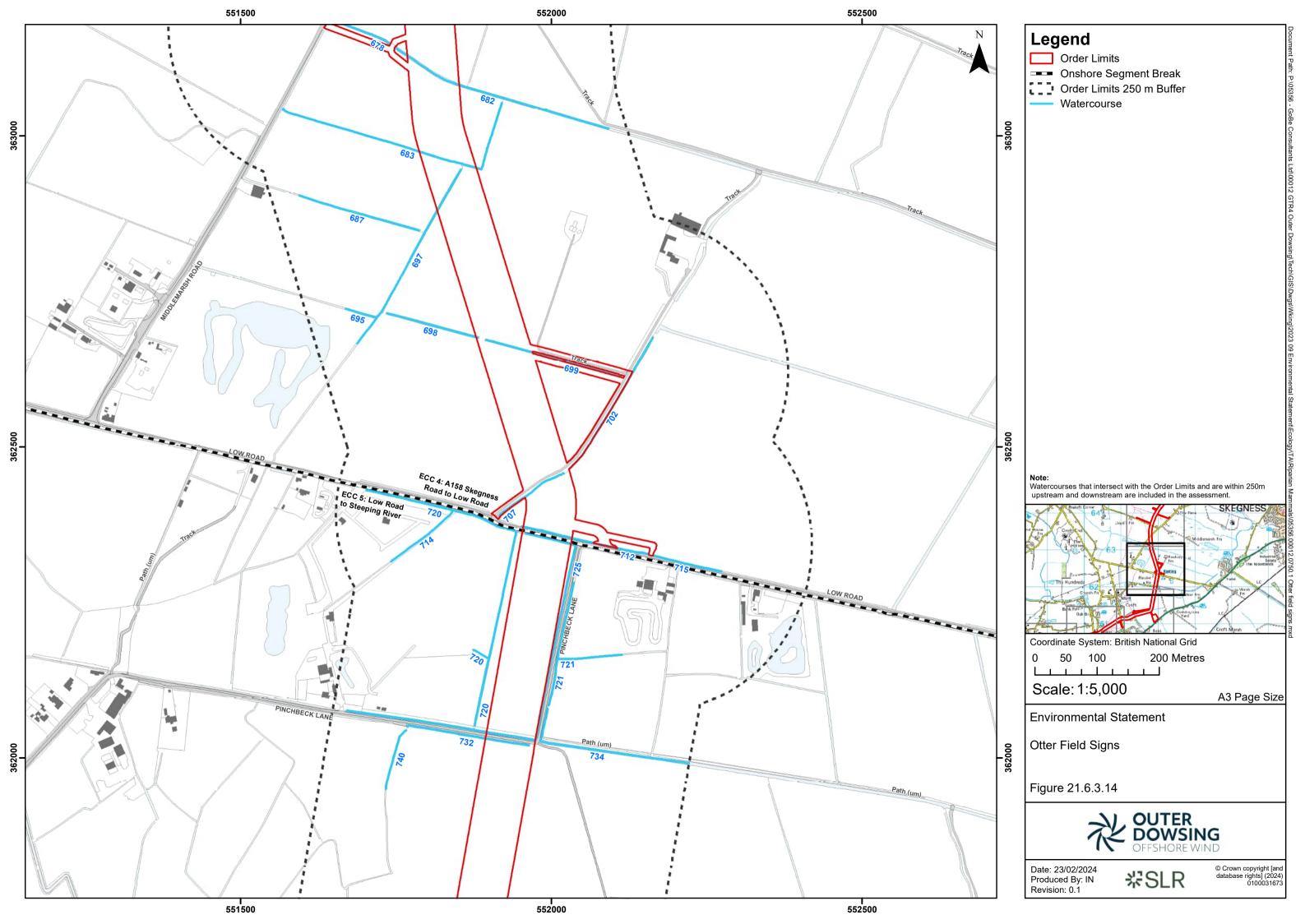


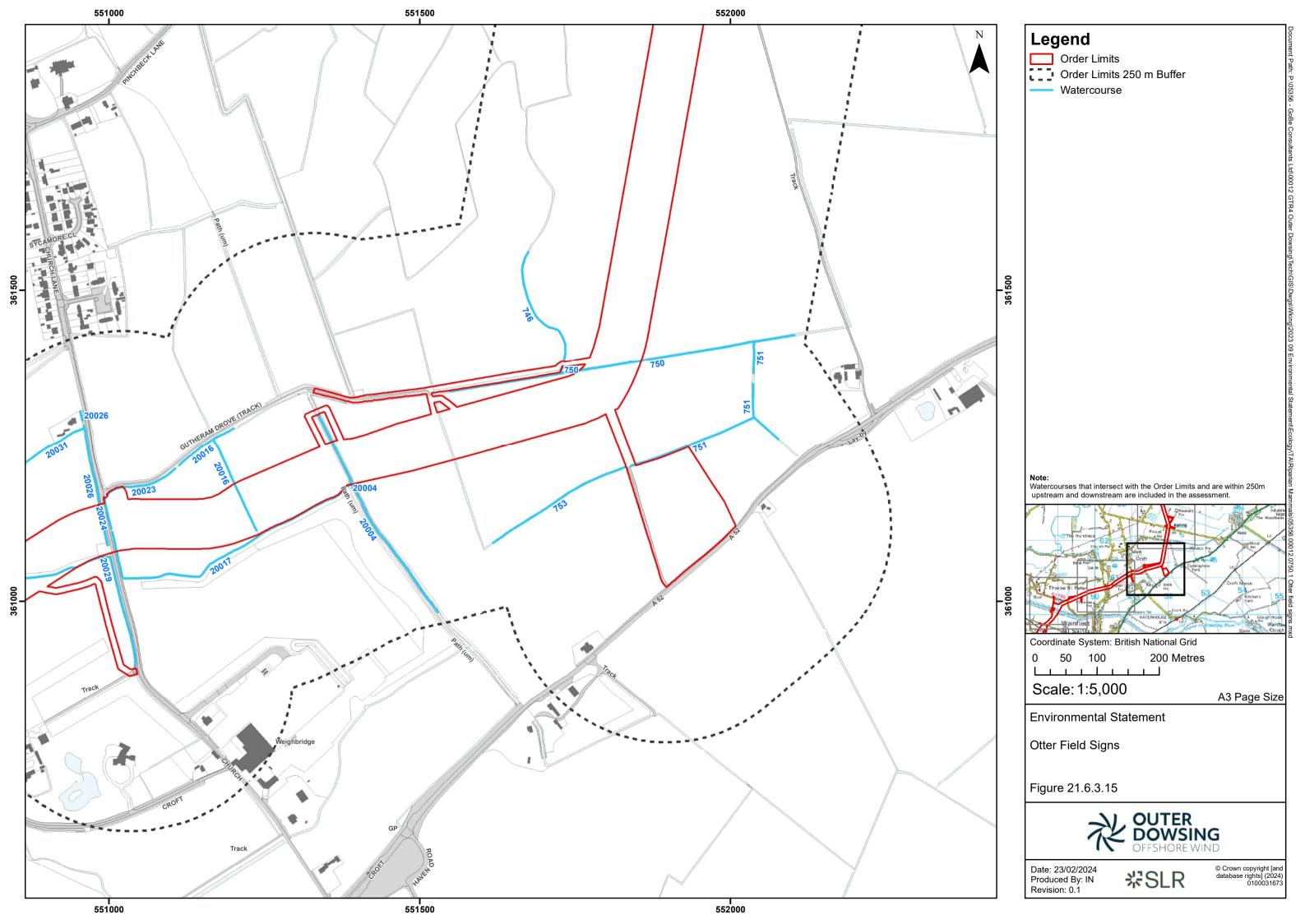


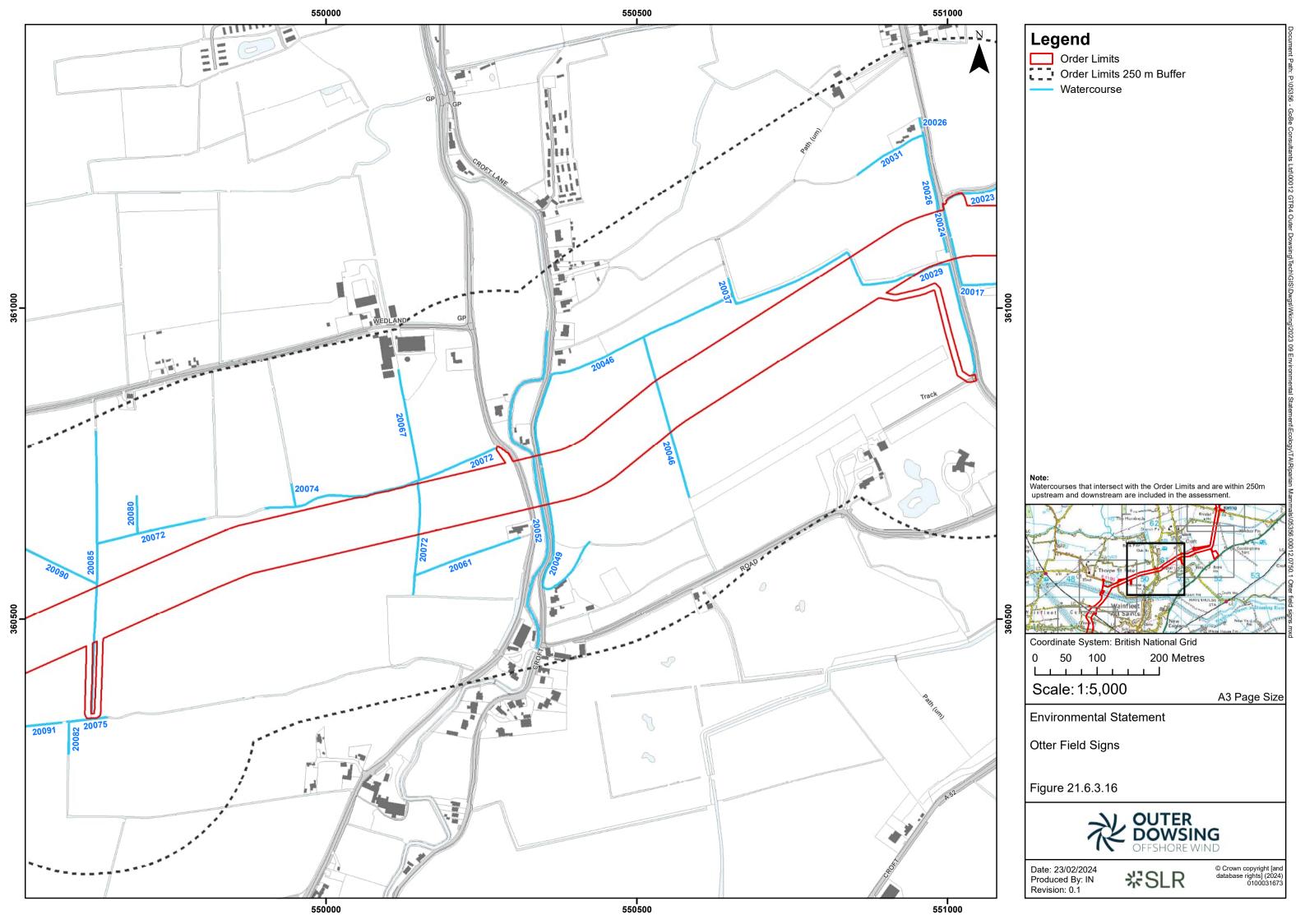


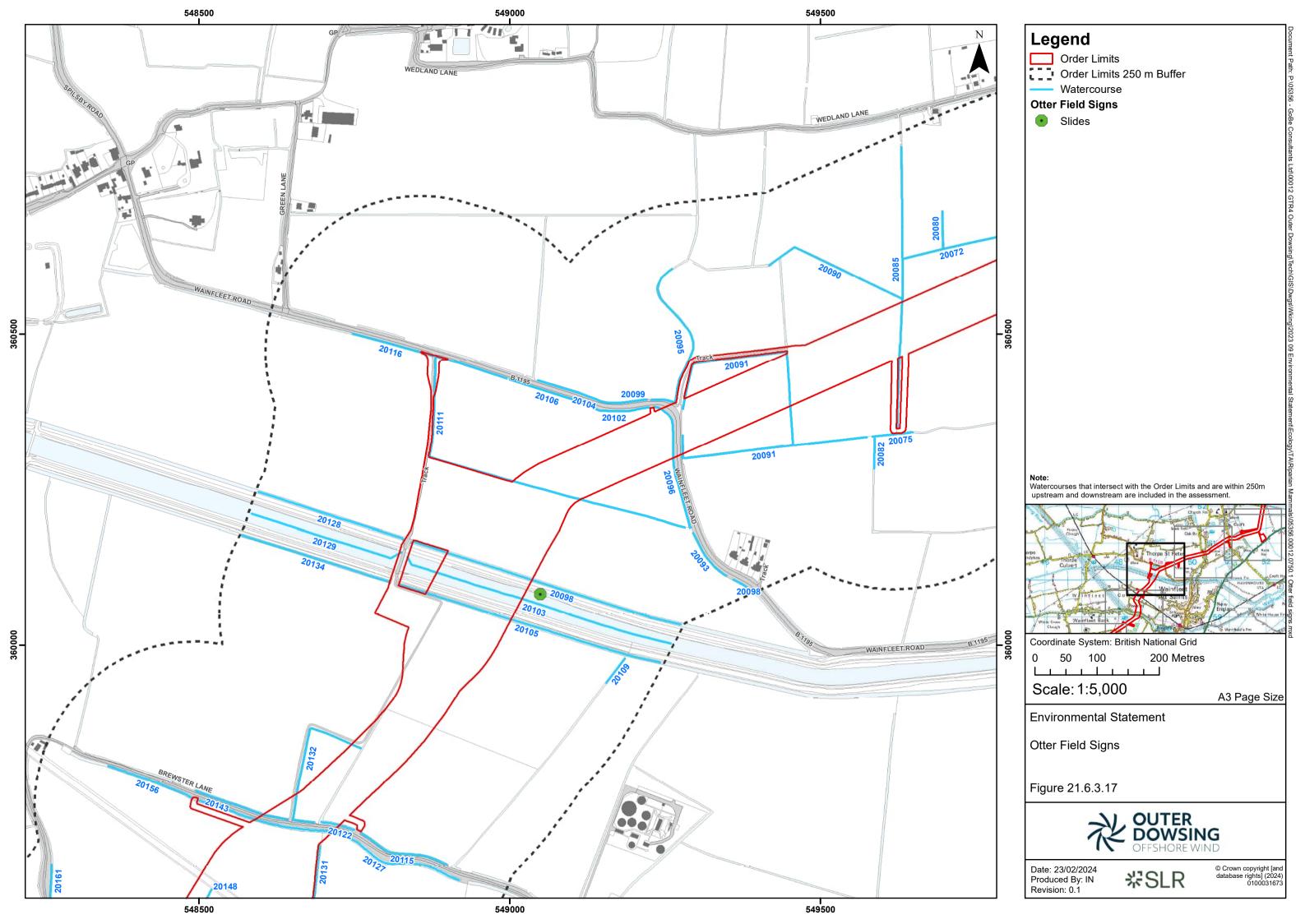


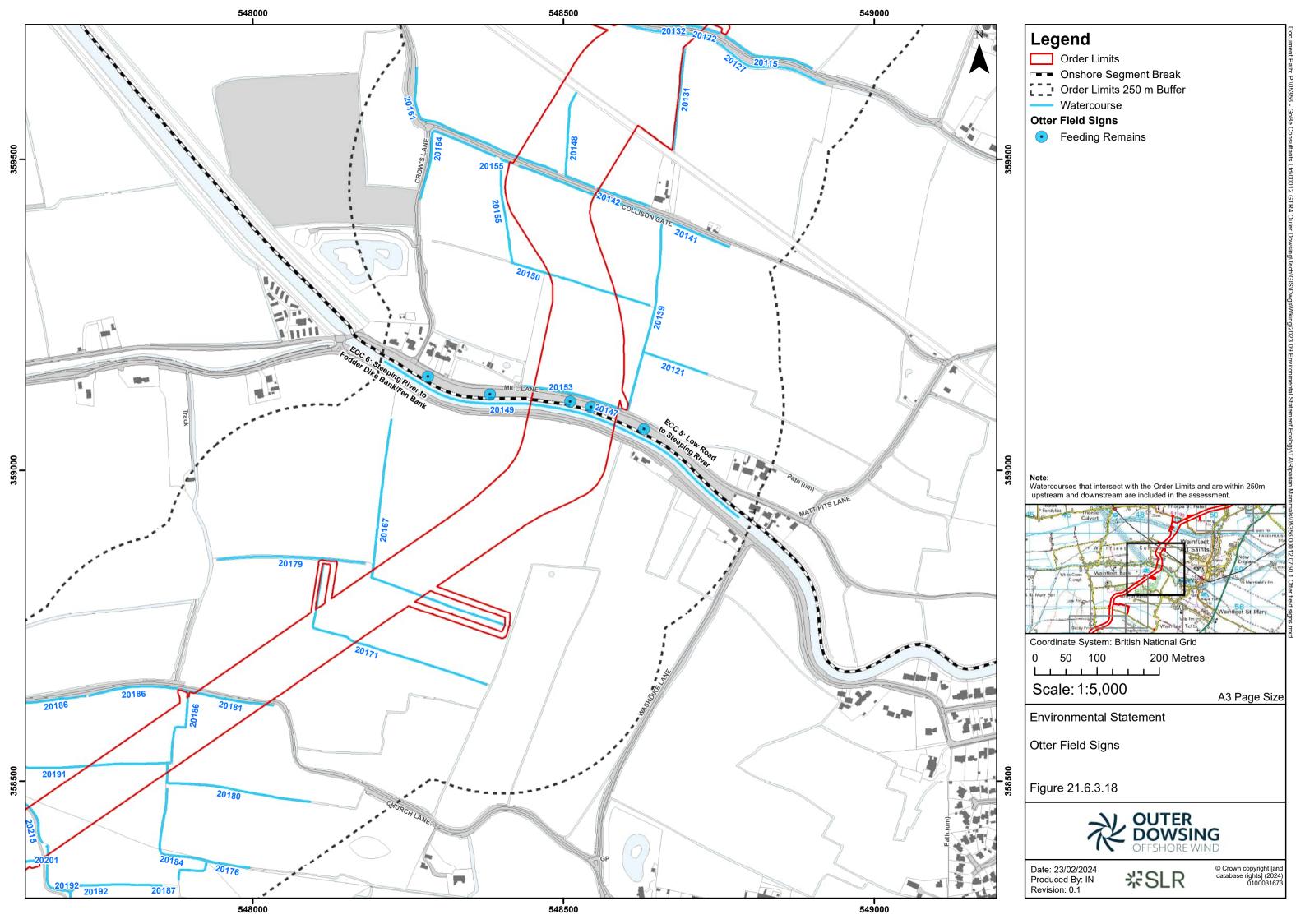


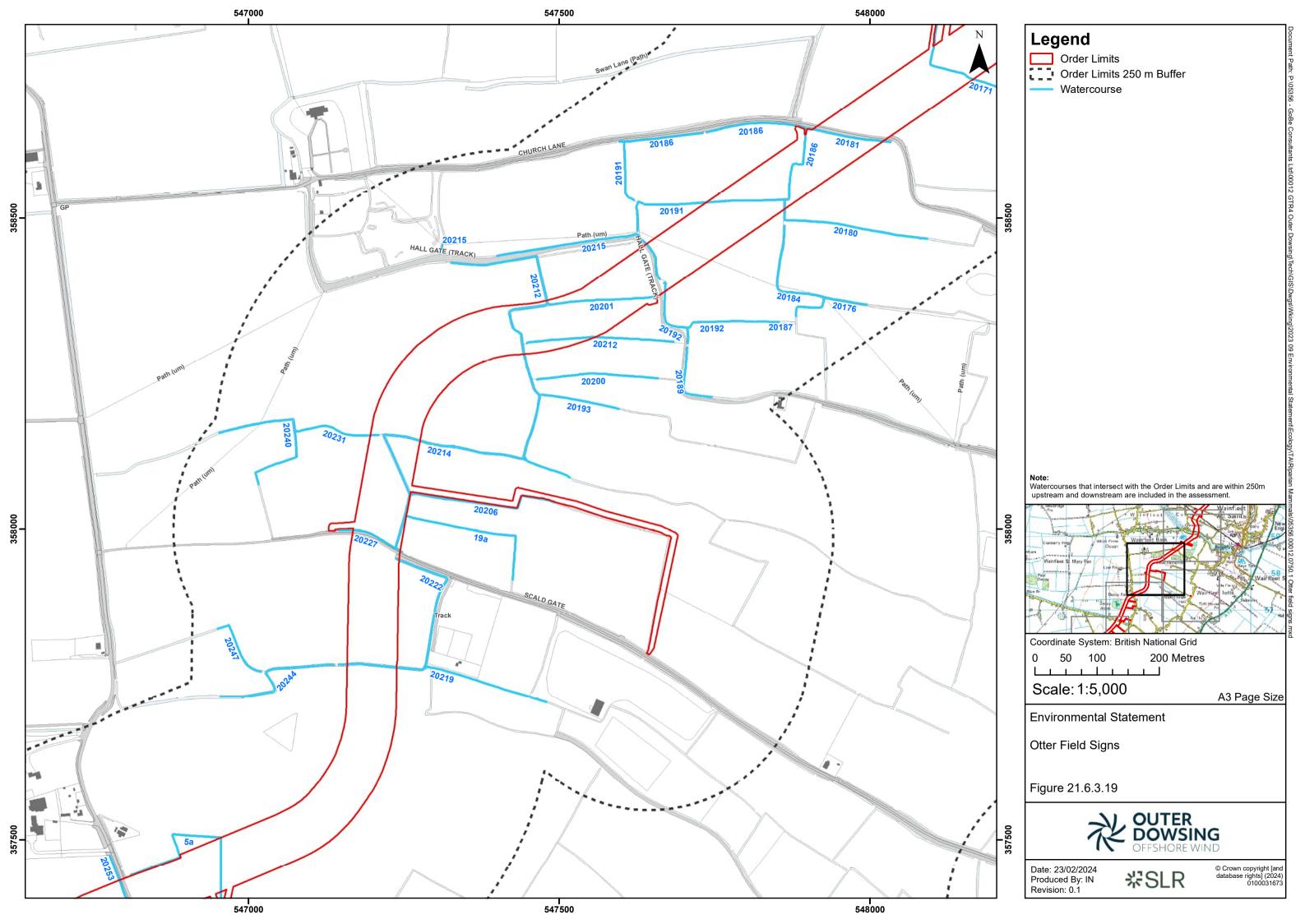


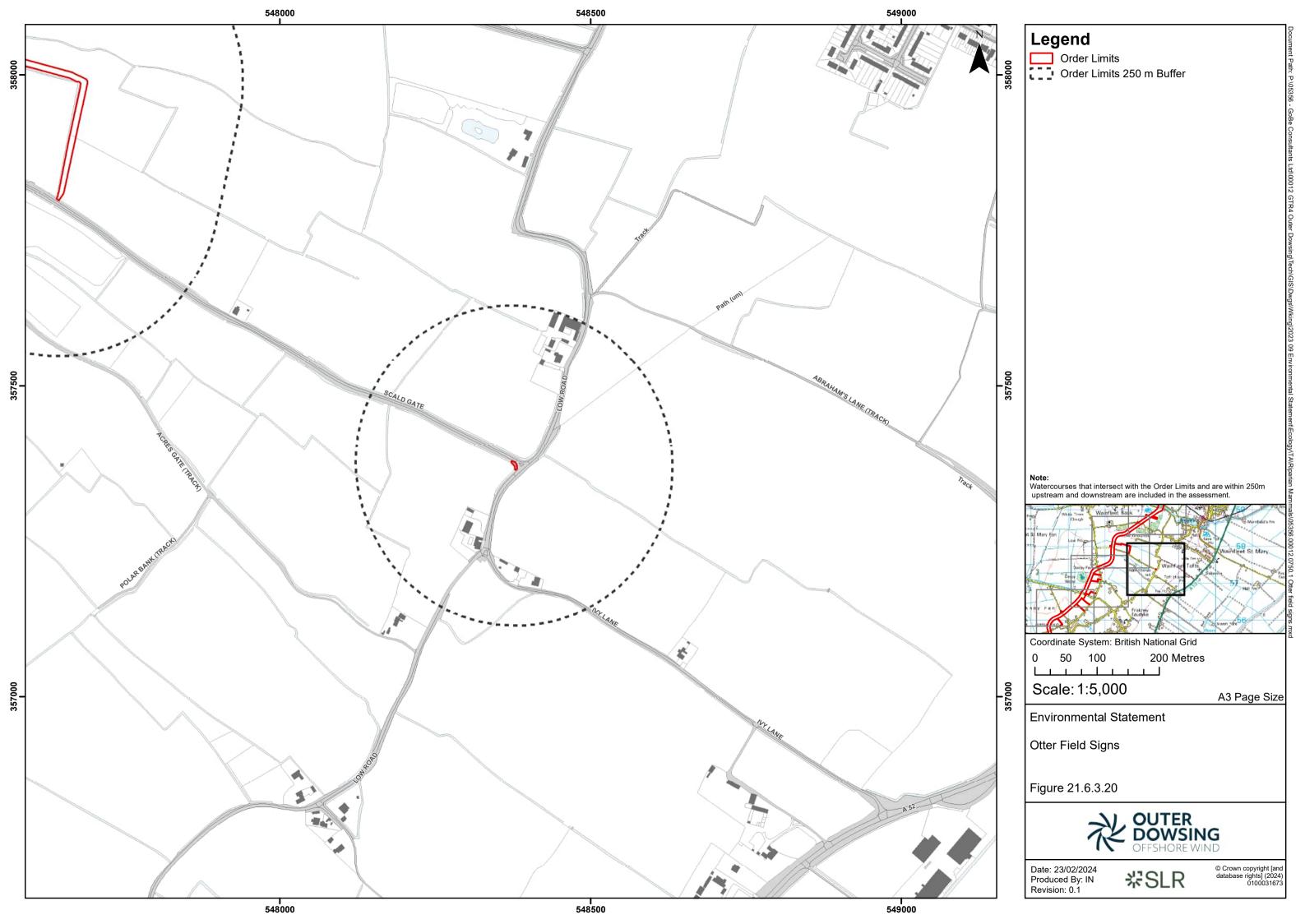


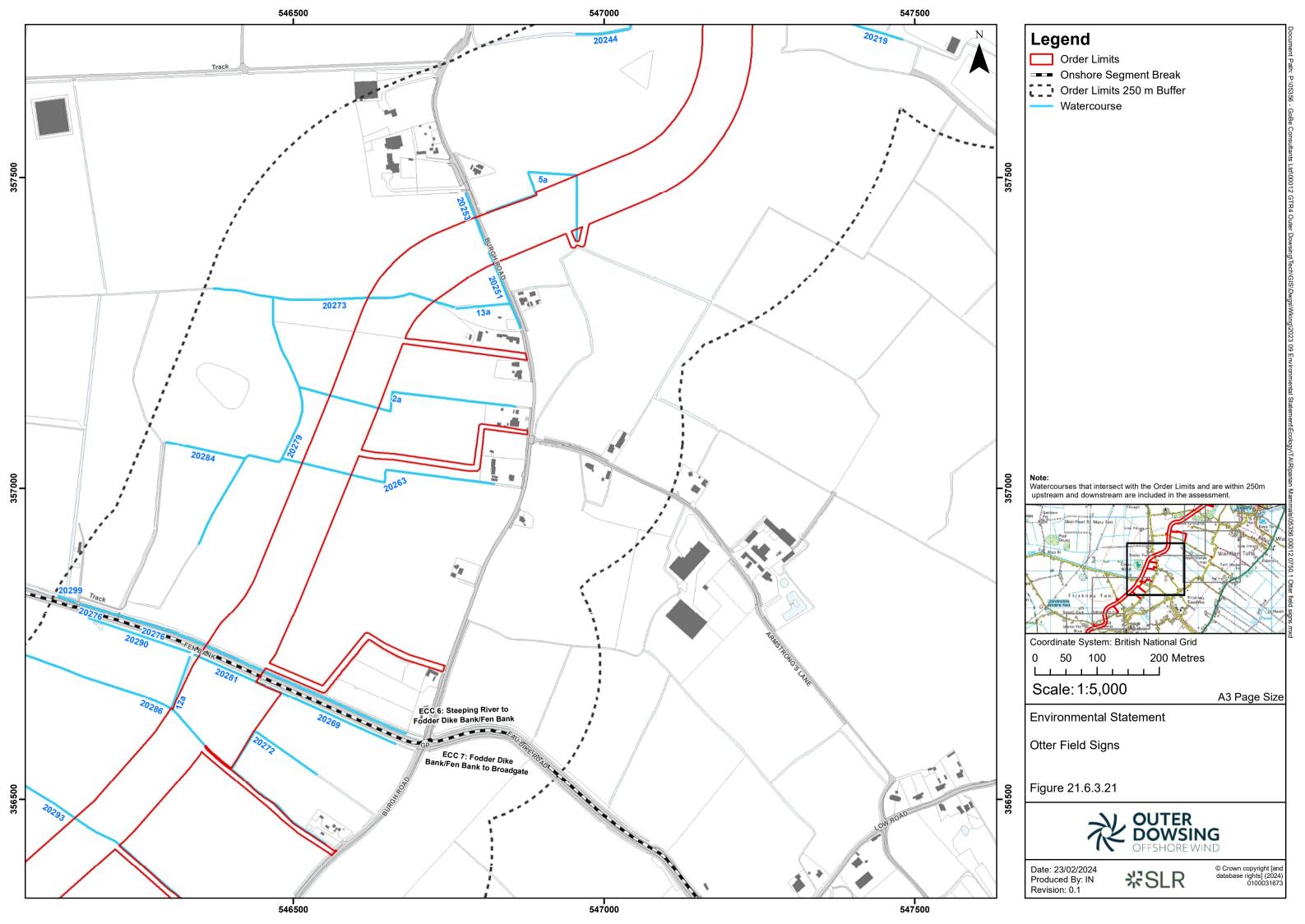


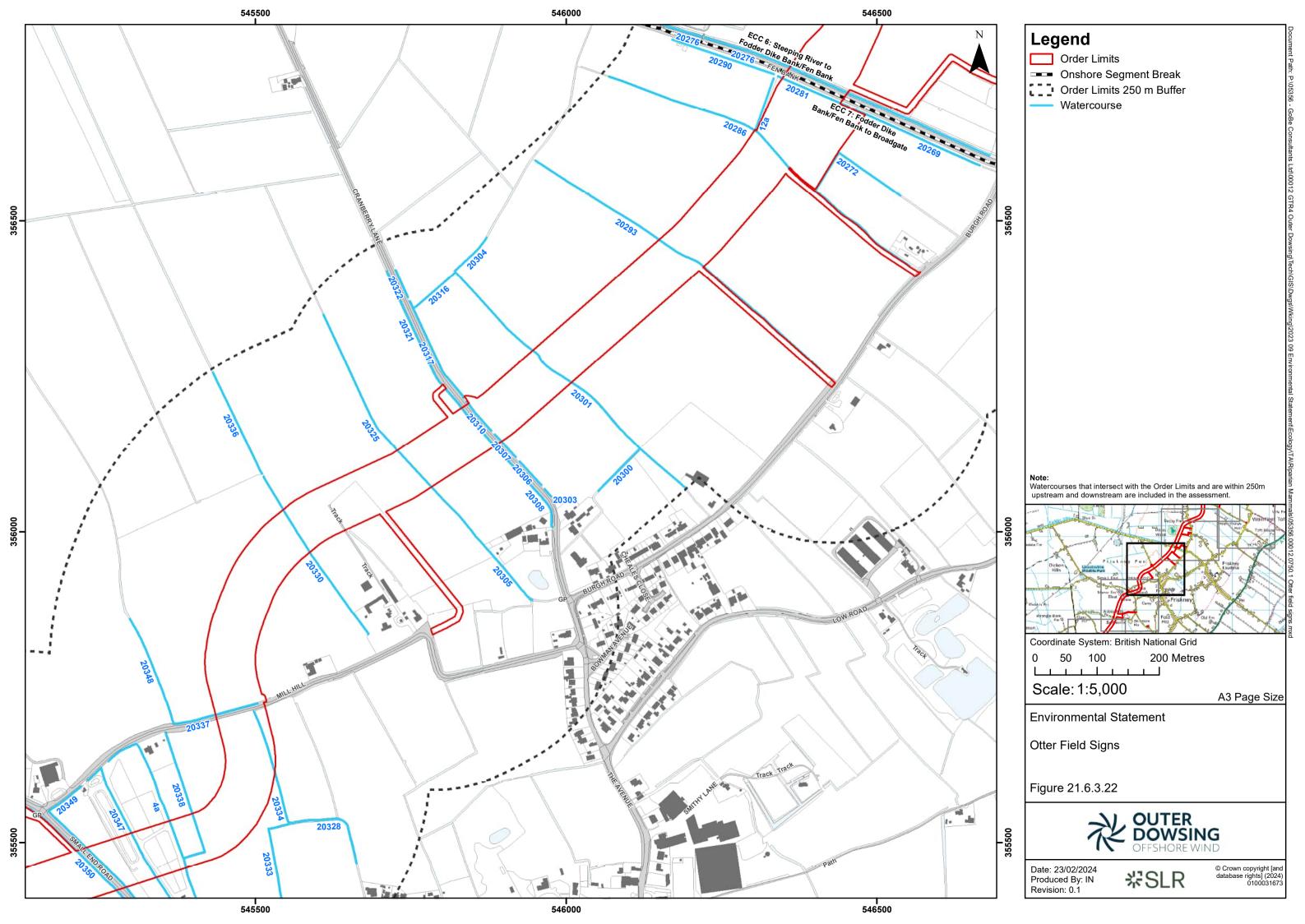


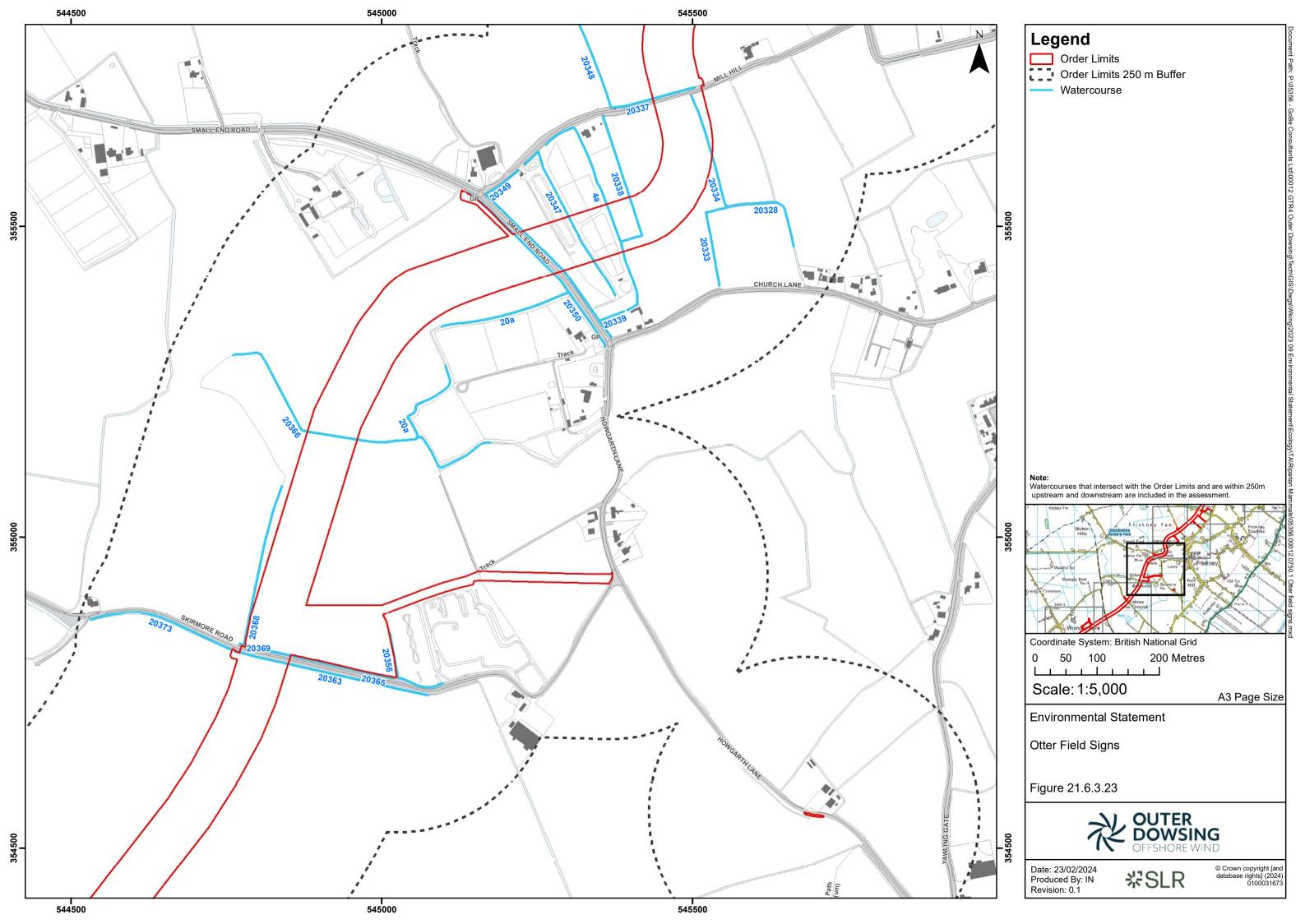


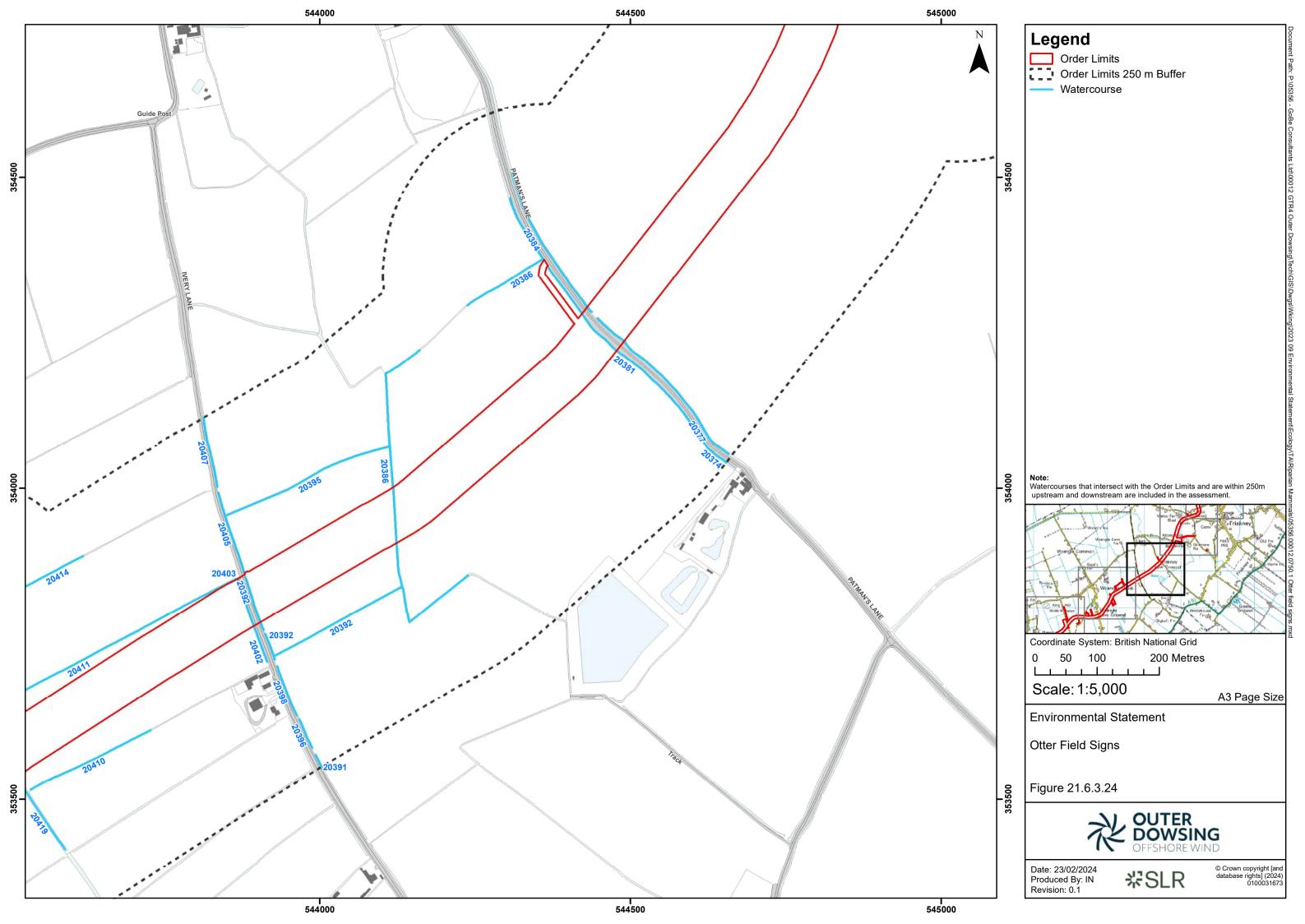


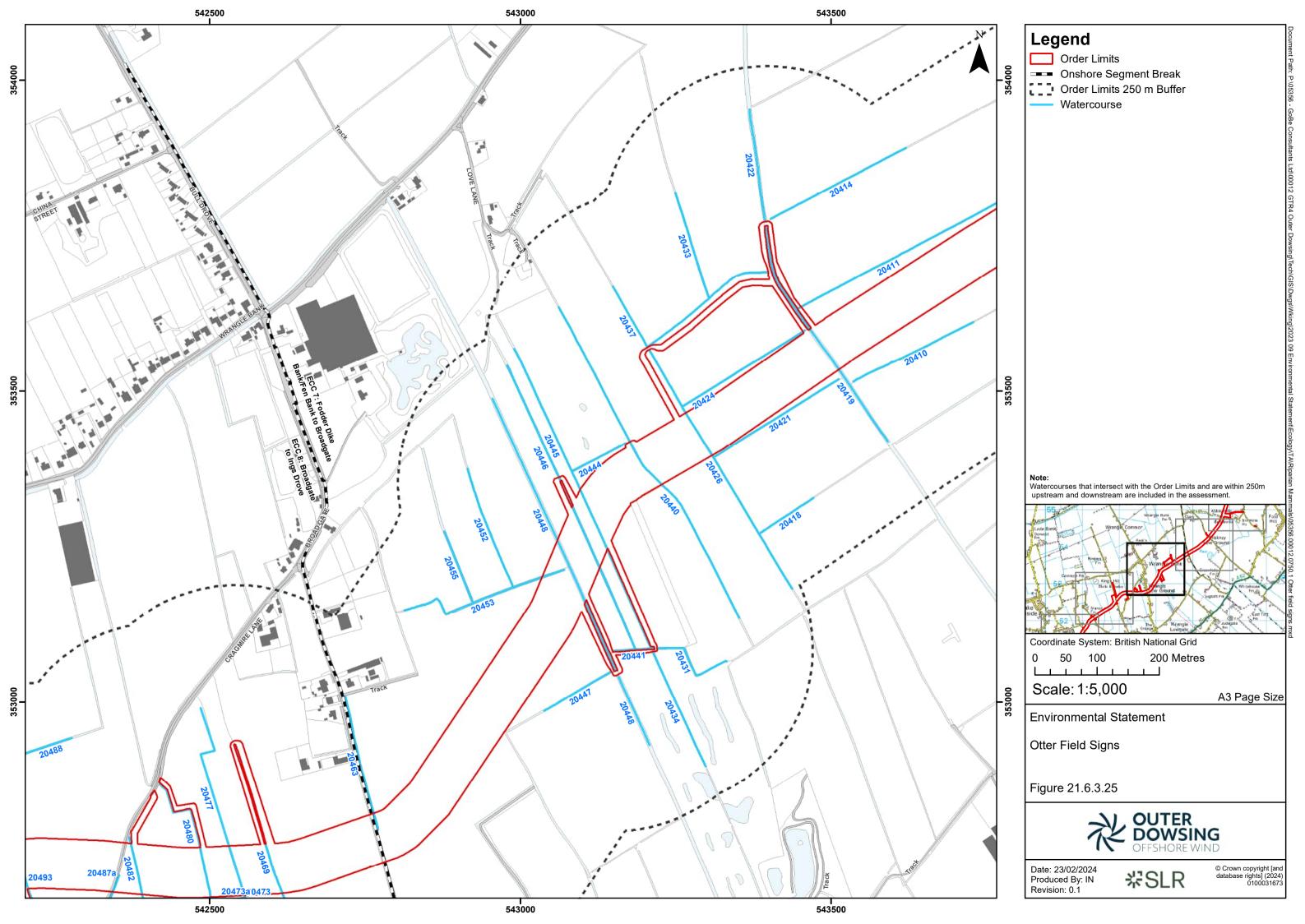


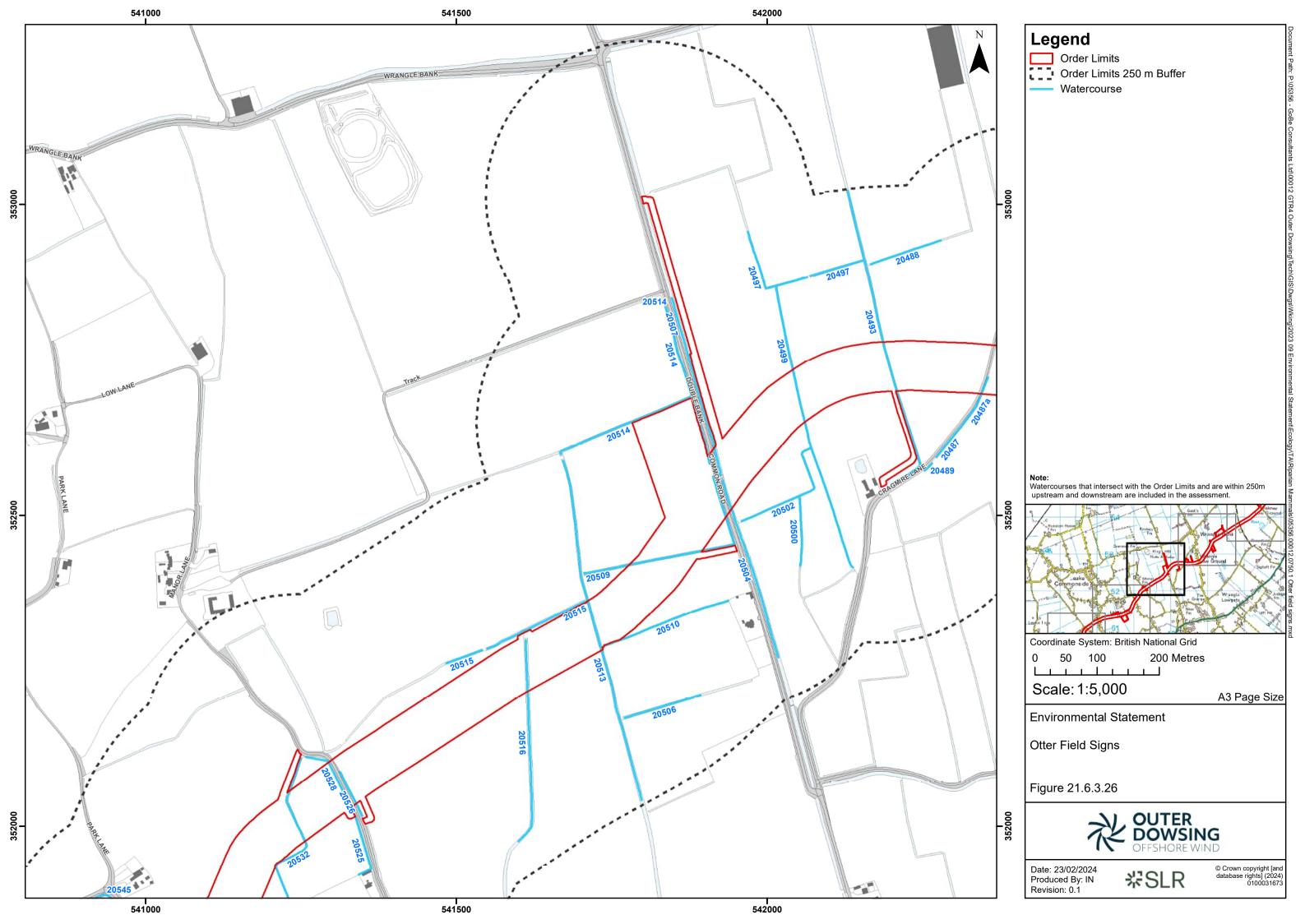


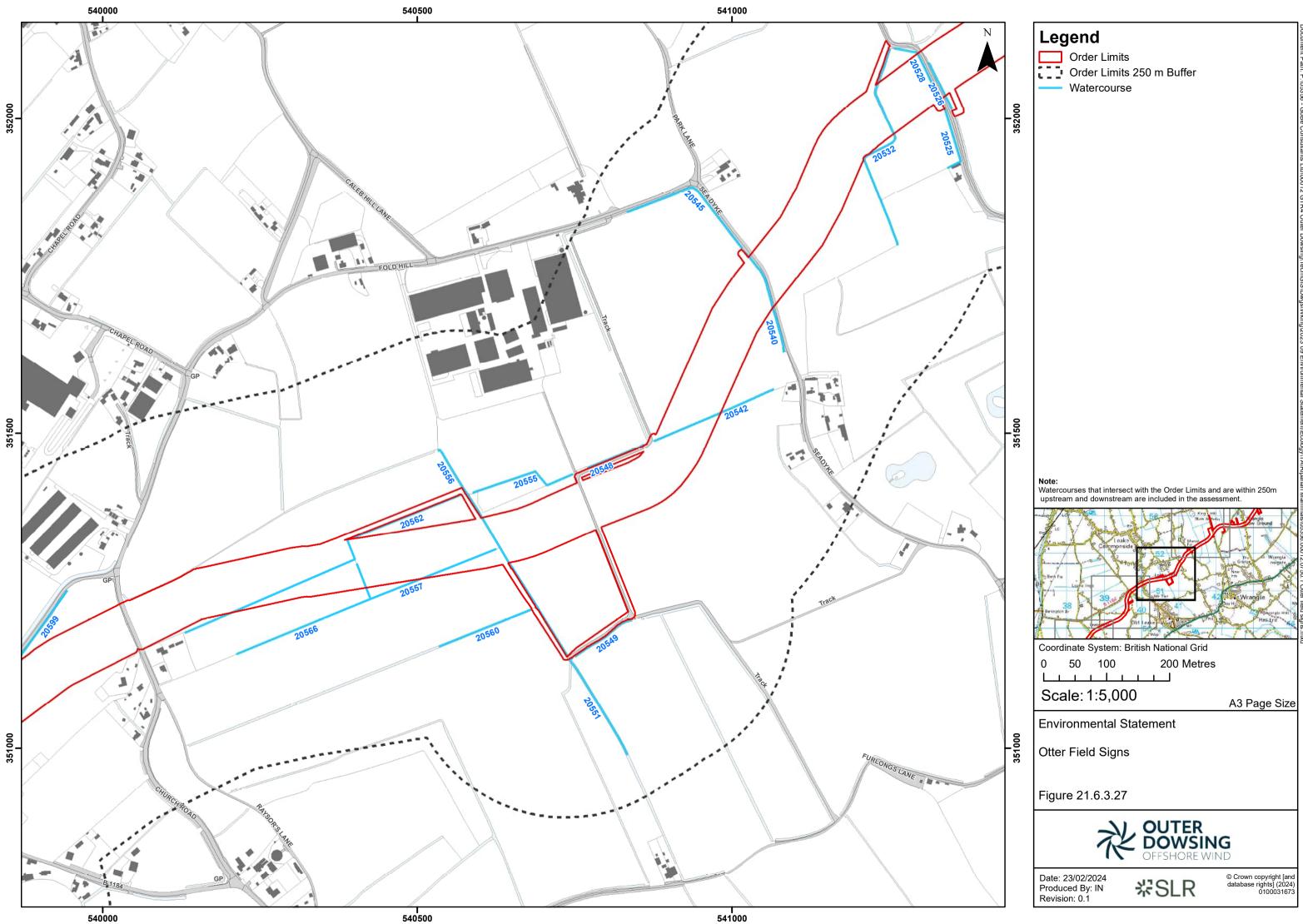


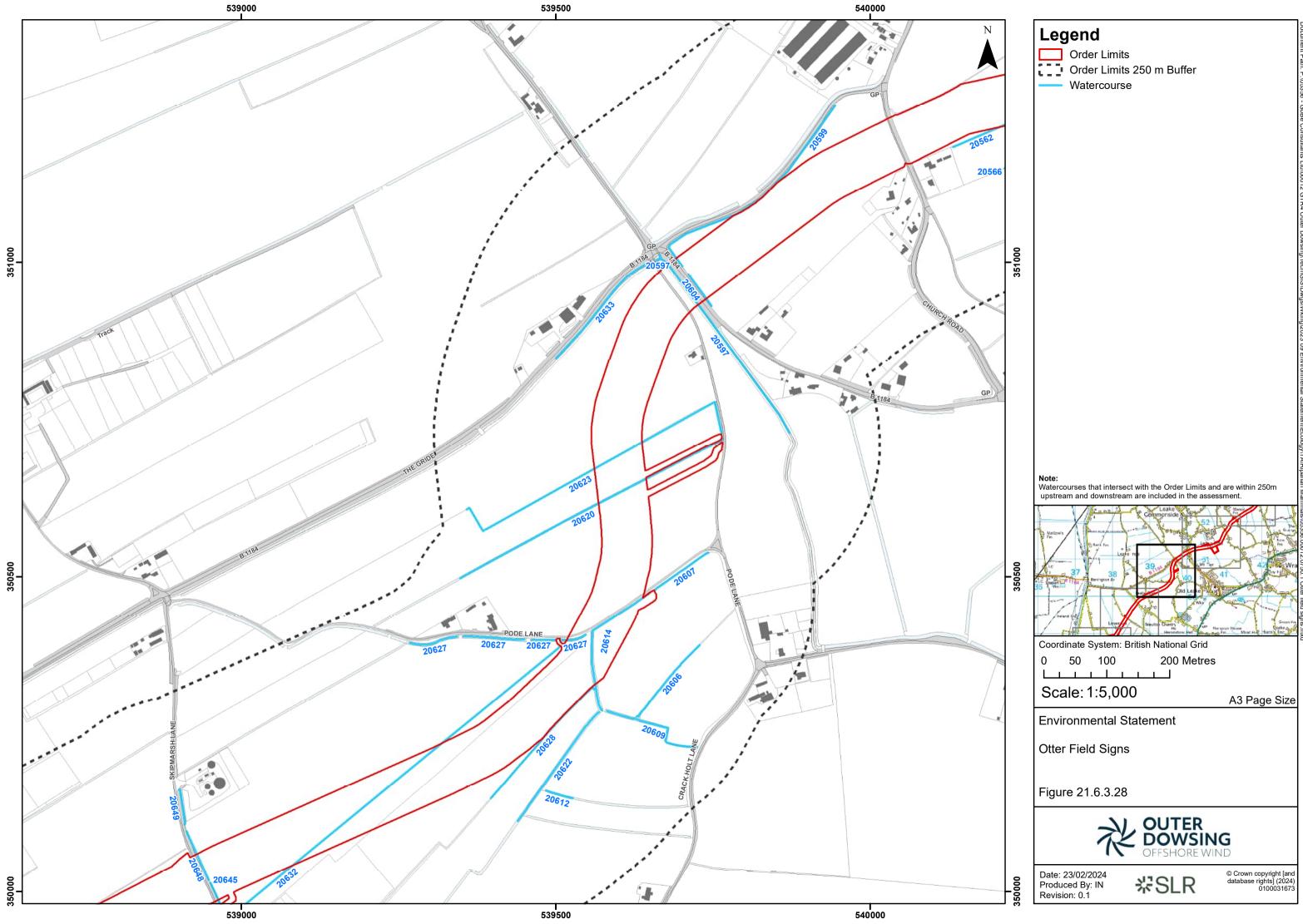


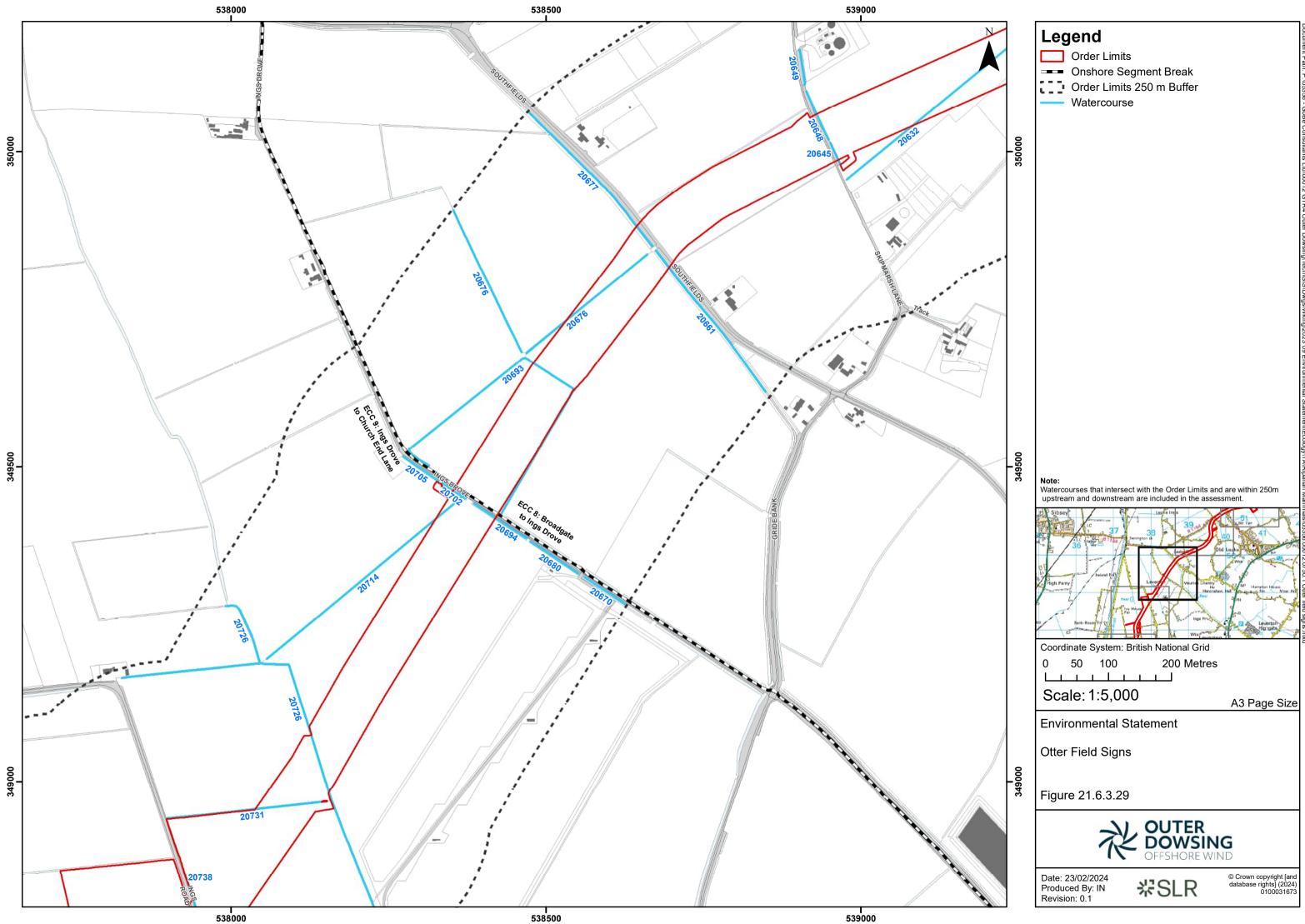


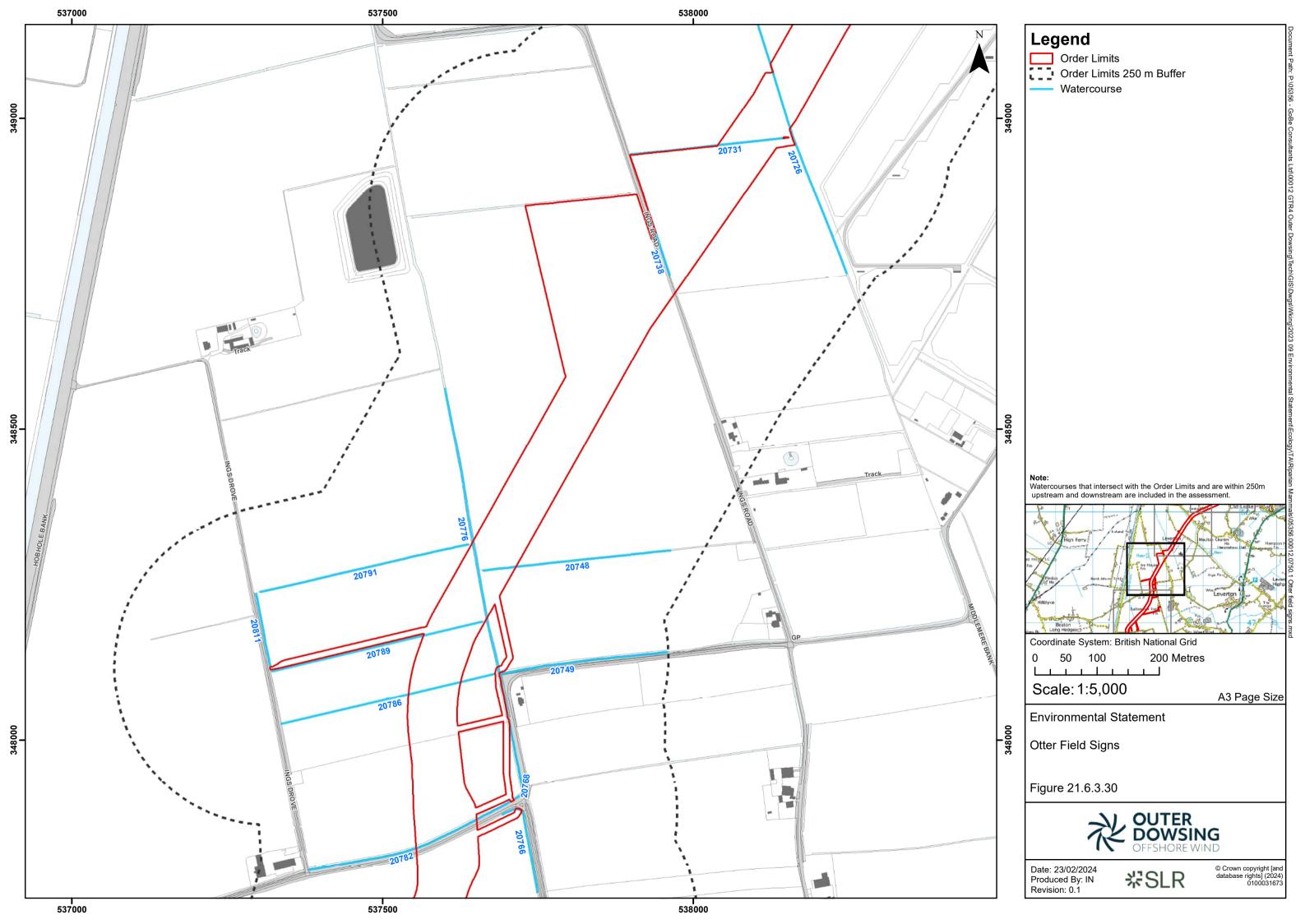


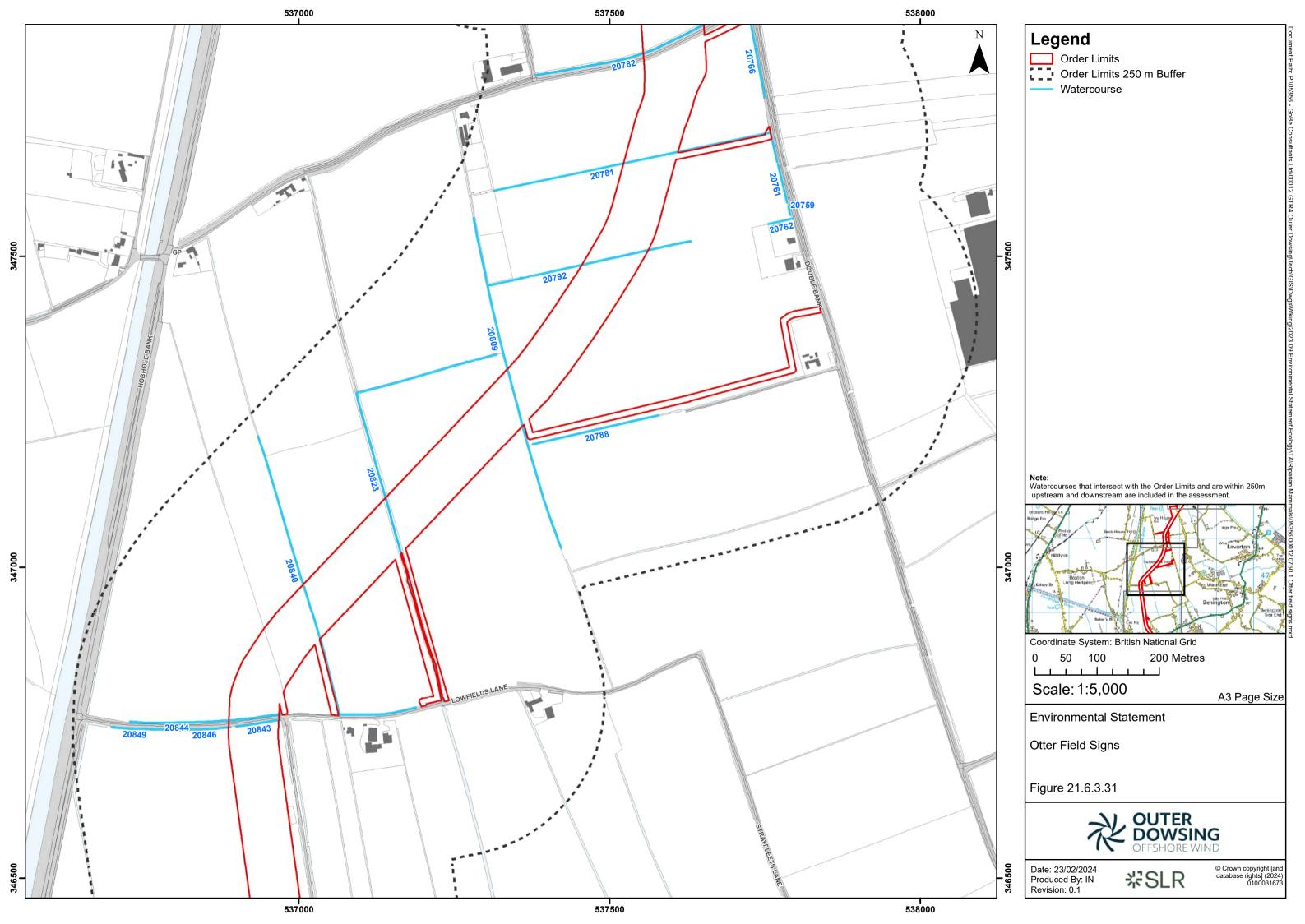


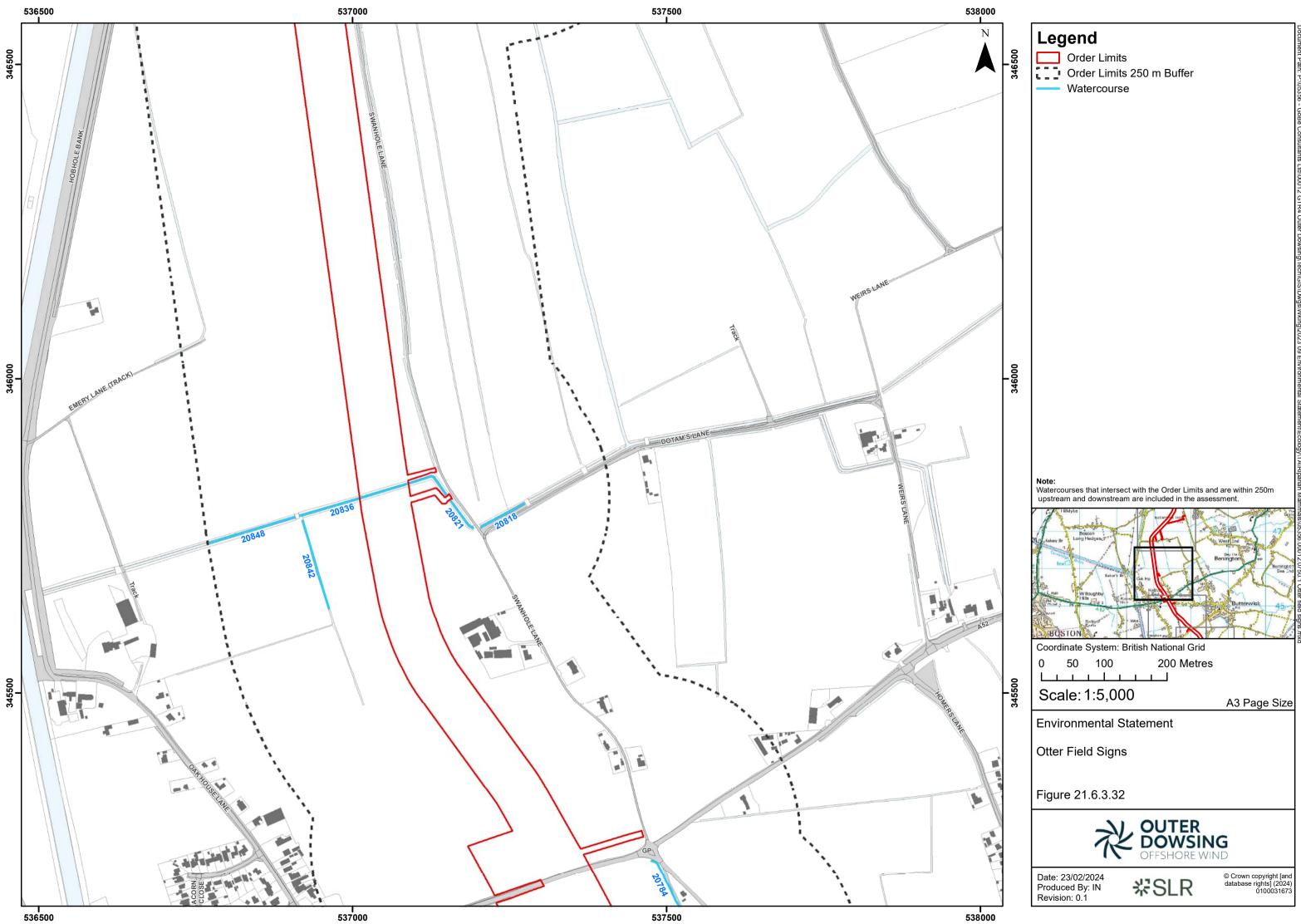


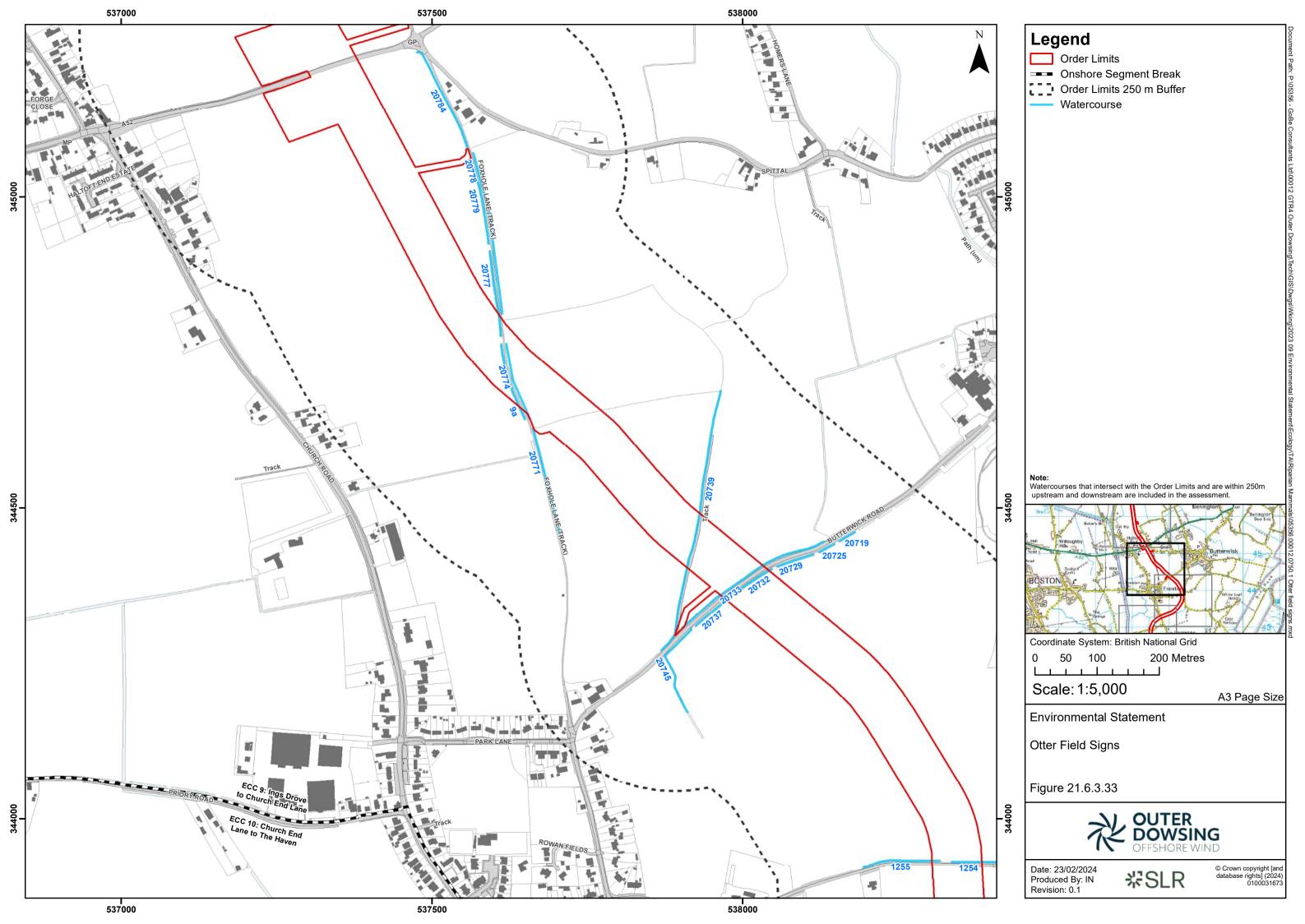


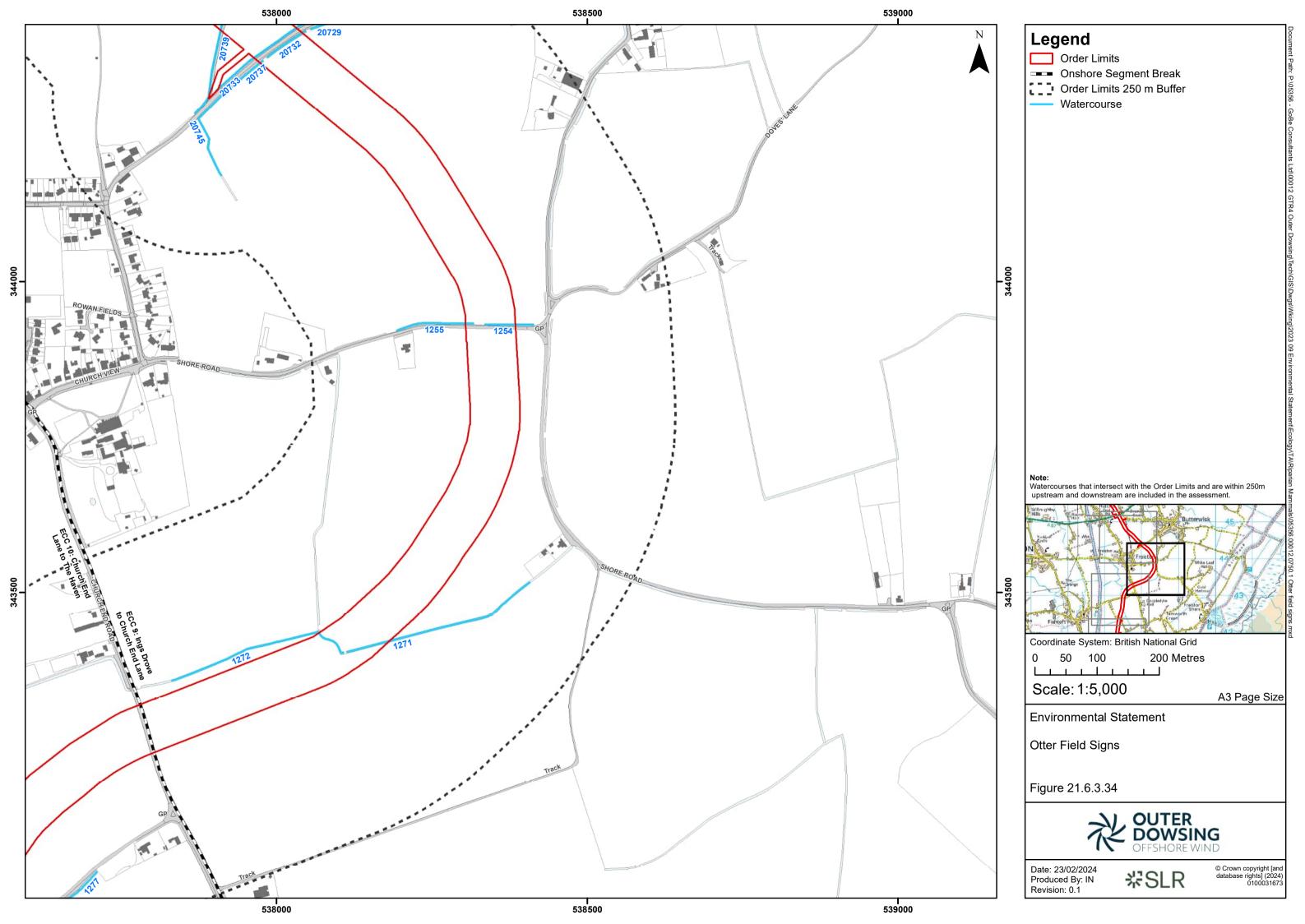


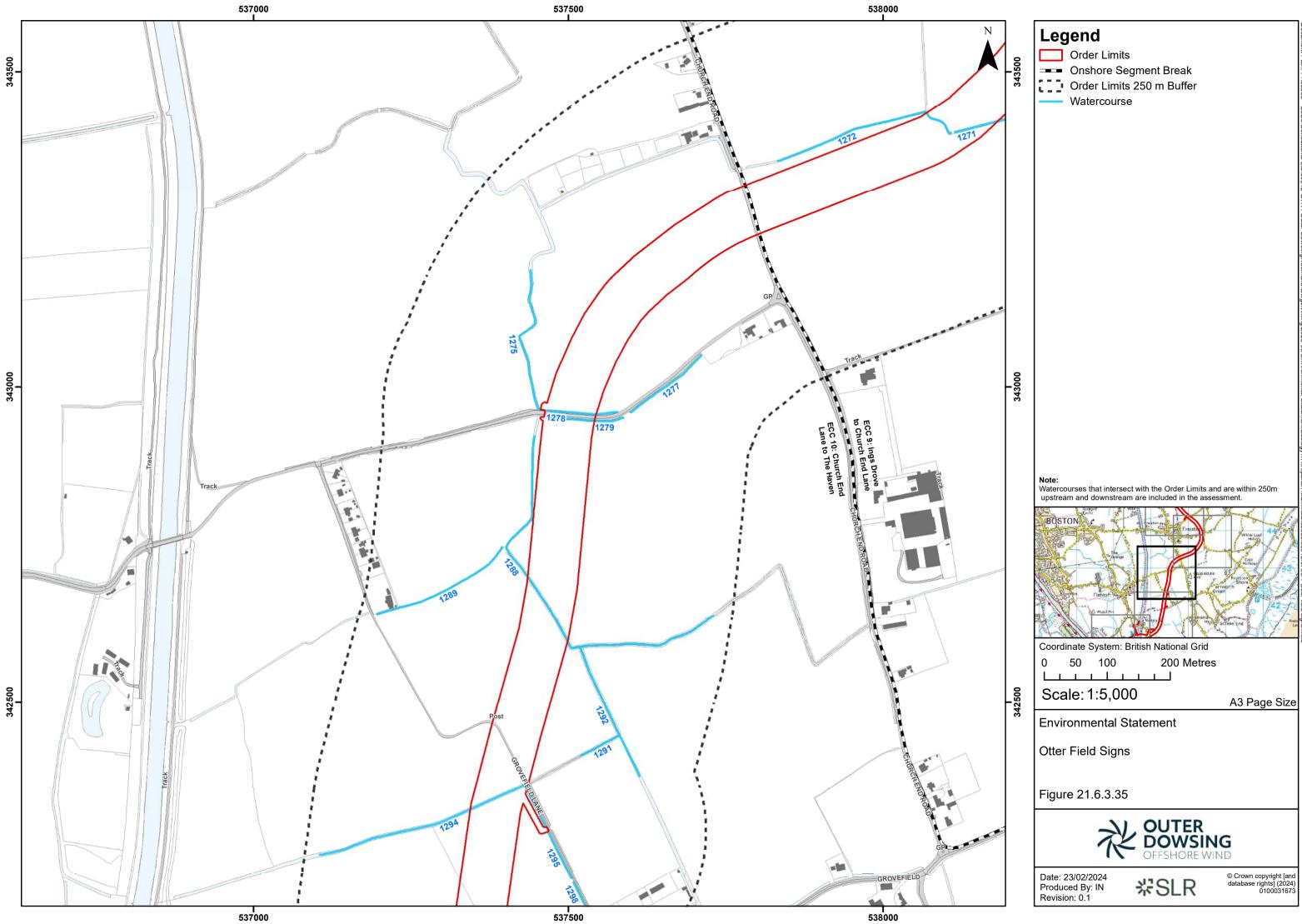


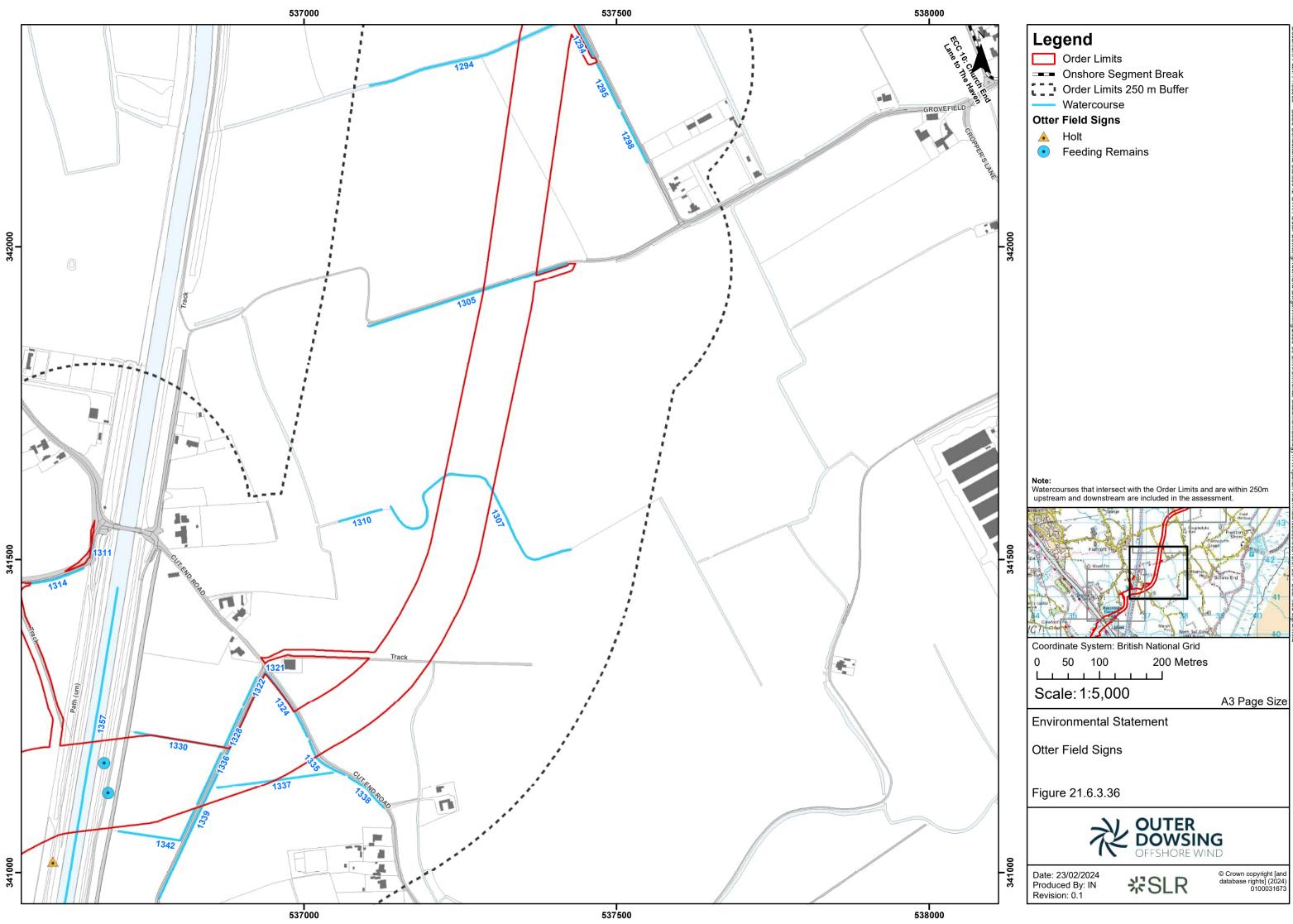


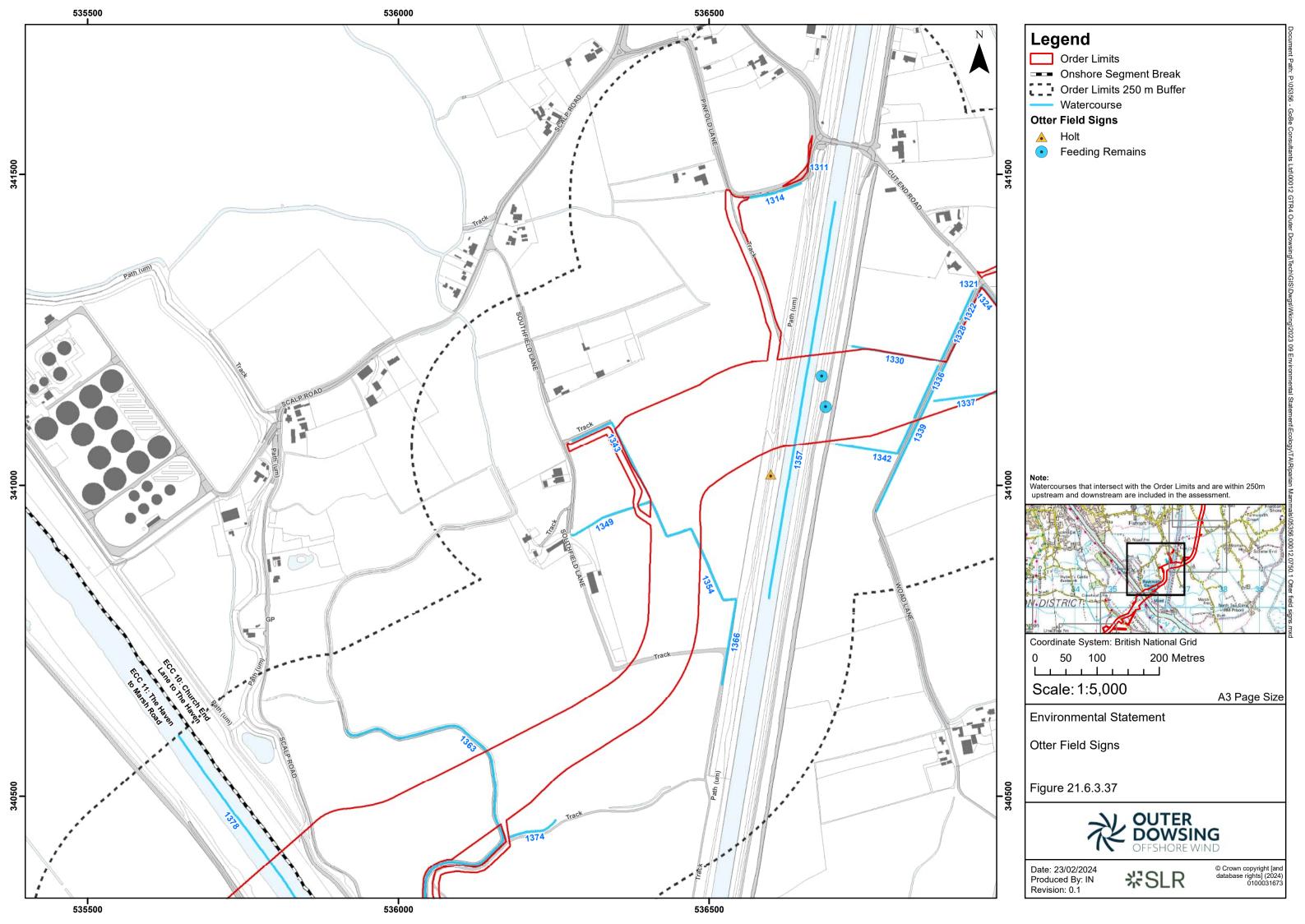


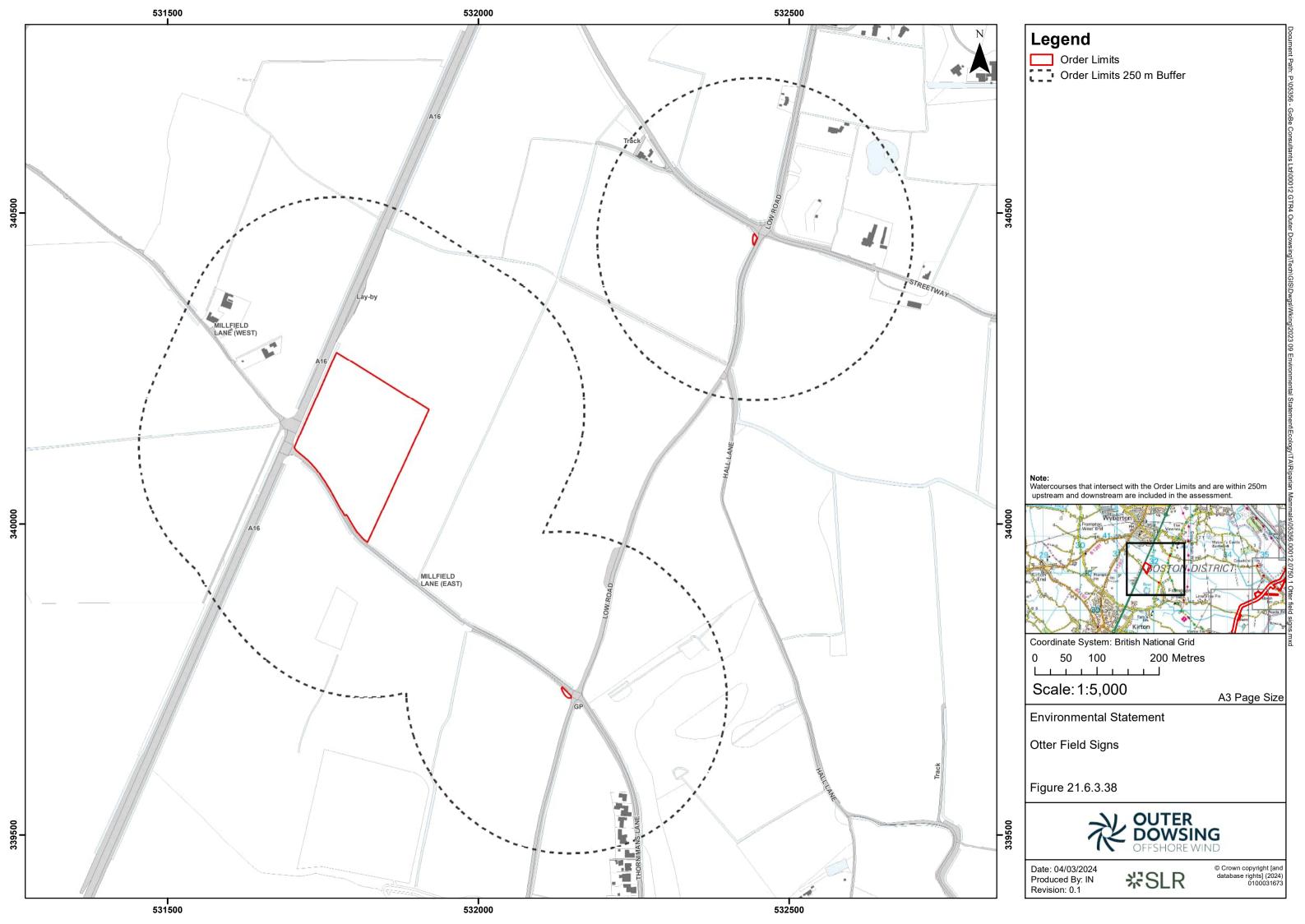


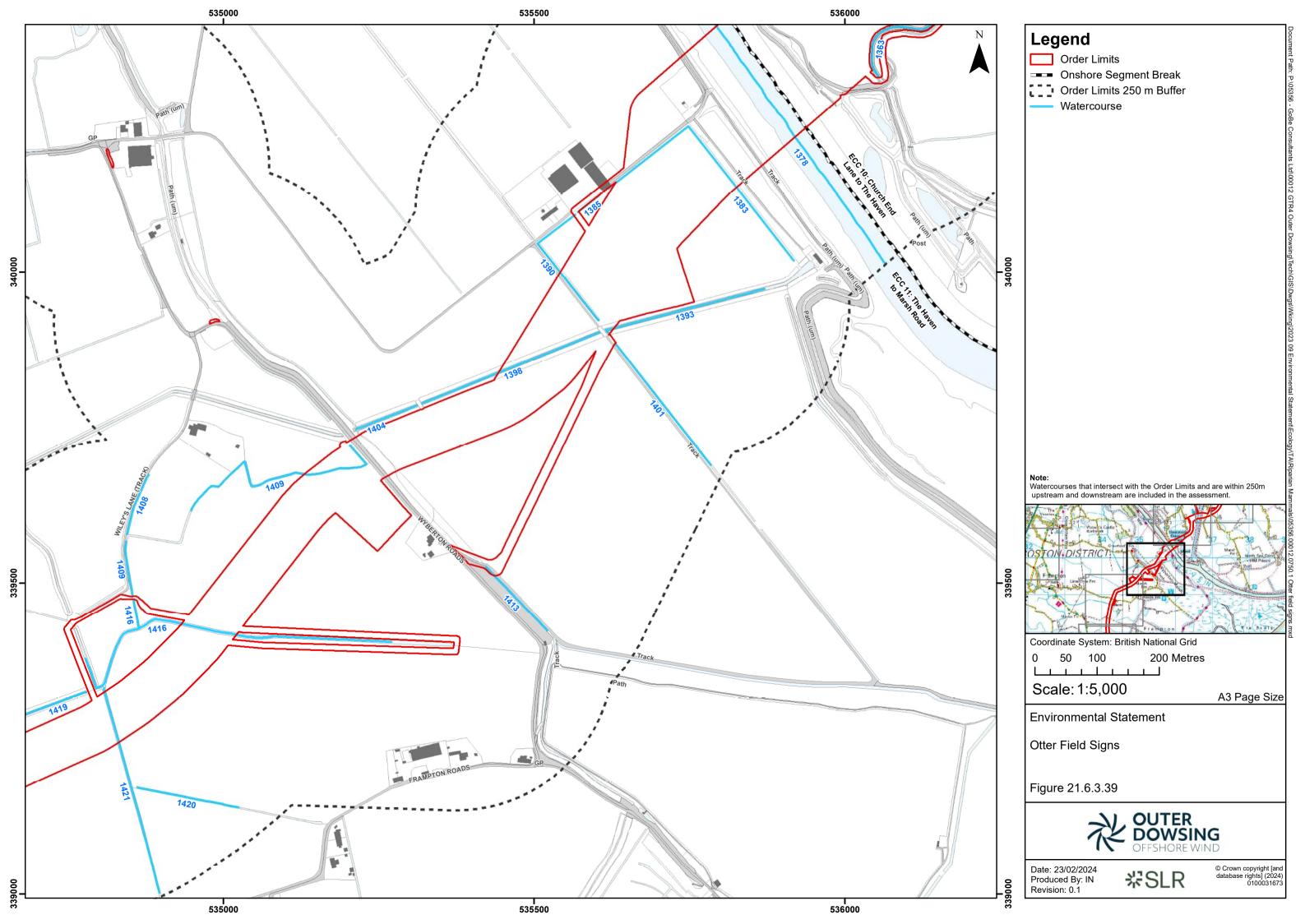


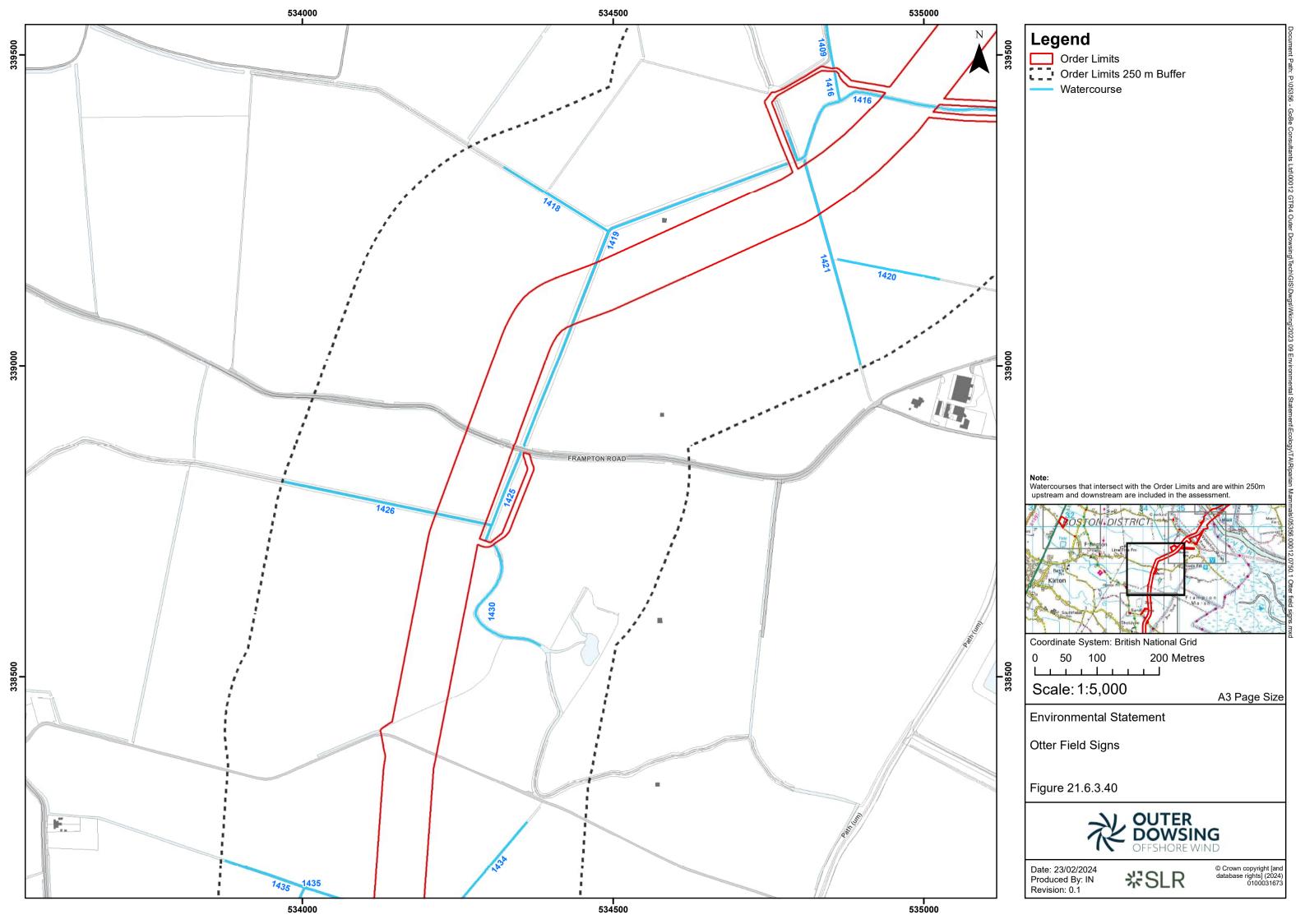


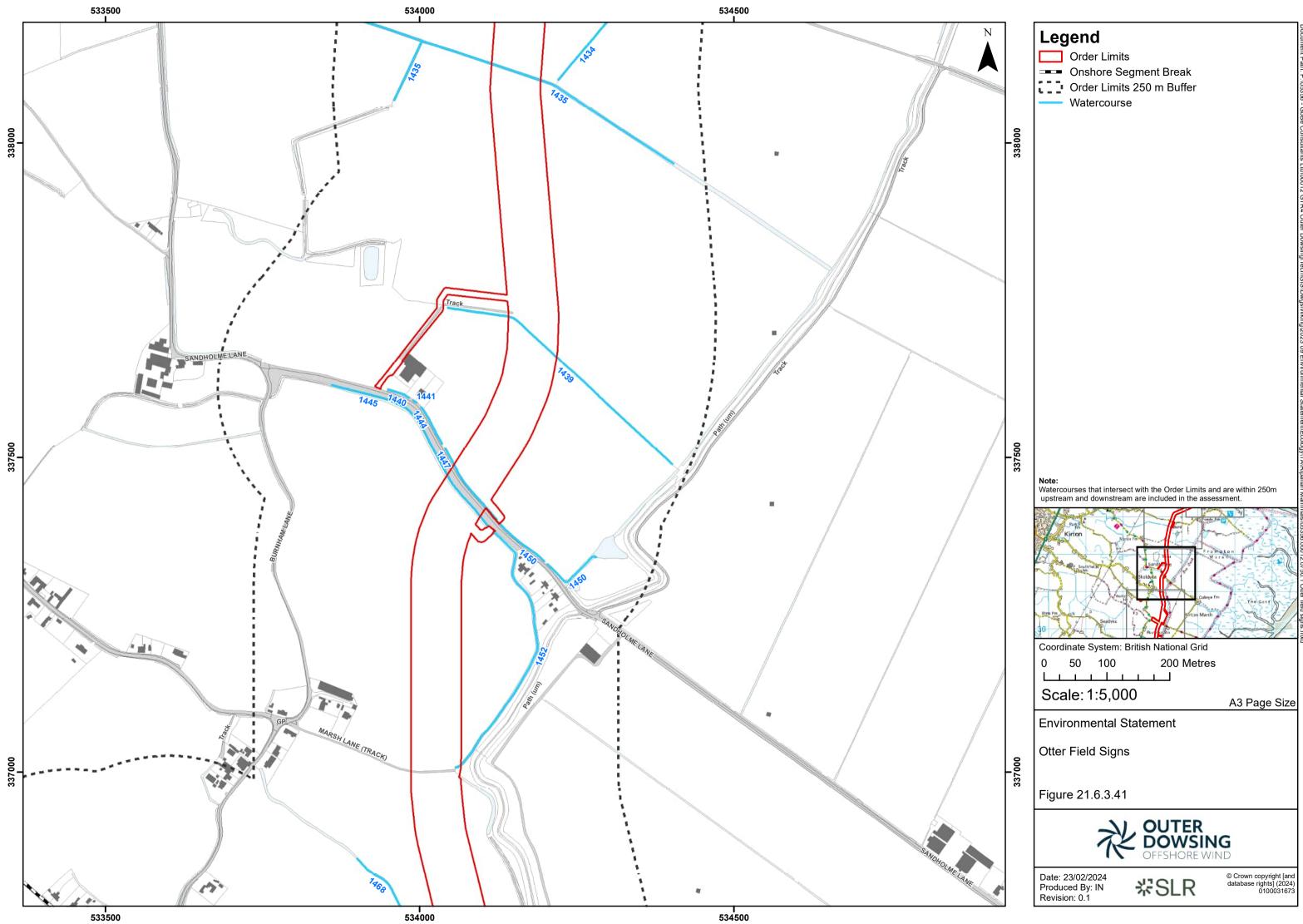


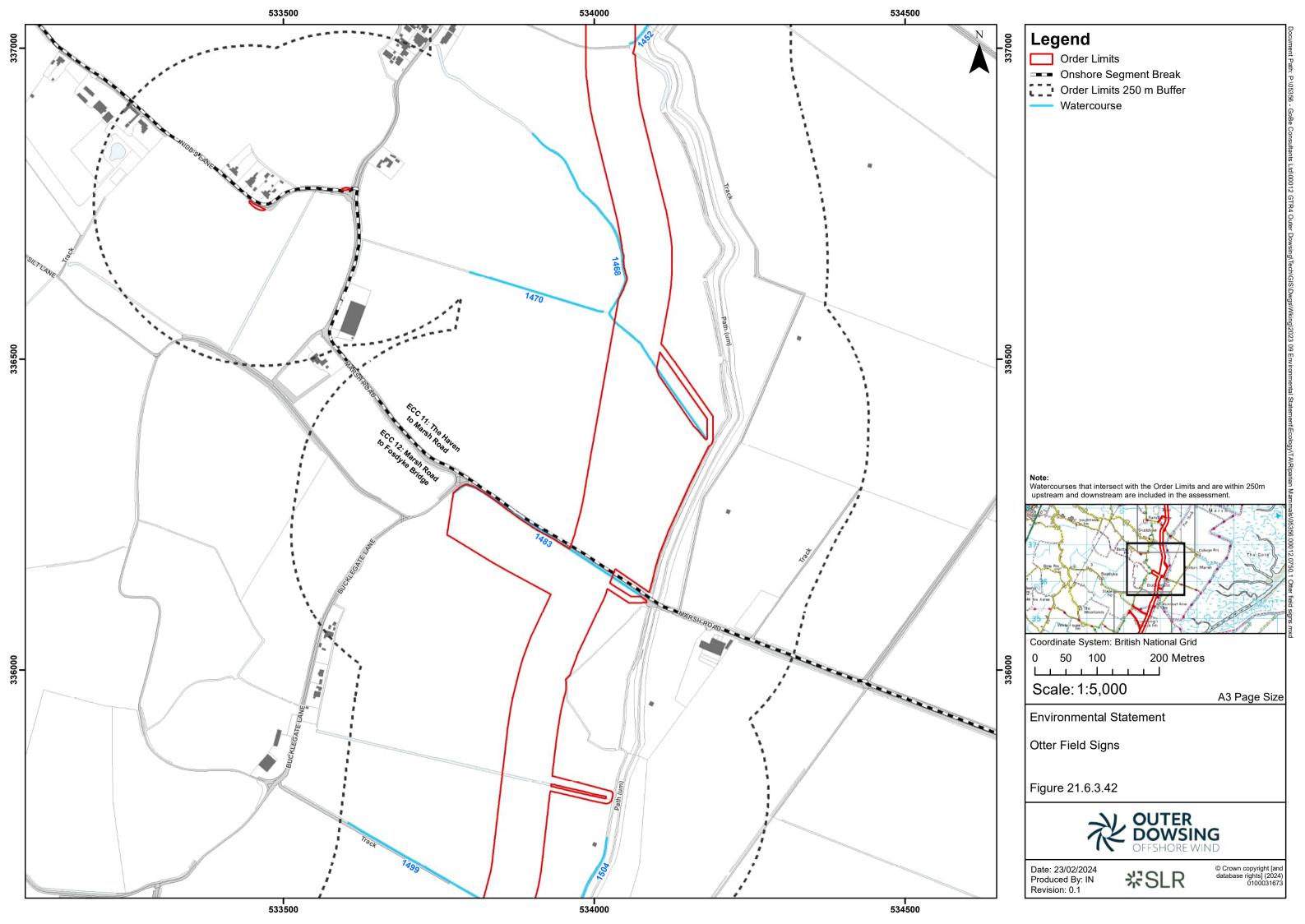


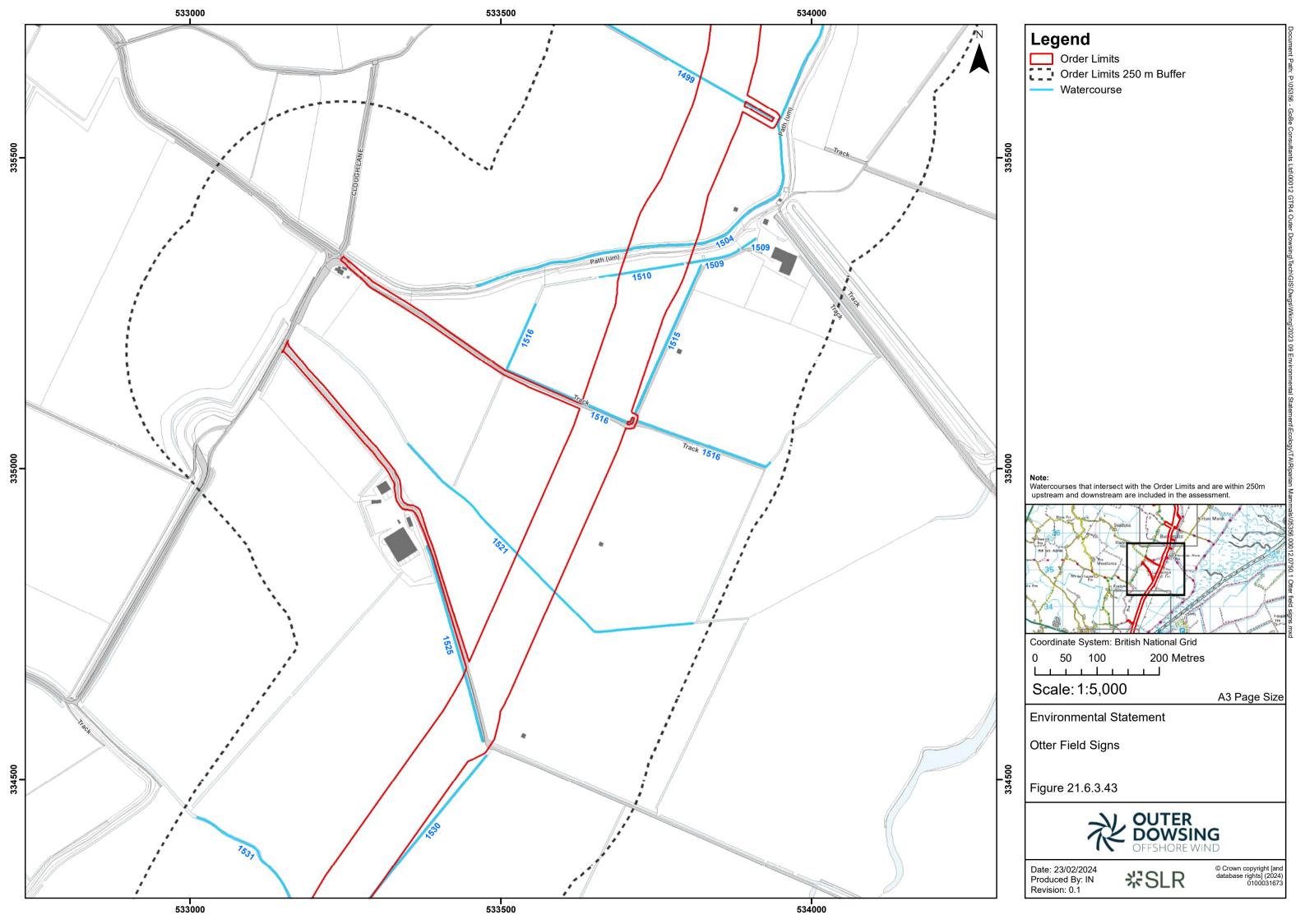


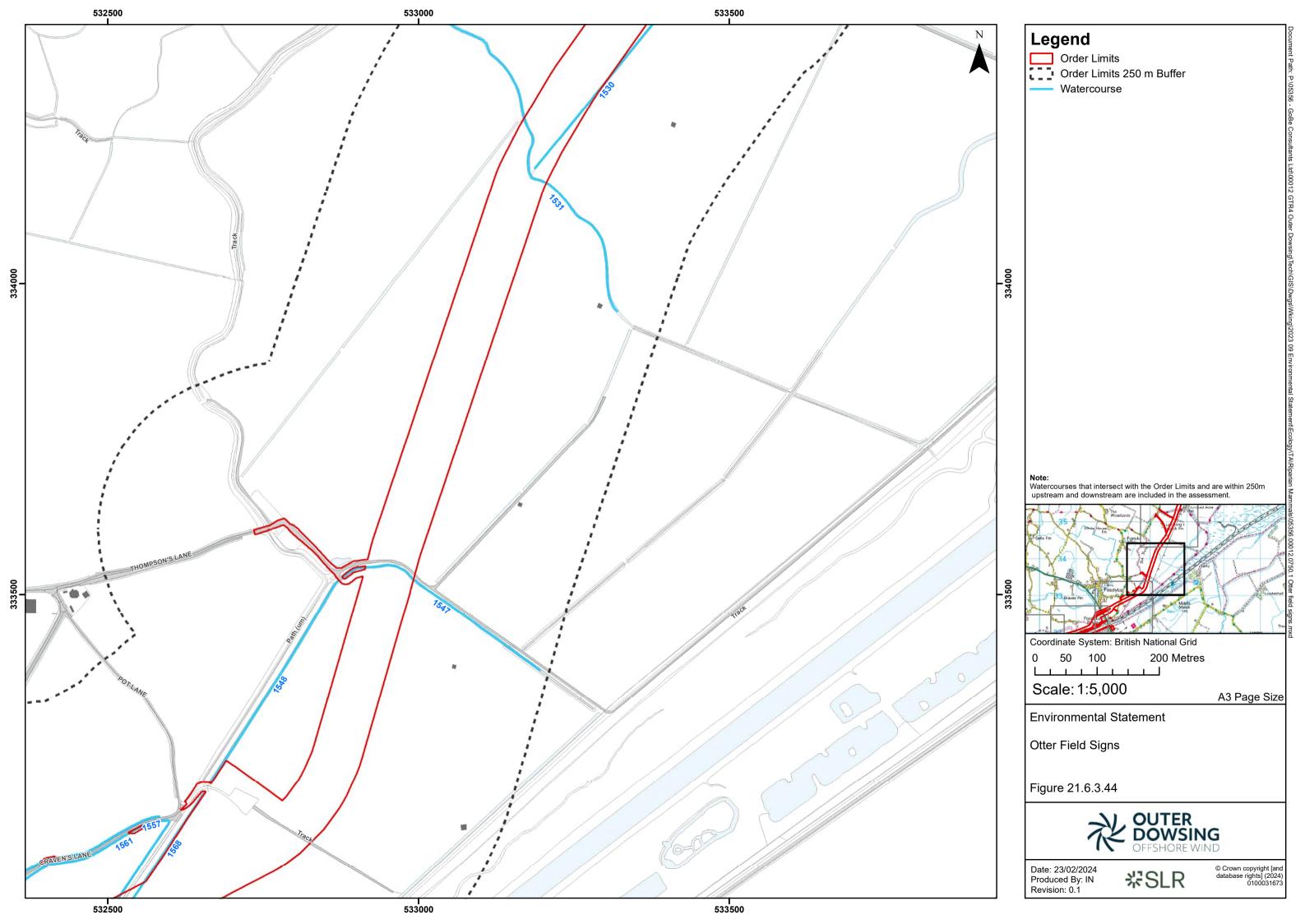


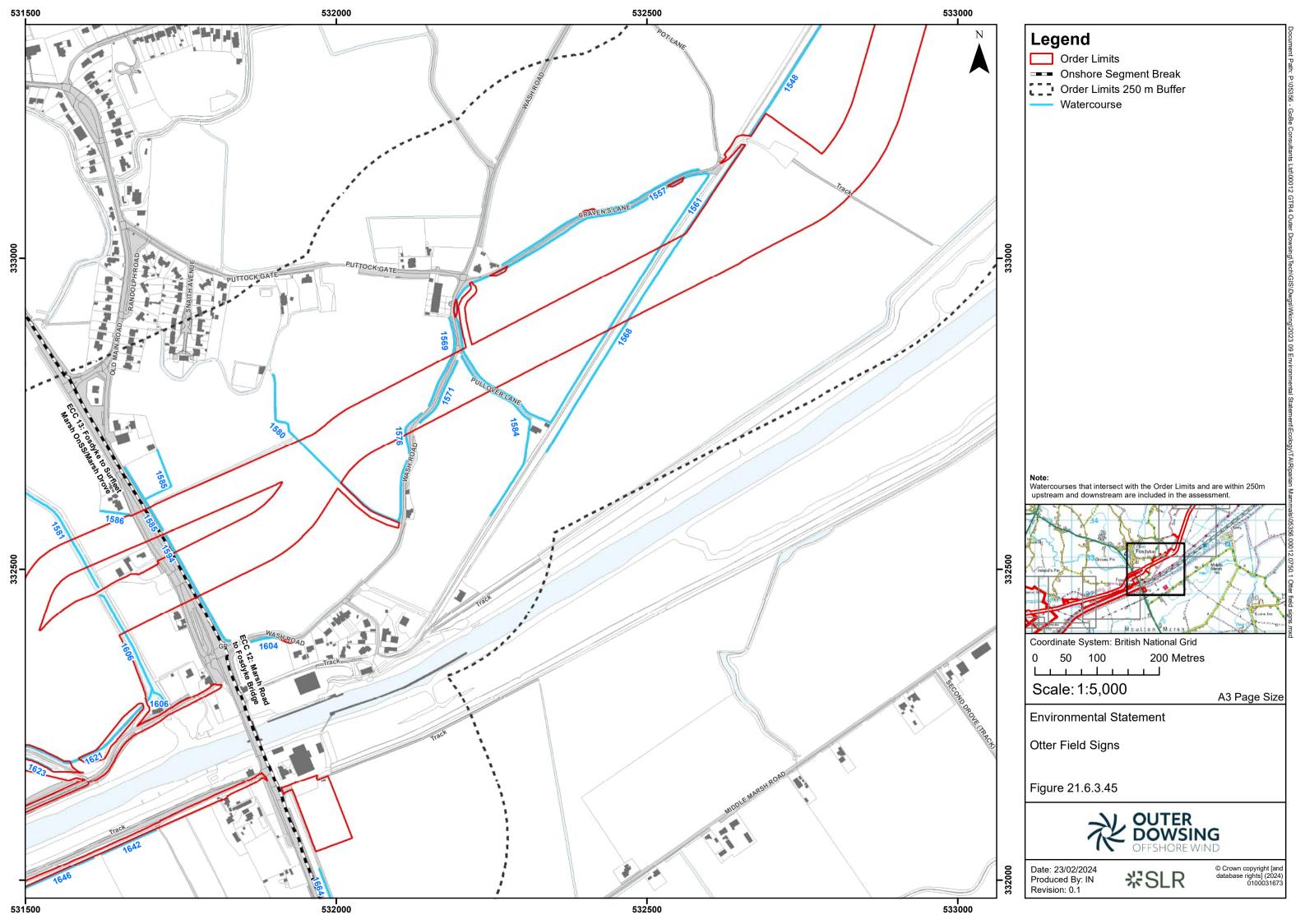


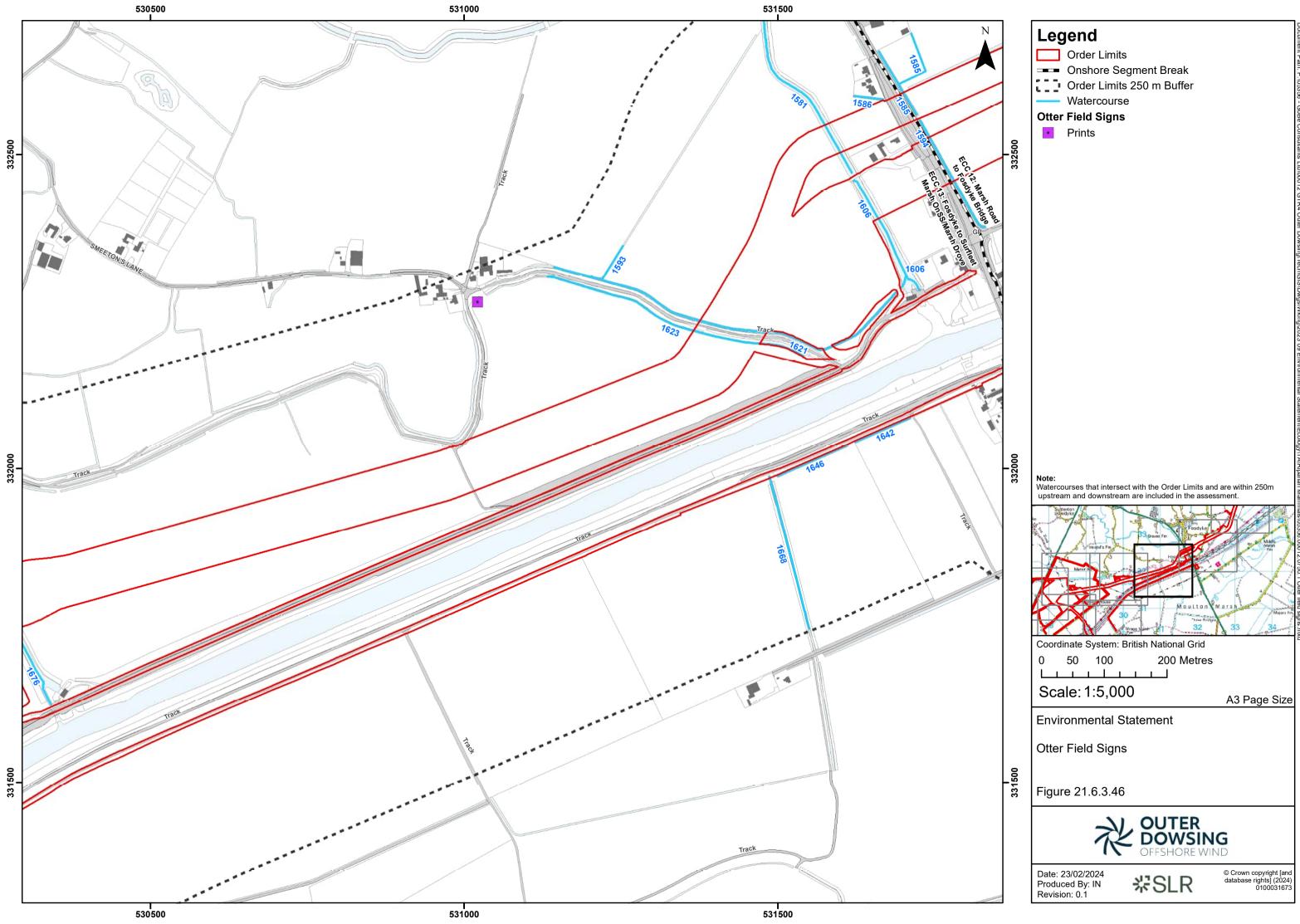


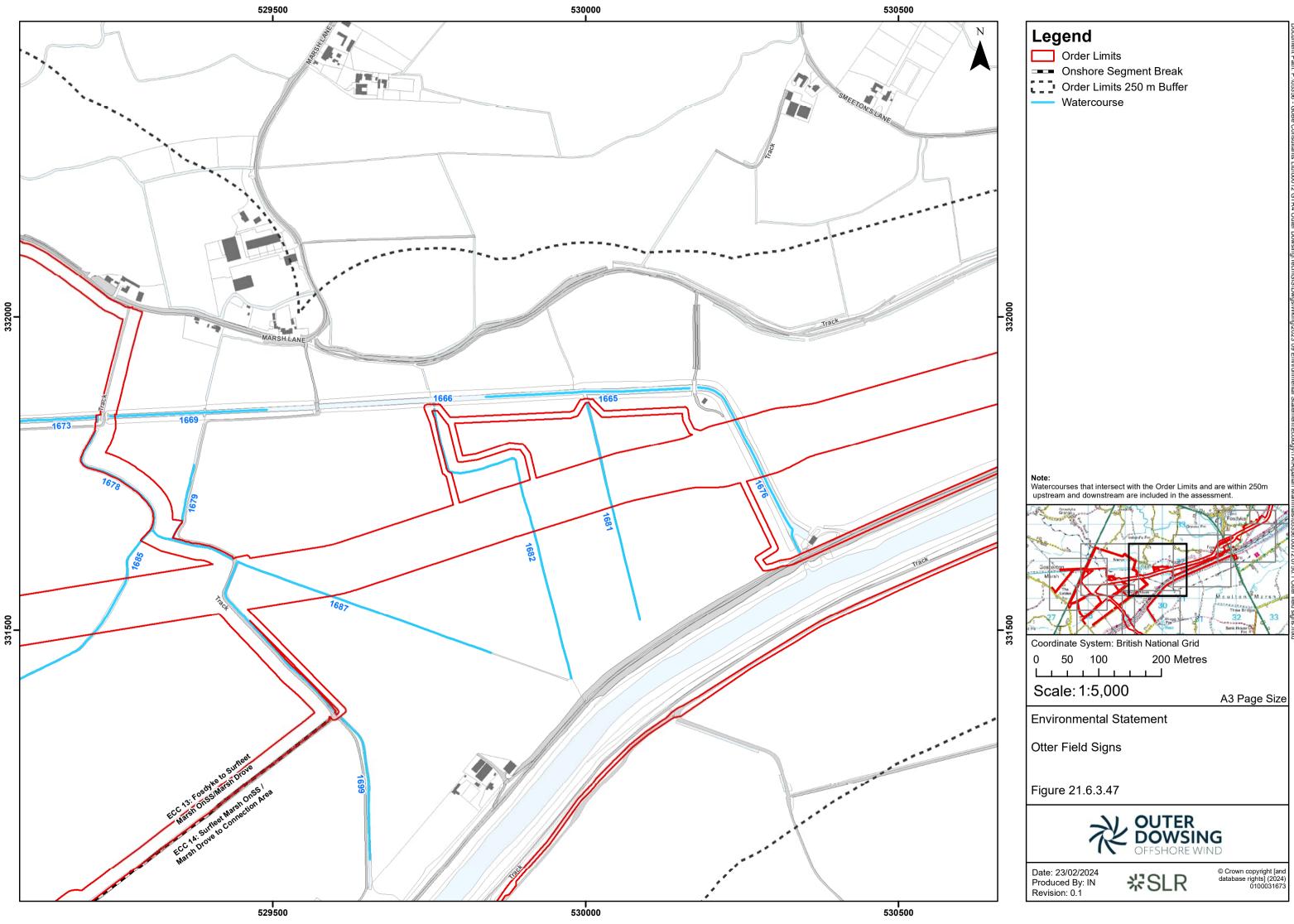


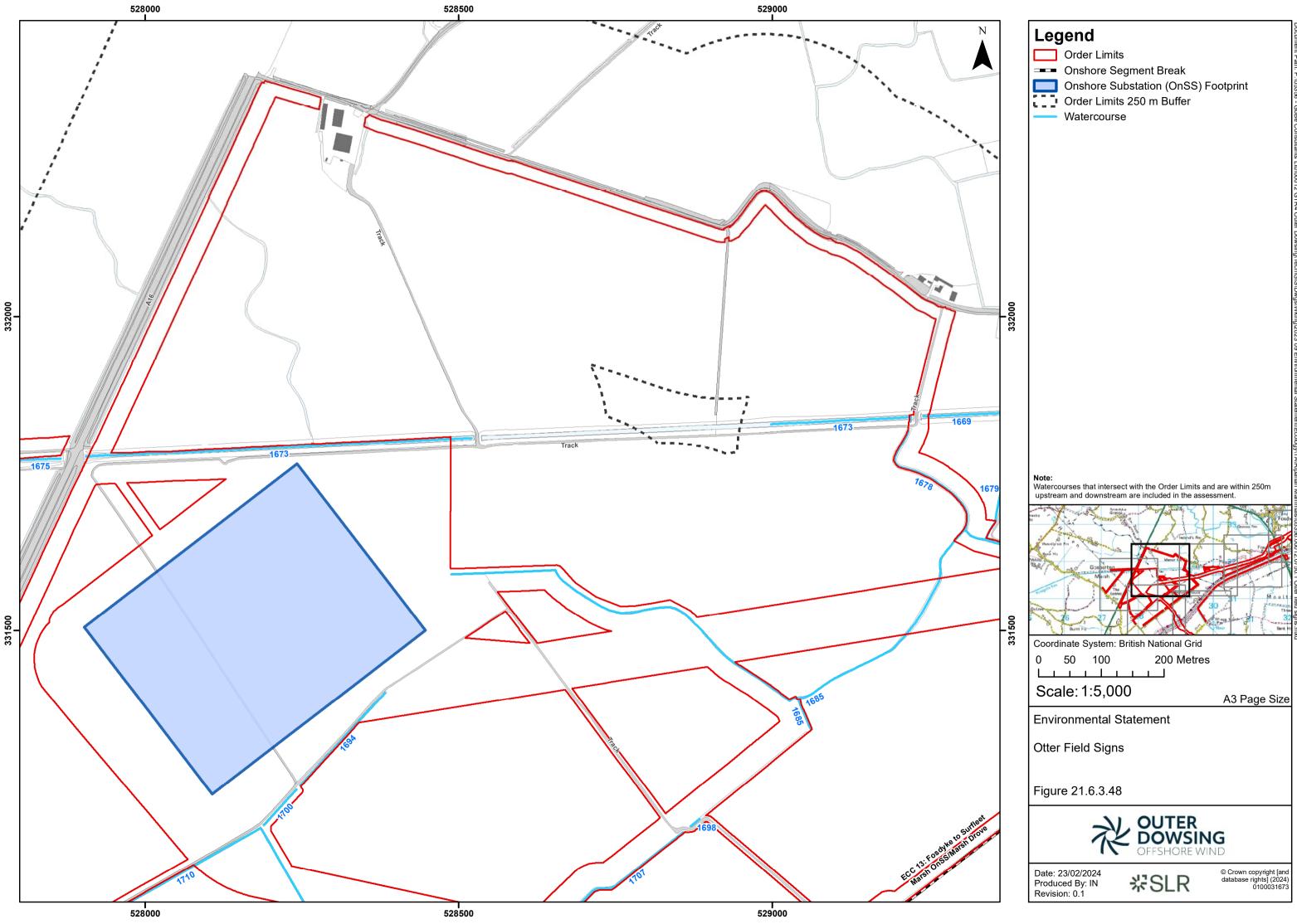


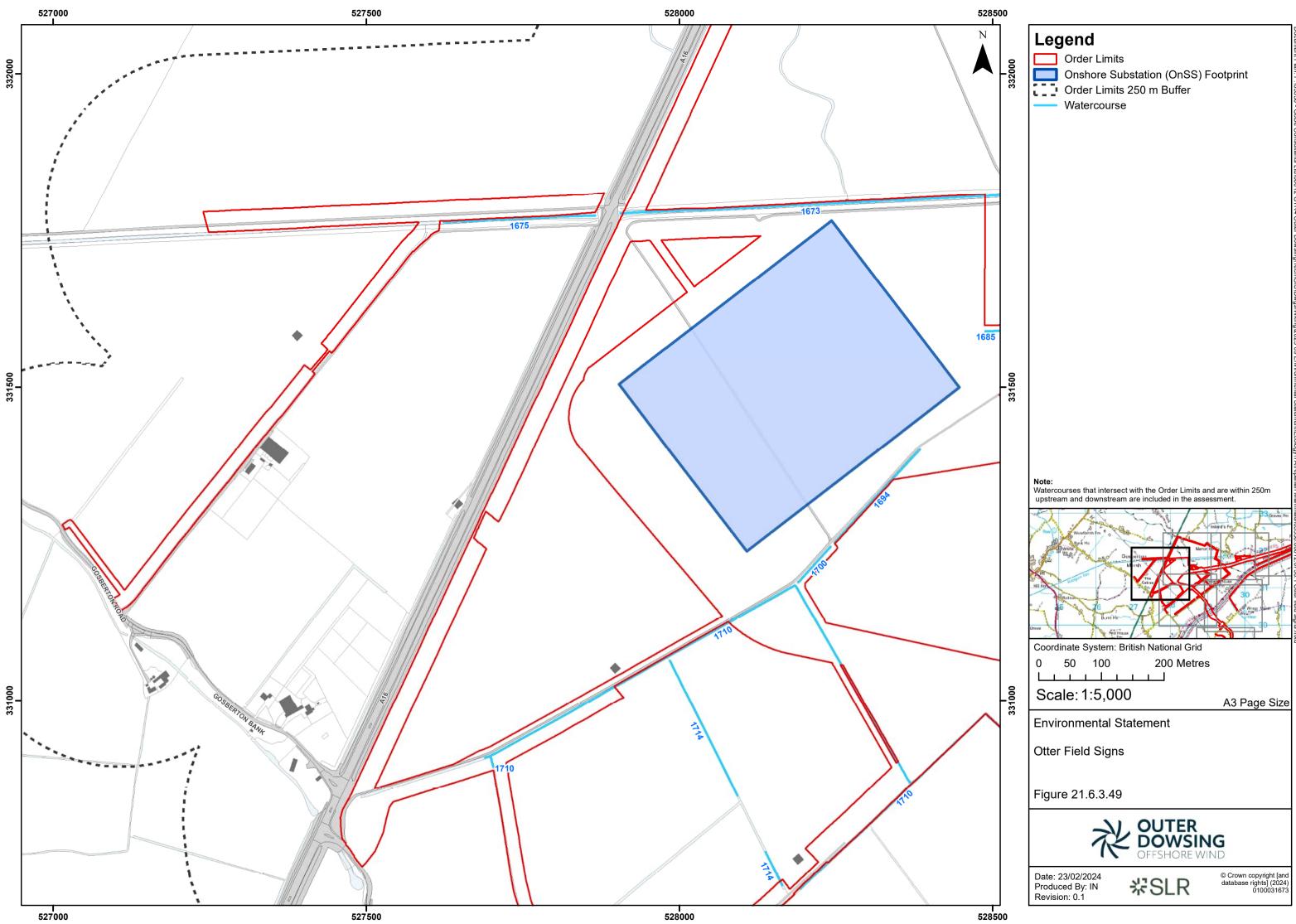


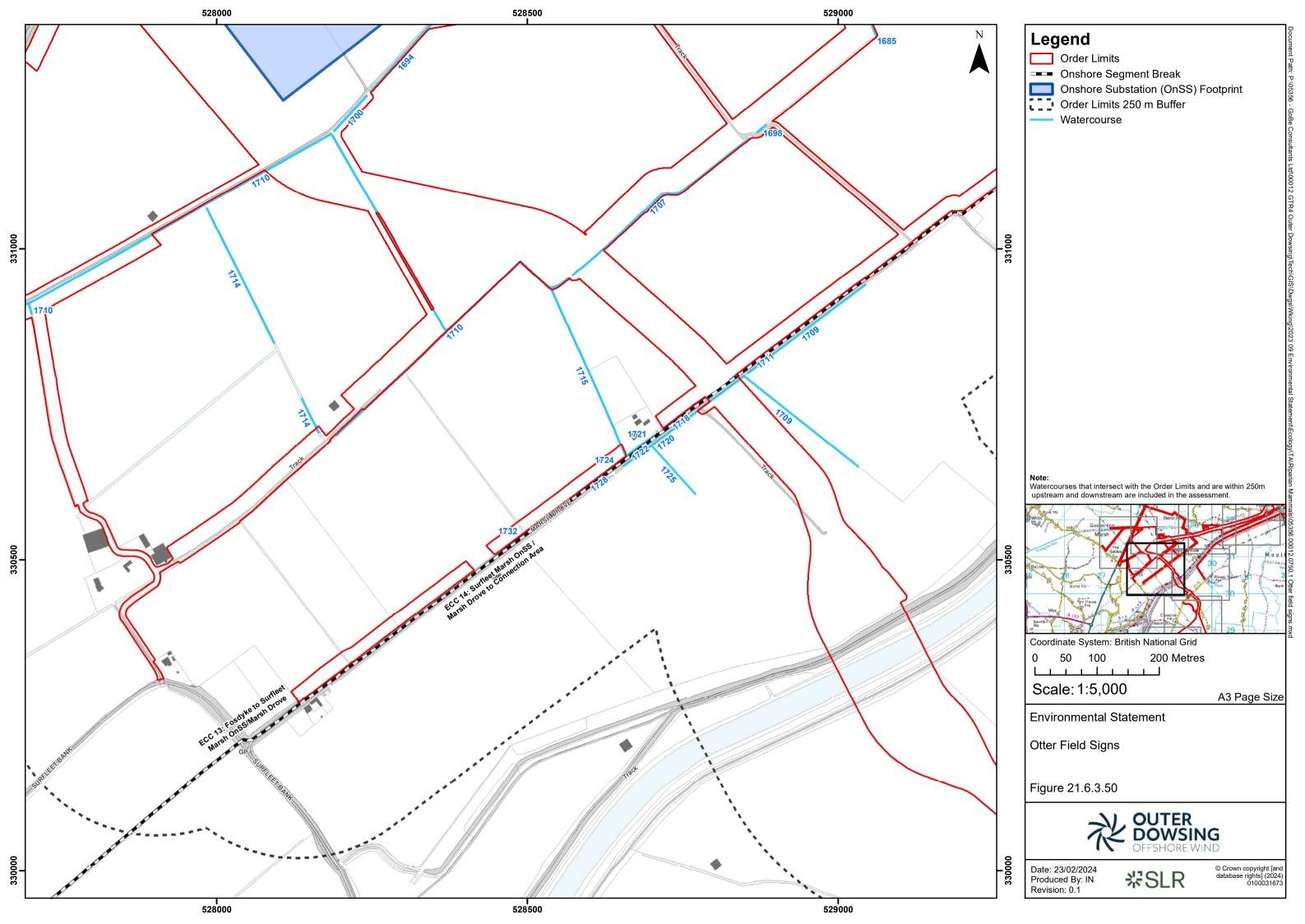


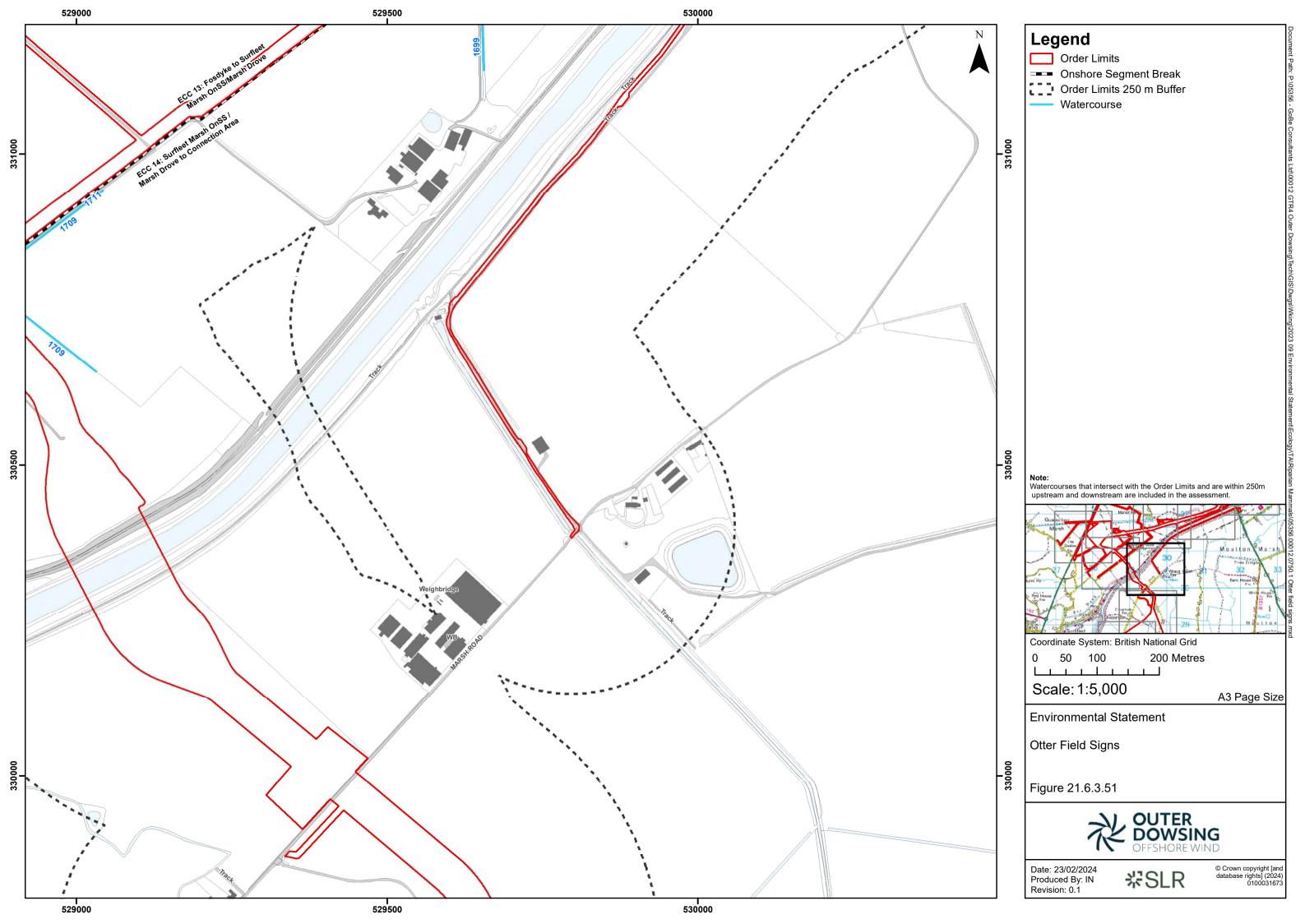


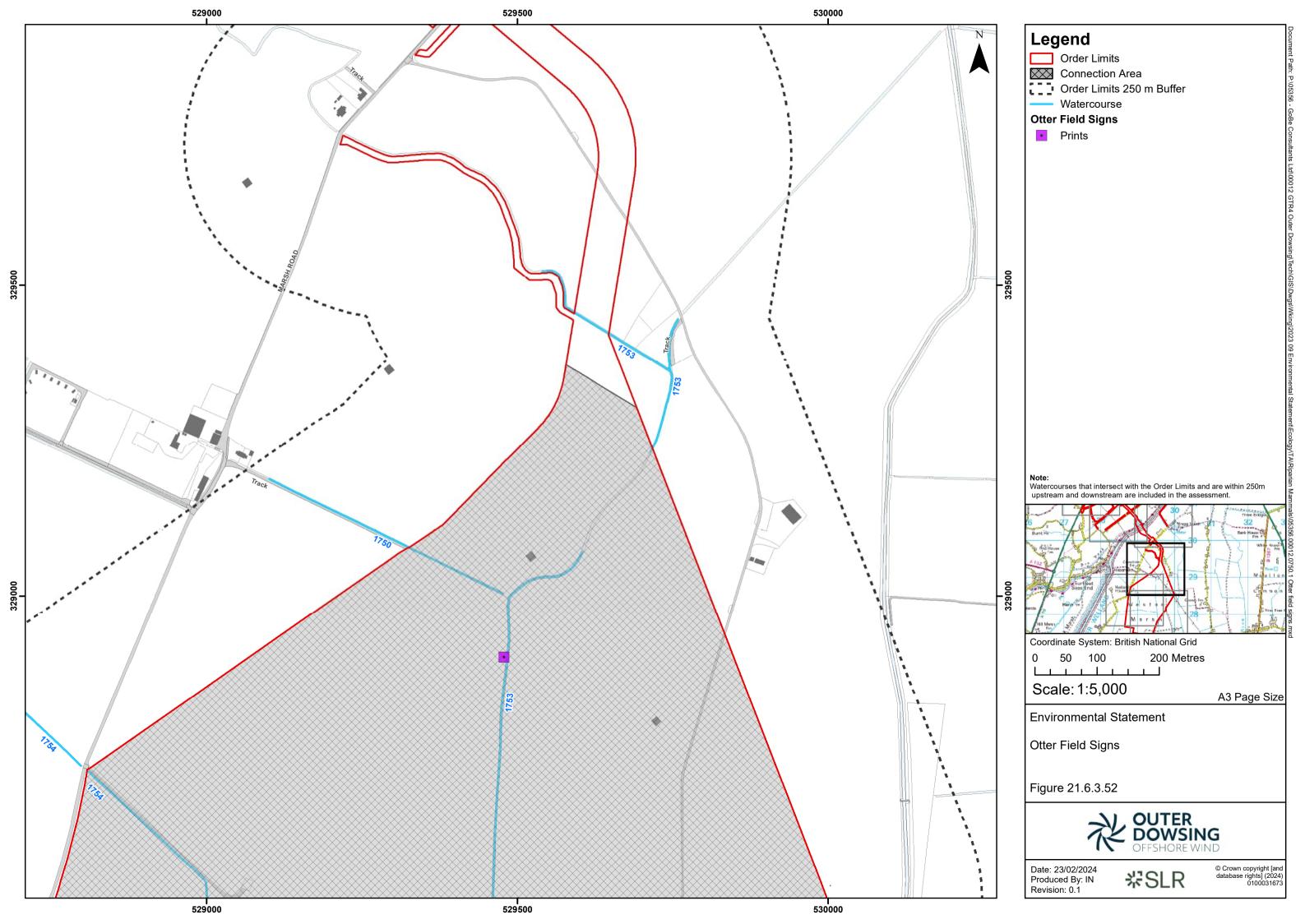


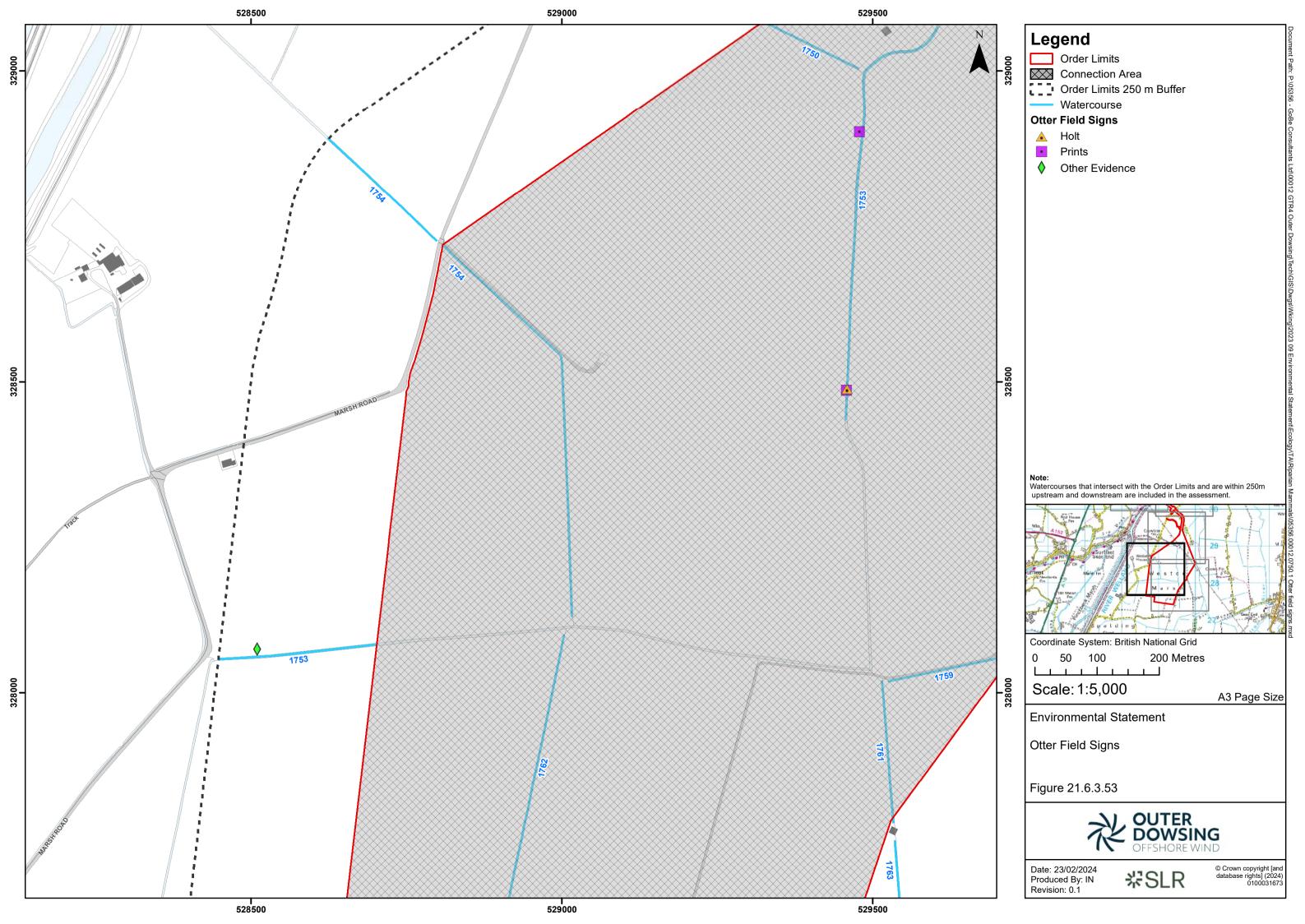


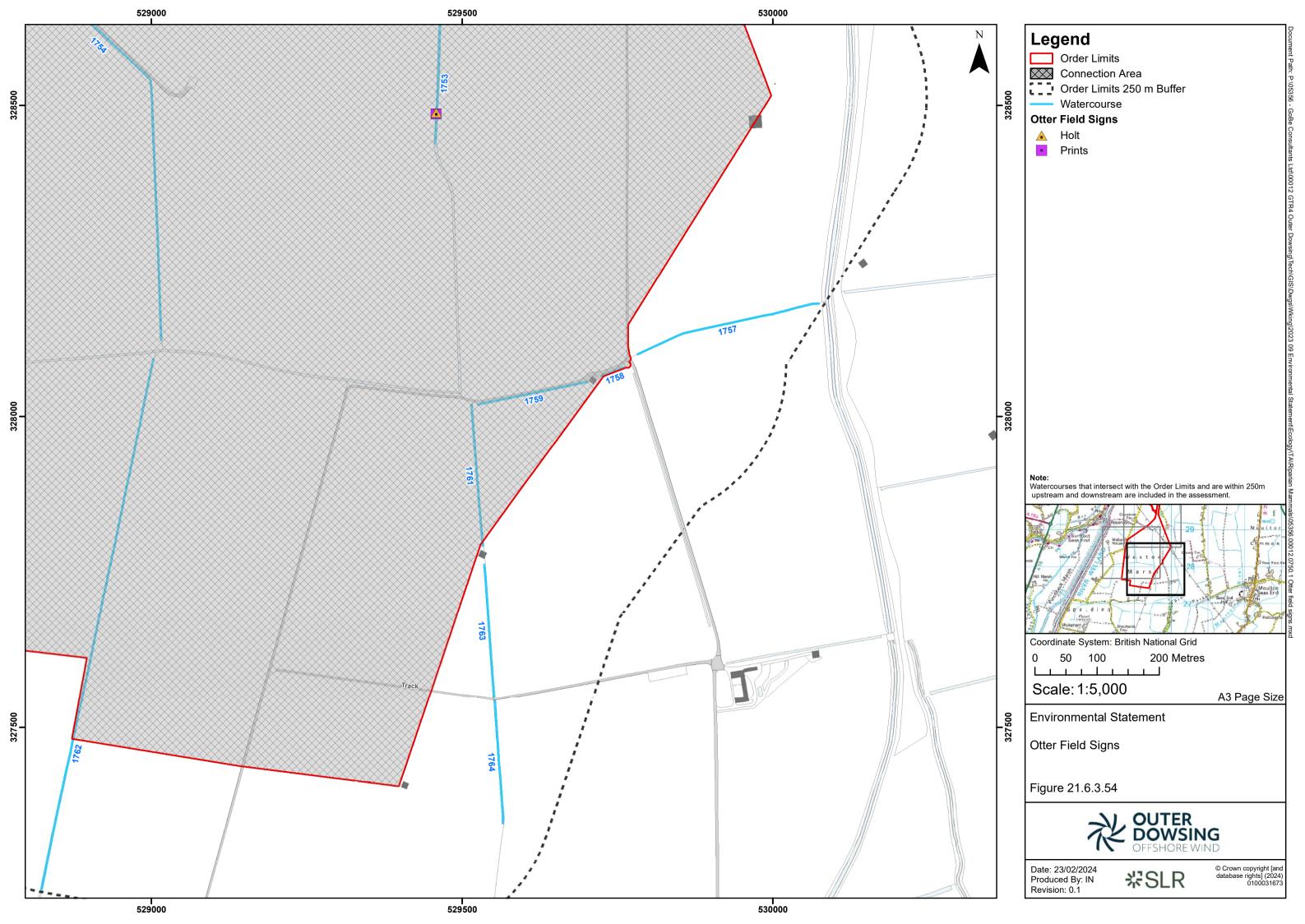














Annex A Otter Field Signs

Riparian Mammal Survey Report

Outer Dowsing Offshore Wind Environmental Statement

GoBe Consultants Ltd

SLR Project No.: 410.V05356.00013



Section		Within E	Within ES Red Line boundary				Within Survey Area (250m buffer)				
	Footprints	Holts	Feedings Remains	Couches	Slides	Footprints	Holts	Feeding Remains	Couches	Slides	Total
ECC 1											0
ECC 2								2			2
ECC 3									1		1
ECC 4											0
ECC 5			2					3		1	6
ECC 6											0
ECC 7											0
ECC 8											0
ECC 9											0
ECC 10			2				1				3
ECC 11											0
ECC 12											0
ECC 13						1					1
ECC 14						2	1				3

Otter Field Signs within the ES Red Line Boundary and Within the Survey Area (250m buffer)



Annex B Water Vole Field Signs

Riparian Mammal Survey Report

Outer Dowsing Offshore Wind Environmental Statement

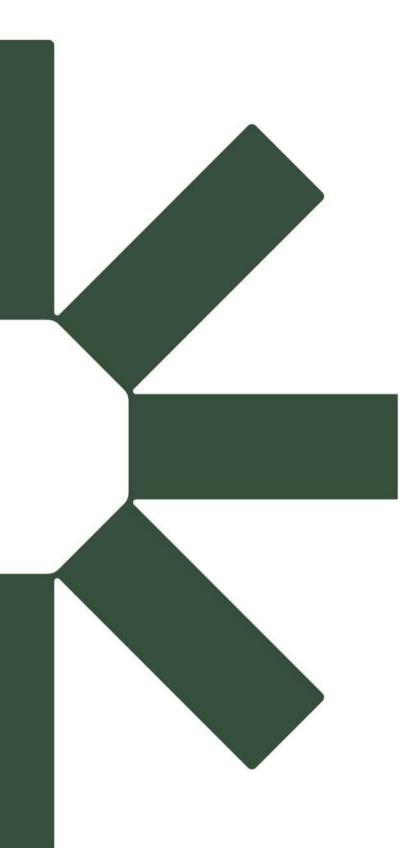
GoBe Consultants Ltd

SLR Project No.: 410.V05356.00013



Water Vole Field Signs within the ES Red Line Boundary and Within the Survey Area (250m buffer)

Section	Within Survey Area (250m buffer)										
	Sightings	Prints	Individual Burrows	Feeding Stations/R emains	Latrines	Sightings	Prints	Individual Burrows	Feeding Stations/R emains	Latrines	Total
ECC 1								7	3		10
ECC 2								1			1
ECC 3								1			1
ECC 4			1					3			4
ECC 5			3		2			16	1	1	23
ECC 6			2					8			10
ECC 7						1	1	15	4	4	25
ECC 8								1		1	2
ECC 9			1								1
ECC 10	1		1	8	14			14	74	32	144
ECC 11								7		3	10
ECC 12			3					11			14
ECC 13											0
ECC 14											0



Making Sustainability Happen