WHITE CROSS

REPORT – GEOTECHNICAL INTERPRETATIVE REPORT

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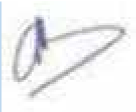
Prepared by:	Chris Gell Watermans	
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White Cross Windfarm: Export Cable Landfall and Onshore Crossings

Geotechnical Interpretative Report

May 2024

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Abbreviations

The following abbreviations are used throughout this report.

ACoW	Archaeological Clerk of Works
BGS	British Geological Survey
CEMP	Construction Environmental Management Plan
c_u	Undrained Shear Strength
c'	Effective Cohesion
EOD	Explosive Ordnance Disposal
FEED	Front End Engineering Design
GI	Ground Investigation
GIR	Geotechnical Interpretive Report
HDD	Horizontal Directional Drill
m AGL	Metres Above Ground Level
m AOD	Metres Above Ordnance Datum
m BGL	Metres Below Ground Level
MOD	Ministry of Defence
NGR	National Grid Reference
ODN	Ordnance Datum Newlyn
OS	Ordnance Survey
SAC	Special Area of Conservation
SDL	Stockton Drilling Ltd
SPT	Standard Penetration Test
SSSI	Site of Special Scientific Interest
TIN	Technical Information Note
TJB	Transition Joint Bay
UCS	Unconfined Compressive Strength
UXO	Unexploded Ordnance
WCOWL	White Cross Offshore Wind Farm Ltd
WIE	Waterman Infrastructure & Environment Ltd
WTG	Wind Turbine Generator
Φ'	Effective Internal Friction Angle

1. Introduction

1.1 Background

White Cross Offshore Wind Farm Ltd ('WCOWL') have appointed Stockton Drilling Ltd ('SDL') to complete a Pre-FEED study for the export cable landfall and onshore cable route required as part of the proposed White Cross Offshore Wind Farm ('the Project'), which shall be located in the Celtic Sea approximately 50km off the Devon Coast. In turn, SDL have appointed Waterman Infrastructure & Environment Ltd ('WIE') as their design consultants.

A detailed description of the Project is beyond the scope of this report, but a summary is provided below to set the context.

The Wind Turbine Generators ('WTG') will comprise innovative floating substructure technology that is anchored to the seabed. There will be up to 7No. WTG's delivering a maximum output capacity of 100MW for the Project. Power will be exported by means of a subsea cable(s) that will make landfall on the Devon coast at Saunton Sands before running generally south over a distance of some 8km to either a new or the existing sub-station at East Yelland.

It is understood that the export cable landfall shall be by means of a winched plough, with duct(s) installed and backfilled by the plough operation prior to the cable(s) being installed. The offshore to onshore cable Transition Joint Bay ('TJB') is to be located within an existing car park at Saunton Sands. The onshore cables will be ducted, with ducts generally being laid in an open cut trench (i.e. excavating down to required depth, installing the duct, and then backfilling), except where there are geographical or environmental constraints that would prohibit open cut trenching. At these locations, it is intended to use trenchless techniques.

At Pre-FEED, the following 4No. trenchless crossings are identified;

1. Beach Dunes at landfall;
2. Golf Course Crossing;
3. Road Crossing near Sandy Lane Car Park (RDX2); and
4. River Taw Crossing.

Following an Onshore Cable Route Feasibility Assessment completed by SDL/WIE in June 2022 (White Cross Offshore Windfarm Onshore Cable Route Feasibility Assessment, WIE12731-135-R-1-2-4 [1]), WIE were appointed by SDL to undertake the specification, tendering, technical administration and reporting of a Ground Investigation ('GI') required to inform the design of the landfall and onshore cable route. The scope of the GI is presented within WIE Document 'White Cross Floating Windfarm Onshore Cable Route Ground Investigation Specification, WIE12731-153-SP-1-2-3 [2].

This Geotechnical Interpretative Report ('GIR') presents an interpretation of factual data obtained during the GI to then provide developed ground models for each trenchless crossing / sub-length of route, recommended material characteristic parameters to be adopted in scheme design, a Geotechnical Risk Register and a Preliminary Engineering Assessment for each trenchless crossing / sub-length of route.

In tandem with production of the GIR by WIE, SDL have completed a Technical Information Note ('TIN') presenting a review of constructability aspects. A copy of the TIN is included within Appendix A.

1.2 Scope and Objectives

This GIR has been prepared in general accordance with the layout advocated in CD 622 [3] and requirements of BS EN 1997-1: 2004 [4].

The objectives of this report are to:

- Provide a description of the site and its surroundings;
- Summarise the ground investigation field work and laboratory testing undertaken;
- Present a summary of ground conditions and ground models;
- Present characteristic material values;
- Present an updated Geotechnical Risk Register; and
- Provide a preliminary engineering assessment discussing the impacts, if any, that the findings of the GI have on feasibility stage designs / for consideration in FEED.

1.3 Parties & Responsibilities

Table 1 summarises the parties involved with undertaking the GI along with their respective roles and responsibilities.

Table 1: Parties & Responsibilities

Project Name:	White Cross Windfarm, Export Cable Landfall and Onshore Crossings.
Employer:	White Cross Offshore Wind Farm Ltd (WCOWL)
Principal Contractor:	Stockton Drilling Ltd.
Ground Investigation Contractor:	Igne Ltd (previously trading as Raeburn Drilling & Geotechnical).
UXO Specialist:	Safelane Global, under contract to Igne.
Geophysical Survey Contractor:	Terradat Ltd, under contract to Igne.
Investigation Supervisor:	Waterman Infrastructure & Environment.

1.4 Limitations

The ground conditions reported relate only to the point of excavation and do not necessarily guarantee a continuation of the ground conditions throughout the non-inspected areas of the Site. Whilst such exploratory holes would usually provide a reasonable indication as to the general ground conditions, these cannot be determined with complete certainty. Design works should take cognisance of the potential for variable ground conditions through the selection of characteristic material parameters, appropriate partial factors and selection of 'worst foreseeable case' ground profiles, as presented within this report. Notwithstanding the foregoing, WIE shall not be held liable for the impact of any unforeseen ground conditions which might arise during the course of the works.

The information contained in this report is based partly on 3rd party information sources, the accuracy of which WIE can accept no liability for.

Detailed consideration of ecological, environmental and archaeological constraints are beyond the scope of WIE's appointment. The information presented in this report is based on high level review of published information sources only.

The scope of the GI includes an assessment of the presence of asbestos containing materials in the ground at the Site, but not within buildings or structures or below ground structures (basements, buried service ducts and the like).

WIE has endeavoured to assess all information provided to them during the course of this study but makes no guarantees or warranties as to the accuracy or completeness of this information.

2. Existing Information

2.1 Site Location and Description

The proposed export cable landfall is located near Saunton in the Saunton Sands Beach Car Park. The proposed onshore cable route passes east across Saunton Golf Course before routing south through agricultural land and Braunton Marsh broadly following Sandy Lane / American Road until reaching the River Taw where a crossing into the agricultural land, denoted Instow Barton Marsh, located west of Yelland is proposed before being routed into East Yelland Substation, some 8km from the landfall. The route runs from approximate NGR E244715, N137622 (Saunton Sands Car Park) to NGR E247941, N132124 (Substation).

The site itself is predominantly undeveloped agricultural land, with the exception of the golf course and hardstanding at Saunton Sands Beach Car Park.

Over much of its length, the land located west of the proposed cable route is noted on mapping as a ‘Danger Area’. This is in relation to an active MOD firing range located in the south end of the Saunton Sand Dunes.

A Site Location Plan with the proposed onshore cable route corridor is presented as Figure 1.

Figure 1: Site Location Plan

2.2 Geology

The anticipated geology beneath the Site was determined via review of published BGS Mapping (BGS Bideford and Lundy Island Solid and Drift Map Sheet 292 (and parts of 275,276,291 and 308) [5], historical BGS boreholes and the BGS online map viewer [6].

Made Ground was encountered in 2 No. localised areas in the south of the site in Yelland, 32m and 131m northeast of the site boundary. No further Made Ground is recorded within the cable route boundaries although Made Ground associated with the construction of Saunton Sands carpark is expected. Historic borehole log SS43SE/25 from 1963 further indicates the presence of localised Made Ground deposits described as ‘clay and stones’, in Yelland with a thickness range between 0m and 6.4m.

Natural superficial deposits across the site are anticipated to comprise predominantly of Blown Sand, Marine Beach Deposits and Tidal Flat Deposits (sand, silt, clay, gravel, cobbles).

Superficial deposits at the River Taw Crossing are expected to be encountered up to 6.4mbgl on the southern bank of the River Taw, around 3.5mbgl below the river crossing, and up to 16.3mbgl below the northern river bank. The superficial deposits throughout the central site area are recorded in historic borehole SS43/SE/1 to consist of medium density to compact grey sand to 7.13mbgl underlain by soft blue silty clay to 9.8mbgl and coarse compact sand to 11mbgl. Superficial deposits beneath the Saunton Golf Club Crossing are expected to be encountered up to 15mbgl at the eastern side of the golf course and 5mbgl at Saunton Sands carpark.

Bedrock across the site is anticipated to comprise predominantly of Pilton Mudstone in the northern site area, and Ashton Mudstone Member and Cracklington Formation in the south. A small band of Doddiscombe Formation and Codden Hill Chert Formation is expected to run through the centre of the site. The rock type is predominately expected to consist of mudstone in the north and mudstone & siltstone in the south. Bedrock depth is expected to be variable across the extent of the cable route, with a marked shallowing of depth to the south of the River Taw.

2.3 Historical Mapping

Historic Mapping was obtained as part of a Groundsure Insight Report [7], a copy of which is included within Appendix D.

A review of the maps indicates that there are no significant differences between the information shown on the 1:10,560 / 1:10,000 scale maps when compared with the 1:2,500 / 1:1250 scale maps. Therefore, only the 1:10,560 / 1:10,000 scale maps are summarised here.

A summary of the historical development of the site is presented in Tables 2 to 4.

Table 2: Historic Mapping Covering the Northern Section of Site

				North	
Map	**Name**	**Year**	**Scale**	**Site Comment**	**Greater Area Comment**
1_4	County Series	1886	1:10560	Site predominantly empty, rock formation/cliff noted to the north. Limekiln Ford present. Greenfield area present south of limekiln ford.	Town of Croyde to north with residential housing and industrial zones. Quarry noted to the north approx. 50m.
	County Series	1903-1905	1:10560	Quarry noted to north along with reservoir.	Quarry noted above since renamed "old Quarry.

				North	
Map	Name	Year	Scale	Site Comment	Greater Area Comment
	Provisional	1963	1:10560	Residential area along with hotel and car park noted within site.	Town of Croyde expanded west with residential and industrial areas noted.
	National Grid	1991	1:10000	Generally unchanged.	Generally unchanged.
	National Grid	2001	1:10000	Generally unchanged.	Generally unchanged.
	National Grid	2010	1:10000	Generally unchanged.	Generally unchanged.
	National Grid	2022	1:10000	Generally unchanged.	Generally unchanged.
2_4	County Series	1886-1887	1:10560	Site predominantly covered with fields. Town of Saunton and associated residential buildings. Greenfield area south southwest of Saunton.	Various buildings are located around the area of the site.
	County Series	1903-1905	1:10560	Sauton sands noted to the west. Golf course present to the south of Saunton.	Generally unchanged.
	Provisional	1963	1:10560	A series of buildings noted to the west of Sauton within Greenfield area.	Generally unchanged.
	National Grid	1982	1:10000	Generally unchanged.	Generally unchanged.
	National Grid	1991-1992	1:10000	Generally unchanged.	Generally unchanged.
	National Grid	2001	1:10000	Generally unchanged.	Generally unchanged.
	National Grid	2010	1:10000	Generally unchanged.	Generally unchanged.
	National Grid	2022	1:10000	Generally unchanged.	Generally unchanged.

Table 3: Historic Mapping Covering the Central Section of Site

				Centre	
Map	Name	Year	Scale	Site Comment	Greater Area Comment
2_3	County Series	1886-1887	1:10560	Site is predominantly covered by fields and a greenfield area stated as Braunton Burrows.	N/a
	County Series	1903-1905	1:10560	Generally unchanged	N/a
	County Series	1905	1:10560	Generally unchanged	N/a

			Centre		
Map	Name	Year	Scale	Site Comment	Greater Area Comment
	Provisional	1963	1:10560	Several buildings relating to farms noted. Golf course present to the north.	N/a
	National Grid	1981-1982	1:10000	Area named Braunton West Ward.	N/a
	National Grid	1991-1992	1:10000	Area named Braunton Burrows deemed nature reserve.	N/a
	National Grid	2001	1:10000	Generally unchanged	N/a
	National Grid	2010	1:10000	Generally unchanged	N/a
	National Grid	2022	1:10000	Generally unchanged	N/a
2_2	County Series	1887	1:10560	Braunton Burrows greenfield area covering majority of site (east and north). Broad sands beach area to the south. Several fields noted to the east. Ferry house located to the east of site, on riverbank.	Small group of buildings to the south, including Bideford Bar Lighthouse.
	County Series	1903-1905	1:10560	Generally unchanged	Small group of buildings to the south expanded to include more building/named buildings.
	Provisional	1963	1:10560	Ferry house noted on riverbank re-named to White house. Areas on site now labelled Drain.	Generally unchanged
	Provisional	1969	1:10560	Generally unchanged	Generally unchanged
	National Grid	1981	1:10000	Generally unchanged	Generally unchanged
	National Grid	1985	1:10000	Generally unchanged	Generally unchanged
	National Grid	1992	1:10000	Car park to the south of site on riverbank.	Buildings to the south now no longer labelled.
	National Grid	2001	1:10000	Braunton Burrows now indicated as nature reserve. Car park to south expanded southwest.	Beach area now named Sauton Sands
	National Grid	2010	1:10000	Car park further expanded southwest.	Generally unchanged

Centre					
Map	**Name**	**Year**	**Scale**	**Site Comment**	**Greater Area Comment**
	National Grid	2022	1:10000	Generally unchanged	Generally unchanged

Table 4: Historic Mapping Covering the Southern Section of Site

South					
Map	**Name**	**Year**	**Scale**	**Site Comment**	**Greater Area Comment**
3_2	County Series	1887	1:10560	Site covered by beach area and fields (East Yelland Marsh). It is noted that the area is liable to floods. North Devon Line Railway track running east-west through site.	Lower Yelland to the southeast with several buildings noted. Limekiln noted to the east.
	County Series	1905	1:10560	Generally unchanged	Limekiln deemed "Old"
	Provisional	1963	1:10560	Site now covered with buildings associated with work which extend out of the site.	Yelland Power Station noted to the east of site, comprising a large main building and various smaller auxiliary buildings. An oil depot is recorded to the south which comprises up to 13 No. potential tanks and various auxillary buildings. A jetty is recorded to the north. Lower Yelland expanded to include housing estates. Chivenor Aerodrome noted in area northeast of site.
	Provisional	1969	1:10560	Generally unchanged	Further expansion of Lower Yelland to the south. Chivenor Aerodrome now named Royal Air Force Chivenor, and several buildings and associated runways shown.
	National Grid	1981	1:10000	Generally unchanged	Generally unchanged
	National Grid	1985	1:10000	Generally unchanged	North Devon line now no longer in operation.
	National Grid	1992	1:10000	Works buildings now removed with roadways still present	Yelland Power Station no longer recorded though oil depot still in place
	National Grid	2001	1:10000	Generally unchanged	Previous work area named Estuary Business Park.
	National Grid	2010	1:10000	Generally unchanged	Generally unchanged
	National Grid	2022	1:10000	Compound east of site set up, additional buildings present.	Generally unchanged. Oil depot understood to have undergone decommissioning and removal of tanks

South					
Map	Name	Year	Scale	Site Comment	Greater Area Comment
					in circa 2012.
3_1	County Series	1886-1887	1:10560	Site covered by beach area and fields (east Yelland Marsh). North Devon line running northeast-south west.	Town of Instow circa 250m south of site, several buildings present. Town of Yelland to northeast.
	County Series	1905	1:10560	East Yelland Marsh now named Instow Barton Marsh.	Generally unchanged
	Provisional	1963	1:10560	Works noted to the north of site.	Several work buildings noted to the east of site. Yelland to northeast expanded.
	Provisional	1969	1:10560	Generally unchanged	Generally unchanged
	National Grid	1976-1981	1:10000	Generally unchanged	Generally unchanged
	National Grid	1985	1:10000	Generally unchanged	Generally unchanged
	National Grid	1992	1:10000	Works to northeast of site no longer present.	Yelland expansion.
	National Grid	2001	1:10000	Generally unchanged	Generally unchanged
	National Grid	2010	1:10000	Generally unchanged	Generally unchanged
	National Grid	2022	1:10000	Generally unchanged	Generally unchanged

2.4 Hydrology and Hydrogeology

2.4.1 Rainfall

Review of the ‘met office’ [8] average UK rainfall map 1981 to 2010 indicates that the average total rainfall in the site area is <1500mm per year.

2.4.2 Watercourses

The Groundsure Report [7] indicates that there are 340 No. surface water features within the site boundary, these appear to be associated with field drainage and typically run along the field boundaries.

One of the proposed HDD crossings passes below the River Taw, which flows in a westerly direction into Barnstaple Bay. The Environment Agency’s Catchment Data Explorer classifies both the River Taw and Barnstaple Bay as being of good ecological status.

2.4.3 Flood Risk

The Groundsure Report [7] indicates that there are 61 No. records within 50m of the site of coastal or river flooding. These appear to be associated with the foreshore flooding and flooding of the field drains. The site area is also indicated to be at Low risk of groundwater flooding. 1 No. of the proposed work areas (Taw River Crossing Exit point) has been identified as being at high risk of flooding.

2.4.4 Aquifers and Groundwater Vulnerability

The Groundsure Report [7] indicates that the superficial deposits are a Secondary A, and Undifferentiated aquifer meaning it has not been possible to attribute to Category A or B but that it has previously been designated as both minor and a non-aquifer due to variable characteristics of the soil type. The bedrock is recorded as a Secondary A aquifer.

2.4.5 Abstractions and Source Protection Zones

The Groundsure Report [7] indicates that there are 2 No. active licenced groundwater abstractions and 2 No. historic groundwater abstractions within the site area. The active abstractions are recorded in the northern section of the route at Saunton Golf Club and are used for irrigation purposes.

2.5 Groundwater Risk Assessment

The proposed development is considered to present a low risk to underlying groundwater aquifers and associated abstractions. The trenchless drilling techniques cause minimal disturbance to surrounding soils and are unlikely to result in significant mobilisation of any residual contaminants. In addition, all open cut trenches would be backfilled with excavated materials, returning the site as close as practicable to its original condition. Nevertheless, the proposed ground investigation will include a programme of testing to confirm contaminant concentrations in soils, leachate and groundwater in order that a Controlled Waters risk assessment can be undertaken if necessary (see section 14.3). Where unacceptable risks are identified, proposals for mitigation and/ or remediation would be provided.

With respect to the Construction stage, potential risks to Controlled Waters receptors would be managed through a Construction Environmental Management Plan (CEMP).

2.6 Mining and Mineral Extraction

The site is not underlain by coal bearing strata and consequently is not within a Coal Authority Reporting Area.

The Groundsure Report [7] indicates that within 1000m of the site boundary there are 5 No. non-coal mining records, associated with recovering vein minerals. These are typically small-scale workings and unlikely to pose a risk to the proposed works.

The Groundsure Report [7] indicates 7 No. ‘brit pits’ records within 500m of the site boundary, however the entries typically relate to infrastructure associated with the mining industry (wharfs, buildings) rather than mine workings themselves.

The Groundsure Report [7] indicates 42 No. Surface ground workings within 250m of the site boundary. Land use is noted as sewage beds, unspecified quarries, reservoirs and ponds.

The Groundsure Report [7] indicates that two areas of Made Ground are present between 500m and 1000m southeast of the site which may be related to surface workings/excavations.

In summary, although some localised underground mining associated with mineral veins and surface workings/excavations are recorded, risks to the works associated with mining and mineral extraction are considered to be low.

2.7 Contamination

Large portions of the Site are in undeveloped, agricultural use and consequently risks associated with potential contamination are considered to be low along much of the proposed cable route.

However, potentially significant sources of contamination have been recorded in the south of the cable route, including the former Yelland Power Station and a former oil depot. The potential for residual (potentially significant) contamination, remnant structures or buried tanks associated with these features cannot be discounted and will require further investigation.

2.8 Ground Gas and Radon

Based on a review of available desk-based information, potential on-Site sources of ground gas are assessed as limited and restricted to where made ground soils are present (such as in areas of former industrial development). However, even where made ground soils are confirmed, it is considered unlikely that they will be present in extents or thickness such that they would represent a significant source of ongoing ground gas generation. Nevertheless, an assessment of the ground gas potential of the underlying geology will be undertaken as part of the proposed ground investigation to confirm the level of risk posed in relation to construction workers, future Site users and future built development.

According to the UKradon online interactive map, the radon potential along the proposed cable route ranges from less than 1% (central section of the route) to between 1% and 3% (northern section of the route) and between 10% and 30% (southern section of the route). The risk presented by radon across the majority of the route is therefore not considered to be significant. However, the potential for elevated radon levels has been recorded in the south of the Site where the proposed substation is to be located and further assessment and/ or radon mitigation measures may be required.

2.9 Vapour

Desk study review has confirmed the potential for localised contamination associated with historical and recent land uses. Whilst the nature and severity of any contamination has not yet been confirmed, the potential for localised vapour cannot be discounted. Future ground investigation should include limited assessment for vapour contamination in areas of known historical development to confirm the level of risk present and whether mitigation/ remedial measures are required with respect to future site users and construction personnel.

2.10 Unexploded Ordnance (UXO)

The Zetica UK interactive map [9] was reviewed, which confirms the site as being at low risk with respect to UXO. However, within the interactive map, locations of UXO finds, including Decoy sites and Luftwaffe targets are shown in the general vicinity of the proposed path of the cable route.

A Detailed Unexploded Ordnance Risk Assessment [10] has been completed by UXO specialist, 1st Line Defence, their study concluded a low risk for German UXO Contamination, however, a medium-high risk for Allied UXO contamination owing to the extensive use of live and practice ammunition by the US Assault Training Centre during WWII.

Future intrusive works should be subject to further risk assessment commensurate with the activities to be undertaken to ensure that safe working practices are employed as appropriate.

A watching brief was undertaken as part of the recently completed intrusive ground investigation works by an Explosive Ordnance Explosives (EOD) specialist who identified the site at an elevated risk of UXO. No evidence of UXO was encountered within these works.

2.11 Archaeology

The Historic England interactive map [11] was reviewed for any archaeological or historic points of interest.

The area just north of the River Taw has 3 No. Grade 2 listed points of interest, these are in relation to 2 No. Cattle Shelters and Stile and Flanking Walls. These are offset from the cable alignment so are not anticipated to have any impact on the cable route works.

A watching brief was undertaken as part of the recently completed intrusive ground investigation works by supervision from an Archaeological Clerk of Works (ACoW), no evidence of archaeological finds were reported.

2.12 Environmental and Ecological

The Groundsure Report [7] records the following environmental designations within the boundaries of the site:

- Saunton to Baggy Point Coast (Site of Special Scientific Interest (SSSI)).
- Greenaways and Freshmarsh, Braunton (SSSI).
- Taw-Torridge Estuary (SSSI); and
- Braunton Burrows (SSSI and Special Area of Conservation (SAC)).

Additionally, the site is recorded as being located within an SSSI Impact Zone, whereby future developments require consultation with the planning authority.

The entire site is considered a habitat of principal importance under the Natural England and Rural Communities Act (2006) with a total of 314 No. locations identified.

Detailed study of ecological impacts is out with the scope of this report. An ecologist should be consulted for further information on potential constraints to development.

3. Hazard Assessment and Preliminary Conceptual Site Model

The following section sets out a conceptual site model for the Site, as recommended in current guidelines and the Environmental Protection Act Part IIA. The model identifies potential sources of contamination, possible receptors and contaminants pathways. The purpose of this model is to identify all potential contaminant linkages considering both on and off-site sources of contamination.

3.1 Potential Sources and Contaminants of Concern

Desk study research has identified the following potential sources of contamination that may pose a risk to sensitive receptors:

- Contamination associated with agricultural land use – The majority of the site is currently (and has historically been) in agricultural use and consequently the likelihood of significant contamination being present is low. However, the potential for localised, low levels of contamination associated with farming practices or leaks or spills from machinery, plant or bulk fuel storage cannot be entirely discounted.
- Contamination associated with golf course – A golf course has been present in the north of the proposed cable route since the early 1900s. The use of made ground materials in the landscaping of golf courses and associated infrastructure cannot be discounted.
- Potentially infilled former quarry – Historical mapping records the presence of a former quarry in the north of the proposed cable route in the early 1900s. In the event that the quarry was subject to backfilling following its closure there is a potential for made ground soils to be present, the nature of which is unknown.
- Sandy Lane Car Park – Recorded on historical plans in the central area of the cable route since the 1990s. Potential for localised contamination associated with parked vehicles, including asbestos and hydrocarbons.
- Contamination associated with former railway line – The North Devon line railway is recorded to have operated in the south of the proposed cable route from at least the 1880s to the 1980s when it is recorded as dismantled. The former railway line has since been paved over and acts as a path/ cycleway. The potential for localised contamination within soils or groundwater in proximity to the former line cannot be discounted.
- Former Oil Storage Depot – A former oil depot is recorded in the south of the proposed cable route in the vicinity of the proposed substation between the 1960s and the early 2000s. Given the significant volumes of hydrocarbons stored here historically, the potentially for contamination in soils and groundwater associated with leaks, spills or accidental releases is recognised. It is understood that the oil depot was decommissioned and tanks removed c. 2012; however other industriaes remain operational in the area, including FloGas. The potential for contamination associated with the activities and processes of these facilities cannot be discounted.
- Former Yelland Power Station – Power station present in the south of the proposed cable route between the 1960s and the 1990s. Potential for localised contamination in soils and groundwater associated with this land use.
- Potential UXO – Desk study indicates there is a potential risk of encountering UXO in the general vicinity of the proposed path of the cable route. Whilst risks are expected to be low, mitigation measures are considered to be required during future intrusive works, including ground investigation and construction. Former military activities may also represent a potential source of contamination.
- Potential radon – Desk study has identified the potential for elevated radon levels in the south of the Sote where the proposed substation is to be located. Further assessment and/ or protection measures in future built development may be required to manage potential risks.

- Off-Site sources of contamination – A number of potentially contaminative land uses have been identified in the surrounding area including works buildings, depots, quarrying, MOD facilities and a former US military training camp. The potential for on-site migration of contamination cannot be discounted but is considered to be of reduced significance given the nature of the development proposals.

Table 5: Contaminants of Concern

Source	Associated Contaminants
On-site	
Agriculture	Metals, PAH, TPH, asbestos
Golf Course	Metals, PAH, TPH, asbestos, ash
Potentially backfilled former opencast	Potential for ash, metals, PAH, TPH, asbestos, sulphate, sulphide and ground gas (carbon dioxide and methane)
Sandy Lane Car Park	Metals, PAH, TPH, asbestos
Former railway infrastructure	Metals, PAH, TPH, BTEX, sulphate, sulphide, phenol, asbestos, VOCs, SVOCs, ash, ballast
Former oil depot	Metals, PAH, TPH, asbestos, VOCs, SVOCs.
Former power station	Potential for ash, metals, PAH, TPH, asbestos, sulphate, sulphide, VOCs, SVOCs, PCBs
Historic WWII training grounds at Braunton Burrows	UXO, metals, PAH, TPH, asbestos
Solid geology	Radon
Off-site	
Various potentially contaminative land uses including works buildings, depots, quarrying and MOD facilities.	Potential for ash, metals, PAH, TPH, asbestos, sulphate, sulphide, VOCs, SVOCs, phenol and ground gas (carbon dioxide and methane)

3.2 Pathways

The following potential pathways have been identified whereby potential receptors could be exposed to, or affected by, the contaminants identified above:

- Dermal contact and ingestion of contaminated soils and dust;
- Inhalation of contaminated dust and asbestos fibres;
- Migration and accumulation of soil-borne gases, vapours or radon in future buildings, structures and confined spaces;
- Leaching of contaminants and migration through soils;
- Migration of contaminants via groundwater;
- Surface water run-off;
- Direct contact between contaminated soils and groundwater and buried services and structures; and
- Direct contact with UXO during future ground investigation or construction stages.

3.3 Receptors

The following potential receptors have been identified for the Site;

- Human Health (agricultural workers, staff of nearby businesses and the general public);
- Human Health (future construction workers);
- Surface waters;
- Groundwater aquifers; and
- Buildings and services on-site and in the vicinity.

The Preliminary Conceptual Model for the Site is presented in Table 6 below. The risk rating included in Table 6 has been assessed qualitatively using the criteria given in Appendix E.

Table 6: Preliminary Conceptual Model

Receptor	Potential Sources	Pathways	Risk	Justification / Mitigation	Residual Risk
Human Health					
Future site users (agricultural workers, substation maintenance personnel and the general public)	Potential contamination in soils or groundwater associated with current and historical uses	Dermal contact, inhalation and ingestion	**Low**	A potential for localised low-levels of contamination associated with current and historical onsite land uses has been identified; however, users of the Site are unlikely to be subject to increased risks under the development proposals given areas of open-cut trenching would be backfilled with arisings and any arisings associated with trenchless techniques would be removed from site and disposed of accordingly. Nevertheless, the potential presence of contamination should be assessed as part of the required ground investigation.	**Low**
	Ground Gas	Accumulation and inhalation	**Low**	Desk study suggests that the potential for ground gas generation across the site is limited but cannot be discounted. Confined spaces are likely to be limited to the proposed substation building. A programme of ground gas monitoring in this location will allow an assessment of risk to be undertaken and confirm the requirement (or otherwise) for ground gas protection measures.	**Low**
	Vapour		**Low**	Historical review suggests that the risk of vapour contamination is low and limited to areas of previous industrial development. Future investigation should assess the potential for vapour in the vicinity of the proposed substation building, where made ground soils are present or evidence of contamination is encountered and undertake testing and assessment as appropriate.	**Low**
	Radon		**Medium**	Online mapping indicates the potential for elevated radon levels in the southern extents of the proposed cable route and in the area of the proposed substation. Further assessment is required to confirm the level of risk present and whether protection measures are required in future structures at the site.	**Low**
Off-Site Land users	Potential contamination in soils associated with current and historical uses	Inhalation, ingestion	**Low**	There is a potential that any contamination present within the shallow soils could be mobilised as dust by future earthworks and construction activities and migrate off-Site to nearby sensitive receptors, although it is recognised that the likelihood of significant contamination being present is low. Furthermore, standard good working practices, such as the damping down of soils during construction works should limit the amount of dust generated at the Site.	**Low**

Receptor	Potential Sources	Pathways	Risk	Justification / Mitigation	Residual Risk
Construction Workers	Potential contamination in soils or groundwater associated with current and historical uses	Inhalation, dermal contact, ingestion	**Low**	Construction personnel working in close proximity to exposed soils are considered to be potentially at risk from any contaminants present, although the likelihood of significant contamination being present is low. However, risks can be readily mitigated by ensuring that construction personnel follow standard health and safety procedures during Site work, including the utilisation of appropriate Personal Protective equipment (PPE) commensurate with the contaminants present and the activities being undertaken. Appropriate hygiene practices and use of appropriate welfare facilities should be adopted, and it should be ensured that all personnel have had asbestos awareness training. All future Site staff should be made aware of the potential for unrecorded contamination and/ or asbestos in soils.	**Low**
	Ground Gas	Accumulation and inhalation	**Low to Medium**	Ground gas, where present, could potentially migrate into excavations and other confined spaces, thereby posing a potential risk to future construction and maintenance workers. Further assessment is required to understand the level of risk present and the mitigation measures to be deployed to protect future workers.	**Low**
	Vapour		**Low**	Historical review suggests that the risk of vapour contamination is low. However, future investigation should consider the potential for vapour where made ground soils are present or evidence of contamination is encountered and undertake testing and assessment as appropriate.	**Low**
	Radon		**Medium**	Online mapping has identified a potential for elevated radon levels in the southern extents of the proposed cable route and in the area of the proposed substation. Excavations in these areas may require monitoring to ensure the health and safety of construction personnel.	**Low**
	UXO	Direct contact	**Low to Medium**	Desk study review indicates that the risk of encountering UXO across the majority of the site is low; however, elevated risks may be present where the proposed cable route passes in the vicinity of the former Braunton Burrows WWII training grounds. Future intrusive works (including both ground investigation and construction) in this locality are likely to be subject to additional mitigation measures to ensure that risks to human health are reduced to As Low As Reasonably Practicable (ALARP).	**Low**
Property					
On-Site structures	Potential contamination in soils or groundwater associated with current and historical uses	Direct contact	**Low**	The requirement for enhanced specifications for buried concrete cannot be discounted and should be confirmed through appropriate ground investigation.	**Low**

Receptor	Potential Sources	Pathways	Risk	Justification / Mitigation	Residual Risk
Controlled Waters					
Surface Water (River Taw/ Barnstaple Bay)	Potential contamination in soils or groundwater associated with current and historical uses	Surface run-off/ migration in groundwater	**Low to Medium**	Potential sources of contamination have been identified locally along the proposed cable route and consequently testing of the soils and groundwater is recommended to confirm the nature, extent and severity of such and whether remedial measures are necessary. With respect to the construction phase, all activities would be managed under a CEMP which is considered to reduce potential risks to Controlled Waters receptors to low.	**Low**
Groundwater Aquifers	Potential contamination in soils or groundwater associated with current and historical uses	Leaching from soils, vertical migration of contaminants in groundwater	**Low to Medium**		

4. Field and Laboratory Studies

4.1 General

A GI was completed in 2023.

The Principal Contractor was SDL, who sub-contracted Igne (previously trading as Raeburn Drilling and Geotechnical Ltd) to complete the GI scope specified by WIE.

Copies of all exploratory hole logs, gas and groundwater monitoring and laboratory testing data are presented within the GI Factual Report [12], which has been prepared by Igne and is presented within Appendix B.

4.2 Fieldwork

Ground investigation fieldwork was completed between the 6th September and 28th October 2023.

The fieldwork consisted of;

- 18 No. Sonic boreholes with Geobore S rotary follow-on, advanced to depths between 4.00mbgl and 20.20mbgl;
- 17 No. Trial Pits machine excavated to depths of between 0.80mbgl and 2.50mbgl;
- 5 No. In-Situ Soil Electrical Resistivity Tests using the Wenner 4 pin electrode method;
- A Geophysical Survey of Saunton Sands beach to profile thickness of superficial deposits;
- 6 No. boreholes were installed with gas and groundwater monitoring standpipes upon completion of the boreholes; and
- Post site works gas and groundwater monitoring was completed on 4 No. occasions and groundwater sampling for chemical analysis were undertaken on 2 No. occasions.

Boreholes were drilled using a Track Mounted Boart Longyear LS250 Mini Sonic Rig.

Trial pits were excavated using an 8.5T Tracked Excavator.

All fieldworks were carried out under a UXO watching brief. Safelane Global provided an EOD Engineer, who carried out surveys ahead of any intrusive investigation. The EOD Engineer provided UXO safety and awareness briefings to site personnel and observed all trial pit excavations. The boreholes were carried out using staged drilling and magnetometer survey procedure. No UXO's were encountered during the fieldworks.

The excavation of the borehole inspection pits and trial pits were subject to an archaeological watching brief under supervision of an ACoW.

A seismic survey on Saunton Sands Beach was undertaken by Terradat, under appointment to Igne, on the 11th of October 2023. The purpose of the survey was to profile the thickness and distribution of superficial deposits below Saunton Sands, at the proposed export cable landfall.

4.3 In-situ Testing

In order to assess the in-situ relative density or consistency of the materials encountered, Standard Penetration Tests (SPT's) were undertaken in the boreholes. Testing was undertaken in accordance with BS EN 22476-3:2005 [13] using a split barrel sampler. Where necessary, within granular deposits, the split barrel sampler was changed to a 60° solid cone.

Hand Shear Vane tests were completed within the side walls of trial pits where cohesive strata encountered up to a depth of 1.2mbgl, or on suitable lump arisings from the trial pits. The testing was undertaken in accordance with BS 1377 Part 9 [14].

Apparent resistivity testing was undertaken in accordance with BS1377: Part 9 Section 5.1 [14] in order to measure the relative resistivity of the ground with depth up to a maximum 10.00mbgl.

4.4 Geophysical Survey

A geophysical survey at Saunton Sands Beach was undertaken using the following geophysical methods:

- Compressional (P) wave seismic refraction; and
- Shear (S) wave seismic refraction.

Both these techniques involve the observation of a seismic signal that has been refracted between layers of contrasting seismic velocity. This allows an interpretation of the stiffness or density of the underlying material.

2 No. 94m long profiles in perpendicular directions were investigated as part of the survey. Owing to the specialist nature of the works, Terradat have undertaken both the site works as well as interpretation of the results. This is reported within the Geophysical Survey Report, which forms an Appendix to the Igne Factual Report [12] (Appendix B).

4.5 Sampling

Disturbed soil samples were recovered as bulk samples from trial pits and Sonic boreholes (following sub-sampling). In accordance with EN ISO 22475-1:2006 [15], the sample category for the disturbed samples recovered is Category B with an achievable sample Class of 3 to 4.

Rock core samples of 100mm diameter were taken from the relevant boreholes from rockhead to the scheduled depth for further observation, logging and laboratory testing. Core samples were obtained using a triple barrel system and were placed in wooden core boxes immediately after extraction to ensure samples structural integrity remained during transit.

Environmental soil samples were also collected from boreholes and trial pits for subsequent analysis. Samples were contained within appropriate receptacles and stored alongside ice packs in a cool box prior to delivery to the testing laboratory under a Chain of Custody.

Undisturbed samples were recovered from Sonic boreholes in preference to undertaking an SPT test, where conditions were favourable for the recovery of an undisturbed sample. In accordance with EN ISO 22475-1:2006 [15], the sample category for the samples recovered is up to Category A with an achievable sample Class of 1.

4.6 Gas and Groundwater Monitoring

On completion of drilling, 50mm diameter perforated standpipes were installed in 6 No. boreholes across the site to enable groundwater and ground gas monitoring, and sampling. The boreholes are kept sealed by a rubber bung, and secure by a lockable secure top-hat cover at ground level. Installation response zones targeted either natural superficial deposits or bedrock.

Gas and groundwater monitoring was carried out by Igne on four occasions to provide an initial assessment of ground gas risk in general accordance with BS8485: 2015+A1: 2019 [16] and CIRIA C665 [17]. During each monitoring visit, the peak and steady state concentration readings of methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), carbon monoxide (CO), hydrogen sulphide (H_2S) and the measurement of gas flow and atmospheric pressure was recorded at each installed monitoring standpipe. The water level in each standpipe was also recorded.

Two subsequent visits to further monitor groundwater levels was carried out by Wesson Environmental Ltd.

Groundwater samples were obtained from monitoring wells on two occasions following purging of three well volumes using baling techniques. The collected water samples were then sealed into bottles with pre-measured fixatives where necessary, as supplied by the specialist laboratory, and transported in cool boxes or refrigerated for 24hrs prior to despatch to the testing laboratory.

A summary of the gas and groundwater monitoring data from the investigation is provided in Section 14.4.

4.7 Geotechnical Laboratory Testing

Geotechnical laboratory testing of selected samples recovered during the ground investigation was scheduled by WIE and undertaken by Igne's in-house testing laboratory (formerly Terra Tek Ltd) or their appointed sub-contracted testing laboratory. Table 7 summarises the geotechnical testing completed.

Table 7: Summary of Laboratory Testing

Laboratory Test	Test Method	Number of Tests
Classification		
Water Content Determination	BS EN ISO 17892-1:2014	42
Atterberg Limits	BS EN ISO 17892-12:2018	20
Particle Size Distribution - Sieve	BE EN ISO 17892-4:2016	29
Particle Size Distribution - Pipette	BE EN ISO 17892-4:2016	17
Strength		
Shear Box – (60mm x 60mm)	BS EN ISO 17892-10:2018	9
Compaction		
Dry Density/ Moisture Content relationship (2.5kg Hammer)	BS 1377:1990 Part 4 – 3.3	9
Chemical and Electrochemical		
BRE Special Digest No.1	BS 1377: Part 3: Clauses 5 & 9	13
Organic Matter Content	BS1377:1990 Part 3:3	10
Rock Testing		
Point Load Index Test	ISRM Commission on Testing Methods, 1985	108
Unconfined Compressive Strength (UCS)	ASTM D7012-14: Method C	5
Cerchar Abrasivity	ASTM D7625-10	9

4.8 Geochemical Laboratory Testing

Samples for geochemical testing were selected to provide an indication of the horizontal and vertical distribution of contaminants across the Site for input into a risk assessment. The selection of samples considered the proposed development, potentially contaminative historical features and the pollutant linkages and receptors which are being assessed.

4.8.1 Soil Analysis

Tests were scheduled on selected soil samples for the following contaminants:

- 29 No. Metals (arsenic, boron, cadmium, chromium, chromium VI, copper, lead, mercury, nickel, selenium and zinc).
- 29 No. pH value
- 29 No. Soil organic matter (SOM) and total organic content (TOC).
- 29 No. Water soluble sulphate (SO4).
- 29 No. Sulphide.
- 12 No. Asbestos (screening).
- 29 No. Total Petroleum Hydrocarbons (TPH) aliphatic and aromatic separation and carbon bonding.
- 28 No. 16 Priority Polynuclear Aromatic Hydrocarbons (PAH).
- 2 No. VOC suites.
- 2 No. SVOC suites.

4.8.2 Leachate Analysis

To assess potential mobility of contaminants from the soils within the Site, the following leachate analysis was undertaken:

- 9 No. Metals (arsenic, boron, cadmium, chromium, chromium VI, copper, lead, mercury, nickel, selenium and zinc.
- 9 No. Sulphide.
- 9 No. Sulphate.
- 9 No. Free cyanide.
- 9 No. Hardness and pH.
- 9 No. Total Petroleum Hydrocarbons (TPH) (speciated aliphatic and aromatic bands).
- 9 No. Total phenol.
- 9 Priority Polyaromatic Hydrocarbons (PAH).
- 9 No. BTEX.

4.8.3 Groundwater Analysis

Groundwater samples were obtained from standpipes BH01, BH05, BH09, BH15 and BH17 on the 25th October 2023 in order to provide an assessment on potential groundwater contamination at the Site. However, due to the use of incorrect sampling containers and exceedances of holding times, the results were recorded as deviating by the laboratory.

A subsequent round of sampling was therefore undertaken on the 19th March 2024 from all 6 No. monitoring standpipes (BH01, BH05, BH09, BH14, BH15 and BH17).

In total, the following testing was undertaken on groundwater obtained from the Site:

- 11 No. Metals (arsenic, boron, cadmium, chromium, chromium VI, copper, lead, mercury, nickel, selenium and zinc.
- 11 No. Calcium.
- 11 No. Free cyanide.

- 11 No. pH value and sulphate as SO4.
- 11 No. Sulphide.
- 11 No. Total Petroleum Hydrocarbons (TPH) aliphatic and aromatic separation and carbon banding.
- 11 No. BTEX.
- 11 No. 16 Priority Polynuclear Aromatic Hydrocarbons (PAH).
- 11 No. Total phenol.
- 11 No. Dissolved organic carbon.
- 11 No. Hardness.
- 4 No. PCBs.
- 4 No. VOC suite.
- 4 No. SVOC suite.

5. Ground Summary

Owing to the linear nature of the cable route, a series of ground models along the proposed cable route have been developed based on the relevant exploratory holes from the completed scope of intrusive ground investigation.

The considered sections are as follows:

- Beach Landfall & Dunes;
- Golf Course Crossing;
- Golf Course to Sandy Lane Car Park;
- Road Crossing near Sandy Lane Car Park (RDX2);
- Sandy Lane Car Park to River Taw;
- River Taw Crossing; and
- River Taw to Substation.

5.1 Beach Landfall & Dunes

5.1.1 General

The Ground Model for the Beach Landfall section of the cable route has been determined considering exploratory holes BH01 to BH03.

Drawing No. 12731-153-WIE-ZZ-XX-DR-C-80101 presents the interpreted Ground Model and is included in Appendix C.

Table 8: Ground Summary

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Made Ground	0.60 (BH03) – 1.00 (BH01)	8.27 (BH03) – 12.36 (BH02)	Brown gravelly to very gravelly slightly silty to silty fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of broken stone, siltstone and sandstone. Greyish brown very sandy silty fine to coarse angular and subangular gravel of various lithologies including broken stone, siltstone and mudstone with cobbles. Sand is fine to coarse. Cobbles are angular and subangular of broken stone and mudstone. Grey siltstone boulder recovered as angular cobbles.
Blown Sand	7.20 (BH03) – 12.50 (BH01)	0.69 (BH01) – 2.86 (BH02, hole terminated at this depth)	Loose to medium dense light brown slightly gravelly slightly silty to silty fine to coarse SAND. Gravel is fine subangular to subrounded of various lithologies including siltstone, sandstone and mudstone. Loose to dense brown slightly gravelly silty fine to medium SAND with shell fragments. Gravel is fine

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
			subangular and subrounded of various lithologies including siltstone, mudstone and sandstone. Localised clay and silt pockets noted.
Pilton Mudstone Formation (Weathered)	8.7 (BH03) – 13.20 (BH01)	-0.01 (BH01) – 0.17 (BH03) -4.5 – -7.0 (Geophysical Survey on Saunton Sands Beach)	Grey MUDSTONE recovered as slightly sandy very clayey fine to coarse angular gravel with cobbles. Sand is fine to coarse. Locally passing to slightly sandy gravelly clay. Grey MUDSTONE recovered as sandy silty fine to coarse angular gravel with cobbles. Sand is fine to coarse. Cobbles are angular. Weathered SILTSTONE recovered as grey gravelly clay. Gravel is fine to medium angular.
Pilton Mudstone Formation	>20.00 (BH01 & BH03)	Not proven	Weak thickly laminated to very thinly bedded brownish grey MUDSTONE with occasional calcite veins. Partially weathered evident as orange brown penetrative staining penetrative up to 30mm. Weak to Medium Strong thinly laminated light grey SILTSTONE interbedded with fine grained light grey sandstone. Rare calcite veining. Partially weathered evident as orange brown staining on fracture surface.

5.1.2 Underground Structures and Obstructions

No underground structures or obstructions were recorded within the Beach Landfall section of the cable route.

5.1.3 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was recorded within the Beach Landfall section of the cable route.

5.1.4 Groundwater

No groundwater strikes are noted within the boreholes due to use of water flush when drilling.

A standpipe installation was installed in BH01, targeting the Blown Sand deposits, and recorded groundwater levels ranging from 8.03m bgl (5.16m AOD) to 8.87m bgl (4.32m AOD).

It is considered likely that groundwater is in hydraulic continuity with the sea, hence levels are likely to vary with tidal state.

5.2 Golf Course Crossing

5.2.1 General

The Ground Model for the Golf Course Crossing section of the cable route has been determined considering exploratory holes BH03 to BH05.

Drawing No. 12731-153-WIE-ZZ-XX-DR-C-80102 presents the interpreted Ground Model and is included in Appendix C.

Table 9: Ground Summary

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Made Ground – Topsoil (BH05 only)	0.40 (BH05)	11.72 (BH05)	Brown sandy silty TOPSOIL with roots and rootlets. Sand is fine and medium.
Made Ground (BH03 only)	0.60 (BH03)	8.27 (BH03)	Greyish brown very sandy silty fine to coarse angular and subangular gravel of various lithologies including broken stone, siltstone and mudstone with cobbles. Sand is fine to coarse. Cobbles are angular and subangular of broken stone and mudstone.
Blown Sand	1.20 (BH04) – 7.20 (BH03 & BH05)	1.67 (BH03) – 12.66 (BH04)	Loose to dense brown locally slightly gravelly silty fine and medium SAND with shell fragments. Gravel is fine subangular and subrounded of various lithologies including siltstone, mudstone and sandstone. Brown slightly gravelly silty to very silty fine to coarse SAND with pockets of brown slightly gravelly sandy silt. Gravel is fine to coarse subangular and subrounded of various lithologies including siltstone, mudstone and sandstone. Loose brownish grey and greyish brown very silty fine and medium SAND with very thin dark grey loamy bands. Strong organic odour.
Tidal Flat Deposits (BH04 & BH05 only)	12.00 (BH04) – 12.30 (BH05)	11.22 (BH05) – 11.56 (BH04)	Medium dense mottled orange brown and brown very sandy very clayey fine to coarse angular to subrounded GRAVEL of siltstone and mudstone. Locally passing to slightly gravelly slightly sandy silt. Medium dense to dense orange brown slightly gravelly slightly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone. Reddish brown gravelly silty to very silty fine to coarse SAND with cobbles. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone. Cobbles are subrounded of siltstone
Pilton Mudstone Formation (Weathered)	8.70 (BH03) – 14.80 (BH04)	-1.08 (BH05) – 0.17 (BH03)	Grey MUDSTONE recovered as slightly sandy very clayey fine to coarse angular gravel. Sand is fine to coarse. Locally passing to slightly sandy gravelly clay Grey sandy very clayey fine to coarse angular to subrounded GRAVEL of siltstone and mudstone with cobbles. Sand is fine to coarse. Cobbles are subangular of siltstone and mudstone. Grey sandy silty fine to coarse angular GRAVEL of weathered mudstone with local bands of gravelly silt. Sand is fine to coarse. Mottled dark brown and grey slightly gravelly slightly sandy CLAY of intermediate plasticity. Sand is fine to coarse. Gravel is fine and medium angular and subangular of mudstone. (Suspected Tidal Flat

			Deposits interbedded within weathered layer) Grey MUDSTONE recovered as sandy silty fine to coarse angular gravel with cobbles. Sand is fine to coarse. Cobbles are angular. Grey SILTSTONE recovered as thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine to coarse angular and subangular.
Pilton Mudstone Formation	>20 (BH03, BH04 & BH05)	Not proven	Weak to Medium Strong thinly laminated light grey SILTSTONE interbedded with fine grained light grey sandstone. Rare to occasional calcite veining. Partially weathered evident as orange brown staining on fracture surface. Moderately weak thinly laminated grey SILTSTONE with mudstone bands. Distinctly weathered evident as an orange brown staining on fracture surfaces and gravelly clay infilling of fractures.

5.2.2 Underground Structures and Obstructions

No underground structures or obstructions were recorded within the Golf Course Crossing section of the cable route.

5.2.3 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was recorded within the Golf Course Crossing section of the cable route.

5.2.4 Groundwater

No groundwater strikes are noted within the boreholes due to use of water flush when drilling.

A standpipe installation was installed in BH05, targeting the Tidal Flat Deposits, and recorded groundwater levels ranging from 0.38m bgl (11.74m AOD) to 1.66m bgl (10.46m AOD).

5.3 Golf Course to Sandy Lane Car Park Onshore Cable Route

5.3.1 General

The Ground Model for the Golf Course to Sandy Lane Car Park section of the cable route has been determined considering exploratory holes BH05 to BH08 & TP01 to TP07.

Table 10: Ground Summary

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Made Ground – Topsoil	0.20 (TP04 & TP07) – 0.40 (BH05)	7.19 (BH06) – 11.72 (BH05)	Brown very sandy silty TOPSOIL with frequent rootlets. Sand is fine and medium.
Blown Sand	1.7 (TP04, not proven) – 7.2 (BH05)	1.14 (BH08) – 7.63 (TP01, not proven)	Loose mottled greyish brown and brownish grey very silty fine and medium SAND with very thin dark brown loamy bands and traces of vegetation. Strong organic odour. Very loose brownish grey slightly gravelly silty fine

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
			to coarse SAND. Gravel is fine to coarse subangular and subrounded of various lithologies including sandstone, siltstone and mudstone.
Tidal Flat Deposits (BH05 to BH08 only)	10.2 (BH06, BH07 & BH08, not proven) – 12.3 (BH05)	-0.18 (BH05) - -2.81 (BH06, not proven)	Grey slightly gravelly slightly sandy silty CLAY of low plasticity with lenses of grey fine very silty sand. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of mudstone and siltstone. Mottled brown and greyish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of mudstone and siltstone. Medium dense to dense brown and orange brown very gravelly very silty fine to coarse SAND with cobbles. Mottled brown and grey very sandy clayey fine to coarse subangular and subrounded GRAVEL of various lithologies including sandstone, siltstone and mudstone. Sand is fine to coarse.
Pilton Mudstone Formation (Weathered) (BH05 only)	13.20 (BH05)	-1.08 (BH05)	Grey MUDSTONE recovered as sandy silty fine to coarse angular gravel with cobbles. Sand is fine to coarse. Cobbles are angular. Grey SILTSTONE recovered as thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine to coarse angular and subangular.
Pilton Mudstone Formation (BH05 only)	>20.00 (BH05)	Not Proven	Moderately weak to medium strong thinly laminated grey SILTSTONE with mudstone bands. Distinctly weathered evident as an orange brown staining on fracture surfaces and gravelly clay infilling of fractures.

5.3.2 Underground Structures and Obstructions

No underground structures or obstructions were recorded within the Golf Course to Sandy Lane Car Park section of the cable route.

5.3.3 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was recorded within the Golf Course to Sandy Lane Car Park section of the cable route.

5.3.4 Groundwater

No groundwater strikes are noted within the boreholes due to use of water flush when drilling.

Trial pit logs noted groundwater at levels ranging from 0.90m bgl (6.75m AOD) to 2.10m bgl (7.73m AOD).

A standpipe installation was installed in BH05, targeting the Tidal Flat Deposits, and recorded groundwater levels ranging from 0.38m bgl (11.74m AOD) to 1.66m bgl (10.46m AOD).

5.4 Road Crossing near Sandy Lane Car Park (RDX2)

5.4.1 General

The Ground Model for the Road Crossing near Sandy Lane Car Park (RDX2) section of the cable route has been determined considering exploratory holes BH08 and BH09.

Table 11: Ground Summary

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Blown Sand (BH08 only)	6.8 (BH08)	1.14 (BH08)	Very loose to loose brownish grey silty fine and medium SAND.
Tidal Flat Deposits	>10.2 (BH08 & BH09)	Not Proven	Medium dense to dense brownish grey slightly gravelly sandy SILT with pockets of sandy clay. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of various lithologies including sandstone, siltstone and mudstone. Very loose to loose grey silty fine and medium SAND with pockets of dark brown pseudofibrous peat and traces of vegetation. Organic odour. Mottled brown and grey slightly gravelly sandy CLAY of low plasticity. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of various lithologies including siltstone, mudstone and sandstone. Mottled brown and grey very sandy clayey fine to coarse subangular and subrounded GRAVEL of various lithologies including sandstone, siltstone and mudstone. Sand is fine to coarse. Dense brown slightly silty fine to coarse SAND and fine to coarse angular to rounded GRAVEL of various lithologies including siltstone, sandstone and quartzite with cobbles. Cobbles are subrounded and rounded of siltstone.
Pilton Mudstone Formation	Not Proven	Not Proven	Mudstone / Siltstone (Not Proven)

5.4.2 Underground Structures and Obstructions

No underground structures or obstructions were recorded within the Road Crossing near Sandy Lane Car Park (RDX2) section of the cable route.

5.4.3 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was recorded within the Road Crossing near Sandy

Lane Car Park (RDX2) section of the cable route.

5.4.4 Groundwater

No groundwater strikes are noted within the boreholes due to use of water flush when drilling.

A standpipe installation was installed in BH09, targeting the Tidal Flat Deposits, and recorded groundwater levels ranging from -0.16m bgl (6.19m AOD) to 0.15m bgl (5.88m AOD). Artesian water conditions have been noted on monitoring logs hence groundwater being encountered above ground level.

5.5 Sandy Lane Car Park to River Taw Onshore Cable Route

5.5.1 General

The Ground Model for the Sandy Lane Car Park to River Taw section of the cable route has been determined considering exploratory holes BH09 to BH14 & TP08 to TP13.

Table 12: Ground Summary

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Made Ground – Topsoil	0.15 (TP10) – 0.40 (BH13)	2.93 (BH13) – 5.00 (TP08)	Dark brown sandy TOPSOIL with rootlets. Sand is fine to coarse.
Tidal Flat Deposits	1.70 (TP10, not proven) – 5.70 (BH10)	-1.87 (BH13) – 3.40 (TP08, not proven)	Firm, locally soft mottled orange-brown and brown slightly gravelly slightly sandy SILT with traces of vegetation. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone. Very loose to loose grey silty fine and medium SAND with pockets of dark brown pseudofibrous peat and traces of vegetation. Organic odour. Grey very silty fine and medium SAND with frequent shell fragments. Very soft dark brownish grey slightly sandy silty CLAY of low plasticity with traces of vegetation. Sand is fine and medium. Dark brown gravelly sandy pseudofibrous PEAT with frequent decomposing vegetation and pockets of brown sand. Sand is fine to coarse. Gravel is fine subrounded of sandstone. Strong organic odour. Brownish grey very silty fine to coarse SAND with frequent pockets of soft brownish grey silt and shells. Firm mottled orange brown and grey slightly gravelly slightly sandy SILT with low cobble content and traces of vegetation.
Ashton Mudstone Member and Crackington	>17.8 (BH14)	Not Proven	Very weak, locally weak and moderately weak dark grey MUDSTONE. Distinctly weathered and recovered almost entirely as angular gravel and gravelly clay. Weak and moderately weak, locally medium strong light grey

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Formation			SILTSTONE with calcite veins. Very weak and weak, locally moderately weak dark grey MUDSTONE with rare calcite veining. Locally partially weathered evident as a reduction in strength. Stratum is highly fractured throughout. Medium strong and strong, locally weak light grey SILTSTONE with occasional calcite veins. Partially weathered evident as an orange-brown staining. Locally distinctly weathered evident as a significant reduction in strength to gravelly clay in places. Stratum is highly fractured throughout.
Pilton Mudstone Formation	>7.20 (BH10 & BH12)	Not Proven	Grey MUDSTONE recovered as sandy clayey fine to coarse angular gravel. Sand is fine to coarse. Mottled dark grey and brown MUDSTONE recovered as thinly laminated slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular.

5.5.2 Underground Structures and Obstructions

No underground structures or obstructions were recorded within the Sandy Lane Car Park to River Taw section of the cable route.

5.5.3 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was recorded within the Sandy Lane Car Park to River Taw section of the cable route.

5.5.4 Groundwater

No groundwater strikes are noted within the boreholes due to use of water flush when drilling.

Trial pit logs noted groundwater at levels ranging from 0.90m bgl (2.46m AOD) to 1.60m bgl (3.60m AOD).

Standpipe installations were installed in BH09, targeting the Tidal Flat Deposits, and BH14, targeting the Ashton Mudstone Member and Crackington Formation, and recorded groundwater levels ranging from 0.00m bgl (6.03m AOD) to 0.96m bgl (2.80m AOD).

5.6 River Taw Crossing

5.6.1 General

The Ground Model for the River Taw Crossing section of the cable route has been determined considering exploratory holes BH14 and BH15.

Drawing No. 12731-153-WIE-ZZ-XX-DR-C-80103 presents the interpreted Ground Model and is included in Appendix C.

Table 13: Ground Summary

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Made Ground – Topsoil (BH14 only)	0.30 (BH14)	3.46 (BH14)	Dark brown sandy TOPSOIL with rootlets. Sand is fine to coarse
Tidal Flat Deposits (BH14 only)	4.20 (BH14)	-0.44 (BH14)	Brown slightly silty to silty fine to coarse SAND. Very loose brown slightly gravelly to gravelly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and siltstone. Greyish brown clayey fine to coarse SAND and fine to coarse subangular to rounded GRAVEL of various lithologies including sandstone, mudstone and siltstone.
Alluvium (BH15 only)	3.80 (BH15)	0.15 (BH15)	Mottled greyish brown and orange brown slightly gravelly slightly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of various lithologies including siltstone, mudstone and sandstone. Brownish grey silty fine to coarse SAND and fine to coarse angular and subangular GRAVEL of siltstone and mudstone.
Ashton Mudstone Member and Crackington Formation (Weathered)	4.20 (BH15) – 7.90 (BH14)	-4.14 (BH14) – -0.26 (BH15)	Grey and dark grey MUDSTONE recovered as sandy to very sandy very clayey fine to coarse angular and subangular gravel. Sand is fine to coarse. Grey MUDSTONE recovered as locally thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine and medium angular. Very weak, locally weak and moderately weak dark grey MUDSTONE. Distinctly weathered and recovered almost entirely as angular gravel and gravelly clay.
Ashton Mudstone Member and Crackington Formation	>20 (BH15)	Not Proven	Weak and moderately weak, locally medium strong light grey SILTSTONE with calcite veins. Recovered as non-intact. Very weak and weak, locally moderately weak dark grey MUDSTONE with rare calcite veining. Locally partially weathered evident as a reduction in strength. Very weak and weak, locally medium strong light grey SILTSTONE with calcite veins. Locally distinctly weathered evident as a reduction in strength. Stratum is highly fractured throughout. Medium strong and strong, locally weak light grey SILTSTONE with occasional to frequent calcite veins. Partially weathered evident as an orange brown staining. Locally distinctly weathered evident as a significant reduction in strength to gravelly clay in places. Stratum is highly fractured throughout.

5.6.2 Underground Structures and Obstructions

No underground structures or obstructions were recorded within the River Taw Crossing section of the cable route.

5.6.3 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was recorded within the River Taw Crossing section of the cable route.

5.6.4 Groundwater

No groundwater strikes are noted within the boreholes due to use of water flush when drilling.

Standpipe installations were installed in BH14 & BH15, both targeting the Ashton Mudstone Member and Crackington Formation, and recorded groundwater levels ranging from 0.45m bgl (3.50m AOD) to 0.96m bgl (2.80m AOD).

It is considered likely that groundwater is in hydraulic continuity with the River Taw, hence levels are likely to vary with river and tidal state.

5.7 River Taw to Substation Onshore Cable Route

5.7.1 General

The Ground Model for the Southern section of the cable route has been determined considering exploratory holes BH15 to BH18 & TP14 to TP17.

Table 14: Ground Summary

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
Made Ground – Topsoil (BH17, TP14, TP15 & TP17)	0.10 (BH17, TP14 & TP15) – 0.15 (TP17)	4.13 (TP14) – 5.09 (TP15)	Dark brown sandy clayey TOPSOIL with frequent roots and rootlets. Sand is fine and medium.
Made Ground (BH18 & TP16)	0.80 (TP16, not proven) – 1.25 (BH18)	3.62 (BH18) – 3.82 (TP16, not proven)	Brown sandy clayey fine to coarse angular and subangular gravel of mudstone and sandstone with small pockets of mottled brown and grey slightly sandy clay and low cobble and boulder content. Sand is fine to coarse. Cobbles and boulders are angular and subangular of mudstone and sandstone. Mottled orange-brown and brown slightly gravelly slightly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including siltstone, mudstone and sandstone. Cobbles are subrounded of sandstone. (Possibly Alluvium)
Alluvium	0.50 (BH17) – 4.20 (BH18)	0.15 (BH15) – 4.22 (BH17)	Mottled greyish brown and orange brown slightly gravelly slightly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of various lithologies

Stratum	Depth to base of stratum (mbgl)	Elevation to base of stratum (m AOD)	Typical Description
			including siltstone, mudstone and sandstone. Brownish grey silty fine to coarse SAND and fine to coarse angular and subangular GRAVEL of siltstone and mudstone. Firm to very stiff mottled orange-brown, brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone.
Ashton Mudstone Member and Crackington Formation (Weathered)	0.70 (BH17) – 5.70 (BH18)	-0.26 (BH15) – 4.02 (BH17)	Grey MUDSTONE recovered as locally thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine and medium angular. Grey SILTSTONE recovered as sandy silty fine to coarse angular gravel with cobbles. Sand is fine to coarse. Cobbles are angular. Grey SILTSTONE recovered as angular cobbles and boulders.
Ashton Mudstone Member and Crackington Formation	>20 (BH15)	Not Proven	Medium strong and strong, locally weak grey SILTSTONE with quartz-carbonate veins. Moderately weathered evident as orange-brown staining and loss of strength. Recovered as non-intact. Moderately weak and medium strong thinly laminated grey SILTSTONE with mudstone bands and rare calcite veining. Locally partially weathered evident as orange-brown staining. Weak and moderately weak thickly laminated to very thinly bedded dark grey MUDSTONE and grey muddy SILTSTONE. Partially weathered evident as orange-brown staining on fracture surfaces. Medium strong, locally strong grey sandy SILTSTONE with quartz-carbonate veins. Partially weathered evident as orange-brown staining on fracture surfaces and local preferential weathering of carbonate minerals within veins creating voiding.

5.7.2 Underground Structures and Obstructions

Trial pits, TP14, TP15 & TP17 were all terminated at depths ranging 2.00m bgl to 2.20m bgl due to hard digging, which is suspected to be rockhead.

Trial pit TP16 was terminated within the Made Ground at a depth of 0.80m bgl due to hard digging, which is suspected to be a boulder.

5.7.3 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was recorded within the River Taw to Substation section of the cable route.

5.7.4 Groundwater

No groundwater strikes are noted within the boreholes due to use of water flush when drilling.

Trial pit logs noted groundwater at levels ranging from 2.00m bgl (2.63m AOD) to 2.20m bgl (2.03m AOD).

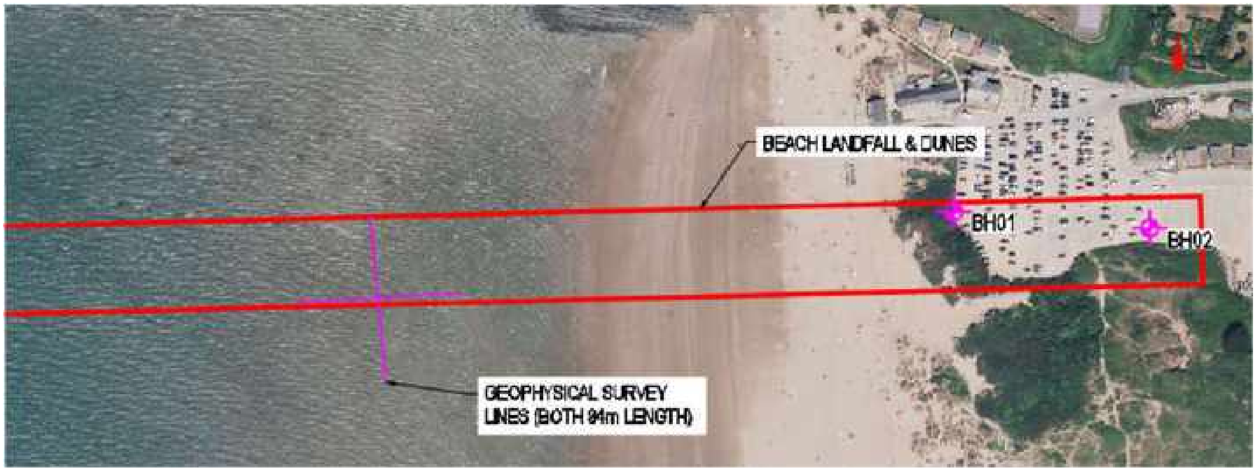
Standpipe installations were installed in BH15 & BH17, both targeting the Ashton Mudstone Member and Crackington Formation, and recorded groundwater levels ranging from 0.42m bgl (4.30m AOD) to 1.45m bgl (3.27m AOD).

6. Ground Conditions and Material Properties – Beach Landfall & Dunes

Owing to the linear nature of the cable route, the ground conditions and material properties have been split up to correspond with the ground models detailed within Section 5.

The Beach Landfall & Dunes section of the cable route has been determined considering exploratory holes BH01 to BH03. An overview of the area being considered is presented in Figure 2.

Figure 2: Beach Landfall & Dunes Plan



6.1 Made Ground

Made Ground was encountered in all 3 No. exploratory holes located within the vicinity of the beach landfall section of the cable route. The locations of all boreholes were within the existing beach car park and thus Made Ground is likely associated with the construction of the car park. Encountered depths ranged from ground level down to a maximum 1.0mbgl (BH01).

Typical descriptions of the encountered Made Ground were as follows:

Brown gravelly to very gravelly slightly silty to silty fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of broken stone, siltstone and sandstone;

Greyish brown very sandy silty fine to coarse angular and subangular gravel of various lithologies including broken stone, siltstone and mudstone with cobbles. Sand is fine to coarse. Cobbles are angular and subangular of broken stone and mudstone; or

Grey siltstone boulder recovered as angular cobbles.

No geotechnical testing was undertaken on samples of Made Ground in the vicinity of the Beach Landfall.

6.2 Blown Sand

Blown Sand was encountered in all exploratory holes, to a maximum depth of 12.50mbgl (BH01). It should be noted that the upper section of this strata may be Marine Beach Deposits rather than Blown Sand, however, there is little to no difference between typical descriptions and thus these materials have been considered as the same for the purposes of reporting.

Typical Descriptions of the Blown Sand were as follows:

Loose to medium dense light brown slightly gravelly slightly silty to silty fine to coarse SAND. Gravel is fine subangular to subrounded of various lithologies including siltstone, sandstone and mudstone; or

Loose to dense brown slightly gravelly silty fine to medium SAND with shell fragments. Gravel is fine subangular and subrounded of various lithologies including siltstone, mudstone and sandstone. Localised clay and silt pockets noted.

6.2.1 In-situ Testing

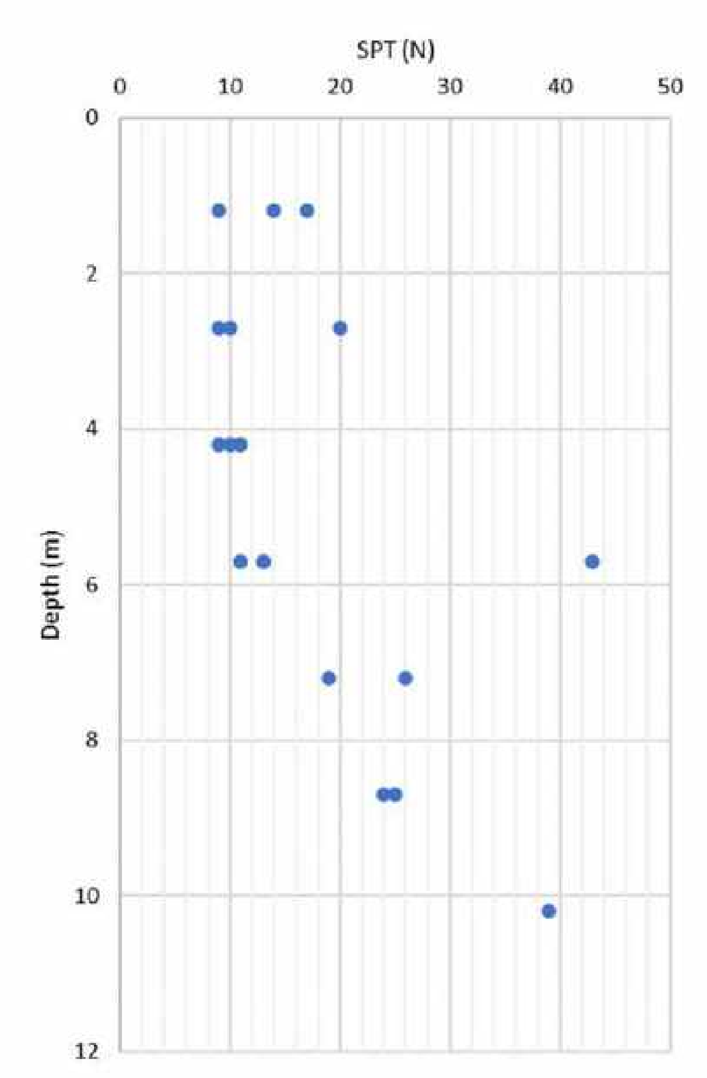
20 No. SPTs were undertaken within the Blown Sand deposits and are presented in Table 15. The SPT N-value results range from 9 to 43, with an average of 18, this excludes values of 50 being recorded on the basis these most likely represent obstructions or rockhead. These values indicate the Blown Sand has been encountered with relative density ranging from loose to dense, but most typically medium dense. It is apparent that the Blown Sand is becoming denser with depth, as presented in Figure 3.

Table 15: Blown Sand – SPT Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH01	1.20	14
	2.70	10
	4.20	10
	5.70	11
	7.20	26
	8.70	25
	10.20	>50
	11.70	>50
BH02	1.20	9
	2.70	9
	4.20	11
	5.70	13
	7.20	19
	8.70	24
	10.20	39
BH03	1.20	17
	2.70	20
	4.20	9
	5.70	43
	7.20	>50
	Average	**18***

* Average does not include >50 readings

Figure 3: Blown Sand – SPT Results Plot



6.2.2 Classification Testing

5 No. Water Content Determination tests were undertaken on samples of the Blown Sand and returned water contents ranging from 4.0% to 28.0% with an average water content of 15.0%.

The results are summarised in Table 16.

Table 16: Blown Sand - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH01	1.20	4.00
	4.20	23.00
BH02	2.70	5.90
	5.70	14.00
	9.50	28.00

	Average	15.0

5 No. Particle Size Distribution (PSD) tests were undertaken on samples of the Blown Sand. Results are summarised in Table 17.

Table 17: Blown Sand – Particle Size Distribution

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Clay / Silt (%)
BH01	2.70	0.0	1.2	96.6	2.2
	9.50	0.0	0.2	94.4	5.5
BH02	4.20	0.0	2.4	90.6	7.0
	9.50	0.0	0.0	96.8	3.2
Average		**0.0**	**1.0**	**94.6**	**4.5**

The PSD results indicate the sampled Blown Sand to be composed predominantly of Sand sized fractions with minor components of Fines and Gravel.

6.2.3 Effective Stress

2 No. Shear Box tests were undertaken on suitable samples of Blown Sand, the results are summarised in Table 18.

Table 18: Blown Sand – Shear Box Results

Exploratory Hole	Depth (mbgl)	Cohesion, c' (kN/m^2)	Internal Friction Angle, Φ' (°)
BH02	4.20	9.0	31.0
	8.00	14.0	31.0
	Average	**11.5**	**31.0**

6.2.4 Compaction Testing

1 No. Moisture Content / Maximum Dry Density relationship test was undertaken using the 2.5kg rammer method. This recorded an optimum moisture content of 17% and a maximum dry density of 15.7kN/m^3. The average natural moisture content of the Blown Sand was 15.0%, and therefore testing indicates the Blown Sand to be marginally dry of optimum moisture content. Some wetting of excavated materials may therefore be required to ensure optimum compaction, if used as backfill.

6.2.5 Blown Sand Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 19.

Table 19: Blown Sand - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content (%)	5	4.0 to 28.0	15.0	15%
Maximum Dry Density (kN/m^3)	1	15.7	15.7	16kN/m^3
Optimum Moisture Content (%)	1	17	17	17%
SPT 'N' Value	20	9 to 43	18	18
Drained Shear Strength (Effective Stress Condition)				
Shear Box (° / kN/m^2)	2	31.0	31.0	Φ = 31°
	2	9.0 – 14.0	11.5	c' = 5kN/m^2

6.3 Pilton Mudstone Formation

Pilton Mudstone Formation was encountered in boreholes, BH01 & BH03 at a minimum depth of 7.2mbgl (BH03). This stratum was encountered initially as a soil due to weathering before becoming more competent with depth. The minimum depth that competent rock was encountered was 8.7m (BH03)

The weathered material was typically described as:

Grey MUDSTONE recovered as slightly sandy very clayey fine to coarse angular gravel with cobbles. Sand is fine to coarse. Locally passing to slightly sandy gravelly clay;

Grey MUDSTONE recovered as sandy silty fine to coarse angular gravel with cobbles. Sand is fine to coarse. Cobbles are angular; or

Weathered SILTSTONE recovered as grey gravelly clay. Gravel is fine to medium angular.

The competent rock was typically described as:

Weak thickly laminated to very thinly bedded brownish grey MUDSTONE with occasional calcite veins. Partially weathered evident as orange brown penetrative staining penetrative up to 30mm; or

Weak to Medium Strong thinly laminated light grey SILTSTONE interbedded with fine grained light grey sandstone. Rare calcite veining. Partially weathered evident as orange brown staining on fracture surface.

6.3.1 Abrasivity Test

3 No. Cerchar Abrasivity tests were undertaken on samples of the Pilton Mudstone Formation and retuned Index values of between 1.2 and 1.4 with an average of 1.3, indicating the abrasivity of the Pilton Mustone Formation to be Medium Abrasiveness.

6.3.2 Compressive Strength

3 No. Unconfined Compressive Strength (UCS) tests were undertaken on suitable rock core samples from boreholes in the vicinity of the Beach Landfall. These results give a UCS range of 6.7MPa to 15.6MPa indicating the rock tested to be Weak to Moderately Weak in strength. UCS test results are presented in Table 20.

Table 20: Pilton Mudstone Formation – Unconfined Compressive Strength (UCS) Test Results

Borehole	Depth (m bgl)	Rock Type	UCS	Classification
BH01	16.60	Mudstone	6.9	Weak
	18.00	Mudstone	15.6	Moderately Weak
BH03	15.55	Siltstone	6.7	Weak

28 No. Point Load Tests were undertaken on suitable rock core samples. Results of these tests are presented in Table 21, and record $I_{s(50)}$ strengths ranging from 0.1 to 2.7MPa. These equate to an estimated UCS range of 1.4 to 37.8MPa, when considering a correction factor of 14, selected considering Rusnak & Mark [18] for mudstone and siltstone.

Table 21: Pilton Mudstone Formation – Point Load Test Results

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
BH01	13.50	Mudstone	D	0.3	0.4	5.6
	13.85	Mudstone	L	0.4	0.4	5.6
	14.05	Mudstone	D	0.2	0.3	4.2
	14.35	Mudstone	A	0.3	0.4	5.6
	14.55	Mudstone	A	0.3	0.4	5.6
	14.95	Mudstone	A	0.4	0.5	7.0
	15.20	Mudstone	D	0.1	0.2	2.8
	15.40	Mudstone	D	0.2	0.3	4.2
	15.65	Mudstone	D	0.2	0.3	4.2
	16.00	Mudstone	D	0.2	0.3	4.2
	16.45	Mudstone	L	0.9	0.9	12.6
	16.85	Mudstone	A	0.3	0.4	5.6
	17.15	Mudstone	D	0.4	0.5	7.0
	17.50	Mudstone	A	0.1	0.1	1.4
	17.80	Mudstone	D	0.7	0.6	8.4
	18.25	Mudstone	A	0.1	0.2	2.8
	18.45	Mudstone	A	0.2	0.2	2.8
	18.75	Mudstone	D	0.5	0.7	9.8
	19.20	Mudstone	D	0.2	0.3	4.2
	19.25	Mudstone	D	0.2	0.2	2.8
BH03	14.75	Siltstone	L	0.9	1.0	14.0
	14.85	Siltstone	A	1.0	1.2	16.8
	14.90	Siltstone	A	2.5	2.7	37.8
	15.05	Siltstone	D	0.5	0.6	8.4

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
	15.30	Siltstone	D	0.3	0.4	5.6
	15.50	Siltstone	L	2.2	2.4	33.6
	15.80	Siltstone	L	0.3	0.4	5.6
	16.00	Siltstone	D	0.3	0.5	7.0

6.3.3 Pilton Mudstone Formation Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 22.

Table 22: Pilton Mudstone Formation - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Abrasivity	3	1.2 – 1.4	1.3	1.3
		Strength		
Unconfined Compressive Strength (UCS) (MPa)	3	6.7 – 15.6	9.7	UCS = 9MPa
Point Load Test correlated UCS (MPa)	28	1.4 – 37.8	8.4	

6.4 Groundwater

During the ground investigation site works, groundwater strikes were not recorded as they were most likely masked by the use of a water flush.

Borehole BH01 was installed with a 50mm diameter monitoring well as part of the ground investigation, and post site works groundwater monitoring visits were undertaken by Igne and Wesson Environmental. A total of 6 No. visits have been completed and summary of groundwater monitoring levels recorded is given in Table 23.

Table 23: Groundwater Monitoring Results

BH	BH Depth m bgl (m AOD)	Standpipe Installation Depth m bgl (m AOD)	Groundwater Levels					
			10/10/23 m bgl (m AOD)	25/10/23 m bgl (m AOD)	08/11/23 m bgl (m AOD)	19/03/24 m bgl (m AOD)	25/03/24 m bgl (m AOD)	25/04/24 m bgl (m AOD)
BH01	20.00 (-6.81)	12.30 (0.89)	8.81 (4.38)	8.86 (4.33)	8.75 (4.44)	8.03 (5.16)	8.23 (4.96)	8.19 (5.00)

6.5 Geophysical Survey on Saunton Sands Beach

A seismic survey was undertaken on Saunton Sands Beach to allow profiling of superficial deposits thickness and distribution. The Geophysical Survey Report, prepared by Terradat, is presented as an appendix to Igne's Factual Report [12] (Appendix B) and should be referred to for full details.

To summarise the findings, a geological profile was determined consisting of a superficial deposits layer of predominantly sand and some gravel over the Pilton Mudstone Formation. The superficial deposits were noted to be increasing in density with depth, albeit some readings may be encountering weathered bedrock.

The competent rockhead boundary lies between -4.5m AOD to -7m AOD with the rock typically shallower to the east and north. Relative to the closest exploratory hole, BH01, which was located some 280m east of the geophysical survey extents, the data would suggest that the rockhead profile dips to the east (i.e. becomes deeper onshore).

6.6 Resistivity Testing

Apparent resistivity testing was undertaken in order to measure the relative resistivity of the ground with depth. The results are summarised in Table 24.

Table 24: Resistivity Testing Summary

Exploratory Hole	Assumed Depth (m bgl)	Assumed Depth (m AOD)	Assumed Material	Apparent Resistivity 000° to 180° (Ω-m)	Apparent Resistivity 090° to 270° (Ω-m)	Mean Apparent Resistivity for Perpendicular Orientations (Ω-m)
RES 1	1.00	11.59	Blown Sand	80.4	88.0	84.2
	2.00	10.59	Blown Sand	119.0	114.4	116.7
	4.00	8.59	Blown Sand	151.8	171.9	161.9
	8.00	4.59	Blown Sand / Weathered Rock	205.1	231.2	218.2
	10.00	2.59	Blown Sand / Bedrock	197.9	236.9	217.4

7. Ground Conditions and Material Properties – Golf Course Crossing

Owing to the linear nature of the cable route, the ground conditions and material properties have been split up to correspond with the ground models detailed within Section 5.

The Golf Course Crossing section of the cable route has been determined considering exploratory holes BH03 to BH05. An overview of the area being considered is presented in Figure 4.

Figure 4: Golf Course Crossing Plan

7.1 Topsoil

Topsoil was only encountered in BH05 in the vicinity of the Golf Course Crossing and was identified up to a depth of 0.4m bgl. This topsoil was described as:

Brown sandy silty TOPSOIL with roots and rootlets. Sand is fine and medium.

No geotechnical testing was undertaken on samples of topsoil in the vicinity of the Golf Course Crossing.

7.2 Made Ground

Made Ground was only encountered in BH03 in the vicinity of the Golf Course Crossing and was identified up to a depth of 0.6m bgl. The location of this borehole was within the existing beach car park and thus Made Ground is likely associated with the construction of the car park. The Made Ground was described as:

Greyish brown very sandy silty fine to coarse angular and subangular gravel of various lithologies including broken stone, siltstone and mudstone with cobbles. Sand is fine to coarse. Cobbles are angular and subangular of broken stone and mudstone.

No geotechnical testing was undertaken on samples of Made Ground in the vicinity of the Golf Course Crossing.

7.3 Blown Sand

Blown Sand was encountered in all 3 No. exploratory holes located in the vicinity of the Golf Course Crossing, the maximum depth recorded was 7.2m bgl (BH03 & BH05).

Typical descriptions of Blown Sand deposits were as follows:

Loose to dense brown locally slightly gravelly silty fine and medium SAND with shell fragments. Gravel is fine subangular and subrounded of various lithologies including siltstone, mudstone and sandstone;

Brown slightly gravelly silty to very silty fine to coarse SAND with pockets of brown slightly gravelly sandy silt. Gravel is fine to coarse subangular and subrounded of various lithologies including siltstone, mudstone and sandstone;

Loose brownish grey and greyish brown very silty fine and medium SAND with very thin dark grey loamy bands. Strong organic odour; or

Medium dense brown very sandy very clayey fine to coarse subangular and subrounded GRAVEL of various lithologies including siltstone, mudstone and sandstone. Sand is fine to coarse.

7.3.1 In-situ Testing

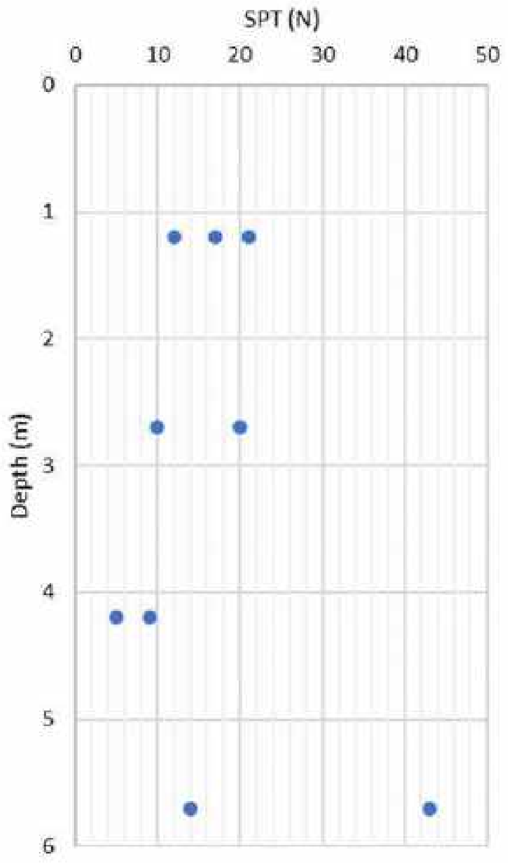
10 No. SPTs were undertaken within the Blown Sand deposits and are presented in Table 25. The SPT N-value results range from 5 to 43, with an average of 17, this excludes the value of >50 being recorded on the basis these most likely represent obstructions or rockhead. These values indicate the Blown Sand has been encountered with relative density ranging from loose to dense, but most typically medium dense. A plot of SPT results with depth is presented in Figure 5

Table 25: Blown Sand – SPT Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH03	1.20	17
	2.70	20
	4.20	9
	5.70	43
	7.20	>50
BH04	1.20	21
BH05	1.20	12
	2.70	10
	4.20	5
	5.70	14
	Average	**17***

* Average does not include >50 readings

Figure 5: Blown Sand – SPT Results Plot



7.3.2 Classification Testing

2 No. Water Content Determination tests were undertaken on samples of the Blown Sand and returned values ranging from 11.0% to 21.0% with an average of 16.0%.

The results are summarised in Table 26.

Table 26: Blown Sand - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH04	1.2	11.0
BH05	2.7	21.0
	Average	**16.0%**

1 No. Atterberg Limit Test was undertaken on samples of Blown Sand Deposits. The result indicates the Blown Sand to be a low plasticity clay. This result does not correspond with the exploratory hole log whereby descriptions are noted as very sandy very clayey GRAVEL. This is considered likely due to localised variations in the strata material make-up. The results are summarised in Table 27.

Table 27: Blown Sand - Atterberg Limits

Exploratory Hole	Depth (mbgl)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH04	1.2	32	19	13

1 No. Particle Size Distribution (PSD) test was undertaken on samples of the Blown Sand. The result of this test is presented in Table 28.

Table 28: Blown Sand – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH04	1.2	0.0	46.2	28.7	19.0	6.1

The PSD results indicate the sampled Blown Sand Deposits to be composed predominantly of Gravel sized fractions with secondary components of Sand and Silt and a minor component of Clay.

7.3.3 Compaction Testing

1 No. Moisture Content / Maximum Dry Density relationship test was undertaken using the 2.5kg rammer method. This recorded an optimum moisture content of 19% and a maximum dry density of 16.0kN/m^3. The average natural moisture content of the Blown Sand was 16%, and therefore testing indicates the Blown Sand to be marginally dry of optimum moisture content. Some wetting of excavated materials may therefore be required to ensure optimum compaction, if used as backfill.

7.3.4 Effective Stress

1 No. Shear Box test was undertaken on suitable samples of Blown Sand, the results are summarised in Table 29.

Table 29: Blown Sand – Shear Box Test Results

Exploratory Hole	Depth (mbgl)	Cohesion, c' (kN/m^2)	Internal Friction Angle, Φ' (°)
BH05	5.0	13	30.0

7.3.5 Organic Matter Content Tests

1 No. Organic Matter Content test was undertaken on a sample of the Blown Sand and indicated an Organic Matter Content of 0.3%.

7.3.6 Blown Sand Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 30.

Table 30: Blown Sand - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
SPT 'N' Value	10	5 to 43	17	17
Organic Matter Contents (%)	1	0.3	0.3	0.3%
Maximum Dry Density (kN/m^3)	1	16.0	16.0	16kN/m^3

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Optimum Moisture Content (%)	1	19	19	19%
Drained Shear Strength (Effective Stress Condition)				
Shear Box (° / kN/m^2)	1	30.0	30.0	Φ = 30°
	1	13.0	13.0	c' = 5kN/m^2

7.4 Tidal Flat Deposits

Tidal Flat Deposits were only encountered in exploratory holes BH04 & BH05 located in the vicinity of the Golf Course Crossing. The maximum depth recorded was 12.3m bgl (BH05).

Typical descriptions of Tidal Flat Deposits were as follows:

Medium dense mottled orange brown and brown very sandy very clayey fine to coarse angular to subrounded GRAVEL of siltstone and mudstone. Locally passing to slightly gravelly slightly sandy silt;

Medium dense to dense orange brown slightly gravelly slightly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone; or

Reddish brown gravelly silty to very silty fine to coarse SAND with cobbles. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone. Cobbles are subrounded of siltstone.

7.4.1 In-situ Testing

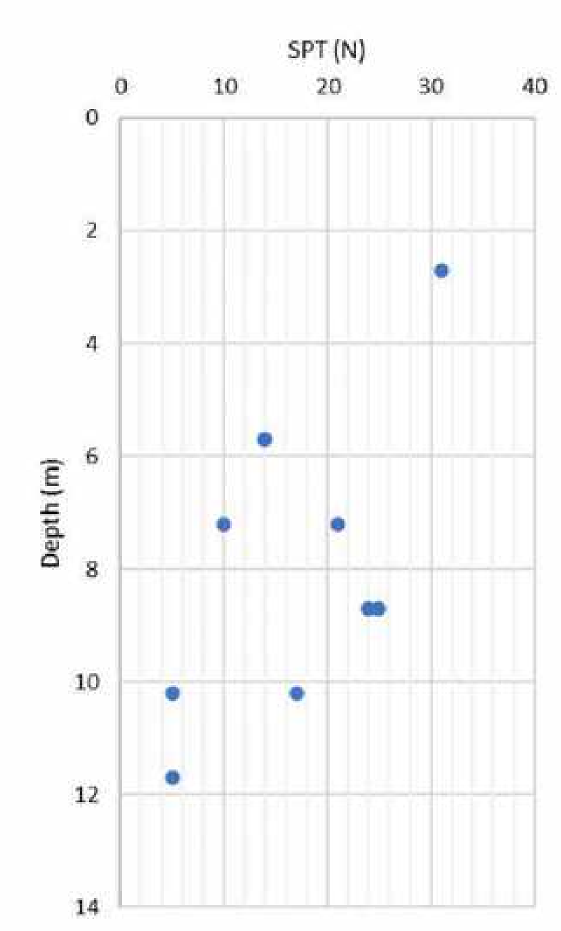
11 No. SPTs were undertaken within the Tidal Flat Deposits and are presented in Table 31. The SPT N-value results range from 5 to 31, with an average of 17, this excludes the value of >50 being recorded on the basis these most likely represent obstructions or rockhead.

Table 31: Tidal Flat Deposits - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH04	2.7	31
	4.2	>50
	5.7	14
	7.2	21
	8.7	24
	10.2	5
	11.7	5
BH05	7.2	10
	8.7	25
	10.2	17
	11.7	>50
	Average	**17***

* Average does not include >50 readings

Figure 6: Tidal Flat Deposits - Standard Penetration Test (SPT) Results Plot



7.4.2 Classification Testing

4 No. Water Content Determination tests were undertaken on samples of the Tidal Flat Deposits and returned values ranging from 11.0% to 16.0% with an average of 13.5%.

The results are summarised in Table 32.

Table 32: Tidal Flat Deposits - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH04	2.3	11.0
	3.3	16.0
	4.2	14.0
	8.0	13.0
	Average	**13.5%**

2 No. Atterberg Limit Tests were undertaken on samples of Tidal Flat Deposits which indicated a liquid limit range of 19% to 29% with an average of 24%, a plastic limit of 17% and a Plasticity Index of 12%. 1 No. of the results indicate the Tidal Flat Deposits to be a low plasticity clay with the remaining 1 No. test result returning a non-plastic designation. These results do not correspond with the exploratory hole log whereby

materials are noted as very sandy very clayey GRAVEL or sandy SILT. This may be due to local variations in the strata material make-up.

The results are summarised in Table 33.

Table 33: Tidal Flat Deposits - Atterberg Limits

Exploratory Hole	Depth (mbgl)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH04	3.3	19	NP	NP
	8.0	29	17	12
Average		**24**	**17**	**12**

3 No. Particle Size Distribution (PSD) tests were undertaken on samples of the Tidal Flat Deposits. The average result is presented in Table 34.

Table 34: Tidal Flat Deposits – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH04	3.8	0.0	27.5	24.0	33.3	15.1
	4.2	0.5	68.3	13.6	12.6	5.0
	7.2	0.0	48.5	27.4	24.1	0.1
Average		**0.2**	**48.1**	**21.7**	**23.3**	**6.7**

The PSD results indicate the sampled Tidal Flat Deposits to be composed predominantly of Gravel sized fractions with secondary components of Sand and Silt and a minor component of Clay.

7.4.3 Undrained Shear Strength

From the SPT, it is possible to derive an estimation of undrained shear strength of the cohesive fraction of the Tidal Flat Deposits using Stroud and Butler [19].

$$c_u = f_1 N$$

Where,

c_u is the undrained shear strength (kN/m^2)

N is the SPT blow count

f_1 is a factor depending upon plasticity.

For clays having a plasticity index of 12%, f1 = 6. For the SPT range of ‘N’ values 5 to 31; this results in an undrained shear strength range of 30kN/m^2 to 186kN/m^2, with an average ‘N’ value of 17 indicating an undrained shear strength of 102kN/m^2. These results indicate the Tidal Flat Deposits to be of low to very high strength.

7.4.4 Effective Stress

1 No. Shear Box test was undertaken on suitable samples of Tidal Flat Deposits, the results are summarised in Table 35.

Table 35: Tidal Flat Deposits – Shear Box Test Results

Exploratory Hole	Depth (mbgl)	Cohesion, c' (kN/m^2)	Internal Friction Angle, Φ' (°)
BH04	2.3	0	32.5

7.4.5 Tidal Flat Deposits Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 36.

Table 36: Tidal Flat Deposits - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content Determination (%)	4	11.0 – 16.0	13.5	14%
Liquid Limit (%)	2	19 – 29	24	27%
Plastic Limit (%)	2	17	18	18%
Plasticity Index (%)	2	12	12	12%
SPT N Value	11	5 – 31	17	15
Undrained Shear Strength (Total Stress Condition)				
Correlation from SPT	11	30 - 186	102	Cu = 50kN/m^2 Φ' = 0°
Drained Shear Strength (Effective Stress Condition)				
Shear Box	1	32.5	32.5	Φ = 32°
	1	0	0	c' = 0kN/m^2

7.5 Pilton Mudstone Formation

The Pilton Mudstone Formation was encountered in all 3 No. boreholes associated with the Golf Course Crossing, at a minimum depth of 7.2m bgl (BH03). This stratum was encountered initially as a soil due to weathering before becoming more competent with depth. The minimum depth that competent rock was encountered was 8.7m (BH03)

The weathered material was typically described as:

Grey MUDSTONE recovered as slightly sandy very clayey fine to coarse angular gravel. Sand is fine to coarse. Locally passing to slightly sandy gravelly clay;

Grey sandy very clayey fine to coarse angular to subrounded GRAVEL of siltstone and mudstone with cobbles. Sand is fine to coarse. Cobbles are subangular of siltstone and mudstone;

Grey sandy silty fine to coarse angular GRAVEL of weathered mudstone with local bands of gravelly silt. Sand is fine to coarse;

Mottled dark brown and grey slightly gravelly slightly sandy CLAY of intermediate plasticity. Sand is fine to coarse. Gravel is fine and medium angular and subangular of mudstone. (Suspected Tidal Flat Deposits *interbedded within weathered layer); or*

Grey SILTSTONE recovered as thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine to coarse angular and subangular.

The competent rock was typically described as:

Weak to Medium Strong thinly laminated light grey SILTSTONE interbedded with fine grained light grey sandstone. Rare to occasional calcite veining. Partially weathered evident as orange brown staining on fracture surface; or

Moderately weak thinly laminated grey SILTSTONE with mudstone bands. Distinctly weathered evident as an orange brown staining on fracture surfaces and gravelly clay infilling of fractures.

7.5.1 In-Situ Testing

2 No. SPTs were undertaken within the Pilton Mudstone Formation, both results returned value of >50, commensurate with SPT testing in rock.

7.5.2 Classification Testing

2 No. Water Content Determination tests were undertaken on samples of the Pilton Mudstone Formation, where the samples recovered were soil, and returned values ranging from 6.4% to 15.0% with an average of 13.4%.

The results are summarised in Table 37.

Table 37: Pilton Mudstone Formation – Water Content Test Results

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH04	13.0	15.0
	13.8	6.4
	Average	**13.4**

2 No. Atterberg Limit Tests were undertaken on samples of Pilton Mudstone Formation, where recovered samples were soil, which indicated both liquid limits to be 37%, plastic limit range of 20% to 21% with an average of 21%, and a Plasticity Index range of 16% to 17% with an average of 17%. The results indicate the Pilton Mudstone Formation to be an intermediate plasticity clay.

Table 38: Pilton Mudstone Formation – Atterberg Limits

Exploratory Hole	Depth (m bgl)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH04	13.0	37	21	16
	13.5	37	20	17
Average		**31**	**19**	**15**

7.5.3 Abrasivity Test

3 No. Cerchar Abrasivity tests were undertaken on samples of the Pilton Mudstone Formation and retuned Index values of between 1.0 and 1.4 with an average of 1.2, indicating the abrasivity of the Pilton Mustone Formation to be Medium Abrasiveness.

7.5.4 Compressive Strength

1 No. Unconfined Compressive Strength (UCS) tests was undertaken on suitable rock core samples from boreholes in the vicinity of the Golf Course Crossing. This result gives a UCS value of 6.7MPa indicating the rock tested to be Weak in strength. UCS test results are presented in Table 39.

Table 39: Pilton Mudstone Formation – Unconfined Compressive Strength (UCS) Test Results

Borehole	Depth (m bgl)	Rock Type	UCS	Classification
BH03	15.55	Siltstone	6.7	Weak

28 No. Point Load Tests were undertaken on suitable rock core samples. Results of these tests are presented in Table 40, and record $I_{s(50)}$ strengths ranging from 0.1 to 3.6MPa. These equate to an estimated UCS range of 1.4 to 50.4MPa, when considering a correction factor of 14, selected considering Rusnak & Mark [18] for mudstone and siltstone.

Table 40: Pilton Mudstone Formation – Point Load Test Results

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
BH03	14.75	Siltstone	L	0.9	1.0	14.0
	14.85	Siltstone	A	1.0	1.2	16.8
	14.90	Siltstone	A	2.5	2.7	37.8
	15.05	Siltstone	D	0.5	0.6	8.4
	15.30	Siltstone	D	0.3	0.4	5.6
	15.50	Siltstone	L	2.2	2.4	33.6
	15.80	Siltstone	L	0.3	0.4	5.6
	16.00	Siltstone	D	0.3	0.5	7.0
BH04	14.80	Siltstone	D	0.2	0.3	4.2
	15.20	Siltstone	D	0.2	0.2	2.8
	15.60	Siltstone	A	0.2	0.2	2.8
	15.90	Siltstone	D	0.1	0.1	1.4
	16.10	Siltstone	D	0.4	0.6	8.4
	16.35	Siltstone	A	0.3	0.4	5.6
	16.75	Siltstone	D	0.6	0.8	11.2
	17.15	Siltstone	A	1.3	1.4	19.6
	17.35	Siltstone	D	0.2	0.3	4.2
	17.60	Siltstone	A	0.9	1.1	15.4
BH05	13.20	Siltstone	L	1.2	1.2	16.8
	13.35	Siltstone	L	0.8	1.0	14.0
	13.50	Siltstone	L	0.6	0.7	9.8
	13.65	Siltstone	L	0.9	0.9	12.6

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
	13.80	Siltstone	L	1.8	1.6	22.4
	13.95	Siltstone	L	1.2	1.0	14.0
	14.10	Siltstone	L	1.0	0.9	12.6
	14.25	Siltstone	L	0.5	0.4	5.6
	14.40	Siltstone	L	1.0	1.0	14.0
	14.55	Siltstone	D	2.7	3.6	50.4

7.5.5 Pilton Mudstone Formation Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 41.

Table 41: Pilton Mudstone Formation - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Abrasivity	3	1.0 – 1.4	1.2	1.2
		Strength		
Unconfined Compressive Strength (UCS) (MPa)	1	6.7	6.7	UCS = 7MPa
Point Load Test correlated UCS (MPa)	28	1.4 – 50.4	13.5	

7.6 Groundwater

During the ground investigation site works, groundwater strikes were not recorded as they were most likely masked by the use of a water flush.

Borehole BH05 was installed with a 50mm diameter monitoring well as part of the ground investigation, and post site works groundwater monitoring visits were undertaken by Igne and Wesson Environmental. A total of 6 No. visits have been completed and summary of groundwater monitoring levels recorded is given in Table 42.

Table 42: Groundwater Monitoring Results

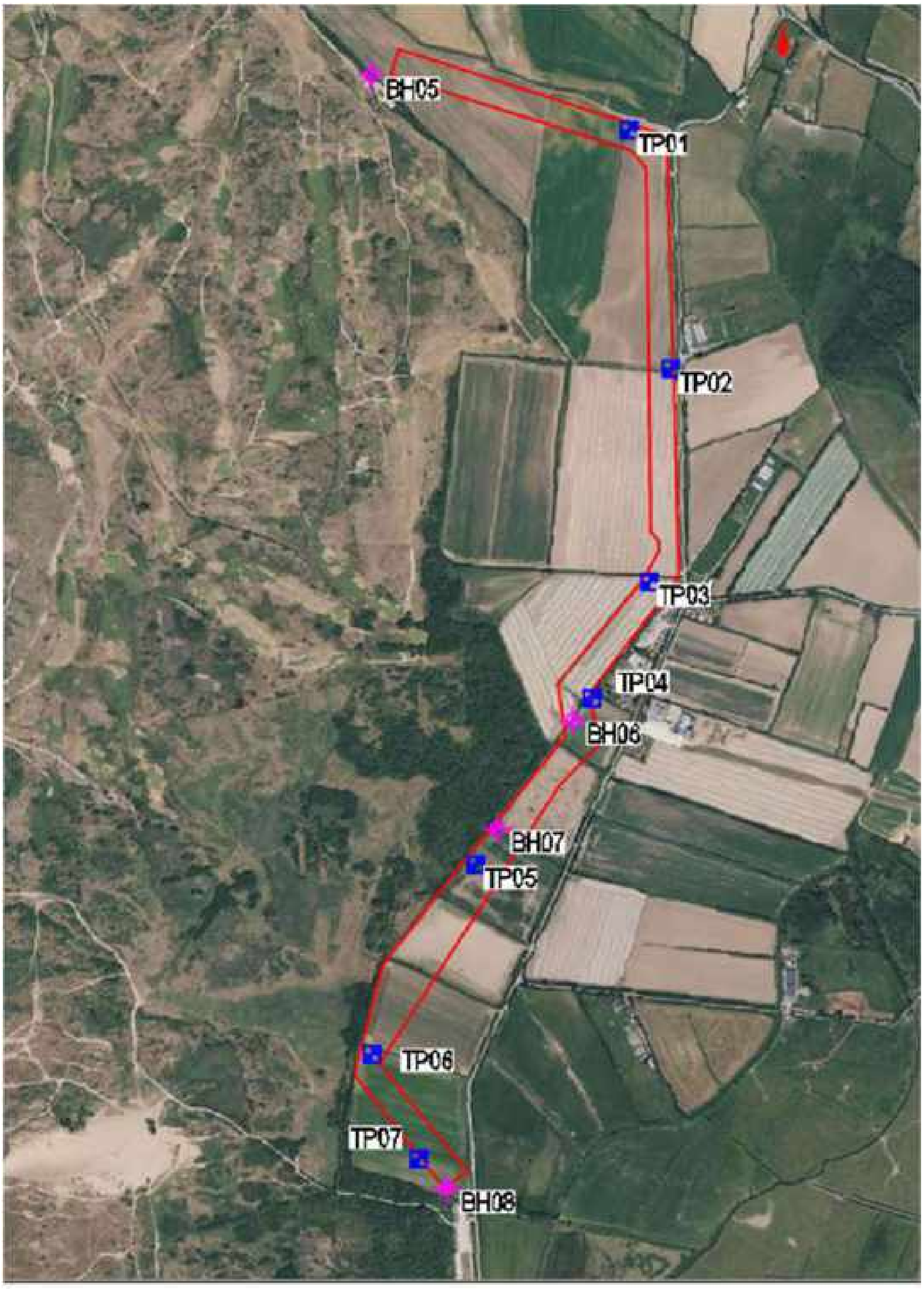
BH	BH Depth m bgl (m AOD)	Standpipe Installation Depth m bgl (m AOD)	Groundwater Levels					
			10/10/23 m bgl (m AOD)	25/10/23 m bgl (m AOD)	08/11/23 m bgl (m AOD)	19/03/24 m bgl (m AOD)	25/03/24 m bgl (m AOD)	25/04/24 m bgl (m AOD)
BH05	20.00 (-7.88)	10.00 (2.12)	1.61 (10.51)	1.42 (10.70)	1.15 (10.97)	0.38 (11.74)	0.44 (11.68)	0.83 (11.29)

8. Ground Conditions and Material Properties – Golf Course to Sandy Lane Car Park Onshore Cable Route

Owing to the linear nature of the cable route, the ground conditions and material properties have been split up to correspond with the ground models detailed within Section 5.

The Golf Course to Sandy Lane Car Park section of the cable route has been determined considering exploratory holes BH05 to BH08 & TP01 to TP07. An overview of the area being considered is presented in Figure 7.

Figure 7: Golf Course to Sandy Lane Car Park Onshore Cable Route Plan



8.1 Topsoil

Topsoil was encountered at all exploratory hole locations, with the exception of BH07 & BH08, up to a maximum depth of 0.40mbgl (BH05). Topsoil was generally recovered as:

Brown very sandy silty TOPSOIL with frequent rootlets. Sand is fine and medium.

No geotechnical testing was undertaken on samples of Topsoil.

8.2 Blown Sand

Blown Sand was encountered in all exploratory holes along the Golf Course to Sandy Land Car Park section of the cable route, up to a maximum depth 7.2mbgl (BH05), although it should be noted that all trial pits were terminated within this stratum. Typical descriptions of the Blown Sand were as follows:

Loose mottled greyish brown and brownish grey very silty fine and medium SAND with very thin dark brown loamy bands and traces of vegetation. Strong organic odour; or

Very loose brownish grey slightly gravelly silty fine to coarse SAND. Gravel is fine to coarse subangular and subrounded of various lithologies including sandstone, siltstone and mudstone.

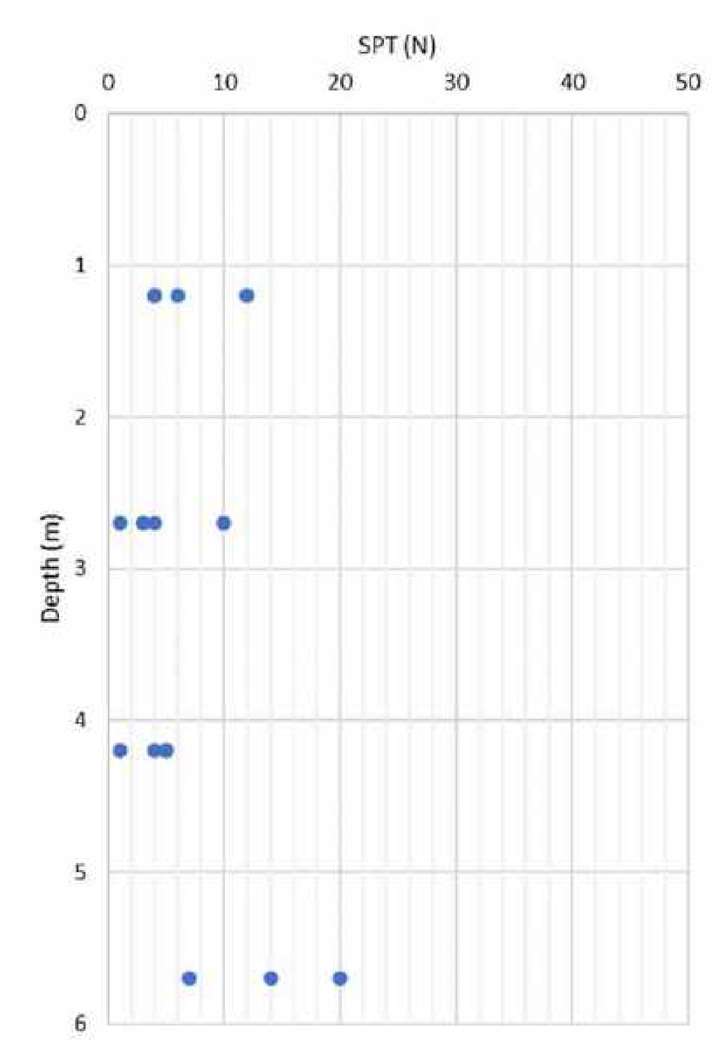
8.2.1 In-situ Testing

15 No. SPTs were undertaken within the Blown Sand and are presented in Table 43. The SPT N-value results range from 1 to 20, with an average of 7. This would indicate the Blown Sand to be very loose to medium dense in terms of relative density.

Table 43: Blown Sand - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH05	1.2	12
	2.7	10
	4.2	5
	5.7	14
BH06	1.2	4
	2.7	4
	4.2	5
BH07	1.2	6
	2.7	3
	4.2	1
	5.7	20
BH08	1.2	4
	2.7	1
	4.2	4
	5.7	7
	Average	**7**

Figure 8: Blown Sand - Standard Penetration Test (SPT) Results Plot



8.2.2 Classification Testing

7 No. Water Content Determination tests were undertaken on samples of the Blown Sand and returned values ranging from 10.0% to 48.0% with an average of 24.7%.

The results are summarised in Table 44.

Table 44: Blown Sand - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH05	2.7	21.0
BH07	2.7	27.0
BH08	2.7	23.0
TP01	2.0	48.0
TP02	0.9	10.0
TP05	0.9	18.0

Exploratory Hole	Depth (m bgl)	Water Content (%)
TP05	1.7	26.0
	Average	**24.7%**

1 No. Atterberg Limit Test was undertaken on a sample of Blown Sand which indicated a liquid limit 28%, no plastic limit was determined indicating the sample to be non-plastic. This is commensurate with the exploratory hole log description which indicates the material to be slightly gravelly very silty SAND.

5 No. Particle Size Distribution (PSD) tests were undertaken on samples of the Blown Sand. The average result is presented in Table 45.

Table 45: Blown Sand – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt / Clay (%)
BH07	4.2	0.0	1.6	90.3	8.1
TP01	2.0	0.0	0.1	90.5	9.1
TP02	2.1	0.0	0.0	98.4	1.6
TP04	1.0	0.0	0.0	93.0	7.0
TP06	1.8	0.0	0.0	97.5	1.5
Average		**0.0**	**0.3**	**94.0**	**5.5**

The PSD results indicate the sampled Blown Sand to be composed predominantly of Sand sized fractions with a minor component of fines and gravel.

8.2.3 Effective Stress

1 No. Shear Box test was undertaken on a suitable sample of Blown Sand, the results are summarised in Table 46.

Table 46: Blown Sand – Shear Box Test Results

Exploratory Hole	Depth (mbgl)	Cohesion, c' (kN/m^2)	Internal Friction Angle, Φ' (°)
BH05	5.0	13	30.0

8.2.4 Compaction Testing

5 No. Moisture Content / Maximum Dry Density relationship tests were undertaken using the 2.5kg rammer method. These recorded an optimum moisture content range of 15% to 22% with an average 18%, and a maximum dry density range of 15.6kN/m^3 to 16.2kN/m^3. The average natural moisture content of the Blown Sand was 24.7%, and therefore testing indicates the Blown Sand to be wet of optimum moisture content hence should any site won arising be re-used as engineered fill within the works, materials may require improvement through drying prior to compaction. It is highlighted that in other areas of the site, the Blown Sand is dry of optimum, indicating variations in natural moisture content likely due to differing groundwater regimes.

8.2.5 Organic Matter Content Tests

4 No. Organic Matter Content tests were undertaken on samples of the Blown Sand and indicated Organic Matter Contents of between 0.1% and 4.3% with an average of 1.4%.

8.2.6 Blown Sand Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 47.

Table 47: Blown Sand - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
SPT 'N' Value	15	5 to 43	17	17
Water Content (%)	7	10 - 48	24.7	25%
Maximum Dry Density (kN/m^3)	5	15.6 – 16.2	16.0	16kN/m^3
Optimum Moisture Content (%)	5	15 - 22	18	18%
Organic Matter Content (%)	4	0.1 – 4.3	1.4	2%
Drained Shear Strength (Effective Stress Condition)				
Shear Box (° / kN/m^2)	1	30.0	30.0	Φ = 30°
	1	13.0	13.0	c' = 5kN/m^2

8.3 Tidal Flat Deposits

Tidal Flat Deposits were encountered in all boreholes located along the Golf Course to Sandy Land Car Park section of onshore cable route, the maximum depth recorded was 12.3m bgl (BH05), albeit all other boreholes were terminated within this stratum.

Typical descriptions of Tidal Flat Deposits were as follows:

Grey slightly gravelly slightly sandy silty CLAY of low plasticity with lenses of grey fine very silty sand. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of mudstone and siltstone;

Mottled brown and greyish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of mudstone and siltstone;

Medium dense to dense brown and orange brown very gravelly very silty fine to coarse SAND with cobbles; or

Mottled brown and grey very sandy clayey fine to coarse subangular and subrounded GRAVEL of various lithologies including sandstone, siltstone and mudstone. Sand is fine to coarse.

8.3.1 In-situ Testing

14 No. SPTs were undertaken within the Tidal Flat Deposits and are presented in Table 48. The SPT N-value results range from 3 to 41, with an average of 25, this excludes the values of >50 being recorded on the basis these most likely represent obstructions or rockhead.

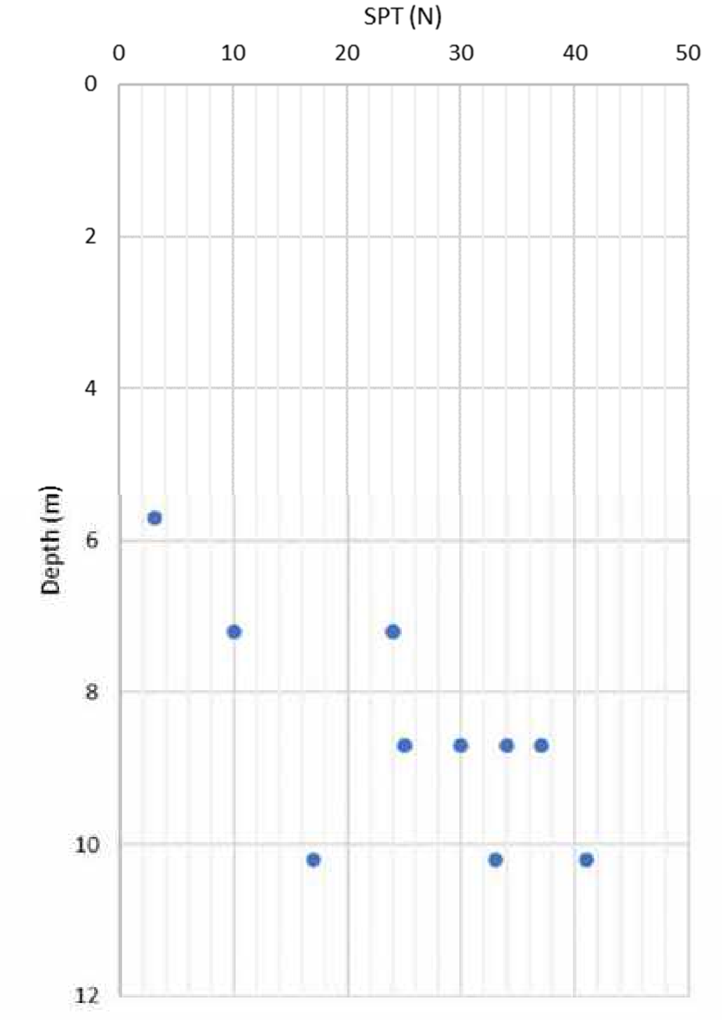
Table 48: Tidal Flat Deposits - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH05	7.2	10

Exploratory Hole	Depth (m bgl)	SPT N-value
	8.7	25
	10.2	17
	11.7	>50
BH06	5.7	3
	7.2	24
	8.7	37
	10.2	33
BH07	7.2	>50
	8.7	30
	10.2	>50
BH08	7.2	24
	8.7	34
	10.2	41
	Average	**25***

* Average does not include >50 readings

Figure 9: Tidal Flat Deposits - Standard Penetration Test (SPT) Results Plot



8.3.2 Classification Testing

3 No. Water Content Determination tests were undertaken on samples of the Tidal Flat Deposits and returned values ranging from 14.0% to 28.0% with an average of 19.7%.

The results are summarised in Table 49.

Table 49: Tidal Flat Deposits - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH06	6.5	28.0
BH07	6.7	17.0
BH08	9.2	14.0
	Average	**19.7%**

3 No. Atterberg Limit Tests were undertaken on samples of Tidal Flat Deposits which indicated a liquid limit range of 32% to 34% with an average of 33%, plastic limit range of 19% to 21% with an average of 20%,

and a Plasticity Index of 13%. This indicates that all samples tested are low plasticity clays.

The results are summarised in Table 50.

Table 50: Tidal Flat Deposits - Atterberg Limits

Exploratory Hole	Depth (mbgl)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH06	6.5	32	19	13
BH07	6.7	34	21	13
BH08	9.2	32	19	13
Average		**33**	**20**	**13**

1 No. Particle Size Distribution (PSD) test was undertaken on a sample of the Tidal Flat Deposits. The result is presented in Table 51.

Table 51: Tidal Flat Deposits – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH08	7.20	0.0	10.2	36.2	41.4	12.2

The PSD results indicate the sampled Tidal Flat Deposits to be composed predominantly of Silt sized fractions with secondary component of Sand and minor components of Clay and Gravel.

8.3.3 Undrained Shear Strength

From the SPT, it is possible to derive an estimation of undrained shear strength of the cohesive fraction of the Tidal Flat Deposits using Stroud and Butler [19].

$$c_u = f_1 N$$

Where,

c_u is the undrained shear strength (kN/m^2)

N is the SPT blow count

f_1 is a factor depending upon plasticity.

For clays having a plasticity index of 13%, f1 = 6. For the SPT range of 'N' values 3 to 41; this results in an undrained shear strength range of 18kN/m^2 to 246kN/m^2, with an average 'N' value of 25 indicating an undrained shear strength of 150kN/m^2. These results indicate the Tidal Flat Deposits to be of low to very high strength.

8.3.4 Tidal Flat Deposits Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 52.

Table 52: Tidal Flat Deposits - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content Determination (%)	3	14.0 – 28.0	19.7	20%
Liquid Limit (%)	3	32 – 34	33	33%

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Plastic Limit (%)	3	19 – 21	20	20%
Plasticity Index (%)	3	13	13	13%
SPT N Value	14	3 – 41	25	25
Undrained Shear Strength (Total Stress Condition)				
Correlation from SPT	14	18 - 246	150	Cu = 75kN/m^2, increasing with depth. Φ' = 0°

8.4 Pilton Mudstone Formation

The Pilton Mudstone Formation was encountered in BH05 only, at a minimum depth of 12.3m bgl (BH05). This stratum was encountered initially as a soil due to weathering before becoming more competent with depth. The minimum depth that competent rock was encountered was 13.2m (BH05)

The weathered material was typically described as:

Grey MUDSTONE recovered as slightly sandy very clayey fine to coarse angular gravel. Sand is fine to coarse. Locally passing to slightly sandy gravelly clay; or

Grey SILTSTONE recovered as thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine to coarse angular and subangular.

The competent rock was typically described as:

Moderately weak thinly laminated grey SILTSTONE with mudstone bands. Distinctly weathered evident as an orange brown staining on fracture surfaces and gravelly clay infilling of fractures; or

Medium Strong thinly laminated light grey SILTSTONE interbedded with fine grained light grey sandstone. Rare to occasional calcite veining. Partially weathered evident as orange brown staining on fracture surface.

8.4.1 Abrasivity Test

1 No. Cerchar Abrasivity test was undertaken on a sample of the Pilton Mudstone Formation and retuned Index values of 1.0, indicating the abrasivity of the Pilton Mustone Formation to be Medium Abrasiveness.

8.4.2 Compressive Strength

10 No. Point Load Tests were undertaken on suitable rock core samples. Results of these tests are presented in Table 53, and record $I_{s(50)}$ strengths ranging from 0.4 to 3.6MPa. These equate to an estimated UCS range of 5.6 to 50.4MPa, when considering a correction factor of 14, selected considering Rusnak & Mark [18] for mudstone and siltstone.

Table 53: Pilton Mudstone Formation – Point Load Test Results

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
BH05	13.20	Siltstone	L	1.2	1.2	16.8
	13.35	Siltstone	L	0.8	1.0	14.0

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
	13.50	Siltstone	L	0.6	0.7	9.8
	13.65	Siltstone	L	0.9	0.9	12.6
	13.80	Siltstone	L	1.8	1.6	22.4
	13.95	Siltstone	L	1.2	1.0	14.0
	14.10	Siltstone	L	1.0	0.9	12.6
	14.25	Siltstone	L	0.5	0.4	5.6
	14.40	Siltstone	L	1.0	1.0	14.0
	14.55	Siltstone	D	2.7	3.6	50.4

8.4.3 Pilton Mudstone Formation Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 54.

Table 54: Pilton Mustone Formation - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Abrasivity	1	1.0	1.0	1.0
		Strength		
Point Load Test correlated UCS (MPa)	10	5.6 – 50.4	17.2	UCS = 15MPa

8.5 Groundwater

During the ground investigation site works, groundwater strikes were not recorded as they were most likely masked by the use of a water flush.

Borehole BH05 was installed with a 50mm diameter monitoring well as part of the ground investigation, and post site works groundwater monitoring visits were undertaken by Igne and Wesson Environmental. A total of 6 No. visits have been completed and summary of groundwater monitoring levels recorded is given in Table 55.

Table 55: Groundwater Monitoring Results

BH	BH Depth m bgl (m AOD)	Standpipe Installation Depth m bgl (m AOD)	Groundwater Levels					
			10/10/23 m bgl (m AOD)	25/10/23 m bgl (m AOD)	08/11/23 m bgl (m AOD)	19/03/24 m bgl (m AOD)	25/03/24 m bgl (m AOD)	25/04/24 m bgl (m AOD)
BH05	20.00 (-7.88)	10.00 (2.12)	1.61 (10.51)	1.42 (10.70)	1.15 (10.97)	0.38 (11.74)	0.44 (11.68)	0.83 (11.29)

8.6 Resistivity Testing

Apparent resistivity testing was undertaken in order to measure the relative resistivity of the ground with depth. The results are summarised in Table 56.

Table 56: Resistivity Testing Summary

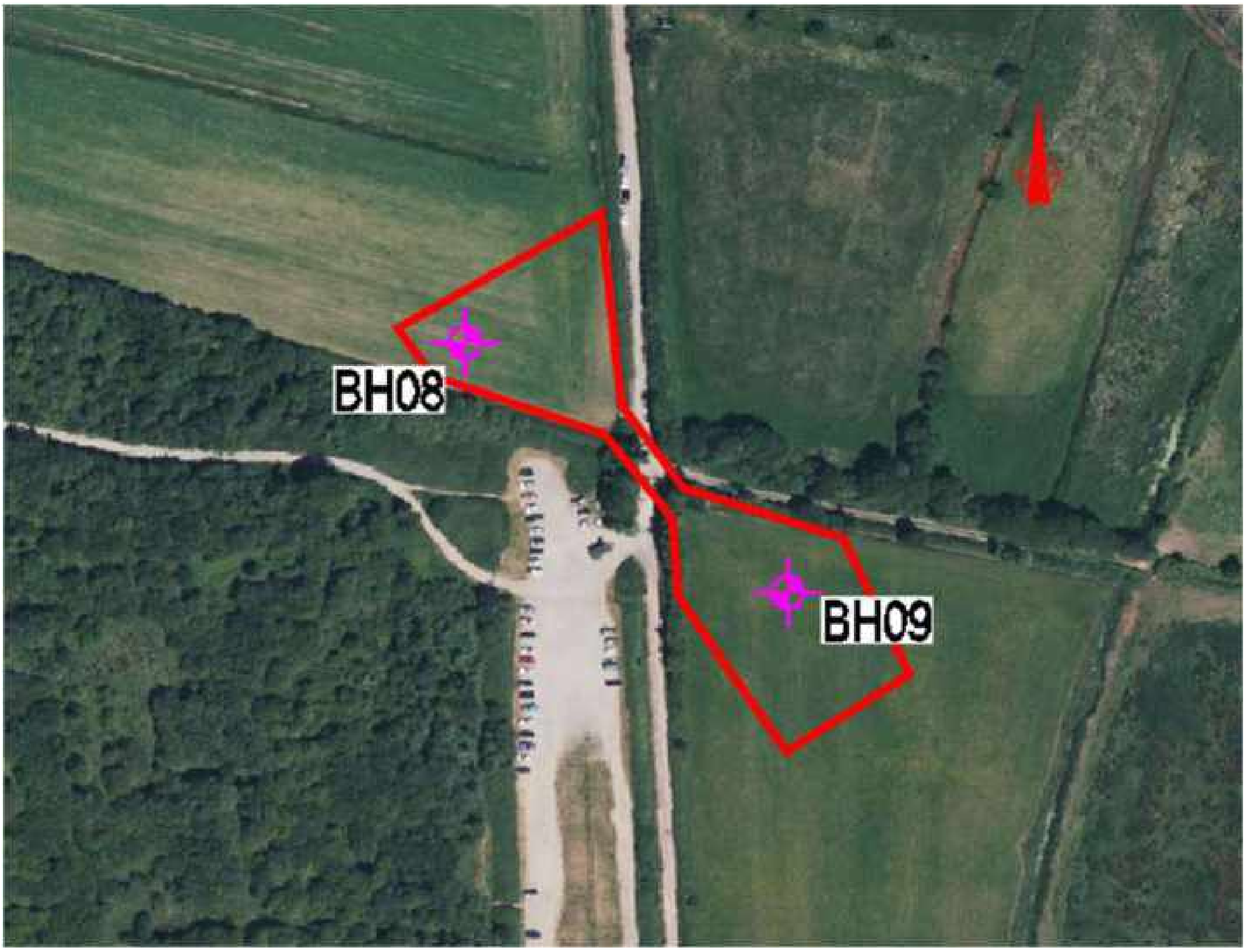
Exploratory Hole	Assumed Depth (m bgl)	Assumed Depth (m AOD)	Assumed Material	Apparent Resistivity 000° to 180° (Ω-m)	Apparent Resistivity 090° to 270° (Ω-m)	Mean Apparent Resistivity for Perpendicular Orientations (Ω-m)
RES 2	1.00	8.07	Blown Sand	93.1	79.2	86.2
	2.00	7.07	Blown Sand	73.4	73.4	73.4
	4.00	5.07	Blown Sand / Tidal Flat Deposits	44.1	52.3	48.2
	8.00	1.07	Tidal Flat Deposits	45.7	56.3	51.0
	10.00	-0.93	Tidal Flat Deposits	50.9	53.4	52.2
RES 3	1.00	7.79	Blown Sand	135.1	143.9	139.5
	2.00	6.79	Blown Sand	103.8	94.6	99.2
	4.00	4.79	Blown Sand	68.4	71.9	70.2
	8.00	0.79	Tidal Flat Deposits	66.4	62.3	64.4
	10.00	-1.21	Tidal Flat Deposits	67.2	66.0	66.6

9. Ground Conditions and Material Properties – Road Crossing near Sandy Lane Car Park (RDX2)

Owing to the linear nature of the cable route, the ground conditions and material properties have been split up to correspond with the ground models detailed within Section 5.

The Road Crossing near Sandy Lane Car Park (RDX2) section of the cable route has been determined considering exploratory holes BH08 & BH09. An overview of the area being considered is presented in Figure 10.

Figure 10: Road Crossing near Sandy Lane Car Park (RDX2)



9.1 Blown Sand

Blown Sand was encountered in BH08 only, down to a maximum depth 6.8m bgl. The typical description of the Blown Sand was:

Very loose to loose brownish grey silty fine and medium SAND.

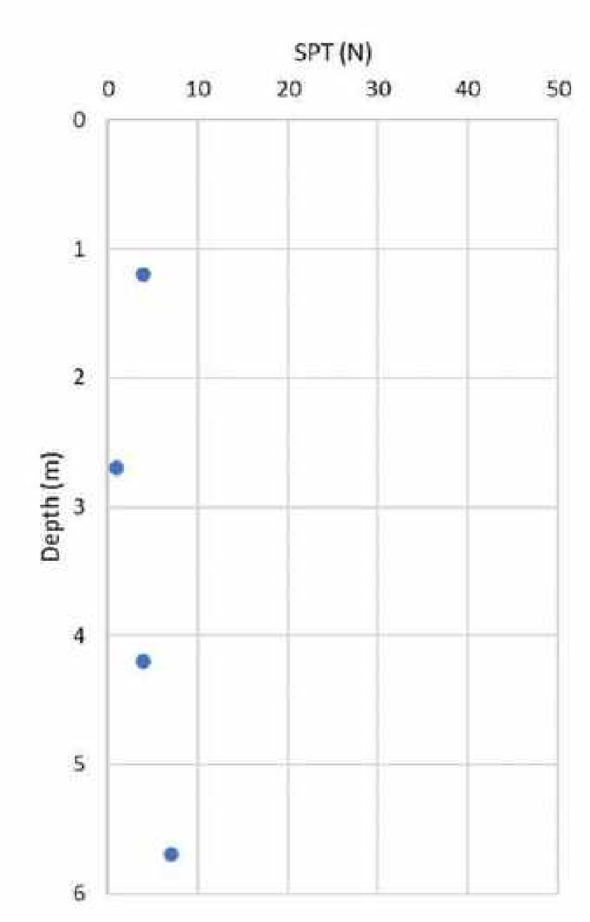
9.1.1 In-situ Testing

4 No. SPTs were undertaken within the Blown Sand and are presented in Table 57. The SPT N-value results range from 1 to 7, with an average of 4. This would indicate the Blown Sand to be very loose to loose in terms of relative density.

Table 57: Blown Sand - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH08	1.2	4
	2.7	1
	4.2	4
	5.7	7
	Average	**4**

Figure 11: Blown Sand - Standard Penetration Test (SPT) Results Plot



9.1.2 Classification Testing

1 No. Water Content Determination test was undertaken on a sample of the Blown Sand and returned water content of 23.0%.

The results are summarised in Table 58.

Table 58: Blown Sand - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH08	2.7	23.0

9.1.3 Compaction Testing

1 No. Moisture Content / Maximum Dry Density relationship tests was undertaken using the 2.5kg rammer method. This recorded an optimum moisture content of 18% and a maximum dry density of 16.2kN/m^3. The average natural moisture content of the Blown Sand was 23%, and therefore testing indicates the Blown Sand to be wet of optimum moisture content hence should any site won arising be re-used as engineered fill within the works, materials may require improvement through drying prior to compaction. It is highlighted that in other areas of the site, the Blown Sand is dry of optimum, indicating variations in natural moisture content likely due to differing groundwater regimes.

9.1.4 Blown Sand Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 59.

Table 59: Blown Sand - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
SPT ‘N’ Value	4	1 - 7	4	4
Water Content (%)	1	23	23.0	23%
Maximum Dry Density (kN/m^3)	1	16.2	16.2	16kN/m^3
Optimum Moisture Content (%)	1	18	18	18%

9.2 Tidal Flat Deposits

Tidal Flat Deposits were encountered in both boreholes located near the proposed road crossing down to a maximum proven depth 10.2m bgl. It should be noted that both boreholes were terminated at this depth and thus the Tidal Flat Deposits may extend deeper than recorded. Typical descriptions of the Tidal Flat Deposits were:

Medium dense to dense brownish grey slightly gravelly sandy SILT with pockets of sandy clay. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of various lithologies including sandstone, siltstone and mudstone;

Very loose to loose grey silty fine and medium SAND with pockets of dark brown pseudofibrous peat and traces of vegetation. Organic odour;

Mottled brown and grey slightly gravelly sandy CLAY of low plasticity. Sand is fine to coarse. Gravel is fine and medium subangular and subrounded of various lithologies including siltstone, mudstone and sandstone;

Mottled brown and grey very sandy clayey fine to coarse subangular and subrounded GRAVEL of various lithologies including sandstone, siltstone and mudstone. Sand is fine to coarse; or

Dense brown slightly silty fine to coarse SAND and fine to coarse angular to rounded GRAVEL of various *lithologies including siltstone, sandstone and quartzite with cobbles. Cobbles are subrounded and rounded of siltstone.*

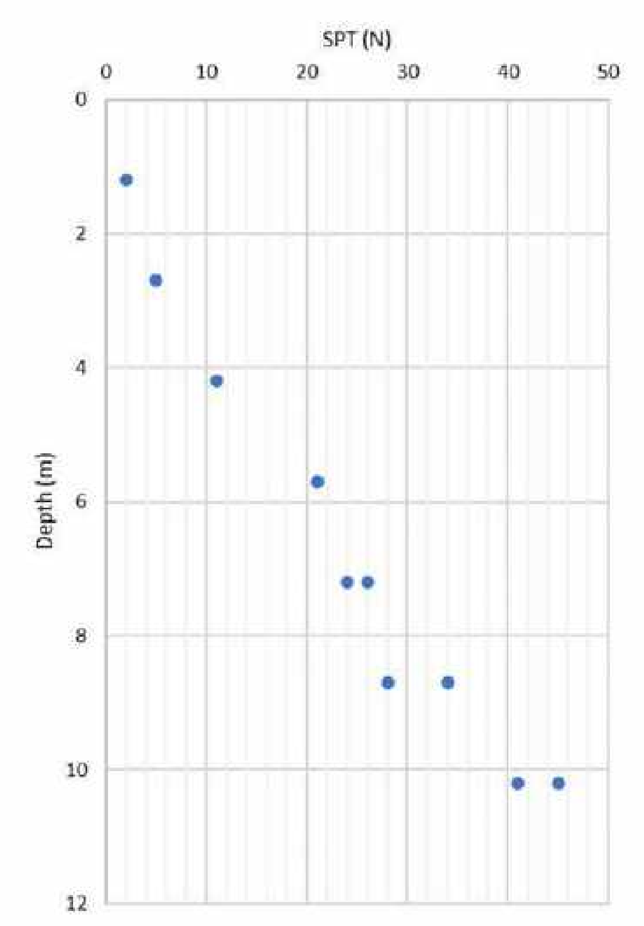
9.2.1 In-situ Testing

10 No. SPTs were undertaken within the Tidal Flat Deposits and are presented in Table 60. It is notable that the results show a distinct trend whereby SPT 'N' values rise with depth.

Table 60: Tidal Flat Deposits - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH08	7.2	24
	8.7	34
	10.2	41
BH09	1.2	2
	2.7	5
	4.2	11
	5.7	21
	7.2	26
	8.7	28
	10.2	45
	Average	**24**

Figure 12: Tidal Flat Deposits - Standard Penetration Test (SPT) Results Plot



9.2.2 Classification Testing

3 No. Water Content Determination tests were undertaken on samples of the Tidal Flat Deposits and returned water contents ranging from 8.9% to 14.0% with an average water content of 11.3%.

The results are summarised in Table 61.

Table 61: Tidal Flat Deposits - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH08	9.2	14.0
BH09	5.0	11.0
	7.0	8.9
	Average	**11.3**

2 No. Atterberg Limit Tests were undertaken on samples of Tidal Flat Deposits which indicated a liquid limit range of 29% to 32% with an average of 31%, plastic limit range of 18% to 19% with an average of 19%, and a Plasticity Index range of 11% and 13% with an average of 12%. The results indicate the Tidal Flat Deposits to be a low plasticity clay.

The results are summarised in Table 62.

Table 62: Tidal Flat Deposits - Atterberg Limits

Exploratory Hole	Depth (mbgl)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH08	9.20	32	19	13
BH09	5.00	29	18	11
Average		**31**	**19**	**12**

2 No. PSD tests were undertaken on samples of the Tidal Flat Deposits. Results are summarised in Table 63.

Table 63: Tidal Flat Deposits – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Clay / Silt (%)
BH08	7.20	0.0	10.2	36.2	41.4	12.2	-
BH09	7.00	20.1	46.9	28.4	-	-	4.6
Average		**10.0**	**28.6**	**32.3**	**41.4**	**12.2**	**4.6**

The PSD results indicate the sampled Tidal Flat Deposits to be extremely variable with primary components of Gravel, Sand and Silt and secondary components of Cobbles and Clay.

9.2.3 Undrained Shear Strength

From the SPT, it is possible to derive an estimation of undrained shear strength of the cohesive fraction of the Tidal Flat Deposits using Stroud and Butler [19].

$$c_u = f_1 N$$

Where,

c_u is the undrained shear strength (kN/m^2)

N is the SPT blow count

f_1 is a factor depending upon plasticity.

For clays having a plasticity index of 12%, f1 = 6. For the SPT range of ‘N’ values 2 to 45; this results in an undrained shear strength range of 12kN/m^2 to 270kN/m^2, with an average ‘N’ value of 24 indicating an undrained shear strength of 144kN/m^2. These results indicate the cohesive fraction of the Tidal Flat Deposits to be of very low to very high strength.

9.2.4 Organic Matter Content Tests

1 No. Organic Matter Content test was undertaken on a sample of the Tidal Flat Deposits and indicated Organic Matter Contents of 4.6%.

9.2.5 Tidal Flat Deposits Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 64.

Table 64: Tidal Flat Deposits - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content Determination (%)	3	8.9 – 14.0	11.3	11%
Liquid Limit (%)	2	29 – 32	31	31%
Plastic Limit (%)	2	18 – 19	19	19%
Plasticity Index (%)	2	11 – 13	12	12%
SPT 'N' Values	10	2 – 45	24	24
Organic Matter Content (%)	1	4.6	4.6	5%
Undrained Shear Strength (Total Stress Condition)				
Correlation from SPT (kN/m^2)	10	12 to 270	144	c_u = 75kN/m^2 increasing with depth. Φ' = 0°

9.3 Groundwater

During the ground investigation site works, groundwater strikes were not recorded as they were most likely masked by the use of a water flush.

Borehole BH09 was installed with a 50mm diameter monitoring well as part of the ground investigation, and post site works groundwater monitoring visits were undertaken by Igne and Wesson Environmental. A total of 6 No. visits have been completed and summary of groundwater monitoring levels recorded is given in Table 65.

Table 65: Groundwater Monitoring Results

BH	BH Depth m bgl (m AOD)	Standpipe Installation Depth m bgl (m AOD)	Groundwater Levels					
			10/10/23 m bgl (m AOD)	25/10/23 m bgl (m AOD)	08/11/23 m bgl (m AOD)	25/03/24 m bgl (m AOD)	25/04/24 m bgl (m AOD)	26/04/24 m bgl (m AOD)
BH09	10.20 (-4.18)	10.20 (-4.18)	0.15 (5.88)	0.00 (6.03)	0.00 (6.03)	-0.16* (6.19)	-0.16* (6.19)	-0.16* (6.19)

** Artesian water conditions noted within monitoring results, thus groundwater level recorded above ground level.*

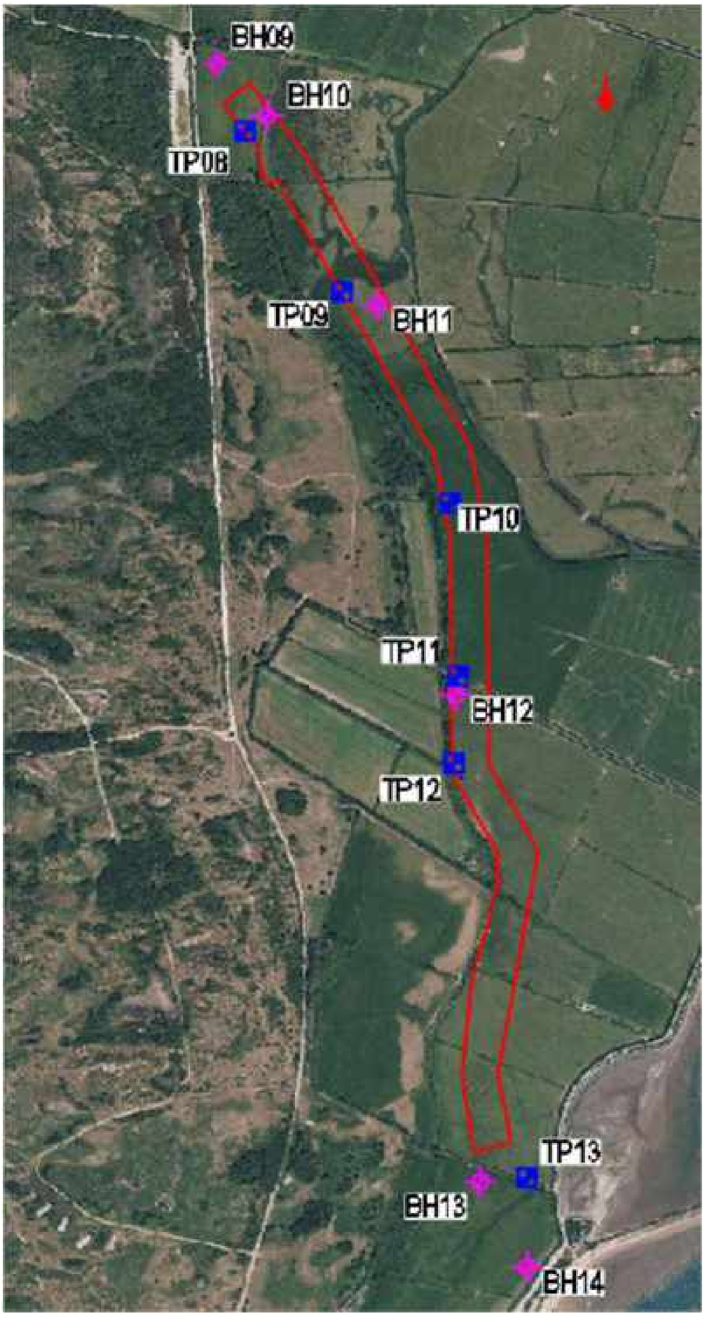
*** A visit to undertake a groundwater reading was undertaken 19th March 2024, however, no result was provided for BH09.*

10. Ground Conditions and Material Properties – Sandy Lane Car Park to River Taw Onshore Cable Route

Owing to the linear nature of the cable route, the ground conditions and material properties have been split up to correspond with the ground models detailed within Section 5.

The Sandy Lane Car Park to River Taw section of the cable route has been determined considering exploratory holes BH09 to BH14 & TP08 to TP13. An overview of the area being considered is presented in Figure 13.

Figure 13: Sandy Lane Car Park to River Taw Onshore Cable Route Plan



10.1 Topsoil

Topsoil was encountered at all exploratory hole locations with the exception of BH09 & BH10, up to a maximum depth of 0.4m bgl (BH13). The topsoil was typically described as:

Dark brown sandy TOPSOIL with rootlets. Sand is fine to coarse.

No Geotechnical Testing on samples of Topsoil were undertaken.

10.2 Tidal Flat Deposits

Tidal Flat Deposits were encountered in all exploratory hole locations up to a maximum proven depth of 10.2m bgl (BH09). It should be noted that all trial pits and BH09 were terminated within this stratum and thus the base of the deposits may be deeper than noted. Typical descriptions of the Tidal Flat Deposits were:

Firm, locally soft mottled orange-brown and brown slightly gravelly slightly sandy SILT with traces of vegetation. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone;

Very loose to loose grey silty fine and medium SAND with pockets of dark brown pseudofibrous peat and traces of vegetation. Organic odour;

Grey very silty fine and medium SAND with frequent shell fragments;

Very soft dark brownish grey slightly sandy silty CLAY of low plasticity with traces of vegetation. Sand is fine and medium;

Dark brown gravelly sandy pseudofibrous PEAT with frequent decomposing vegetation and pockets of brown sand. Sand is fine to coarse. Gravel is fine subrounded of sandstone. Strong organic odour;

Brownish grey very silty fine to coarse SAND with frequent pockets of soft brownish grey silt and shells; or

Firm mottled orange brown and grey slightly gravelly slightly sandy SILT with low cobble content and traces of vegetation.

10.2.1 In-situ Testing

8 No. hand shear vane tests were completed within the Tidal Flat Deposits, recording an average undrained shear strength range of 24kN/m^2 indicating the Tidal Flat Deposits to be of Low Strength.

The results are summarised in Table 66.

Table 66: Tidal Flat Deposits - Hand Vane Summary Results

Exploratory Hole	Depth (m bgl)	Undrained Shear Strength Results (kN/m^2)
TP08	1.8	30 / 25 / 33
TP09	0.5	23 / 23 / 35
TP10	0.8	8 / 15 / 13
	1.3	13 / 13 / 20
TP11	1.0	18 / 15
TP12	1.1	11 / 30 / 13
TP13	0.5	60 / 47 / 64

Exploratory Hole	Depth (m bgl)	Undrained Shear Strength Results (kN/m^2)
	1.2	15 / 13 / 15
	Average	**24**

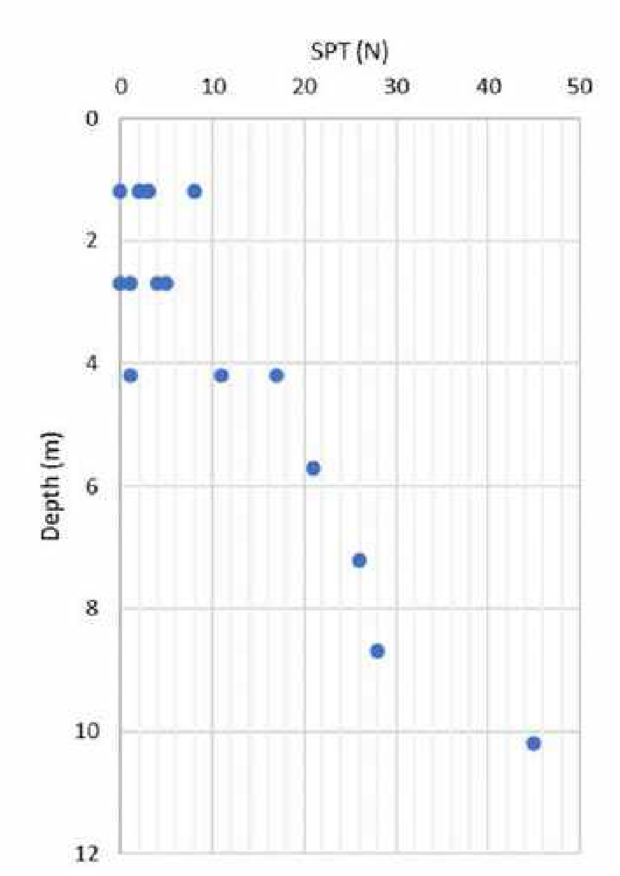
20 No. SPTs were undertaken within the Tidal Flat Deposits and are presented in Table 67. It is notable that the results show a distinct trend whereby SPT ‘N’ values rise with depth.

Table 67: Tidal Flat Deposits - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH09	1.2	2
	2.7	5
	4.2	11
	5.7	21
	7.2	26
	8.7	28
	10.2	45
BH10	1.2	2
	2.7	4
	4.2	1
BH11	1.2	8
	2.7	0
BH12	1.2	3
	2.7	1
	4.2	17
BH13	1.2	3
	2.7	>50
	4.2	>50
BH14	1.2	0
	2.7	>50
	Average	**10.4***

* Average does not include >50 readings

Figure 14: Tidal Flat Deposits - Standard Penetration Test (SPT) Results Plot



10.2.2 Classification Testing

13 No. Water Content Determination tests were undertaken on samples of the Tidal Flat Deposits and returned water contents ranging from 8.9% to 160.0% with an average water content of 22.5%, excluding the 160% reading which has been obtained on a sample recovered from a band of PEAT. It is notable that several elevated water content readings have been obtained and seem to correlate with organic content being noted on exploratory hole logs.

The results are summarised in Table 68.

Table 68: Tidal Flat Deposits - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH09	5.0	11.0
	7.0	8.9
BH11	3.0	19.0
BH13	2.7	9.5
	4.2	10.0
BH14	2.7	15.0
	4.2	16.0

Exploratory Hole	Depth (m bgl)	Water Content (%)
TP08	0.8	160.0
	1.7	47.0
TP11	1.0	54.0
TP12	0.9	21.0
	2.1	22.0
TP13	1.3	36.0
	Average	**22.5***

* Average does not include 160% reading obtained within TP08, 0.8m depth sample

7 No. Atterberg Limit Tests were undertaken on samples of Tidal Flat Deposits which indicated a liquid limit range of 29% to 88% with an average of 46%, plastic limit range of 18% to 59% with an average of 29%, and a Plasticity Index range of 11% and 37% with an average of 21%. 1 No. test returned a non-plastic designation, 3 No. returned a low plasticity clay designation, 3 No. returned a high plasticity clay designation, and the remaining 1 No. returned a very high silt.

The results are summarised in Table 69.

Table 69: Tidal Flat Deposits - Atterberg Limits

Exploratory Hole	Depth (mbgl)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH09	5.00	29	18	11
BH11	3.00	34	22	12
TP08	0.80	88	59	29
	1.70	53	30	23
TP11	1.00	61	24	37
TP12	2.10	26	NP	NP
TP13	1.30	34	20	14
Average		**46**	**29**	**21**

10 No. PSD tests were undertaken on samples of the Tidal Flat Deposits. Results are summarised in Table 70.

Table 70: Tidal Flat Deposits – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Clay / Silt (%)
BH09	7.00	20.1	46.9	28.4	-	-	4.6
BH10	2.30	0.0	0.1	94.9	-	-	5.0
BH11	3.00	0.0	4.4	24.0	47.5	24.1	-
BH13	3.00	22.2	46.4	13.3	10.9	7.2	-
BH14	4.20	0.0	52.0	19.9	18.9	9.2	-
TP08	0.80	0.0	6.8	74.6	16.7	1.9	-

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Clay / Silt (%)
	1.70	0.0	0.0	9.9	57.9	32.3	-
TP11	1.00	0.0	0.0	8.1	55.7	36.2	-
TP12	0.90	0.0	0.0	24.6	34.4	41.1	-
TP13	2.00	0.0	24.3	23.0	31.7	20.9	-
Average		**4.2**	**18.1**	**32.1**	**34.2**	**21.6**	**4.8**

The PSD results indicate the sampled Tidal Flat Deposits to be extremely variable with primary components of Sand and Silt, secondary components of Gravel and Clay and a minor component of Cobbles.

10.2.3 Undrained Shear Strength

From the SPT, it is possible to derive an estimation of undrained shear strength of the cohesive fraction of the Tidal Flat Deposits using Stroud and Butler [19].

$$c_u = f_1 N$$

Where,

c_u is the undrained shear strength (kN/m^2)

N is the SPT blow count

f_1 is a factor depending upon plasticity.

For clays having a plasticity index of 21%, f1 = 5. For the SPT range of 'N' values 0 to 45; this results in an undrained shear strength range of 0kN/m^2 to 225kN/m^2, with an average 'N' value of 10 indicating an undrained shear strength of 50kN/m^2. These results indicate the cohesive fraction of the Tidal Flat Deposits to be of very low to very high strength.

10.2.4 Effective Stress

3 No. Shear Box tests were undertaken on suitable samples of Tidal Flat Deposits, the results are summarised in Table 71.

Table 71: Tidal Flat Deposits – Shear Box Results

Exploratory Hole	Depth (mbgl)	Cohesion, c' (kN/m^2)	Internal Friction Angle, Φ' (°)
BH10	2.70	10.0	25.0
BH12	1.60	2.0	34.0
BH14	2.30	5.0	22.0

10.2.5 Compaction Testing

1 No. Moisture Content / Maximum Dry Density relationship test was undertaken using the 2.5kg rammer method. This recorded an optimum moisture content of 11% and a maximum dry density of 20.2kN/m^3. The average natural moisture content of the Tidal Flat Deposits was 23%, and therefore testing indicates the Tidal Flat Deposits to be wet of optimum moisture content hence should any site won arising be re-used as engineered fill, materials may require improvement through drying prior to compaction.

10.2.6 Organic Matter Content Tests

6 No. Organic Matter Content tests were undertaken on samples of the Tidal Flat Deposits and indicated Organic Matter Contents ranging between 0.1% to 23.1% with an average 5.2%, albeit, the single test result of 23.1%, which was obtained where PEAT was noted, is significantly increasing the average. The average excluding the raised result is 1.7%.

10.2.7 Tidal Flat Deposits Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 72.

Table 72: Tidal Flat Deposits - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content Determination (%)	13	8.9 – 160.0	22.5	23%
Liquid Limit (%)	7	29 – 88	46	46%
Plastic Limit (%)	7	18 – 59	29	29%
Plasticity Index (%)	7	11 – 37	21	21%
Maximum Dry Density (kN/m^3)	1	20.2	20.2	20kN/m^3
Optimum Moisture Content (%)	1	11	11	11%
SPT 'N' Values	20	0 – 45	10	10
Organic Matter Content (%)	6	0.1 – 23.1	5.2	2%
Undrained Shear Strength (Total Stress Condition)				
Hand Vane (kN/m^2)	8	8 – 64	24	
Correlation from SPT (kN/m^2)	20	0 to 225	50	c_u = 50kN/m^2 increasing with depth. Φ' = 0°
Drained Shear Strength (Effective Stress Condition)				
Shear Box (° / kN/m^2)	3	22 – 34	27	Φ = 25°
	3	2 – 10	5.7	c' = 5kN/m^2

10.3 Ashton Mudstone Member and Crackington Formation

Rock was encountered in all boreholes, except BH09 which was terminated within the Tidal Flat Deposits, down to maximum proven depth of 17.8m (BH14).

Published geological mapping indicates that there is a change in rock type within this section of the cable route, whereby the Pilton Mudstone Formation is anticipated to the north, Ashton Mudstone Member and Crackington Formation to the south, and a narrow band of Doddiscombe Formation and Codden Hill Chert Formation running perpendicular to the cable route through the centre. Given this band is minimal no exploratory holes have been undertaken within this stratum.

For this section of the cable route an opencut methodology at a shallow depth is the proposed technique and thus the variance in rock type likely has no great bearing on the works, nonetheless the typical descriptions from exploratory logs are outlined below.

Ashton Mudstone Member and Crackington Formation typical descriptions:

Very weak, locally weak and moderately weak dark grey MUDSTONE. Distinctly weathered and recovered almost entirely as angular gravel and gravelly clay;

Weak and moderately weak, locally medium strong light grey SILTSTONE with calcite veins;

Very weak and weak, locally moderately weak dark grey MUDSTONE with rare calcite veining. Locally partially weathered evident as a reduction in strength. Stratum is highly fractured throughout; or

Medium strong and strong, locally weak light grey SILTSTONE with occasional calcite veins. Partially weathered evident as an orange-brown staining. Locally distinctly weathered evident as a significant reduction in strength to gravelly clay in places. Stratum is highly fractured throughout.

Pilton Mudstone Formation typical descriptions:

Grey MUDSTONE recovered as sandy clayey fine to coarse angular gravel. Sand is fine to coarse; or

Mottled dark grey and brown MUDSTONE recovered as thinly laminated slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular.

All geotechnical rock testing at this section of the cable route has been undertaken within BH14 which is located within the Ashton Mudstone Member and Crackington Formation rock type.

10.3.1 Abrasivity Test

1 No. Cerchar Abrasivity tests were undertaken on a sample of the Ashton Mudstone Member and Cracklington Formation and retuned an Index value of 1.7, indicating the abrasivity of the Ashton Mudstone Member and Cracklington Formation to be Medium Abrasiveness.

10.3.2 Compressive Strength

20 No. Point Load Tests were undertaken on suitable rock core samples. Results of these tests are presented in Table 73, and record $I_{s(50)}$ strengths ranging from 0.1 to 5.4MPa. These equate to an estimated UCS range of 1.4 to 75.6MPa, when considering a correction factor of 14, selected considering Rusnak & Mark [18] for mudstone and siltstone.

Table 73: Ashton Mudstone Member and Cracklington Formation – Point Load Test Results

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
BH14	6.20	Mudstone	L	0.8	0.8	11.2
	6.90	Mudstone	L	0.1	0.1	1.4
	7.60	Mudstone	A	0.1	0.1	1.4
	8.00	Siltstone	A	0.9	1.2	16.8
	8.50	Siltstone	L	1.4	1.8	25.2
	9.10	Siltstone	L	4.0	4.4	61.6
	9.45	Mudstone	A	0.2	0.3	4.2
	9.95	Mudstone	A	0.1	0.2	2.8
	10.30	Mudstone	L	0.2	0.3	4.2
	10.50	Mudstone	D	1.5	2.1	29.4
	11.20	Mudstone	A	0.5	0.7	9.8

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
	11.35	Mudstone	D	0.1	0.1	1.4
	13.00	Mudstone	A	0.3	0.3	4.2
	13.50	Mudstone	A	0.4	0.4	5.6
	13.90	Mudstone	D	0.1	0.2	2.8
	14.65	Siltstone	D	0.1	0.2	2.8
	15.50	Siltstone	L	2.2	2.4	33.6
	16.00	Siltstone	L	0.2	0.2	2.8
	16.30	Siltstone	D	0.1	0.1	1.4
	16.60	Siltstone	A	4.3	5.4	75.6

10.3.3 Ashton Mudstone Member and Cracklington Formation Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 74.

Table 74: Ashton Mudstone Member and Cracklington Formation - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Abrasivity	1	1.7	1.7	1.7
		Strength		
Point Load Test correlated UCS (MPa)	20	1.4 – 75.6	14.9	UCS = 15MPa

10.4 Groundwater

During the ground investigation site works, groundwater strikes were not recorded as they were most likely masked by the use of a water flush.

Boreholes BH09 & BH14 were installed with 50mm diameter monitoring wells as part of the ground investigation, and post site works groundwater monitoring visits were undertaken by Igne and Wesson Environmental. A total of 6 No. visits have been completed and summary of groundwater monitoring levels recorded is given in Table 75.

Table 75: Groundwater Monitoring Results

BH	BH Depth m bgl (m AOD)	Standpipe Installation Depth m bgl (m AOD)	Groundwater Levels						
			10/10/23 m bgl (m AOD)	25/10/23 m bgl (m AOD)	08/11/23 m bgl (m AOD)	19/03/24 m bgl (m AOD)	25/03/24 m bgl (m AOD)	25/04/24 m bgl (m AOD)	26/04/24 m bgl (m AOD)
BH09	10.20 (-4.18)	10.20 (-4.18)	0.15 (5.88)	0.00 (6.03)	0.00 (6.03)	-	-0.16* (6.19)	-0.16* (6.19)	-0.16* (6.19)
BH14	17.80 (-14.04)	17.30 (-13.54)	0.95 (2.81)	-	0.35 (3.41)	0.81 (2.95)	0.67 (3.09)	0.86 (2.90)	-

** Artesian water conditions noted within monitoring results, thus groundwater level recorded above ground level.*

10.5 Resistivity Testing

Apparent resistivity testing was undertaken in order to measure the relative resistivity of the ground with depth. The results are summarised in Table 76.

Table 76: Resistivity Testing Summary

Exploratory Hole	Assumed Depth (m bgl)	Assumed Depth (m AOD)	Assumed Material	Apparent Resistivity 000° to 180° (Ω-m)	Apparent Resistivity 090° to 270° (Ω-m)	Mean Apparent Resistivity for Perpendicular Orientations (Ω-m)
RES 4	1.00	2.84	Tidal Flat Deposits	22.4	30.5	26.5
	2.00	1.84	Tidal Flat Deposits	26.1	21.5	23.8
	4.00	-0.16	Tidal Flat Deposits	19.1	26.0	22.6
	8.00	-4.16	Rock	33.8	31.3	32.6
	10.00	-6.16	Rock	35.4	30.7	33.1

11. Ground Conditions and Material Properties – River Taw Crossing

Owing to the linear nature of the cable route, the ground conditions and material properties have been split up to correspond with the ground models detailed within Section 5.

The River Taw Crossing section of the cable route has been determined considering exploratory holes BH14 and BH15. An overview of the area being considered is presented in Figure 15.

Figure 15: River Taw Crossing Plan

11.1 Topsoil

Topsoil was encountered in BH14 only, up to a maximum depth of 0.3m bgl. The log description of the encountered topsoil was:

Dark brown sandy TOPSOIL with rootlets. Sand is fine to coarse.

No geotechnical testing was undertaken on samples of topsoil.

11.2 Tidal Flat Deposits

Tidal Flat Deposits were encountered within BH14 only at the River Taw Crossing section of the route, up to a maximum depth of 4.2m bgl. Typical descriptions of the material encountered were as follows:

Brown slightly silty to silty fine to coarse SAND;

Very loose brown slightly gravelly to gravelly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and siltstone; or

Greyish brown clayey fine to coarse SAND and fine to coarse subangular to rounded GRAVEL of various lithologies including sandstone, mudstone and siltstone.

11.2.1 In-situ Testing

2 No. SPTs were undertaken within the Tidal Flat Deposits and are presented in Table 77.

Table 77: Tidal Flat Deposits - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH14	1.2	0
	2.7	>50
	Average	**-**

11.2.2 Classification Testing

2 No. Water Content Determination tests were undertaken on samples of the Tidal Flat Deposits and returned water contents ranging from 15.0% to 16.0% with an average water content of 15.5%.

The results are summarised in Table 78.

Table 78: Tidal Flat Deposits - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH14	2.7	15.0
	4.2	16.0
	Average	**15.5**

1 No. PSD test was undertaken on samples of the Tidal Flat Deposits. Results are summarised in Table 79.

Table 79: Tidal Flat Deposits – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH14	4.20	0.0	52.0	19.9	18.9	9.2

The PSD result indicates that sampled Tidal Flat Deposits have a primary component of Gravel, secondary component of Sand and Silt and minor component of Clay.

11.2.3 Effective Stress

1 No. Shear Box test was undertaken on a suitable sample of Tidal Flat Deposits, the results are summarised in Table 80.

Table 80: Tidal Flat Deposits – Shear Box Results

Exploratory Hole	Depth (mbgl)	Cohesion, c' (kN/m^2)	Internal Friction Angle, Φ' (°)
BH14	2.30	5.0	22.0

11.2.4 Tidal Flat Deposits Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 81.

Table 81: Tidal Flat Deposits - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content Determination (%)	2	15 – 16	15.5	16%
SPT 'N' Values	2	0 - >50	-	-
Drained Shear Strength (Effective Stress Condition)				
Shear Box (° / kN/m^2)	1	22	22	Φ = 22°
	1	5	5	c' = 5kN/m^2

11.3 Alluvium

Alluvium was encountered in BH15 only, up to a maximum depth of 3.8m bgl. The alluvium was typically described as:

Mottled greyish brown and orange brown slightly gravelly slightly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of various lithologies including siltstone, mudstone and sandstone; or

Brownish grey silty fine to coarse SAND and fine to coarse angular and subangular GRAVEL of siltstone and mudstone.

11.3.1 In-situ Testing

2 No. SPTs were undertaken within the Alluvium and are presented in Table 82.

Table 82: Alluvium - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH15	1.2	13
	2.7	>50
	Average	**-**

11.3.2 Classification Testing

1 No. Water Content Determination test was undertaken on a sample of the Alluvium.

The results are summarised in Table 83.

Table 83: Alluvium - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH15	0.50	16.0

11.3.3 Compaction Testing

1 No. Moisture Content / Maximum Dry Density relationship test was undertaken using the 2.5kg rammer method. This recorded an optimum moisture content of 12% and a maximum dry density of 19.5kN/m^3. The average natural moisture content of the Alluvium was 16.0%, and therefore testing indicates the Alluvium deposits to be wet of optimum moisture content hence should any site won arising be re-used as engineered fill within the works, materials may require improvement through drying prior to compaction.

11.3.4 Alluvium Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 84.

Table 84: Alluvium - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content Determination (%)	1	16.0	16.0	16%
Maximum Dry Density (kN/m^3)	1	19.5	19.5	19.5kN/m^3
Optimum Moisture Content (%)	1	12	12	12%
SPT 'N' Values	2	13 - >50	-	13

11.4 Ashton Mudstone Member and Crackington Formation

Both boreholes encountered Ashton Mudstone Member and Crackington Formation down to a maximum depth of 20.2m bgl (BH15). Both boreholes were terminated within this stratum. The rock was typically encountered initially as a weathered layer before becoming competent with depth.

The weathered material was typically described as:

Grey and dark grey MUDSTONE recovered as sandy to very sandy very clayey fine to coarse angular and subangular gravel. Sand is fine to coarse;

Grey MUDSTONE recovered as locally thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine and medium angular; or

Very weak, locally weak and moderately weak dark grey MUDSTONE. Distinctly weathered and recovered almost entirely as angular gravel and gravelly clay.

The competent material was typically described as:

Weak and moderately weak, locally medium strong light grey SILTSTONE with calcite veins. Recovered as non-intact;

Very weak and weak, locally moderately weak dark grey MUDSTONE with rare calcite veining. Locally partially weathered evident as a reduction in strength;

Very weak and weak, locally medium strong light grey SILTSTONE with calcite veins. Locally distinctly *weathered evident as a reduction in strength. Stratum is highly fractured throughout; or*

Medium strong and strong, locally weak light grey SILTSTONE with occasional to frequent calcite veins. Partially weathered evident as an orange brown staining. Locally distinctly weathered evident as a significant reduction in strength to gravelly clay in places. Stratum is highly fractured throughout.

11.4.1 Abrasivity Test

3 No. Cerchar Abrasivity tests were undertaken on samples of the Ashton Mudstone Member and Cracklington Formation and retuned Index values of between 1.7 and 4.8 with an average of 3.2, indicating the abrasivity of the Ashton Mudstone Member and Cracklington Formation to be Medium to Extreme Abrasiveness.

11.4.2 Compressive Strength

2 No. Unconfined Compressive Strength (UCS) tests were undertaken on suitable rock core samples from boreholes in the vicinity of the River Taw. These results give a UCS range of 57.1MPa to 76.5MPa indicating the rock tested to be Strong in strength. UCS test results are presented in Table 85.

Table 85: Ashton Mudstone Member and Cracklington Formation – Unconfined Compressive Strength (UCS) Test Results

Borehole	Depth (m bgl)	Rock Type	UCS	Classification
BH15	7.80	Siltstone	76.5	Strong
	9.50	Siltstone	57.1	Strong

50 No. Point Load Tests were undertaken on suitable rock core samples. Results of these tests are presented in Table 86, and record $I_{s(50)}$ strengths ranging from 0.1 to 8.0MPa. These equate to an estimated UCS range of 1.4 to 112.0MPa, when considering a correction factor of 14, selected considering Rusnak & Mark [18] for mudstone and siltstone.

Table 86: Ashton Mudstone Member and Cracklington Formation – Point Load Test Results

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
BH14	6.20	Mudstone	L	0.8	0.8	11.2
	6.90	Mudstone	L	0.1	0.1	1.4
	7.60	Mudstone	A	0.1	0.1	1.4
	8.00	Siltstone	A	0.9	1.2	16.8
	8.50	Siltstone	L	1.4	1.8	25.2
	9.10	Siltstone	L	4.0	4.4	61.6
	9.45	Mudstone	A	0.2	0.3	4.2
	9.95	Mudstone	A	0.1	0.2	2.8
	10.30	Mudstone	L	0.2	0.3	4.2
	10.50	Mudstone	D	1.5	2.1	29.4
	11.20	Mudstone	A	0.5	0.7	9.8
	11.35	Mudstone	D	0.1	0.1	1.4

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
	13.00	Mudstone	A	0.3	0.3	4.2
	13.50	Mudstone	A	0.4	0.4	5.6
	13.90	Mudstone	D	0.1	0.2	2.8
	14.65	Siltstone	D	0.1	0.2	2.8
	15.50	Siltstone	L	2.2	2.4	33.6
	16.00	Siltstone	L	0.2	0.2	2.8
	16.30	Siltstone	D	0.1	0.1	1.4
	16.60	Siltstone	A	4.3	5.4	75.6
BH15	4.25	Siltstone	L	7.6	8.0	112.0
	4.40	Siltstone	L	3.5	4.8	67.2
	4.60	Siltstone	L	4.9	6.5	91.0
	5.00	Siltstone	L	1.6	2.1	29.4
	5.20	Siltstone	L	3.0	3.7	51.8
	5.30	Siltstone	L	7.5	7.8	109.2
	5.70	Siltstone	L	4.6	5.3	74.2
	6.00	Siltstone	D	0.2	0.3	4.2
	6.20	Siltstone	A	2.3	2.6	36.4
	6.40	Siltstone	D	1.0	1.3	18.2
	6.60	Siltstone	A	1.9	2.4	33.6
	6.70	Siltstone	D	1.2	1.6	22.4
	6.90	Siltstone	A	6.1	7.1	99.4
	7.10	Siltstone	D	2.4	3.3	46.2
	7.25	Siltstone	A	3.3	4.7	65.8
	7.60	Siltstone	D	0.3	0.3	4.2
	7.70	Siltstone	D	0.2	0.3	4.2
	8.10	Siltstone	D	0.1	0.1	1.4
	8.20	Siltstone	L	0.2	0.2	2.8
	8.65	Siltstone	L	1.5	1.9	26.6
	11.85	Siltstone	D	3.4	4.5	63.0
	12.30	Siltstone	A	0.8	0.8	11.2
	12.70	Siltstone	L	1.8	2.1	29.4
	13.00	Siltstone	A	1.5	1.7	23.8
	13.55	Siltstone	D	3.4	4.6	64.4

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
	13.75	Siltstone	D	4.3	5.9	82.6
	14.10	Siltstone	A	0.6	0.8	11.2
	14.30	Siltstone	D	0.4	0.5	7.0
	14.50	Siltstone	A	1.9	2.5	35.0
	14.90	Siltstone	L	2.3	2.8	39.2

11.4.3 Ashton Mudstone Member and Cracklington Formation Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 87.

Table 87: Ashton Mudstone Member and Cracklington Formation - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Abrasivity	3	1.7 – 4.8	3.2	3.2
		Strength		
Unconfined Compressive Strength (UCS) (MPa)	2	57.1 – 76.5	66.8	UCS = 50MPa
Point Load Test correlated UCS (MPa)	50	1.4 – 112	31.3	

11.5 Groundwater

During the ground investigation site works, groundwater strikes were not recorded as they were most likely masked by the use of a water flush.

Boreholes BH14 & BH15 were installed with 50mm diameter monitoring wells as part of the ground investigation, and post site works groundwater monitoring visits were undertaken by Igne and Wesson Environmental. A total of 6 No. visits have been completed and summary of groundwater monitoring levels recorded is given in Table 88.

Table 88: Groundwater Monitoring Results

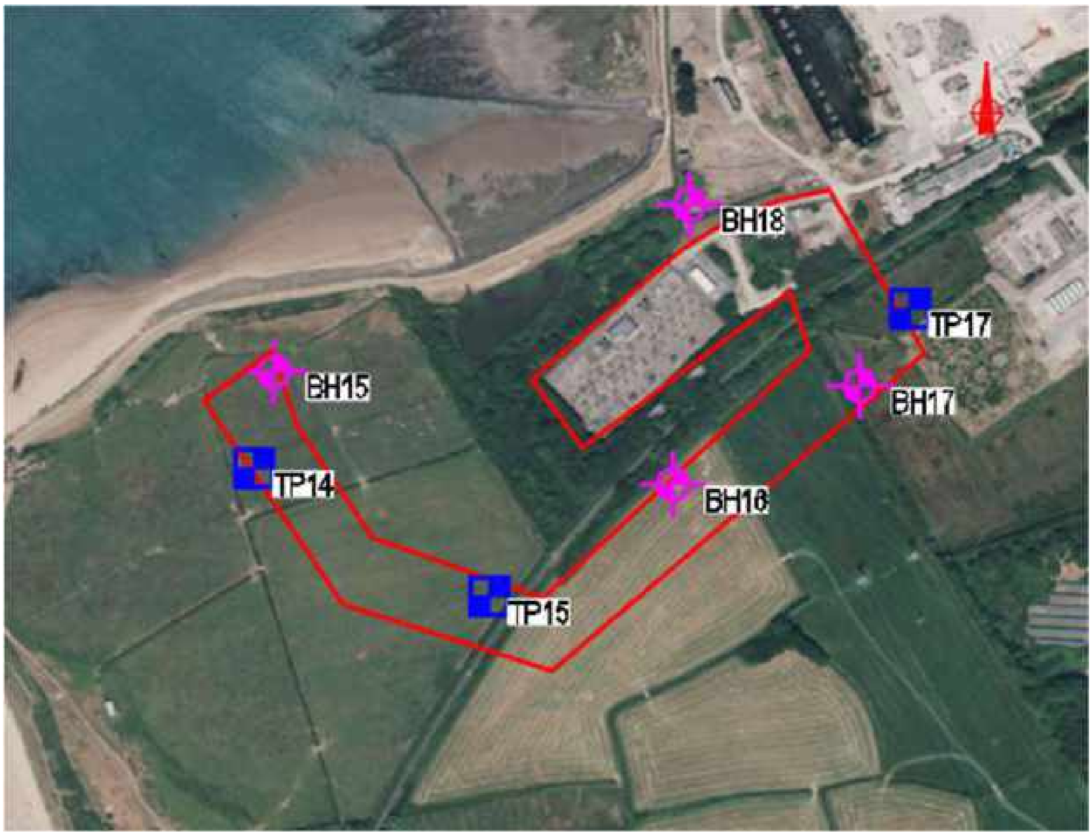
BH	BH Depth m bgl (m AOD)	Standpipe Installation Depth m bgl (m AOD)	Groundwater Levels						
			10/10/23 m bgl (m AOD)	25/10/23 m bgl (m AOD)	08/11/23 m bgl (m AOD)	19/03/24 m bgl (m AOD)	26/03/24 m bgl (m AOD)	25/04/24 m bgl (m AOD)	26/04/24 m bgl (m AOD)
BH14	17.80 (-14.04)	17.30 (-13.54)	0.95 (2.81)	-	0.35 (3.41)	0.81 (2.95)	0.67 (3.09)	0.86 (2.90)	-
BH15	20.20 (-16.26)	20.00 (-16.06)	0.91 (3.04)	0.65 (3.30)	0.65 (3.30)	0.45 (3.50)	0.16 (3.79)	-	0.35 (3.60)

12. Ground Conditions and Material Properties – River Taw to Substation Onshore Cable Route

Owing to the linear nature of the cable route, the ground conditions and material properties have been split up to correspond with the ground models detailed within Section 5.

The River Taw to Substation section of the cable route has been determined considering exploratory holes BH15 to BH18 & TP14 to TP17. An overview of the area being considered is presented in Figure 16.

Figure 16: River Taw to Substation Onshore Cable Route Plan



12.1 Topsoil

Topsoil was encountered within exploratory holes, BH17, TP14, TP15 & TP17 up to a maximum depth of 0.15mbgl (TP17). Topsoil was generally recovered as:

Dark brown sandy clayey TOPSOIL with frequent roots and rootlets. Sand is fine and medium.

No geotechnical testing was undertaken on samples of topsoil.

12.2 Made Ground

Made Ground was encountered in BH18 and TP16 only. BH18 encountered Made Ground up to a maximum depth 1.25m bgl & TP16 was terminated at a depth of 0.8m bgl whilst still within the Made Ground stratum due to hard digging on a suspected boulder. The typical descriptions of Made Ground were as follows:

Brown sandy clayey fine to coarse angular and subangular gravel of mudstone and sandstone with small pockets of mottled brown and grey slightly sandy clay and low cobble and boulder content. Sand is fine to *coarse. Cobbles and boulders are angular and subangular of mudstone and sandstone; or*

Mottled orange-brown and brown slightly gravelly slightly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including siltstone, mudstone and sandstone. Cobbles are subrounded of sandstone. (Possibly Alluvium).

12.2.1 In-situ Testing

1 No. SPT was undertaken within the Made Ground and is presented in Table 89.

Table 89: Made Ground - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH18	1.2	8

No further Geotechnical Testing was undertaken.

12.3 Alluvium

Alluvium was encountered in all exploratory holes, except TP16 which was terminated within the Made Ground, up to a maximum depth of 4.2m bgl. Typical descriptions of the Alluvium was as follows:

Mottled greyish brown and orange brown slightly gravelly slightly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of various lithologies including siltstone, mudstone and sandstone;

Brownish grey silty fine to coarse SAND and fine to coarse angular and subangular GRAVEL of siltstone and mudstone; or

Firm to very stiff mottled orange-brown, brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including siltstone, mudstone and sandstone.

12.3.1 In-situ Testing

1 No. hand shear vane tests was completed within the alluvium, recording an undrained shear strength of 156kN/m^2 indicating the Alluvium to be of Very High Strength.

The results are summarised in Table 90.

Table 90: Alluvium - Hand Vane Summary Results

Exploratory Hole	Depth (m bgl)	Undrained Shear Strength Results (kN/m^2)
TP14	0.5	148 / 159 / 161
	Average	156

5 No. SPTs were undertaken within the Alluvium and are presented in Table 91.

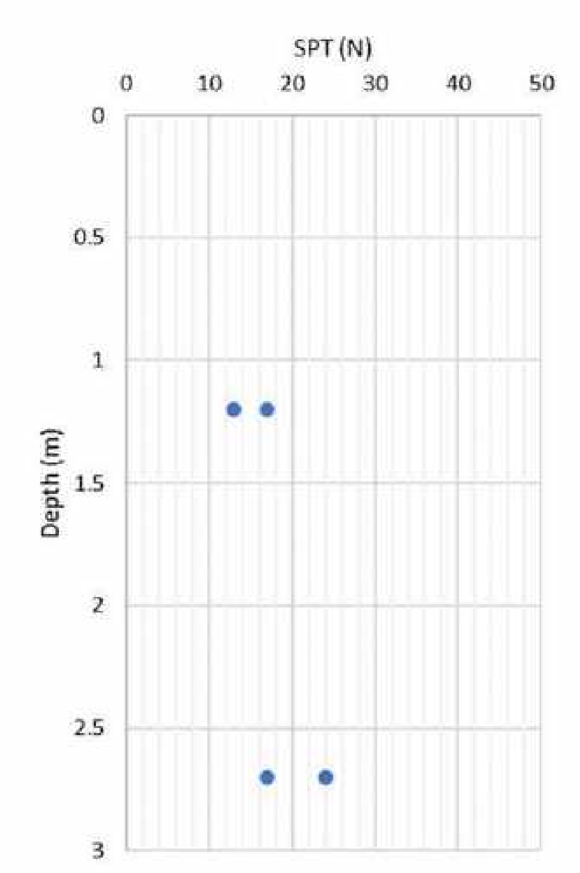
Table 91: Alluvium - Standard Penetration Test (SPT) Results

Exploratory Hole	Depth (m bgl)	SPT N-value
BH15	1.2	13

Exploratory Hole	Depth (m bgl)	SPT N-value
	2.7	>50
BH16	1.2	17
	2.7	17
BH18	2.7	24
	Average	**18***

* Average does not include >50 reading

Figure 17: Alluvium - Standard Penetration Test (SPT) Results Plot



12.3.2 Classification Testing

7 No. Water Content Determination tests were undertaken on samples of the Alluvium and returned water contents ranging from 6.5% to 23.0% with an average water content of 15.8%.

The results are summarised in Table 92.

Table 92: Alluvium - Water Content Tests

Exploratory Hole	Depth (m bgl)	Water Content (%)
BH15	0.5	16.0
BH16	1.0	6.5
BH18	2.7	11.0
TP14	0.5	23.0
	2.0	10.0
TP15	0.9	22.0
TP17	1.2	22.0
	Average	**15.8**

4 No. Atterberg Limit Tests were undertaken on samples of Alluvium deposits which indicated a liquid limit range of 32% to 45% with an average of 38%, plastic limit range of 16% to 24% with an average of 21%, and a Plasticity Index range of 12% and 21% with an average of 16%. The results indicate the Alluvium to be a low to intermediate plasticity clay.

The results are summarised in Table 93.

Table 93: Alluvium - Atterberg Limits

Exploratory Hole	Depth (mbgl)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH16	1.0	32	20	12
BH18	2.7	34	16	12
TP14	0.5	41	22	19
TP17	1.2	45	24	21
Average		**38**	**21**	**16**

3 No. PSD tests were undertaken on samples of the Alluvium Deposits. Results are summarised in Table 94.

Table 94: Alluvium – Particle Size Distribution Test Results

Exploratory Hole	Depth (mbgl)	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Clay / Silt (%)
TP14	0.5	0.0	8.4	16.6	36.9	38.0	-
TP15	2.0	0.0	73.8	14.5	-	-	11.7
TP17	1.2	1.6	24.9	8.7	35.2	29.6	-
Average		**0.5**	**35.7**	**13.3**	**36.0**	**33.8**	**11.7**

The PSD results indicate the sampled Alluvium Deposits to be extremely variable with primary components of Gravel, Silt and Clay a secondary component of Sand and minor component of Cobbles.

12.3.3 Undrained Shear Strength

From the SPT, it is possible to derive an estimation of undrained shear strength of the cohesive fraction of the Alluvium using Stroud and Butler [19].

$$c_u = f_1 N$$

Where,

c_u is the undrained shear strength (kN/m^2)

N is the SPT blow count

f_1 is a factor depending upon plasticity.

For clays having a plasticity index of 16%, f1 = 6. For the SPT range of 'N' values 13 to 24; this results in an undrained shear strength range of 78kN/m^2 to 144kN/m^2, with an average 'N' value of 18 indicating an undrained shear strength of 108kN/m^2. These results indicate the Alluvium to be of high strength.

12.3.4 Effective Stress

2 No. Shear Box test was undertaken on a suitable sample of Alluvium Deposits, the results are summarised in Table 95.

Table 95: Alluvium – Shear Box Results

Exploratory Hole	Depth (mbgl)	Cohesion, c' (kN/m^2)	Internal Friction Angle, Φ' (°)
BH16	1.6	6	25
BH18	3.5	3	32
	Average	**5**	**29**

12.3.5 Compaction Testing

2 No. Moisture Content / Maximum Dry Density relationship tests were undertaken using the 2.5kg rammer method. These recorded an optimum moisture content range of 12% to 16%, with an average 14%, and a maximum dry density range of 18.4 to 19.5kN/m^3. The average natural moisture content of the Alluvium was 15.8%, and therefore testing indicates the Alluvium deposits to be marginally wet of optimum moisture content hence should any site won arising be re-used as engineered fill within the works, materials may require improvement through drying prior to compaction.

12.3.6 Alluvium Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 96.

Table 96: Alluvium - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Water Content Determination (%)	7	6.5 – 23.0	15.8	16%
Liquid Limit (%)	4	32 – 45	38	38%
Plastic Limit (%)	4	16 – 24	21	21%
Plasticity Index (%)	4	12 – 21	16	16%
Maximum Dry Density (kN/m^3)	2	18.4 to 19.5	19.0	19kN/m^3
Optimum Moisture Content (%)	2	12 to 16	14	14%
SPT 'N' Value	4	13 - 24	18	18
Undrained Shear Strength (Total Stress Condition)				
Correlation from SPT 'N' Value (kN/m^2)	4	78 – 144	108	c_u = 100kN/m^2
Hand Vane (kN/m^2)	1	156	156	Φ' = 0°
Drained Shear Strength (Effective Stress Condition)				
Shear Box (° / kN/m^2)	2	25 – 32	29	Φ = 28°
	2	3 – 6	5	c' = 4kN/m^2

12.4 Ashton Mudstone Member and Crackington Formation

Ashton Mudstone Member and Crackington Formation was encountered in all exploratory holes, except TP16 which was terminated due to an obstruction in the Made Ground, up to a maximum depth of 20.2m bgl, all exploratory holes were terminated within this stratum. The rock was typically encountered initially as a weathered layer before becoming competent with depth.

The weathered material was typically described as:

Grey MUDSTONE recovered as locally thinly laminated slightly gravelly slightly sandy silt. Sand is fine to coarse. Gravel is fine and medium angular;

Grey SILTSTONE recovered as sandy silty fine to coarse angular gravel with cobbles. Sand is fine to coarse. Cobbles are angular; or

Grey SILTSTONE recovered as angular cobbles and boulders.

The competent material was typically described as:

Medium strong and strong, locally weak grey SILTSTONE with quartz-carbonate veins. Moderately weathered evident as orange-brown staining and loss of strength. Recovered as non-intact;

Moderately weak and medium strong thinly laminated grey SILTSTONE with mudstone bands and rare calcite veining. Locally partially weathered evident as orange-brown staining; or

Weak and moderately weak thickly laminated to very thinly bedded dark grey MUDSTONE and grey muddy SILTSTONE. Partially weathered evident as orange-brown staining on fracture surfaces.

12.4.1 Abrasivity Test

3 No. Cerchar Abrasivity tests were undertaken on samples of the Ashton Mudstone Member and Cracklington Formation and retuned Index values of between 3.2 and 5.2 with an average of 4.4, indicating the abrasivity of the Ashton Mudstone Member and Crackington Formation to be High to Extreme Abrasiveness.

12.4.2 Compressive Strength

2 No. Unconfined Compressive Strength (UCS) tests were undertaken on suitable rock core samples from boreholes in the vicinity of the River Taw. These results give a UCS range of 57.1MPa to 76.5MPa indicating the rock tested to be Strong in strength. UCS test results are presented in Table 97.

Table 97: Ashton Mudstone Member and Crackington Formation – Unconfined Compressive Strength (UCS) Test Results

Borehole	Depth (m bgl)	Rock Type	UCS	Classification
BH15	7.80	Siltstone	76.5	Strong
	9.50	Siltstone	57.1	Strong

40 No. Point Load Tests were undertaken on suitable rock core samples. Results of these tests are presented in Table 98, and record $I_{s(50)}$ strengths ranging from 0.1 to 8.0MPa. These equate to an estimated UCS range of 1.4 to 112.0MPa, when considering a correction factor of 14, selected considering Rusnak & Mark [18] for mudstone and siltstone.

Table 98: Ashton Mudstone Member and Crackington Formation – Point Load Test Results

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
BH15	4.25	Siltstone	L	7.6	8.0	112.0
	4.40	Siltstone	L	3.5	4.8	67.2
	4.60	Siltstone	L	4.9	6.5	91.0
	5.00	Siltstone	L	1.6	2.1	29.4
	5.20	Siltstone	L	3.0	3.7	51.8
	5.30	Siltstone	L	7.5	7.8	109.2
	5.70	Siltstone	L	4.6	5.3	74.2
	6.00	Siltstone	D	0.2	0.3	4.2
	6.20	Siltstone	A	2.3	2.6	36.4
	6.40	Siltstone	D	1.0	1.3	18.2
	6.60	Siltstone	A	1.9	2.4	33.6
	6.70	Siltstone	D	1.2	1.6	22.4
	6.90	Siltstone	A	6.1	7.1	99.4
	7.10	Siltstone	D	2.4	3.3	46.2
	7.25	Siltstone	A	3.3	4.7	65.8

Borehole	Depth	Rock Type	Type of Test	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (using F factor 14)
	7.60	Siltstone	D	0.3	0.3	4.2
	7.70	Siltstone	D	0.2	0.3	4.2
	8.10	Siltstone	D	0.1	0.1	1.4
	8.20	Siltstone	L	0.2	0.2	2.8
	8.65	Siltstone	L	1.5	1.9	26.6
	11.85	Siltstone	D	3.4	4.5	63.0
	12.30	Siltstone	A	0.8	0.8	11.2
	12.70	Siltstone	L	1.8	2.1	29.4
	13.00	Siltstone	A	1.5	1.7	23.8
	13.55	Siltstone	D	3.4	4.6	64.4
	13.75	Siltstone	D	4.3	5.9	82.6
	14.10	Siltstone	A	0.6	0.8	11.2
	14.30	Siltstone	D	0.4	0.5	7.0
	14.50	Siltstone	A	1.9	2.5	35.0
	14.90	Siltstone	L	2.3	2.8	39.2
BH17	2.80	Siltstone / Mudstone	D	2.2	2.3	32.2
	3.35	Siltstone / Mudstone	L	3.3	4.1	57.4
	3.70	Siltstone / Mudstone	L	2.4	2.5	35.0
	4.10	Siltstone / Mudstone	L	1.7	2.0	28.0
	4.40	Siltstone / Mudstone	L	1.5	1.9	26.6
	4.90	Siltstone / Mudstone	A	0.9	1.2	16.8
	5.05	Siltstone / Mudstone	D	0.5	0.6	8.4
	5.25	Siltstone	A	2.8	3.9	54.6
	5.65	Siltstone	D	3.7	4.9	68.6
	5.80	Siltstone	A	3.7	4.8	67.2

12.4.3 Ashton Mudstone Member and Crackington Formation Summary of Geotechnical Test Results

A summary of the characteristic material values recommended for design is given in Table 99.

Table 99: Ashton Mudstone Member and Crackington Formation - Summary of Geotechnical Results

Test	No. of Tests	Range	Average	Suggested Characteristic Value
Abrasivity	3	3.2 – 5.2	4.4	4.4
Strength				
Unconfined Compressive Strength (UCS) (MPa)	2	57.1 – 76.5	66.8	UCS = 50MPa
Point Load Test correlated UCS (MPa)	40	1.4 – 112	41.6	

12.5 Groundwater

During the ground investigation site works, groundwater strikes were not recorded as they were most likely masked by the use of a water flush.

Boreholes BH15 & BH17 were installed with 50mm diameter monitoring wells as part of the ground investigation, and post site works groundwater monitoring visits were undertaken by Igne and Wesson Environmental. A total of 6 No. visits have been completed and summary of groundwater monitoring levels recorded is given in Table 100.

Table 100: Groundwater Monitoring Results

BH	BH Depth m bgl (m AOD)	Standpipe Installation Depth m bgl (m AOD)	Groundwater Levels					
			10/10/23 m bgl (m AOD)	25/10/23 m bgl (m AOD)	08/11/23 m bgl (m AOD)	19/03/24 m bgl (m AOD)	26/03/24 m bgl (m AOD)	26/04/24 m bgl (m AOD)
BH15	20.20 (-16.26)	20.00 (-16.06)	0.91 (3.04)	0.65 (3.30)	0.65 (3.30)	0.45 (3.50)	0.16 (3.79)	0.35 (3.60)
BH17	6.10 (-1.38)	6.10 (-1.38)	1.43 (3.29)	0.90 (3.82)	0.72 (4.00)	0.42 (4.30)	-	0.51 (4.21)

12.6 Resistivity Testing

Apparent resistivity testing was undertaken in order to measure the relative resistivity of the ground with depth. The results are summarised in Table 101.

Table 101: Resistivity Testing Summary

Exploratory Hole	Assumed Depth (m bgl)	Assumed Depth (m AOD)	Assumed Material	Apparent Resistivity 000° to 180° (Ω-m)	Apparent Resistivity 090° to 270° (Ω-m)	Mean Apparent Resistivity for Perpendicular Orientations (Ω-m)
RES 5	1.00	4.41	Alluvium	32.5	24.6	57.1
	2.00	3.41	Alluvium	17.5	21.7	19.6
	4.00	1.41	Alluvium /	25.4	21.9	23.7

Exploratory Hole	Assumed Depth (m bgl)	Assumed Depth (m AOD)	Assumed Material	Apparent Resistivity 000° to 180° (Ω-m)	Apparent Resistivity 090° to 270° (Ω-m)	Mean Apparent Resistivity for Perpendicular Orientations (Ω-m)
			Rock			
	8.00	-2.59	Rock	36.2	37.2	36.7
	10.00	-4.59	Rock	41.5	41.5	41.5

13. Generic Environmental Assessment Criteria

13.1 Background

Under the development proposals, risks associated with potential contamination are considered to be limited and largely associated with the potential for construction workers to be exposed to any contamination present in soils generated during open cut trenching or within any shallow groundwater encountered. Risks are further reduced where trenchless techniques are proposed as these methods are not anticipated to generate significant arisings. With respect to other sensitive receptors (such as Controlled Waters), potential risks may arise in the event that the cable installation disturbs or mobilises any residual contamination that could then feasibly migrate vertically or laterally.

To provide an indication of whether contamination is present at the Site and the potential risks posed in relation to future Site users, construction workers and other sensitive receptors (including Controlled Waters), soil and groundwater samples were collected from trial pits and boreholes and subject to laboratory analysis. The results of that analysis have been subject to risk assessment as detailed below.

13.2 Site Specific Information Used to Support the Generic Risk Assessment

13.2.1 Future Site Users

To provide an initial assessment of the potential significance of contaminant concentrations detected in soil samples collected from the site, a generic risk assessment is presented below using soil assessment criteria that are derived to be protective of human health.

The soil assessment criteria are intended to provide a conservative means of initial assessment. Where contaminant concentrations are less than the appropriate assessment criteria, it is considered unlikely that the contaminant concentrations will pose a potentially unacceptable risk to human health. Where a contaminant concentration exceeds the assessment criteria, it does not automatically follow that an unacceptable risk exists, but that further assessment may be necessary to quantify the risk taking into account site-specific information.

Under the proposed land use, future Site users are considered to be most at risk from any contamination brought to surface as part of the cable installation process, although it is recognised that all excavations and trenches would be backfilled and the land returned to a conditions as close to existing as reasonably practicable. In consideration of this, soil chemical test results have been compared initially against CLEA SGVs, DEFRA C4SLs, LQM S4ULs and Waterman Generic Assessment Criteria (GAC) for human health in a public open space setting to give an outline indication of risk.

The use of this criteria is considered as being somewhat conservative given the receptors most likely to interact with the soils along the proposed cable route are agricultural workers (generally interacting with soils through plant and machinery use, rather than direct/ dermal contact with soils). Whilst there is a potential for the general public to come into contact with soils along the proposed cable route, as it generally passes through private agricultural land, exposure timeframes are likely to be over very short timeframes only. The selected criteria is also considered conservative with respect to future substation workers and users of the Saunton Sands car park as surface conditions will comprise building footprint or hardstanding surfacing, thereby reducing the likelihood of direct contact with exposed soils or groundwater.

The SGVs, C4SLs, S4ULs and Waterman GAC values are variable with soil organic matter (SOM) content. On the basis of the SOM content recorded at the Site, values for 1% SOM have been adopted as this represents the most conservative value.

13.2.2 Construction Workers

Future construction workers are considered to be most at risk from any contamination present within soil arisings or groundwater encountered during opencut trenching or in arisings generated through trenchless techniques, although it is recognised that typical exposure timeframes would be minimal and the use of PPE would be mandatory in line with legislative requirements. In the absence of specific criteria for assessing potential risks to construction and maintenance workers, a qualitative assessment has been undertaken.

Localised risks associated with UXO are also considered when working in the vicinity of Braunton Burrows, although risks would be managed through mandatory mitigation measures.

Potential risks associated with ground gas are discussed in Section 13.2.4 below.

13.2.3 Controlled Waters

The superficial deposits along the cable route are classified by the EA as being either Secondary A or Secondary Undifferentiated aquifers. Where the deposits are classified as Secondary A Aquifers, they are associated with either Alluvium, Blown Sand or Marine Beach deposits in proximity to the Devon Coast/ River Taw. The underlying bedrock is also classified by the EA as a Secondary A Aquifer.

There are no groundwater Source Protection Zones recorded within 1km of the cable route. However, the Groundsure report provides details of 2 No. active groundwater abstractions within the red-line boundary. The abstractions are derived from two boreholes at Saunton Golf Club and relate to the abstraction of fresh water from an unspecified source (described as ‘Groundwater – Fresh’) for the purposes of spray irrigation.

In light of the above, the results of leachate and groundwater analysis have been compared against Environmental Quality Standards (EQS) for marine waters with respect to potential risks to surface water and UK Drinking Water Standards with respect to potential risks to groundwater resources. In the case of Total Petroleum Hydrocarbons (TPH), the World Health Organisation (WHO) drinking water guideline values were used to provide an indication of the presence of potential contamination.

Due to deviations in the original groundwater sampling results associated with the use of incorrect sampling containers and exceedances of holding times, a second round of sampling and testing was undertaken.

13.2.4 Ground Gas

The proposed development will include construction of a new electricity substation, with man entry envisaged by future workers/ maintenance personnel. To provide an assessment of ground gas risk at the site, 4 No. rounds of ground gas monitoring were undertaken over a period of approximately 5 months and the results assessed using the guidance presented within BS8485:2015+A1:2019 and CIRIA Report C665.

A qualitative assessment has been undertaken with respect to construction workers.

13.2.5 Vapour

The risk from vapours to future Site users and construction personnel will be assessed qualitatively through consideration of soil descriptions and soil headspace analysis. A quantitative assessment will also be untaken through VOC laboratory testing of soil and groundwater and collection of vapour samples from selected boreholes with comparison of results against human health GAC for a commercial end use and SOBRA Generic Assessment Criteria for Assessing Vapour Risk to Human Health from Volatile Contaminants in Groundwater.

13.2.6 Plants and Vegetation

The risk to plant life within the proposed development has been considered in relation to threshold values listed in "The Soil Code", Appendix 3 revised issue, 1998.

14. Quantitative Environmental Risk Assessment – Risk Estimation

14.1 Risk to Human Health (Future Site Users)

14.1.1 Soils Analysis

The results of the laboratory data have been compared against criteria for human health in a Public Open Space (Park) setting. The following exceedance was recorded.

Table 102: Exceedances of Human Health Criteria

Contaminant	Location	Concentration (mg/kg)	Criteria (mg/kg)	Strata	Number of Exceedances
Arsenic	BH03 @ 0.50m	226	170	Made Ground	1

As indicated above, only a single exceedance of human health criteria for arsenic was recorded within the soils throughout the proposed cable route. The recorded concentration is not considered to be significantly elevated above the POS (Park) criteria, which as stated in Section 13.2.1 is somewhat conservative given the nature of the land use in the area of BH03 and the presence of hardstanding surfacing. Taking the aforementioned into account, the recorded exceedance is not considered to represent a significant risk to future Site users.

In addition, testing confirmed positive concentrations of the following SVOCs for which assessment criteria is not held:

Table 103: Recorded contaminant concentrations for which no GAC is available

Contaminant	Location	Concentration (mg/kg)	Strata	Number of Exceedances
2-Methylnaphthalene	BH18 @ 0.20m	0.29	Made Ground	1
Dibenzofuran	BH18 @ 0.20m	0.11	Made Ground	1

As highlighted in the Table above, a small number of SVOCs were recorded in borehole location BH18 only at a depth of 0.20mbgl. Whilst assessment criteria are not held for these contaminants, as a marker/ indicator of potential harm, the recorded concentrations have been compared against human health GAC for Naphthalene (190mg/kg) and Benzene (27mg/kg) respectively for an industrial land use.

The concentrations recorded within the soils are considerably lower than the GAC of the marker compounds and therefore not considered to be significant nor representative of a potential risk to human health.

In consideration of the results, risks to human health associated with contaminant concentrations within the soils along the proposed cable route are assessed as low.

14.1.2 Asbestos Screening

A total of 12 No. soil samples were analysed for the presence of asbestos, with no positive identifications recorded.

14.1.3 Visual and Olfactory Evidence of Contamination

With the exception of organic odours recorded in boreholes BH06, BH09 and BH10 (considered to be associated with the presence of vegetation and/ or peat within natural soils), no visual or olfactory evidence of contamination was recorded within the soils along the proposed cable route. These observations generally align with the results of the chemical testing undertaken, suggesting an absence of significant contamination.

14.2 Risk to Human Health (Construction Workers)

As outlined above, chemical testing undertaken as part of the ground investigation has not recorded exceedances of GAC for an industrial end use within the soils along the proposed cable route and consequently risks to future construction workers/ maintenance personnel are considered to be low.

However, irrespective of the contaminant concentrations recorded, all construction workers should be subject to mandatory health and safety requirements under the Construction, (Design and Management) (CDM) regulations 2015 and Control of Substances Hazardous to Health (COSHH) Regulations 2002. In addition, construction workers should wear appropriate Personal Protective Equipment (PPE) during ground works to reduce the potential for direct contact, dermal absorption, ingestion, and inhalation of contamination. Entry into excavations should be avoided wherever possible. However, if it is undertaken then the Confined Space Regulations 1997 should be followed.

It is also noted that a Construction Environmental Management Plan is to be prepared for the project which will include measures to manage/ control risks in relation to construction workers from contamination. The measures outlined within this document should be implemented in full.

In addition, all future site staff should be made aware of the potential for unrecorded contamination (including asbestos) and a procedure should be in place for staff to report any potential contamination uncovered during Site works. Further advice on managing potential exposure of asbestos should be obtained during the works if asbestos is identified. All potential contamination should be further investigated.

14.3 Risk to Controlled Waters

In order to assess potential risks to Controlled Waters receptors, the results of leachate and groundwater analysis have been compared against Environmental Quality Standards (EQS) for marine waters with respect to potential risks to surface water and UK Drinking Water Standards with respect to potential risks to groundwater resources. In the case of Total Petroleum Hydrocarbons (TPH), the World Health Organisation (WHO) drinking water guideline values were used to provide an indication of the presence of potential contamination.

14.3.1 Soil Leachability Analysis

In total, 12 No. samples of soil from along the proposed cable route have been subject to leachate analysis. A summary of the results that exceed relevant assessment criteria is presented in Table 104 below:

Table 104: Exceedances of Controlled Waters Generic Assessment Criteria (Leachate)

Contaminant	Location	Concentration (µg/l)	Generic Assessment Criteria (µg/l)
Copper	TP17 @ 0.50m	9.84	3.76 (EQS)
Lead	TP17 @ 0.50m	2.42	1.3 (EQS)

As indicated in the table above, copper and lead have been recorded as potentially leachable at concentrations marginally in excess of EQS criteria in a single sample location only.

The marginal and isolated nature of these exceedances are such that they are not considered to be significant.

14.3.2 Groundwater Analysis

Initial Round of Sampling – 25/10/23

An initial 5 No. groundwater samples were obtained from borehole installations and subject to a suite of analysis. Access to borehole BH14 was not available at the time of sampling and therefore a sample was collected from this installation. A summary of the results from the initial round of sampling that exceeded relevant assessment criteria is presented in Table 105 below:

Table 105: Exceedances of Controlled Waters Generic Assessment Criteria (Groundwater – Sampling Round 1)

Contaminant	Location	Concentration (µg/l)	Generic Assessment Criteria (µg/l)
Nickel	BH15 (Superficials/ bedrock)	15	8.6 (EQS)
Fluoranthene	BH01 (Superficials)	0.03	0.0063 (EQS)
	BH05 (Superficials)	0.02	
Benzo(b)fluoranthene	BH01 (Superficials)	0.01	0.00017 (EQS)

As indicated in the table above, only localised and marginal exceedances of EQS criteria for Nickel and PAH were recorded.

Second Round of Sampling – 19/03/24

The laboratory report from the initial round of sampling stated that there were potential deviations associated with the use of incorrect sampling containers by the ground investigation contractor and exceedances of holding times. As a result, the contractor was instructed to take a further round of samples from borehole installations. On this occasion, groundwater samples were obtained from all 6 No. borehole installations.

A summary of the results that exceeded relevant assessment criteria is presented in Table 106 below:

Table 106: Exceedances of Controlled Waters Generic Assessment Criteria (Groundwater – Sampling Round 2)

Contaminant	Location	Concentration (µg/l)	Generic Assessment Criteria (µg/l)
Arsenic	BH15 (Superficials/ bedrock)	13	10 (DWS)
Fluoranthene	BH01 (Superficials)	0.01	0.0063 (EQS)
	BH09 (Superficials)	0.02	
	BH14 (Bedrock)	0.97	
	BH15 (Superficials/ bedrock)	0.02	

As indicated in the table above, the second round of testing recorded only Fluoranthene and (locally) Arsenic as being in excess of EQS and DWS criteria respectively.

Groundwater Testing Summary

The results of the second round of testing largely corroborate those from the initial round in that significant contamination has not been recorded in groundwater within either the superficial deposits or the bedrock. Highly localised and isolated exceedances of arsenic (DWS) and nickel (EQS) were recorded within borehole BH15, whilst concentrations of PAHs (principally Fluoranthene) have been recorded to exceed conservative EQS criteria generally across the Site.

With respect to the single exceedance of DWS criteria, it has been recorded a significant distance (and on the opposite bank of the River Taw) from the recorded groundwater abstractions at Saunton Golf Club. The EQS exceedances are of minimal concentration and considered insignificant in terms of risk to surface water receptors (and associated ecological designations), especially when factors such as attenuation and dilution are taken into consideration.

In summary, the concentrations recorded by the testing to date are not considered to be significant and highly unlikely to represent a risk to identified Controlled Waters receptors.

14.4 Ground Gas

As stated within the Preliminary CSM, the potential for ground gas generation at the Site is limited and associated risks are minimal given the nature of the proposed development. Risks to future Site users associated with ground gas are likely to be restricted to the proposed substation building as it represents an enclosed space, whilst construction workers may be at risk within confined spaces, such as excavations.

14.4.1 Standpipe Monitoring

A total of 4 No. rounds of gas monitoring were undertaken over an approximate 5-month period between the 10th October 2023 and 19th March 2024 as part of the investigation to provide an assessment of the ground gas potential at the Site. A summary of the monitoring results is provided in Table 107 below.

Table 107: Summary of monitoring data

BH Ref	Response Zone (m) / Stratum	Methane (v/v%)	Carbon Dioxide (v/v%)	Oxygen (v/v%)	Boreholes Flow Rate (l/hr)	Water Level (m bgl)
BH01	1.5 – 12.3 / Blown Sand	<0.1	<0.1 – 3.5	18.3 – 19.0	<0.1 – 0.4	8.03 – 8.86
BH05	1.0 – 10.0 / Blown Sand & Tidal Flat Deposits	<0.1	<0.1 – 0.4	19.2 – 20.3	<0.1	0.38[1] – 1.61
BH09[1]	1.0 – 10.2 / Tidal Flat Deposits	<0.1	<0.1	20.3	<0.1	GL – 0.15
BH14[2]	6.2 – 17.3 / Ashton Mudstone Member and Crackington Formation	<0.1	1.6 – 4.8	13.0 – 19.6	<0.1 – 0.6	0.35 – 1.12
BH15	1.0 – 20.0 / Alluvium & Ashton Mudstone Member and Crackington Formation	<0.1	<0.1 – 0.3	19.3 – 20.7	<0.1	0.16 – 0.91
BH17[3]	1.0 – 6.1 / Ashton Mudstone Member and Crackington Formation	<0.1	<0.1 – 7.1	15.8 – 19.6	<0.1 – 0.1	0.42 – 1.43

1. No gas readings possible on 25/10/23, 08/11/23 and 19/03/24 due to borehole exhibiting artesian conditions.
2. No gas or groundwater reading possible on 25/10/23 due to cows in field.
3. No groundwater reading possible on 26/03/24 due to locked gate.

As highlighted in the table above, gas monitoring did not record the presence of methane (CH_4) above the instrument limit of detection (0.1%) in any of the boreholes on any of the monitoring rounds. Carbon dioxide (CO_2) concentrations ranged from <0.1% to 7.1% (recorded in BH17). Oxygen (O_2) levels ranged from 13% (BH14) to 20.7% (BH15).

Carbon monoxide (CO) was recorded in all borehole installations with the exception of BH09 at concentrations ranging from 1ppm to a maximum of 10ppm (BH15). Hydrogen sulphide (H_2S) was not recorded above the instrument limit of detection (1ppm) in any of the boreholes on any of the monitoring rounds.

Flow rates ranged from <0.01l/hr to 0.6l/hr (recorded in BH14).

Based on the above summary, a semi quantitative approach to gas characterisation is outlined below.

14.4.2 Gas Screening Value (GSV)

In accordance with BS8485:2015+A1:2019, an empirical, semi-quantitative approach has been used to characterise the ground gas risk for the site. This approach derives an appropriate gas screening value (GSV), which is then used to select an appropriate Characteristic Situation (CS) for design and selection of the choice of protective measures.

The borehole flow rate Qhg (in L/h) is calculated using the following equation:

$$Q_{hg} = q\ (\frac{C_{hg}}{100})$$

Where: -

Q_{hg} is the borehole hazardous gas flow rate

q is the measured flow rate (in litres per hour) of combined gases from the monitoring standpipe

C_{hg} is the measured hazardous gas concentration (in % volume/volume).

As CH_4 was not recorded above the instrument LOD in any of the borehole installations on any of the monitoring rounds, no risk is considered to be present and consequently no assessment has been undertaken.

For the purposes of assessing the worst-case scenario, the maximum CO_2 concentration of 7.1% (BH17) and the maximum recorded steady state flow rate of 0.6l/hr (BH14) have been utilised. This gives a worst-case Gas Screening Value (GSV) of **0.0426 l/h**.

In accordance with CIRIA C665, the calculated GSV is consistent with Characteristic Situation 1 (CS-1), Very Low Hazard Potential.

However, CIRIA Report C665 states that, where CO_2 concentrations exceed 1%v/v, consideration could be given to increasing the characteristic situation. At this Site, the 5%v/v threshold was marginally exceeded once only (BH17 on the final monitoring round of 19/03/24). It is noted however, that the marginal exceedance was recorded on the first monitoring round only, with recorded methane concentrations reducing to below the instrument LOD on the subsequent valid monitoring round.

14.4.3 Discussion

Whilst the CIRIA threshold value of 5%v/v CO_2 was exceeded in borehole BH17, risks with respect to ground gas are considered to remain low across the Site.

The investigation has confirmed ground conditions comprising relatively thin and localised layers of made ground soils throughout the Site (generally <1.0m in thickness and confined to the northern and southern sections of the route), with limited readily degradable organic material. As such, the made ground is not considered to represent a significant ground gas source. As detailed in the CIEH, Local Authority Guide to Ground Gas 'Made up ground with low degradable organic content (e.g. up to five percent organic material such as pieces of wood, pieces of paper, rags, etc. with a high proportion of ash. No food or other easily degradable waste') would have a very low generation potential and very low risk level to future development.

The made ground is underlain by Blown Sand, Tidal Flat Deposits and Alluvium to a maximum recorded depth of 12.3mbgl. Within these deposits the readily degradable material has historically been degraded with low to very low continued ground gas generation. The gas historically generated is trapped within soil pore spaces with no or very limited lateral/vertical migration. Where the soil pore spaces are breached during construction (foundations) or through ground investigation an initial high ground gas concentration is recorded. However, the concentrations decrease over time as the soil pore spaces are depleted and ground gas is not generated within the deposit to replace it. The superficial deposits are therefore not considered to represent a significant ground gas generating source.

The solid geology is Pilton Mudstone, Ashton Mudstone Member and Crackington Formation bedrock. The investigation has confirmed an absence of any workings or voids which may indicate a history of mining or quarrying and therefore no significant source of gas is considered to be present.

The ground conditions at the Site are therefore qualitatively assessed as posing a low to very low risk of ground gas generation and this largely been confirmed by the monitoring data where CO_2 concentrations and flow rates have been recorded as largely negligible. The exception to this is a single recording of CO_2 which exceeds the CIRIA threshold value of 5%v/v. However, in that particular incidence, it is noted that groundwater was recorded at a depth of 0.42mbgl, meaning the entire well was flooded.

Flooded wells are considered incapable of determining the ground gas regime as the well creates an increase in pressure within the well headspace due to the absence of permeable material through which the gas can escape to. The gas is released following each monitoring round potentially creating an artificially high ground gas regime which is not representative of the ground gas regime in the pore space outside the monitoring well.

In summary, a qualitative and quantitative assessment has been undertaken which confirms an absence of significant ground gas generating sources at the Site. It is therefore considered that a significant ground gas risk is absent and the ground gas regime should be classified as Characteristic Situation 1 (CS-1), Very Low Risk, in which ground gas protection measures are not required in future built development at the Site.

Furthermore, in addition to the low risks posed by the site geology, it is also anticipated that the proposed substation building would be provided with ventilation for heat dissipation purposes and consequently, an element of protection against the build-up of gases would be inherent in the design of the structure.

In consideration of the low gas concentrations and flow rates recorded, there is not considered to be a significant ground gas regime at the Site. Consequently, the risks posed to construction workers from CH_4 and CO_2 are assessed as low. However, depleted O_2 concentrations have been recorded locally and this should be taken into consideration by future groundworks contractors. Confined spaces, such as excavations, should not be entered wherever possible and if needed only by trained operatives with appropriate risk assessment, and, if necessary, the use of additional PPE and RPE.

14.5 Vapour

A lines of evidence approach to vapour risk assessment has been undertaken as part of this investigation.

PID headspace screening, dry soils analysis and groundwater analysis have not recorded concentrations of volatile contaminants above the respective instrument/ laboratory LOD and consequently risks associated with vapour are assessed as low.

However, the potential for unrecorded vapour contamination in areas of the route not subject to investigation or testing to date cannot be completely discounted, especially in the south of the route where potentially significant historical features were previously operational. Vigilance is required during construction within these areas for all and any indicators of contamination.

14.6 Radon Gas

Review of the UKRadon online interactive map indicates that risks with respect to radon are negligible to low across much of the proposed cable route. However, the potential for elevated radon concentrations is indicated in the south of the route in the general vicinity of where the proposed substation is to be located. Whilst risks to future Site users are unlikely to be significant given that the substation building is likely to be ventilated and occupied over short timeframes only; it would be prudent to seek the advice of the local authority building control department on whether formal radon protection measures would be required.

There may also be benefit in obtaining a radon report from the BGS to clarify the radon probability at the specific location of the proposed substation.

With respect to the construction stage, risks associated with radon will have to be taken into consideration by future groundworks contractors when working in areas where potentially elevated radon concentrations have been identified. Whilst the scope of required mitigation will be subject to contractor's risks assessments, there may be a requirement for the use of radon detectors or alarms in excavations and other confined spaces.

15. Risk Evaluation

15.1 Human Health

As highlighted in Section 14, chemical testing of soil samples obtained from the proposed cable route has recorded only a single exceedance of human health criteria for arsenic at borehole location BH03. In consideration of the conservative nature of the assessment criteria utilised and the presence of hardstanding surfacing in the location of the exceedance, no significant risk to human health is considered and no requirement for remedial measures or mitigation has been identified.

Across the remainder of the route, no exceedances of human health criteria were recorded and asbestos was not detected. There were no visual or olfactory indicators of contamination identified during drilling or excavation and, where tested, there is no indication of volatile contaminants being present. As such, and on the basis of the information available, risks are assessed as low.

However, the potential for unrecorded contamination in areas of the route not subject to investigation or testing cannot be completely discounted, especially in the south of the route where potentially significant historical features were previously operational. Vigilance is required during construction within these areas for all and any indicators of contamination (including free product), buried structures and tanks.

With respect to future groundworkers, laboratory data should be incorporated into method statements and risk assessments and suitable PPE and other standard health and safety protocols utilised as required. All future work activities should be subject to risk assessment to ensure that the most appropriate scope of mitigation measures is employed. All measures included within the CEMP to manage/ control risks in relation to construction workers from contamination should be implemented in full.

With respect to ground gas, A qualitative and quantitative assessment has been undertaken which confirms an absence of significant ground gas generating sources at the Site. It is therefore considered that a significant ground gas risk is absent and the ground gas regime should be classified as Characteristic Situation 1 (CS-1), Very Low Risk, in which ground gas protection measures are not required in future built development at the Site.

Risks posed to construction workers from CH_4 and CO_2 are assessed low. However, depleted O_2 concentrations have been recorded locally and this should be taken into consideration by future groundworks contractors. Confined spaces, such as excavations, should not be entered wherever possible and if needed only by trained operatives with appropriate risk assessment, and, if necessary, the use of additional PPE and RPE.

Risks associated with radon will have to be taken into consideration by future groundworks contractors when working in areas where potentially elevated radon concentrations have been identified. Whilst the scope of required mitigation will be subject to contractor's risks assessments, there may be a requirement for the use of radon detectors or alarms in excavations and other confined spaces.

15.2 Controlled Waters

A selected number of soils samples were subject to leachability analysis to determine the potential mobility of contaminants within the soil profile, with only a small number of metals recorded as potentially leachable at concentrations marginally in excess of EQS criteria. The marginal nature of the exceedances is such that they are not considered to pose a significant risk to Controlled Waters. In addition, groundwater samples obtained from boreholes installed along the proposed cable route recorded minimal impact, with only a small number of metals and PAHs as being locally and marginally in excess of DWS and EQS criteria.

On the basis of the laboratory data available, risks to Controlled Waters are assessed as low and consequently there is no requirement for further assessment or remedial measures.

However, as stated in Section 15.1, the potential for unrecorded contamination in areas of the route not subject to investigation or testing cannot be completely discounted, especially in the south of the route where potentially significant historical features were previously operational. In the event that significant unexpected contamination is encountered during construction, further investigation and testing may be required to facilitate an updated Controlled Waters risk assessment.

With respect to the trenchless drilling process, the potential for unrecorded contamination (including potentially leachable contaminants) along the proposed cable route, whilst unlikely given the information available, cannot be entirely discounted. However, the drilling methods to be employed would result in minimal disturbance of the surrounding soils which is considered to reduce the potential for mobilisation of any residual contamination. In addition, future Site works would be undertaken in accordance with a Construction Environmental Management Plan (CEMP) which will detail measures and protocols to be taken to ensure that there no potential pollutant pathways created as a result of the drilling process.

There is also a potential for on-Site storage of fuels, chemicals or other hazardous materials required to facilitate the construction process. However, assuming good Site management and construction practices and the use of standard pollution prevention measures and stockpile/ materials management procedures as part of a Construction Environmental Management Plan (CEMP), potential hazards associated with the construction process should be adequately controlled and risks to Controlled Waters minimised as far as reasonably practicable.

16. Environmental Assessment

Following the completion of the ground investigation, the pollutant linkages identified in the outline conceptual model have been re-evaluated and reclassified in relation to the additional information obtained. The results of the reassessment are summarised in Table 108.

Table 108: Estimation of environmental risks

Receptor	Source	Pathway	Risk	Justification /Mitigation	Risk after mitigation
Human Health					
Future Site users	Single exceedance of human health criteria for arsenic	Dermal contact, ingestion and inhalation	**Low**	No exceedances of human health GAC have been recorded along the proposed cable route and therefore risks are currently assessed as low. However, it is recognised that the potential for encountering previously unrecorded contamination cannot be entirely discounted, particularly in the south of the site. In the event that significant contamination is encountered during construction, an updated assessment of risk would be required.	**Low**
	Ground Gas	Inhalation, accumulation in confined spaces	**Low**	A qualitative and quantitative assessment has been undertaken which confirms an absence of significant ground gas generating sources at the Site. It is therefore considered that a significant ground gas risk is absent and the ground gas regime should be classified as Characteristic Situation 1 (CS-1), Very Low Risk, in which ground gas protection measures are not required in future built development at the Site (i.e. the proposed substation).	**Low**
	Vapour		**Low**	A lines of evidence approach to vapour risk assessment has been undertaken as part of this investigation which confirms that risks associated with vapour are low and no further assessment or specific mitigation measures are considered to be necessary.	**Low**
	Radon		**Low to Medium**	The UKRadon interactive map indicates the potential for elevated radon concentrations in the south of the route in the general vicinity of where the proposed substation is to be located. Whilst risks to future Site users are unlikely to be significant given that the substation building is likely to be ventilated and occupied over short timeframes only; it would be prudent to seek the advice of the local authority building control department on whether formal radon protection measures would be required. There may also be benefit in obtaining a radon report from the BGS to clarify the radon probability at the specific location of the proposed substation.	**Low**
Construction workers	Single exceedance of human health criteria for arsenic	Dermal contact, ingestion and inhalation	**Low**	Risks to human health associated with contamination in soil have been assessed as low. However, irrespective of the contaminant concentrations recorded, all construction workers should be subject to mandatory health and safety requirements and utilise appropriate PPE when working in proximity to the soils at the site. **Mitigation Measures: Whilst risks are low, it is recommended that, as a standard precaution, the use of PPE (gloves, face masks etc.) should be made mandatory for future construction personnel when working in proximity soils. Basic hygiene facilities should also be provided. In addition, all measures outlined within the CEMP to manage/ control risks in relation to construction workers from contamination should be implemented in full. Construction staff should be made aware of the potential for unrecorded contamination.**	**Low**
	Depleted O_2	Inhalation, accumulation in confined spaces	**Low to Medium**	Gas monitoring has recorded depleted oxygen concentrations locally within the underlying soils. This should be taken into consideration by future groundworks contractors. **Mitigation measures: Subject to contractor's risk assessment; however, as a minimum, the atmosphere should be checked before man entry into excavations or confined spaces**	**Low**

Receptor	Source	Pathway	Risk	Justification /Mitigation	Risk after mitigation
				at the site and entry should only be undertaken by appropriately qualified personnel in line with the Confined Spaces Regulations, utilising RPE as necessary.	
	Vapour		**Low**	A lines of evidence approach to vapour risk assessment has been undertaken as part of this investigation which confirms that risks associated with vapour are low. No specific mitigation measures over and above adherence to standard health and safety protocols are considered to be required.	**Low**
	Radon		**Low to Medium**	Risks associated with radon will have to be taken into consideration by future groundworks contractors when working in areas where potentially elevated radon concentrations have been identified. Whilst the scope of required mitigation will be subject to contractor's risks assessments, there may be a requirement for the use of radon detectors or alarms in excavations and other confined spaces.	**Low**
Property					
On-Site structures	Elevated concentrations of potentially degrading contaminants.	Direct contact	**Low**	Results indicate that, in relation to the procedure laid out in BRE Special Digest 1:2005, assuming greenfield conditions and mobile groundwater a Design Class and Aggressive Chemical Environments Classification for the Made Ground, Blown Sand, Alluvium and Pilton Mudstone would be DS-1 and AC-1 respectively. A Design Class and Aggressive Chemical Environments Classification for the Tidal Flat Deposits would be DS-2 and AC-2 respectively.	**Low**
Controlled Waters					
Surface Water (River Taw/ Barnstaple Bay)	Localised marginal exceedances of EQS for metals and PAH in soil leachate and groundwater	Leaching of contamination and migration in groundwater	**Low**	On the basis of the laboratory data available, risks to Controlled Waters are assessed as low and consequently there is no requirement for further assessment or remedial measures. However, the potential for unrecorded contamination in areas of the route not subject to investigation or testing cannot be completely discounted, especially in the south of the route where potentially significant historical features were previously operational. In the event that significant unexpected contamination is encountered during construction, further investigation and testing may be required to facilitate an updated Controlled Waters risk assessment.	**Low**
Groundwater Aquifers	No exceedances of DWS criteria recorded in soil leachate or groundwater	Leaching of contamination	**Low**	With respect to the proposed trenchless drilling activities, all future Site works should be undertaken in accordance with a Construction Environmental Management Plan (CEMP). The CEMP should detail measures and protocols to be taken to ensure that there no potential pollutant pathways created as a result of the drilling process. Good Site management and construction practices and the use of standard pollution prevention measures and stockpile/ materials management procedures as part of a Construction Environmental Management Plan (CEMP), will also be required to ensure that potential hazards associated with the construction process are controlled and risks to Controlled Waters minimised as far as reasonably practicable.	**Low**

The potential pollutant linkages described above can be managed by design of appropriate mitigation measures during redevelopment.

17. Preliminary Engineering Assessment

17.1 Characteristic Geotechnical Parameters

Characteristic geotechnical parameters have been determined for each stratum and are presented in Tables 109 and 110. This section aims to present an overview of the material properties. The materials encountered are typically consistent across the site with the exception of the Tidal Flat Deposits, which were encountered both as a granular and cohesive material. The specific section of cable route being considered should be reviewed, as outlined in Sections 5 & 6, as part of selecting characteristic geotechnical parameters for design.

Table 109: Characteristic Geotechnical Parameters (Soil)

Stratum	Typical Description[A]	Classification			Total Stress Conditions		Effective Stress Conditions	
		Dry Density (kN/m³)	Plasticity Index (%)	Organic Matter Content (%)	c_u (kN/m²)	Φ (°)	c' (kN/m²)	Φ' (°)
Made Ground	Brown gravelly to very gravelly slightly silty to silty fine to coarse sand with cobbles.	-	-	-	-	-	-	-
Blown Sand	Loose to dense brown locally slightly gravelly silty fine and medium SAND with shell fragments.	16.0	-	0.3 – 2.0	-	-	5	30 – 31
Tidal Flat Deposits	Mottled brown and grey slightly gravelly sandy CLAY of low plasticity. Brownish grey silty fine to coarse SAND and fine to coarse angular and subangular GRAVEL of siltstone and mudstone.	20.0	12 – 21	2 – 5[B]	50 – 125	0	22 – 32	0 – 5
Alluvium	Firm to very stiff mottled orange-brown, brown and grey slightly gravelly slightly sandy CLAY.	19.0	16	-	100	0	4	28

[A] Materials encountered are extremely variable along the cable route, typical descriptions are for guidance only and specific ground models for each section should be reviewed to determine anticipated materials at each location.

[B] Please note that PEAT was encountered within the Tidal Flat Deposits with an Organic Content Matter of >20%, where encountered this should be treated separately to the rest of the Tidal Flat Deposits and thus is not reported here.

Table 110: Characteristics Geotechnical Parameters (Rock)

Stratum	Typical Description[C]	Dry Density (kN/m^3)	Internal Friction Angle, Φ (°)	Unconfined Compressive Strength, UCS (MPa)	Abrasivity (CA Index)
Pilton Mudstone Formation	Weak thickly laminated to very thinly bedded brownish grey MUDSTONE with occasional calcite veins. Weak to Medium Strong thinly laminated light grey SILTSTONE interbedded with fine grained light grey sandstone. Rare calcite veining.	23.0[D]	30[D]	7 – 9	1.0 – 1.4 (Medium Abrasiveness)
Ashton Mudstone Member and Crackington Formation	Very weak and weak, locally moderately weak dark grey MUDSTONE with rare calcite veining. Very weak to Strong, light grey SILTSTONE with calcite veins.	23.0[D]	30[D]	15 – 50 (Increases as moving South)	1.7 (Medium Abrasiveness, North of River Taw) 4.4 (Extreme Abrasiveness, South of River Taw)

[C] Materials encountered are extremely variable along the cable route, typical descriptions are for guidance only and specific ground models for each section should be reviewed to determine anticipated materials at each location. Furthermore, values reported are representative of competent rock, the initial interface between superficial deposits & rockhead was typically encountered as a weathered layer which is likely to have reduced strength properties.

[D] No geotechnical testing data available and thus determined by published values.

17.2 Depth to Rockhead

The depth to rockhead in the north portion of the site, near the Landfall & Golf Course Crossing, was encountered at 8.7m bgl to 14.8m bgl. Relative to Ordnance Datum, the rockhead level was fairly consistently encountered at circa -1m AOD to 0m AOD. The geophysical survey undertaken beneath the Saunton Sands beach indicated the rockhead level to be deeper, with competent rock indicated at approximately -5m ADO before falling to -7m AOD when moving west.

The depth to rockhead in the central portion of the site, from RDX2 road crossing to the River Taw, was encountered as >10m bgl to 5m bgl. Relative to Ordnance Datum, the rockhead level was encountered at circa -2m AOD to -1m AOD.

The area of the cable route to the south of the River Taw encountered rockhead at shallow depths of 2.7m bgl to 4.2m bgl, and trial pits were terminated as shallow as 2m bgl due to hard digging and thus potential rockhead. Relative to Ordnance Datum, the rockhead level was encountered at circa 0m AOD to 2m AOD.

Owing to the shallow nature of the rock in the southern section of the site a rockhead contour plot has been prepared as Drawing No. 12731-153-WIE-ZZ-XX-DR-C-80100 (Appendix C) to demonstrate where shallow rock may be a risk to opencut trenching works between the River Taw Crossing and Substation.

17.3 Rock Strength & Abrasiveness

In the approximate north half of the site, Pilton Mudstone Formation was encountered as either Mudstone or Siltstone. The rock encountered was typically weak in strength and of medium abrasiveness. The strength and abrasiveness of the encountered rock was fairly consistent and thus the landfall and Golf Course Crossing can be designed based on these designations.

In the approximate south half of the site, Ashton Mudstone Member and Crackington Formation was encountered as either Mudstone or Siltstone. The rock encountered had a notable change in properties at either side of the River Taw. To the north of the River Taw, rock tended to be of moderately weak strength and medium abrasiveness whereas to the south of the River Taw the rock tended to be medium strong to strong in strength and of extreme abrasiveness. On this basis, the River Taw Crossing design should consider the change in rock strength and abrasiveness in terms of drill profile and drill bit selection.

17.4 Aggressive Chemical Environment for Concrete Classification

Chemical testing was undertaken in accordance with BRE Special Digest No.1 – Concrete in Aggressive Ground (3rd Edition, 2005) [20]. Design sulphate and aggressive chemical environment for concrete (ACEC) designations have been determined for each stratum.

All designations have been determined based on a presumption of mobile groundwater within a greenfield location.

Table 111: BRE SD1 Tests Results

Stratum	Determinant	Units	No. of Tests	Min	Max	Average	Characteristic Value	Designation
Made Ground	pH	-	2	7.0	8.5	7.8	7.0	DS-1
	Sulphate	mg/l		20	90	55	90	AC-1
Blown Sand	pH	-	3	8.3	8.6	8.4	8.3	DS-1
	Sulphate	mg/l		10	20	17	20	AC-1

Stratum	Determinant	Units	No. of Tests	Min	Max	Average	Characteristic Value	Designation
Tidal Flat Deposits	pH	-	4	7.2	8.5	8.1	7.2	DS-2
	Sulphate	mg/l		10	1120	358	1120	AC-2
Alluvium	pH	-	3	6.2	7.9	7.2	6.2	DS-1
	Sulphate	mg/l		40	220	140	220	AC-1
Pilton Mudstone	pH	-	1	-	-	8.6	8.6	DS-1
	Sulphate	mg/l		-	-	80	80	AC-1

Once exact locations of buried concrete, for TJBs or similar, are known further samples could be obtained and further BRE SD1 testing could be undertaken to lower the required designation of the Tidal Flat Deposits. Currently the single occurrence of elevated levels due to PEAT is resulting in a raised designation when following the BRE SD1 for determining characteristic values.

17.5 Material Reusability

Particle size distribution tests indicate the Blown Sand, Tidal Flat Deposits & Alluvium Deposits would predominately fall within the grading envelope of a Specification for Highway Works (SHW) Series 600 [21] Class 2A (Wet Cohesive Material), 2B (Dry Cohesive Material) or 2C (Stoney Cohesive Material).

Compaction testing undertaken indicated that Tidal Flat Deposits & Alluvium could likely achieve compaction of minimum 95% Maximum Dry Density and maximum 5% air voids, which is typically the compaction requirements for engineered fill. However, Blown Sand would likely not achieve adequate compaction to be used for engineered fill.

For both the Tidal Flat Deposits & Alluvium Deposits the average moisture content was wet of optimum hence should any site won arising be re-used as engineered fill within the works, materials may require improvement through drying prior to compaction.

The Blown Sand deposits had average moisture contents similar to the optimum moisture content, however, it is noted that in isolated cases there was a large variance in results and thus consideration of the suitability of reuse of Blown Sand should be undertaken on a site by site basis. This is likely due to variations in natural moisture contents as a result of varying groundwater regimes.

All materials should be suitable for reuse as landscaping fill and / or lightly compacted backfill within the cable opencut sections, however, some screening for materials with elevated organic contents, such as PEAT, will be required prior to reuse.

17.6 Groundwater & Stability of Excavations

Trial pits, TP01 to TP07 & TP09 to TP13, all collapsed during excavation. In all cases groundwater was encountered prior to collapse. All the noted trial pits, as well as TP08, were terminated due to either sidewalls collapsing or water ingress. In addition, artesian groundwater conditions have been noted during recent monitoring visits at BH09, with groundwater recorded above ground level.

This indicates that all excavations north of the River Taw are likely to unstable. In sections of opencut a construction methodology using a trench box or slide rail trench support system will likely be required. In other excavations, such as trenchless launch / reception pits, a suitable shoring system and a means of dewatering should be considered within the temporary works design.

In the trial pits to the south of the River Taw, TP14 to TP17, the walls of the pits stood vertical throughout the excavation. Due to hard digging, and potential rockhead, the maximum depth of these excavations was only 2.2m. In any case, in line with BS6031 [22] all excavations should be examined daily by a competent person to ensure that they remain safe. Where the sides cannot be graded back to a safe angle, as approved by a competent person, their continued stability should not be taken for granted. The stability of all excavations requiring man entry, regardless of depth, must be assessed by a competent person and provided with a suitably designed shoring support system as required. Accounting for shallow groundwater, groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required within excavations.

17.7 Appraisal of Crossing Techniques

17.7.1 Beach Landfall & Dunes Crossing

The landfall works are best undertaken in a phased manner as follows:

- The intertidal zone as a cable ploughed opencut trench, this will be undertaken within the beach deposits with rock determined as lying >5m bgl from the geophysical survey undertaken on the beach;
- A cased system for crossing beneath the dunes between the Saunton Sands Beach and Saunton Sands Beach Car Park. This is best achieved using an aguer bore or piperam technique owing to the granular nature of the deposits; and
- Opencut trench through the Saunton Sands Beach Car Park to the Golf Course trenchless entry point.

17.7.2 Golf Course Crossing

The Golf Course Crossing will be undertaken using a trenchless methodology. Owing to the depth to rock and granular nature of the superficial deposits at this location a few options are available for consideration:

- A drill profile targeting rock by an HDD methodology with casing through the superficial deposits at entry and a sizable reception pit at the exit (to minimise the depth of superficial deposits being passed with an unsupported bore);
- A drill profile targeting rock by an HDD methodology, considering an intercept technique whereby 2 No. separate HDD's are drilled from each side of the golf course with the profiles intercepting in the middle of the bore before reaming into one complete profile. This would allow casing through the superficial deposits to be used at both ends of the golf course minimising the likelihood of a bore collapse; or
- Use of a fully cased system, such as a Direct Pipe technique, which could be employed targeting superficial deposits or rock. The length of the crossing is near the upper limit of this technique so further consideration as to its feasibility would be required at FEED stage.

17.7.3 Road Crossing near Sandy Lane Car Park (RDX2)

The Road Crossing near Sandy Lane Car Park (RDX2) will be undertaken entirely within the superficial deposits and can be undertaken as either:

- A cased system, such as an augerbore or piperam, to minimise the likelihood of collapse;
- A HDD, considering that the short length of crossing reduces the likelihood of bore collapse, but accepting there may still be some risk owing to some granular superficial deposits being encountered in this area; or
- Use of an opencut trench, accepting that there will be a requirement for de-vegetation works and perhaps removal of a tree(s).

17.7.4 Opencut Sections (North of River Taw)

Sections of opencut located to the North of the River Taw are likely to be unstable. Therefore, a construction methodology using a trench box or slide rail trench support system will likely be required. In addition, a means of dewatering using a well point system and / or groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required within excavations.

17.7.5 River Taw Crossing

The River Taw Crossing is best undertaken using an HDD methodology targeting rock. Some considerations within FEED / detailed design stages will however be required including:

- Selection of a drill bit, given there is a notable strength and abrasiveness increase in the encountered rock properties when moving south; and
- Depth of marine sediments is unknown, especially in the area near the north bank of the river where a deepened channel is apparent on aerial photography, a profile should be designed suitably deep to ensure a profile running entirely within rock. Further GI within the River Taw may be required to prove the thickness of superficial deposits.

17.7.6 Opencut Section (South of River Taw)

As indicated on Drawing No. 12731-153-WIE-ZZ-XX-DR-C-80100 (Appendix C), shallow bedrock in this area of site may result in hard digging when excavating the opencut section, the design should consider minimising the burial depth of the cables as far as practically possible. A means of dewatering using a well point system and / or groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required within excavations.

18. Geotechnical Risk Register

Based on information available, a specific review of the geotechnical risks associated with the cable installation works has been undertaken and the risks evaluated using a risk evaluation matrix.

The risk register, detailed in the following tables, lists the anticipated ground hazards associated with the works and the associated consequences of those hazards in order to determine the level of risk presented. The risk before control of the hazard has been assessed quantitatively and following the implementation of specific control to each risk. The register should remain a 'live' document, updated as FEED, detailed design and construction works progress.

The level of risk is calculated to be up to a value of 25 (Critical Risk). The maximum value can be reduced to 5 (Medium Risk) and with implementation of the recommended controls during construction may be reduced further.

PROBABILITY OF OCCURRING		IMPACT ON PROJECT COST / PROGRAMME
Very Likely	5	Substantial (>50% Cost/ Programme increase)
Likely	4	High (30% to 50% Cost/ Programme increase)
Probable	3	Moderate (10% to 30% Cost/ Programme increase)
Unlikely	2	Minor (< 10% Cost/ Programme increase)
Highly Unlikely	1	Negligible (0% Cost/ Programme increase)

PROBABILITY (P)	IMPACT (I) 5	4	3	2	1
5	25	20	15	10	5
4	20	16	12	8	4
3	15	12	9	6	3
2	10	8	6	4	2
1	5	4	3	2	1

Probability (P) x Impact (I) = Risk Rating (R)

1 to 4	Low Risk
5 to 10	Medium Risk
11 to 16	High Risk
≥ 17	Critical Risk

White Cross Windfarm: Export Cable Landfall and Onshore Crossings											
No	**Hazard**	**Consequence**	**Risk before Control**			**Recommended Mitigation Measures to be implemented**	**Risk after Control**			**Comments**
			P	**I**	**R**		**P**	**I**	**R**	
1	Varying rock properties	Incorrect drill bit selection, leading to impact on progress, programme and costs.	4	5	**20**	The rock strength / abrasivity noted to substantially increase when moving south, trenchless drill design to consider most appropriate drill bit for such conditions (most notably at the River Taw crossing).	1	5	**5**	
2	Deep underlying granular superficial deposits	Bore path may be at risk of collapse and would require a re-drilled leading to programme and cost impacts. Potential for "Frac-out" to occur leading to programme and cost impacts.	4	5	**20**	The trenchless design to consider using a cased system to mitigate risks of collapse if superficial deposits being targeted for bore profile. If using uncased technique (HDD) then depth increase of profile to reach bedrock would be advised.	1	5	**5**	
3	Bedrock consisting of Mudstone / Siltstone	Mudstone / Siltstone may behave like a clay when drilling resulting in drill head becoming clogged / blocked, leading to programme and cost impact.	4	5	**20**	Drill head to be selected considering the risks associated weak rock (as encountered in north of site). Drill profile to be designed into more competent rock avoiding interface where rock is more likely to be weathered / weak.	1	5	**5**	

White Cross Windfarm: Export Cable Landfall and Onshore Crossings										
No	Hazard	Consequence	Risk before Control			Recommended Mitigation Measures to be implemented	Risk after Control			Comments
			P	I	R		P	I	R	
4	Shallow Bedrock / Obstructions	Potential for hard digging / obstructions to delay progress, thus impacting programme and costs.	4	3	**12**	South of the River Taw encountered bedrock at shallow depths and obstructions in exploratory holes, burial depth of the cable should be as shallow as possible in this location. Contractor to make allowance in their method statements / programme for hard digging conditions and removal of obstructions such as boulders.	4	1	**4**	
5	Public Utilities	Risk of death or injury. Potential costs and programme impacts.	4	5	**20**	Initial utilities search completed as part of Pre-FEED Concept Design. Detailed enquiries to be submitted as part of FEED / detailed design and refreshed prior to Construction Stage. Any contractors employed on site should undertake their own searches and satisfy themselves that all utilities have been identified and cleared.	1	5	**5**	Utility plans should be current to within 3 months at time of construction. Line and level of all utilities within vicinity of works area should be positively confirmed by investigation prior to construction. Private landowners should be approached for details of any private utilities.

White Cross Windfarm: Export Cable Landfall and Onshore Crossings										
No	Hazard	Consequence	Risk before Control			Recommended Mitigation Measures to be implemented	Risk after Control			Comments
			P	I	R		P	I	R	
6	Limited information on thickness and composition of marine sediments for landfall works / river crossing (particularly at River Taw Crossing where a potential deepened channel of superficial deposits is visible on aerial imagery).	Encountering unforeseen ground conditions and incorrect design leading to impact on progress, programme and costs. Bore path may need to be abandoned and re-drilled leading to programme and cost impacts. Impact on temporary works design at the offshore end including recovery of drill head / MTBM. Potential for “Frac-out” to occur leading to programme and cost impacts. Damage/ environmental incident.	3	5	**15**	Targeted nearshore ground investigation to be undertaken to determine depth / composition of marine sediments.	2	3	**6**	Non-trenchless techniques may be employed to reduce risks associated with the landfall. Notwithstanding, a scope of nearshore ground investigation should be undertaken.
7	Shallow Groundwater	Temporary works stability. Opencut sections instability. Influence on design (buoyancy).	5	4	**20**	Targeted Ground investigation campaign, including groundwater monitoring, has been completed.	2	3	**6**	Contractor will require a suitable system of stabilising excavations such as a trench box and / or shoring.

White Cross Windfarm: Export Cable Landfall and Onshore Crossings											
No	Hazard	Consequence	Risk before Control			Recommended Mitigation Measures to be implemented	Risk after Control			Comments
			P	I	R		P	I	R	
										Groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required within excavations
8	Potential for UXO unknown.	Risk of death or injury. Programme delays and cost increases.	2	5	**10**	Construction works should consider the risk and have safe working practices in place such as a site specific UXO risk assessment / or a UXO watching brief from an EOD specialist.	1	5	**5**	
9	Loss of Drilling fluid affecting hydrology	Negative impact on watercourses / coastal life if drilling is not progressed as designed.	2	5	**10**	Use of environmentally friendly drilling fluids. Preliminary hydrofracture assessments have been carried out, these should be updated at detailed design when specific bore profiles are known. Drilling fluid design plan should be established.	1	3	**3**	

White Cross Windfarm: Export Cable Landfall and Onshore Crossings										
No	Hazard	Consequence	Risk before Control			Recommended Mitigation Measures to be implemented	Risk after Control			Comments
			P	I	R		P	I	R	
10	Contaminated Soils	Health risk to construction personnel. Increased disposal costs of any materials going off-site.	3	3	**9**	Targeted Ground investigation campaign has been completed.	1	3	**3**	
11	Aggressive Soils	Sulphate attack on buried concrete.	3	3	**9**	Targeted Ground investigation campaign has been completed. Generally, ground conditions encountered were not aggressive, however, elevated aggressivity levels were recorded where PEAT was present, buried concrete to be designed accordingly.	1	3	**3**	Contractor can carry out specific testing at confirmed locations of buried concrete to further assess the aggressivity and subsequent concrete design.

19. Environmental Conclusions and Recommendations

19.1 Human Health

Chemical testing of soil samples obtained from the proposed cable route has recorded only a single exceedance of human health criteria for arsenic at borehole location BH03. In consideration of the conservative nature of the assessment criteria utilised and the presence of hardstanding surfacing in the location of the exceedance, no significant risk to human health is considered and no requirement for remedial measures or mitigation has been identified.

Across the remainder of the route, no exceedances of human health criteria were recorded and asbestos was not detected. There were no visual or olfactory indicators of contamination identified during drilling or excavation and, where tested, there is no indication of volatile contaminants being present. As such, and on the basis of the information available, risks are assessed as low.

However, the potential for unrecorded contamination in areas of the route not subject to investigation or testing cannot be completely discounted, especially in the south of the route where potentially significant historical features were previously operational. Vigilance is required during construction within these areas for all and any indicators of contamination (including free product), buried structures and tanks.

With respect to future groundworkers, laboratory data should be incorporated into method statements and risk assessments and suitable PPE and other standard health and safety protocols utilised as required. All future work activities should be subject to risk assessment to ensure that the most appropriate scope of mitigation measures is employed. All measures included within the CEMP to manage/ control risks in relation to construction workers from contamination should be implemented in full.

With respect to ground gas, A qualitative and quantitative assessment has been undertaken which confirms an absence of significant ground gas generating sources at the Site. It is therefore considered that a significant ground gas risk is absent and the ground gas regime should be classified as Characteristic Situation 1 (CS-1), Very Low Risk, in which ground gas protection measures are not required in future built development at the Site.

Risks posed to construction workers from CH_4 and CO_2 are assessed low. However, depleted O_2 concentrations have been recorded locally and this should be taken into consideration by future groundworks contractors. Confined spaces, such as excavations, should not be entered wherever possible and if needed only by trained operatives with appropriate risk assessment, and, if necessary, the use of additional PPE and RPE.

Review of the UKRadon online interactive map indicates that risks with respect to radon are negligible to low across much of the proposed cable route. However, the potential for elevated radon concentrations is indicated in the south of the route in the general vicinity of where the proposed substation is to be located. In light of this it is considered that there would be benefit in obtaining a site-specific radon report from the BGS to clarify the radon probability at the specific location of the proposed substation.

Risks associated with radon will have to be taken into consideration by future groundworks contractors when working in areas where potentially elevated radon concentrations have been identified. Whilst the scope of required mitigation will be subject to contractor’s risks assessments, there may be a requirement for the use of radon detectors or alarms in excavations and other confined spaces.

As stated above, a CEMP has been prepared which sets out the standards of construction logistics and practices that will minimise (if not eliminate) the impacts of the project upon the local environment and local community surrounding the Site. This includes measures to minimise dust, odour and noise.

19.2 Controlled Waters

A selected number of soils samples were subject to leachability analysis to determine the potential mobility of contaminants within the soil profile, with only a small number of metals recorded as potentially leachable at concentrations marginally in excess of EQS criteria. The marginal nature of the exceedances is such that they are not considered to pose a significant risk to Controlled Waters. In addition, groundwater samples obtained from boreholes installed along the proposed cable route recorded minimal impact, with only a small number of metals and PAHs as being locally and marginally in excess of DWS and EQS criteria.

On the basis of the laboratory data available, risks to Controlled Waters are assessed as low and consequently there is no requirement for further assessment or remedial measures.

However, the potential for unrecorded contamination in areas of the route not subject to investigation or testing cannot be completely discounted, especially in the south of the route where potentially significant historical features were previously operational. In the event that significant unexpected contamination is encountered during construction, further investigation and testing may be required to facilitate an updated Controlled Waters risk assessment.

With respect to the construction process, assuming good Site management and construction practices and the use of standard pollution prevention measures and stockpile/ materials management procedures as part of a Construction Environmental Management Plan (CEMP), potential hazards associated with the construction process should be adequately controlled and risks to Controlled Waters minimised as far as reasonably practicable.

20. Geotechnical Conclusions

Following an Onshore Cable Route Feasibility Assessment completed by SDL/WIE in June 2022 (White Cross Offshore Windfarm Onshore Cable Route Feasibility Assessment, WIE12731-135-R-1-2-4 [1]), WIE were appointed by SDL to undertake the specification, tendering, technical administration and reporting of a GI required to inform the design of the landfall and onshore cable route. The scope of the GI is presented within WIE Document 'White Cross Floating Windfarm Onshore Cable Route Ground Investigation Specification, WIE12731-153-SP-1-2-3 [2].

This GIR presents an interpretation of factual data obtained during the GI to then provide developed ground models for each trenchless crossing / sub-length of route, recommended material characteristic parameters to be adopted in scheme design, a Geotechnical Risk Register and a Preliminary Engineering Assessment for each trenchless crossing / sub-length of route.

In tandem with production of the GIR by WIE, SDL have completed a Technical Information Note ('TIN') presenting a review of constructability aspects, which should be read in conjunction and is included in Appendix A.

Following GI, the key conclusions of this GIR are presented below.

20.1 Aggressive Chemical Environment for Concrete Classification

- Made Ground, Blown Sand, Alluvium and Pilton Mudstone Formation all were determined to have a design sulphate class DS-1 and aggressive chemical environment for concrete class (ACEC) of AC-1, in accordance with BRE SD1 [20].
- Tidal Flat Deposits were determined to have a design sulphate class DS-2 and aggressive chemical environment for concrete class (ACEC) of AC-2, in accordance with BRE SD1 [20].

20.2 Material Reusability

- All materials encountered should be suitable for reuse as landscaping fill and / or loosely tipped backfill within the cable opencut sections, however, some screening for materials with elevated organic contents, such as PEAT, will be required prior to reuse.
- Should materials be required as engineered fill, the grading envelopes of all superficial deposits encountered implies a Class 2 material, however, materials may require improvement through drying and / or wetting as stipulated in SHW Series 600 [21].

20.3 Appraisal of Crossing Techniques

20.3.1 Beach Landfall & Dunes Crossing

- Installation through the intertidal zone should be as a cable ploughed opencut trench;
- A cased system for encompassing the dunes between the Saunton Sands Beach and Saunton Sands Beach Car Park, this is best achieved using an aguer bore or piperam technique; and
- Opencut trench through the Saunton Sands Beach Car Park to the Golf Course trenchless entry point.

20.3.2 Golf Course Crossing

The Golf Course Crossing will be undertaken using a trenchless methodology, by one of the following techniques:

- A drill profile targeting rock by an HDD methodology with casing through the superficial deposits at entry and a sizable reception pit at the exit;
- A drill profile targeting rock by an HDD methodology, considering an intercept technique; or
- Use of a fully cased system, which could be employed targeting superficial deposits or rock.

20.3.3 Road Crossing near Sandy Lane Car Park (RDX2)

The Road Crossing near Sandy Lane Car Park (RDX2) will be undertaken entirely within the superficial deposits and can be undertaken as either:

- A cased system;
- A HDD, accepting there may still be some risk of bore collapse; or
- Use of an opencut trench, accepting that there will be a requirement for de-vegetation works and perhaps removal of a tree(s).

20.3.4 Opencut Sections (North of River Taw)

Sections of opencut located to the North of the River Taw are likely to be unstable. Therefore, a construction methodology using a trench box or slide rail trench support system will likely be required. In addition, a means of dewatering using a well point system and / or groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required within excavations.

20.3.5 River Taw Crossing

The River Taw Crossing is best undertaken using an HDD methodology targeting rock. Some considerations within FEED / detailed design stages will however be required including:

- Selection of a drill bit, given there is a notable strength and abrasiveness increase in the encountered rock properties when moving south.
- Depth of marine sediments is unknown, a profile should be designed suitably deep to ensure a profile running entirely within rock. Further GI within the River Taw may be required to prove the thickness of superficial deposits.

20.3.6 Opencut Section (South of River Taw)

Shallow bedrock in this area of site may result in hard digging when excavating the opencut section, the design should consider minimising the burial depth of the cables as far as practically possible. A means of dewatering using a well point system and / or groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required within excavations.

21. References

1. White Cross Offshore Windfarm Onshore Cable Route Feasibility Assessment, WIE12731-135-R-1-2-4, June 2022
2. White Cross Floating Windfarm Onshore Cable Route Ground Investigation Specification, WIE12731-153-SP-1-2-3, August 2023
3. Design Manual For Roads and Bridges (DMRB), CD 622, Managing Geotechnical Risk.
4. BS EN 1997-1: 2004 General rules (+A1:2013) (incorporating corrigendum February 2009) plus UK NA to BS EN 1997-1: 2004:2007.
5. British Geological Survey (BGS) Sheet 292, which includes parts of sheet 275, 276, 291 & 308, Solid and Drift Edition, 1:50,000 scale, 1977.
6. British Geological Survey (BGS), Geoindex Interactive Map Viewer.
7. Groundsure, Enviro + Geo Report, No. GSIP-2022-12715-10377, May 2022
8. Met Office Average UK rainfall map 1981 to 2010.
9. Zetica Interactive UXO Map, Risk Maps | Zetica UXO.
10. 1st Line Defence, Detailed Unexploded Ordnance Risk Assessment, DA17998-00, June 2023
11. Historic England Interactive Map, Search the List: Map Search | Historic England.
12. Igne, Report on Ground Investigation – White Cross Floating Windfarm Onshore Cable Route. Report Issue: Final. Contract Number: 26508. Dated, 18th April 2024.
13. BS EN ISO 22476-3:2005+A1:2011, Geotechnical Investigation and Testing, Field testing, Standard Penetration Test.
14. BS 1377-9 (1990), Methods of Test for Soils for Civil Engineering Purposes Part 9: In-Situ Tests.
15. BS EN ISO 22475-1:2021 Geotechnical Investigation and Testing. Sampling Methods and Groundwater Measurements.
16. BS8485:2015+A1:2019 Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.
17. CIRIA C665 Assessing risks posed by hazardous ground gases to buildings.
18. Using the Point Load Test to Determine the Uniaxial Compressive Strength of Coal Measure Rock, Rusnak & Mark.
19. The Standard Penetration Test and the Engineering Properties of Glacial Materials, M. Stroud & F. Butler,1975.
20. BRE Special Digest No.1 – Concrete in Aggressive Ground (3rd Edition, 2005).
21. Specification for Highway Works, Manual of Contract Documents, Series 600 Earthworks.
22. BS 6031:2009 Code of Practice for Earthworks.

APPENDICES

A. Constructability Technical Note (by Stockton Drilling Ltd)

WHITE CROSS

TECHNICAL INFORMATION NOTE – Construction & Geotechnical Conditions

Document Code:	**WHX001-FLO-CON-ENV-TEC-0002**	
Contractor Document Number:	110-099-TIN-007	
Version Number:	01	
Date:	20.05.2024	
Prepared by:	Mark Gardner	
Checked by:	Stuart Stephens	
Approved by Client:	Oliver Gardner	

Version Number	Reason for Issue / Major Changes	Date of Change
01	Issued as final	20.05.2024
00	Issued as final	13.05.2024
A1	Issued for client review	26.04.2024

PROJECT LOCATION – White Cross Onshore Cable Route

Construction & Geotechnical Conditions - Technical Information Note

White Cross Onshore Cable Route

May 2024

Client: FLOTATION ENERGY
Client Tender Reference: N/A

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CLIENT	**FLOTATION ENERGY**
DOCUMENT REFERENCE	**110-099-TIN-007**
CONTRACT NO.	**110-099**

APPROVAL STATUS

REV	DATE	PREPARED	REVIEWED	APPROVED
A01	18.03.24	Mark Gardner Engineering Manager	Stuart Stephens Specialist Projects Director	Gearoid O'Connell Director
A02	26.04.24	Mark Gardner Engineering Manager	Stuart Stephens Specialist Project Director	Gearoid O'Connell Director
A03	13.05.24	Mark Gardner Engineering Manager	Stuart Stephens Specialist Project Director	Gearoid O'Connell Director
A04	20.05.24	Mark Gardner Engineering Manager	Stuart Stephens Specialist Project Director	Gearoid O'Connell Director

REVISION STATUS

A01	18.03.24	Internal Issue – For review
A02	26.04.24	DRAFT Issue – For client review
A03	13.05.24	FINAL Issue – Incorporating CLIENT comments
A04	20.05.24	FINAL Issue – Incorporating CLIENT comments

DISCLAIMER

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1 INTRODUCTION

STOCKTON INTRODUCTION

A privately owned Limited company which has been trading for over 17 years in the construction industry, specialising in Oil, Gas and Renewables providing turnkey solutions for onshore and nearshore projects that require trenchless and open cut installations of outfalls and landfalls.
Head office is based in Wakefield (West Yorkshire) and our plant yard is based in Barnsley (South Yorkshire), 10 miles from our Head Office. We operate predominately throughout the UK and Europe.
We permanently employ a highly motivated and technical team of individuals, ensuring we have continuity of competent and experience and technical “know how”.
We have successfully completed many major and complex projects, and have had the opportunity to work alongside some fantastic clients; Shell, Eon, BP, Wessex Water, SSE, Scottish Water and many more.
Complex HDDs, onshore and offshore, drilling distances from 200m to 2000m, pipe diameters from 100mm to 1200mm. Steel and HDPE pipe line installations from 100m to 4000m.
Most recently we successfully completed the landfall installation of the Tolmount gas export pipeline into Easington Gas Terminal, this was installed using a mixture of open cut techniques into the nearshore zone and micro tunnel underneath the terminal.
We are very proud of our Achilles scoring across all scopes averaging over 95%, with a 100% pass-rate in 2017, 2018, 2019 and 2020 demonstrating Stockton’s commitment to Safety, Quality and the Environment. To date in 2021 we have obtained our CHAS Gold and Supply Chain qualifications signifying our continued pledge to our company policies.

DOCUMENT INTRODUCTION

Stockton Drilling Ltd. are asked on a regular basis about the constructability of onshore cable routes and landfalls/outfalls due to our track record and experience of delivering these project scopes. This document provides the reader with a description of the methods, techniques, and programme required to successfully deliver the onshore cable routes and landfalls/outfalls as per the contract.

LIMITATIONS

This document is intended to contain estimate level only data and shall be regarded as indicative based on the information available to date to SDL.

Liaison with local authorities, Governmental, Non-Governmental Organisations and environmental organisations was not carried out as part of this response.

This report was written in March 2024 and should be considered in the light of any changes in legislation, statutory requirement or industry practices that have occurred subsequent to this date.

DEFINITIONS & ABBREVIATIONS

Abbreviation	Description
ACOP	Approved Code of Practice
AOD	Above Ordnance Datum
BTS	British Tunnelling Society
DCA	Drilling Contractors Association
HDD	Horizontal Directional Drilling
JCOP	Joint Code of Practice
SDL	Stockton Drilling Ltd
RLX	Railway crossing
RDX	Road Crossing
ROW	Right of way (Work area usually linear in nature)
TBC	To Be Confirmed

REFERENCES - INDUSTRY GUIDANCE

Key Sources of Information (legislation, Approved Codes of Practice, Guidance Notes, etc)
Health & Safety at Work etc. Act 1974
Management of Health and Safety at Work Regulations 1999
Workplace (Health, Safety and Welfare) Regulations 1992
Construction (Design and Management) Regulations 2015
Control of Noise at Work Regulations 2005
Control of Substances Hazardous to Health Regulations 2002
Electrical Equipment (Safety) Regulations 2016
Health and Safety (Consultation with Employees) Regulations 1996
Health and Safety (First-Aid) Regulations 1981
Health and Safety (Safety Signs and Signals) Regulations 1996
Lifting Operations and Lifting Equipment Regulation 1998 (LOLER)
Manual Handling Regulations 1992
Personal Protective Equipment at Work Regulations 1992
Provision and Use of Work Equipment Regulations 1998 (PUWER)
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)
DCA HDD Technical Guidelines

CLIENT SUPPLIED DATA

Key Sources of Information (Topographical, Geotechnical, Constraints, Materials,)
Geotechnical Report (BH/TH) **FLO-WHI-REP-0100 03-11-2023**

2. PROJECT INTRODUCTION

2.1 PROJECT DETAILS

White Cross Offshore Wind Farm Ltd (WCOWL) are currently developing an offshore wind farm project - White Cross Offshore Wind Farm. Located approximately 50km west of Barnstaple Bay, in the Celtic Sea. A comprehensive description of the project is beyond the scope of this document, but a summary is provided below in order to frame the work elements to which this Construction Execution plan relate. White Cross OWF will be located approximately 50km off the Devon Coast. 7# floating Wind Turbine Generators, that are anchored to the seabed, will comprise the array. The planned maximum capacity of the completed wind farm will be 100MW. Generated power will be exported by means of a subsea cable that will landfall on the Devon coast at Saunton Sands before heading south to a new sub-station to be built at East Yelland. It is understood that the offshore to onshore cable transition will be located on the coast at the Saunton Sands Car park. The on-shore cables will generally be laid in an open cut trench (i.e., excavating down to required depth, installing the duct, and then backfilling), except where there are geographical or environmental constraints that would prohibit open cut trenching. At these locations, it is intended to use trenchless techniques. To support with developing scheme feasibility, as part of Pre-Front End Engineering Design (Pre-FEED) works, WHITE CROSS OFFSHORE WIND FARM LTD (WCOWL) have appointed Stockton Drilling Ltd ('SDL') to complete a Constructability Assessment of the onshore cable route(s) including the trenchless crossings, with particular assessment of prevailing ground conditions, and likely temporary works/structures required for successful installation of the onshore cable.

2.2 SCOPE AND OBJECTIVES

This report is currently issued as final and will be updated with further information following review by the **CLIENT.** Additionally, some information requests may remain outstanding at the date of **DRAFT** issue and will be reported within the Final Version of this report. The scope and objectives of this report are to:

- Develop understanding of likely subsurface conditions from observed and statutory data sources along the length of the onshore cable route, including the landfall section.
- Identify hazards and constraints that may impact on the installation methodology.
- Identify lengths that will require trenchless installation, and lengths which could be open cut.
- Undertake a Preliminary Engineering Appraisal of proposed potential trenchless techniques, including developing Concept Arrangements.
- Summarise likely construction plant, personnel, accommodation, traffic and transport requirements.
- Present Recommendations for further work including a gap analysis of investigations and surveys.

Notwithstanding the foregoing, the primary objective of this review is to present pre-FEED analysis of the cable route in terms of constructability in relation to prevailing geotechnical conditions, such that these can be considered within environmental, landowner and planning approvals to be progressed by the **CLIENT**.
A full FEED study would thereafter be required to develop the proposals.

2.3 LIMITATIONS

The information contained in this report is based on the Ground Investigation report (Onshore cable route) produced by IGNE Ltd/SDL on behalf of WHITE CROSS OFFSHORE WIND FARM LTD (WCOWL). Correspondingly, the conclusions presented in this review, including Conceptual Designs, are based on information available during the course of review and may require to be revised in light of additional information obtained from further investigations to be undertaken at the site.

SDL has endeavoured to assess all information provided to them during this study but makes no guarantees or warranties as to the accuracy or completeness of this information.

Any illustrations presented within this report are for review purposes only and would require development through detailed design with all necessary supporting calculations prior to being considered suitable for construction. Illustrations will however provide an accurate representation of the most likely site layout based on all information available at the time of writing this report, and assuming SDL drilling plant.

Within the report, a number of assumptions are made on construction arrangements including trench dimensions, depths, structure dimensions temporary works requirements. Such assumptions are based on previous experience from similar projects, however, would require to be confirmed by the project FEED. Consequently, SDL can accept no liability for the accuracy of this information.

3. GEOTECHNICAL CONDITIONS

3.1 LANDFALL – SECTION 0 TO SECTION 1 (INTERTIDAL TO OFFSHORE / CAR PARK/GOLFCOURSE)

(*Corresponds to Section 1 & 2 of GIR)

The Landfall for the Offshore cable route is located within the southern portion of the Saunton Sands car park.
The general topography of the work area is level for the car park section, and rolling vegetated sand dunes forming the boundary to the west section of the car park cable route.
The prevailing geology of the Area is SAND (Superficial) with SILTSTONE/MUDSTONE bedrock.
Groundwater observed in BH01 – Water monitoring regime ongoing. Groundwater in close proximity to intertidal zone may be tidally affected, with groundwater rising and falling relative to the tidal flow.

OBSERVED DATA

- Intertidal (SI Shallow seismic survey 2023) revealed Rockhead at approximately -8m below superficial marine deposits.
- BH01 through BH04 – SEC 0 to SEC 1 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 7-12m bgl
- SILTSTONE/MUDSTONE from a depth of 7m bgl (generally 10m+ bgl)
- BH01 (13.19m AOD) from the onshore SI campaign indicates water strike at a depth of 8.8m bgl,
- No TRIAL PIT observed data available. (No TP undertaken within car park area)

CONSTRUCTABILITY

- Landfall Dune crossing propose Piperam duct installation due to prevailing geology (SAND)
- SAMPLE PIPE RAM: See section 6.2
- Drive pit located in west side of car park. Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Reception pit located at toe of dunes on foreshore. Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Opencut section through car park (from dune crossing to HDD entry point for Golf course crossing.)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Slide Rail)

3.1.1 Golf course HDD – SECTION 0 TO SECTION 1 (*Corresponds to Section 2 of GIR)

The crossing of the Golf course for the Offshore cable route is located within the east portion of the Saunton Sands car park. The general topography of the work area is level for the car park section, and rolling vegetated sand dunes forming the boundary to the east section of the car park cable route.

The prevailing geology of the Area is SAND (Superficial) with MUDSTONE/SILTSTONE (bedrock).

No Groundwater observed in BH03 – Casing required to protect HDD Entry from SAND.

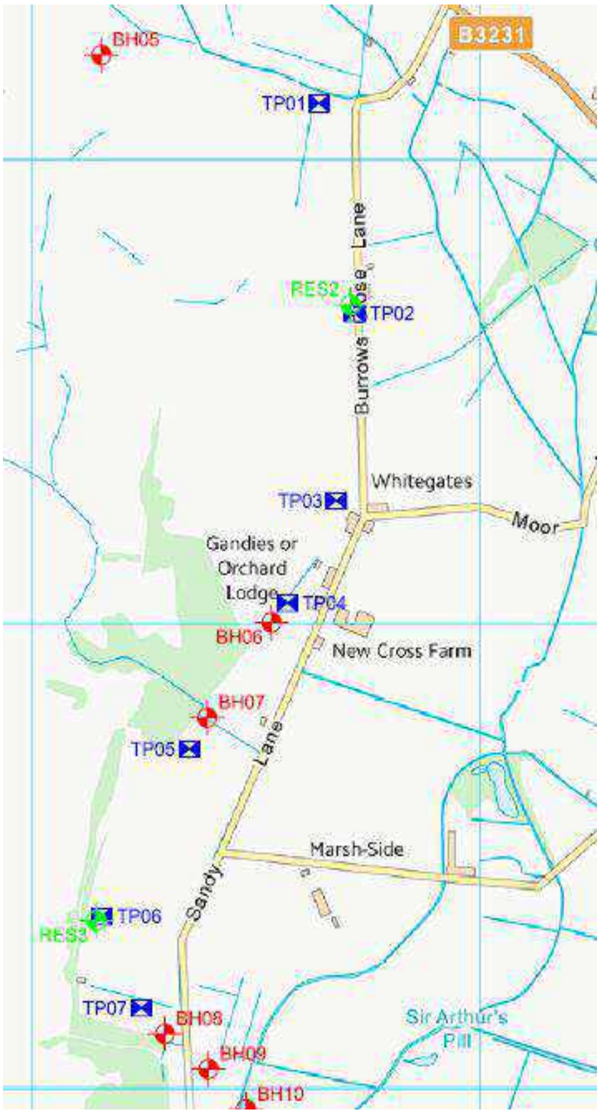
OBSERVED DATA

- BH03 shows SAND to a depth of 7.2m bgl. (HDD ENTRY POINT)
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 7-12m bgl
- BH03 MUDSTONE/SILTSTONE from a depth of 7m bgl (HDD ENTRY POINT)
- No TRIAL PIT observed data available.

CONSTRUCTABILITY

- Golf course crossing propose HDD duct installation due to prevailing geology (SAND) over MUDSTONE/SILTSTONE.
- MUDSTONE/SILTSTONE Bedrock will form a clean, self-supporting bore path.
- SAMPLE HDD: See section 6.6
- Drive pit located in east side of car park. Trench support required due to geology (SAND) Steel casing driven through SAND.
- SAMPLE TRENCH SUPPORT: See section 6.2 (Piperam casing)
- Reception pit located east side of boundary of private track (Golf course).
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Early access required for duct fabrication east of Golf course.
- Public interface in Car park at HDD Entry.

3.2 ONSHORE SECTION 1 TO SECTION 2



(*Corresponds to Section 3 & 4 of GIR)

Section 1 (east of Saunton Sands golf course) through to Section 2 (Sandy Lane) with the cable route located east of Saunton Sands car park and Golf course, running parallel to the west of Sandy Lane until it crosses north of the Car park.

The general topography of the work area is level (flat) with the land mainly laid to seasonal agricultural crops.

The prevailing geology of the Area is SAND, GRAVELS, SILTS, CLAYS (Superficial) with SILTSTONE/MUDSTONE bedrock.

Groundwater observed in BH05 – Water monitoring regime ongoing. Groundwater within trench profile.

OBSERVED DATA

- BH05 through BH09 – SEC 0 to SEC 2 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 6-10m bgl
- SILTSTONE/MUDSTONE from a depth of 6m bgl (generally 10m+ bgl)
- BH05 (12.12m AOD) from the onshore SI campaign indicates water strike at a depth of 1.5m bgl,
- TRIAL PIT observed data confirms BH results

CONSTRUCTABILITY

- SEC 1 to SEC 2 geology along the trench profile is largely SAND.
- SEC 1 to SEC 2 has an observed (2023 initial readings) water table of between 0.15m & 1.5m bgl
- SEC 1 to SEC 2 will require dewatering and water management regimes prior to any excavation.
- SAMPLE Well point dewatering: See section 6.3
- For proposed water and road crossings, propose Piperam duct installation due to prevailing geology (SAND), as open cut in sand without adequate trench support and dewatering (where appropriate), would require large footprint for open excavation (3-5 times more depending upon depth of crossing/trench).
- SAMPLE PIPE RAM: See section 6.2
- Drive and reception pits - Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Majority of infield installation of ducts by opencut trench from RDX1 (Golf course crossing east) to RVX1 (North of river Taw.)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Slide Rail)

3.2.1 Sandy Lane Road crossing (RDX2) – SECTION 1 TO SECTION 2

(*Corresponds to Section 4 of GIR)

Sandy Lane road crossing for the Offshore cable route is located north of Braunton Burrows Sandy Lane car park.
The general topography of the work area is level either side of the road, with the road raised by embankment.
The prevailing geology of the Area is SAND (Superficial) with SILTSTONE/MUDSTONE bedrock.
Groundwater observed in BH09 – Water monitoring regime ongoing.

OBSERVED DATA

- BH08 through BH09 – SEC 1 to SEC 2 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 5-6m bgl
- SILTSTONE/MUDSTONE not encountered to -10m bgl.
- BH09 (6.03m AOD) from the onshore SI campaign indicates water strike at a depth of 3.2m bgl, rising to 0.10m overnight.
- TRIAL PIT observed data confirms BH Results

CONSTRUCTABILITY

- Sandy lane crossing propose Piperam duct installation due to prevailing geology (SAND).
- HDD unsuitable due to large unsupported bores in non-cohesive geology. High risk of bore collapse.
- Opencut not recommended due to geology (SAND), as trench support (Temp works) required to open cut in SAND, along with the re-instatement and long-term maintenance issues for Operations.
- SAMPLE PIPE RAM: See section 6.2
- Drive pit located in the field North east of car park. Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Reception pit located East of Sandy Lane (Car Park). Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Road structure raised on embankment – minimises pit depth to same as infield trench invert – no deep excavations.

3.3 ONSHORE SECTION 2 TO SECTION 3

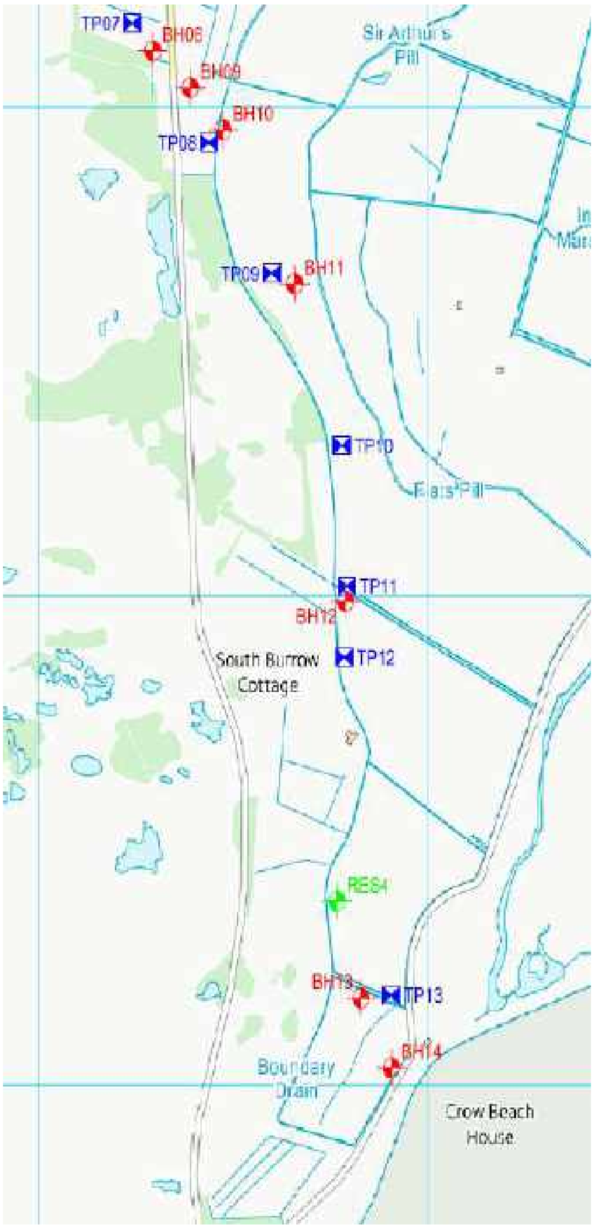
(*Corresponds to Section 4 & 5 of GIR)

Section 2 (south of Sandy Lane) through to Section 3 (south of River Taw) with the cable route located to the east of and running parallel to Boundary drain until it crosses the river Taw.

The general topography of the work area is level (flat) with the land mainly laid to grazing/meadow.

The prevailing geology of the Area is SAND, GRAVELS, SILTS, CLAYS (Superficial) with SILTSTONE/MUDSTONE bedrock.

Groundwater observed in BH09 – Water monitoring regime ongoing. Groundwater within trench profile.



OBSERVED DATA

- BH10 through BH14 – SEC 2 to SEC 3 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 4-7m bgl
- SILTSTONE/MUDSTONE from a depth of 4m bgl (generally 7m+ bgl)
- BH09 (6.03m AOD) from the onshore SI campaign indicates water strike at a depth of 0.15m bgl,
- BH14 (3.76m AOD) from the onshore SI campaign indicates water strike at a depth of 0.77m bgl,
- TRIAL PIT observed data confirms BH results

CONSTRUCTABILITY

- SEC 2 to SEC 3 geology along the trench profile is largely SAND, with discrete lenses of GRAVELS, SILTS, CLAYS.
- SEC 2 to SEC 3 has an observed (2023 initial readings) water table of between 0.15m & 0.77m bgl
- SEC 2 to SEC 3 will require dewatering and water management regimes prior to any excavation.
- For proposed water and road crossings, propose Piperam duct installation due to prevailing geology (SAND)
- SAMPLE PIPE RAM: See section 6.2
- Drive and reception pits - Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Majority of infield installation of ducts by opencut trench from RDX1 (Golf course crossing east) to RVX1 (North of river Taw.)
- Minor 3rd Party assets/services opencut trench from RDX1 (Golf course crossing east) to RVX1 (North bank of river Taw.)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Slide Rail)

3.3.1 RIVER TAW HDD – SECTION 3

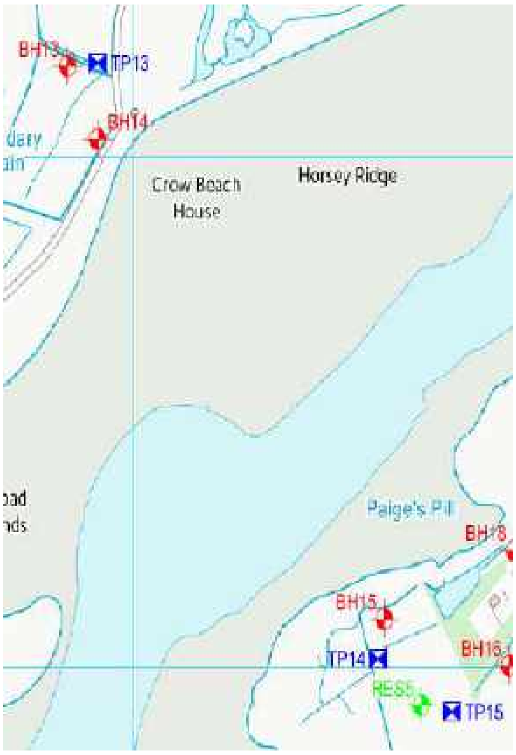
(*Corresponds to Section 6 of GIR)

The river Taw crossing for the Offshore cable route is located north of the crow park car park.

The general topography of the work area is level with the river showing a distinct channel to the north bank.

The prevailing geology of the Area is SAND (Superficial) with SILTSTONE/MUDSTONE bedrock.

Groundwater not observed in BH013 & 14 – Water monitoring regime ongoing. Groundwater in close proximity to intertidal zone may be tidally affected, with groundwater rising and falling relative to the tidal flow.



OBSERVED DATA

- BH10 through BH14 – SEC 2 to SEC 3 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 4-7m bgl
- SILTSTONE/MUDSTONE from a depth of 4m bgl (generally 7m+ bgl)
- BH15 (3.95m AOD) from the onshore SI campaign indicates water strike at a depth of 0.35m - 0.59m bgl,

  BH17 (4.72m AOD) from the onshore SI campaign indicates water strike at a depth of 0.42m - 1.43m bgl,

CONSTRUCTABILITY

- River Taw crossing propose HDD duct installation due to prevailing geology MUDSTONE/SILTSTONE.
- MUDSTONE/SILTSTONE Bedrock will form a clean, self-supporting bore path.
- SAMPLE HDD: See section 6.6
- Drive pit located north of crow park car park.
- Trench support required due to geology (SAND) Steel casing driven through SAND @ HDD Entry
- SAMPLE TRENCH SUPPORT: See section 6.2 (Piperam casing)
- Reception pit located north of crow park car park.
- SAMPLE TRENCH SUPPORT: See section 6.1 (Slide Rail)
- Early access required for duct fabrication north of river Taw.
- Public interface in Car park at HDD Entry.
- SAMPLE HDD: See section 6.6

3.4 ONSHORE SECTION 3

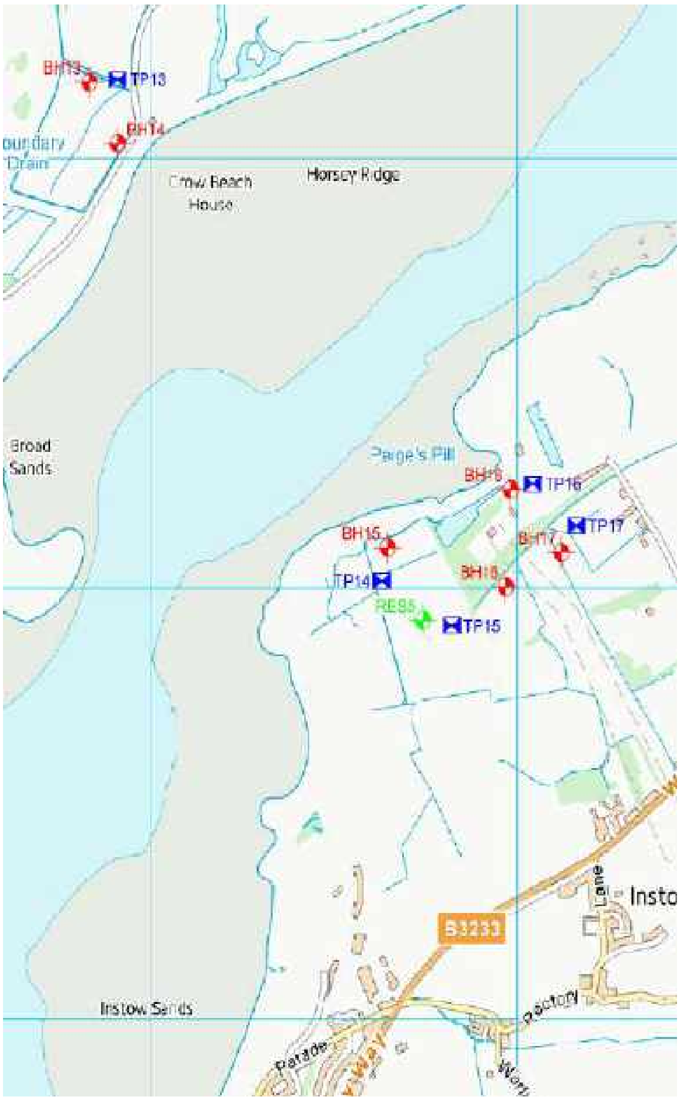
(*Corresponds to Section 5, 6 & 7 of GIR)

Section 3 (north of RVX 1 river Taw) through to Yelland substation (south of River Taw) with the cable route located to the west and south of Yelland substation, crossing the tarka trail, then running parallel until it terminates at the proposed substation, with a short spur connection into the existing National Grid substation to the north.

The general topography of the work area is level (flat) with the land mainly laid to grazing/arable.

The prevailing geology of the Area is SAND, GRAVELS, SILTS, CLAYS (Superficial) with SILTSTONE/MUDSTONE bedrock.

Groundwater observed in BH15 & BH17 – Water monitoring regime ongoing. Groundwater within trench profile.



OBSERVED DATA

- BH14 through BH17 – SEC 2 to SEC 3 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 4-7m bgl
- SILTSTONE/MUDSTONE from a depth of 3m bgl (generally 7m+ bgl)
- BH15 (3.95m AOD) from the onshore SI campaign indicates water strike at a depth of 0.35m - 0.59m bgl,
- BH17 (4.72m AOD) from the onshore SI campaign indicates water strike at a depth of 0.42m - 1.43m bgl,

CONSTRUCTABILITY

- SEC 3 geology along the trench profile is largely SAND, with discrete lenses of GRAVELS, SILTS, CLAYS.
- SEC 3 has an observed (2023 initial readings) water table of between 0.35m & 1.43 m bgl
- SEC 3 will require dewatering and water management regimes prior to any excavation.
- For proposed water and road crossings, propose Piperam duct installation due to prevailing geology (SAND)
- SAMPLE PIPE RAM: See section 6.2
- Drive and reception pits - Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Opencut sections from RVX1 (North bank of river Taw.) to Yelland Substation.
- Opencut 3rd Party assets/services from RVX1 (North bank of river Taw.) to Yelland Substation.
- SAMPLE TRENCH SUPPORT: See section 6.2 (Slide Rail)

3.4.1 TARKA TRAIL – SECTION 3

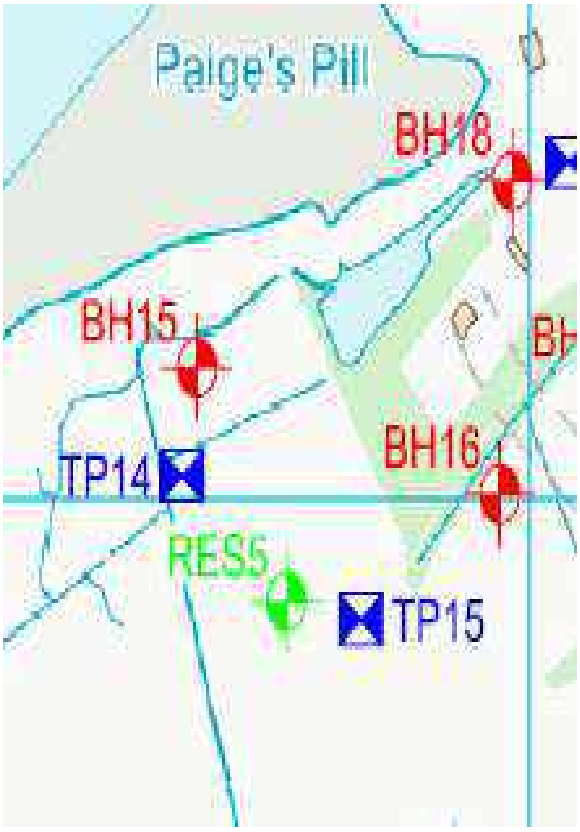
(*Corresponds to Section 7 of GIR)

The Tarka Trail crossing for the Offshore cable route is located east of East Yelland Substation.

The general topography of the work area is level (flat) with the land mainly laid to grazing/arable.

The prevailing geology of the Area is SAND, GRAVELS, SILTS, CLAYS (Superficial) with SILTSTONE/MUDSTONE bedrock.

Groundwater observed in BH15 & BH17 – Water monitoring regime ongoing. Groundwater within trench profile.



OBSERVED DATA

- BH15 through BH16 –SEC 3 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 4-7m bgl
- SILTSTONE/MUDSTONE from a depth of 4m bgl
- BH15 (3.95m AOD) from the onshore SI campaign indicates water strike at a depth of 0.35m - 0.59m bgl,
- BH17 (4.72m AOD) from the onshore SI campaign indicates water strike at a depth of 0.42m - 1.43m bgl,

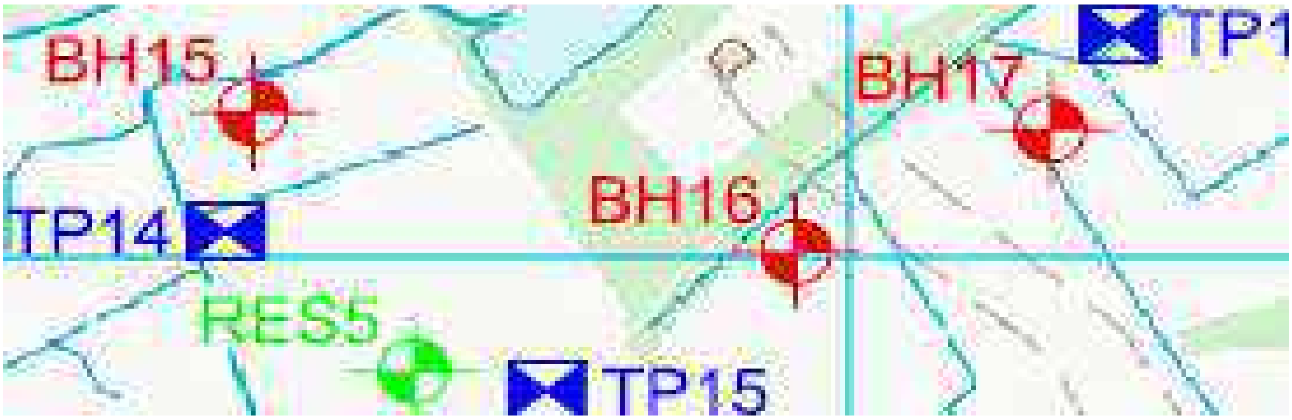
CONSTRUCTABILITY

- Tarka Trail crossing propose Piperam duct installation due to prevailing geology (SAND).
- HDD unsuitable due to large unsupported bores in non-cohesive geology. High risk of bore collapse.
- Opencut not recommended due to geology (SAND), as trench support (Temp works) required to open cut in SAND, along with the re-instatement and long-term maintenance issues for Operations.
- SAMPLE PIPE RAM: See section 6.2
- Drive pit located in the field North of Tarka Trail. Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Reception pit located south of Tarka Trail. Trench support required due to geology (SAND)
- SAMPLE TRENCH SUPPORT: See section 6.1 (Cofferdam/Sheet piled pit)
- Road structure raised on embankment – minimises pit depth to same as infield trench invert – no deep excavations.

3.4.2 132kVA ELECTRIC OVERHEAD CABLE CROSSING – SECTION 3

(*Corresponds to Section 7 of GIR)

The 132kVA crossing for the Offshore cable route is located south of East Yelland Substation.
The general topography of the work area is level (flat) with the land mainly laid to grazing/arable.
The prevailing geology of the Area is SAND, GRAVELS, SILTS, CLAYS (Superficial) with SILTSTONE/MUDSTONE bedrock.
Groundwater observed in BH15 & BH17 – Water monitoring regime ongoing. Groundwater within trench profile.



OBSERVED DATA

- BH16 through BH17 –SEC 3 generally illustrate consistency of geology with the following constituents:
- SAND with discrete lenses of GRAVELS, SILTS, CLAYS, to a depth of 4-7m bgl
- SILTSTONE/MUDSTONE from a depth of 4m bgl
- BH16 – 17 – No groundwater recorded.

CONSTRUCTABILITY

- 132kVA crossing propose HDD duct installation due to prevailing geology (MUDSTONE/SILTSTONE).
- MUDSTONE/SILTSTONE Bedrock will form a clean, self-supporting bore path.
- SAMPLE HDD: See section 6.6
- Drive pit located east of overhead cables, exit pit west of overhead cables to utilise ROW for duct preparation.
- Open cut exit pit due to geology (CLAY).
- Opencut not recommended due to geology (CLAY/SAND), as trench support (Temp works) required to open cut in CLAY/SAND, constructing below large overhead electric cables not recommended.
- Pipe ram installation of ducts in SAND strata possible, but not possible too steer with accuracy over this distance.

4. WATER MANAGEMENT

4.1 RISKS AND MITIGATIONS

The below notes highlight the possible construction constraints:

- Possible programme risk for works in SEC 2, south of the Sandy Lane crossing (RDX2) due to medium flood risk.
- High water table expected year-round, as located in medium risk flood area, with SAND/GRAVEL prevailing geology.
- Dewatering expected for all areas from RDX1 through to Substation, excluding the HDD Crossings (Golf course + River Taw)
- Dewatering and water management plan to be developed. Direct liaison with landowners and IDB recommended.
- Programmed to run concurrent HDD operations at Golf course crossing and River crossing to mitigate programme risk.
- High ground water horizon, non-cohesive SAND and GRAVEL, trench support for excavation (temporary works) all require to be considered holistically to provide engineering for value.
- Horizons and lenses of Alluvium observed in various Trial pits is a difficult, if not impossible medium to dewater as the fine-grained alluvial silts bind with the water to make a material that behaves much the same as toothpaste. Contact with water wether rain, flood water or ground water, begins an almost immediate process of structural degradation. Where required to be excavated without the use of trench support (open cut) then the use of the excavator bucket to create terraces or steps in the trench side wall appears to provide a level of stability from immediate slump. Time is of the essence when creating a trench without temporary support in this material.
- Where Alluvial horizons are within the trench profile, further consideration should be given to placement of heavy equipment and lifting appliances, due to the weak nature of the underlying Alluvium, which over a short period of time can compress and deform causing the equipment to sink, especially with a high-water table in close contact.
- Temporary trackway for access to Section 2 could be considered in place of a stone haul road, as it would provide a running track that would have little impact on the flood risk zone, and could be secured against flood events.

Typical EA Flood risk map (Rivers and Sea only)

THIS SECTION SHOULD BE READ IN CONJUNCTION WITH: The White Cross Offshore Windfarm_Environmental Statement *Chapter 14: Water Resources and Flood Risk, Appendix 14.C: Flood Risk Assessment*
Which contains further detailed flood risk assessment and mitigation proposals.

5. CONSIDERATIONS & RECOMMENDATIONS

5.1 CONSIDERATIONS

- Cable plough intertidal installation Shallow seismic results indicate 100-200mm of mobile marine sediment overlying Stiff marine sediments to 2.5m bgl, followed by Dense, compacted marine deposits to 6m bgl, which provides an excellent geological horizon for the cable plough to install to the designed depth (2-3m approximately)
- Consider utilising the Trenchless landfall drive pit located at the west boundary of the car park as the location for the Transition joint bay (TJB), as this will economise on cost and programme.
- Temporary works for drive pit could be absorbed into permanent works of the TJB.
- The entire right of way (work site) should be available relatively early due to the nature of the free draining soil (SAND). Subject to prevailing GW levels at proposed site mobilisation window.
- Where possible, surplus excavated material generated through construction activities, deemed suitable for re-use will be recycled and reused across the project as required.
- During detailed design, look to decrease the Trench cut profile as much as possible to minimise excavation. Due to geological conditions, trench support and dewatering will be required for SEC 2 to SEC 3.
- With SEC2 south at the HDD exit point for the river TAW crossing, north of the river Taw, the HDD strings will be strung and fabricated along the proposed right of way (ROW – Works area) in preparation for pull back into the Bore trajectory opened by the HDD driven from the south side of the river Taw. Taw crossing is currently programmed to avoid winter working as much as possible.
- May be possible to reduce project footprint by use of Duct plough technology available, reducing trench excavation by almost 80%. Significant reduction in spoil handling, space requirements, backfill, haul away, and re-instatement.
- SAMPLE DUCT PLOUGH: See section 6.3

5.2 RECOMMENDATIONS

The below notes are the main considerations which could be further developed during FEED/detailed design:
Please note that the recommendations below do not negate the constructability detail contained within this report.

- Produce a Geotechnical profile of route from offshore Landfall limit to Yelland substation, showing geology horizons, and all relevant crossings and Intersect points (IPs) along the route.
- Produce a Ground water profile of route from offshore Landfall limit to Yelland substation, showing geology horizons, and all relevant crossings and Intersect points (IPs) along the route. Groundwater readings to be plotted to time so as to be able to visualise the groundwater regime, ebb and flow over the construction season so as to inform dewatering activities.
- Develop a Cable configuration to inform civils design (Trefoil/Single/OD?)
- Develop a Water management plan for all construction activities to identify discharge activities and locations.
- Develop FEED Level design for proposed Landfall (Currently Piperam dune crossing + cable plough intertidal zone)
- Develop FEED Level designs for all proposed crossings along the route (Major and Minor).
- Develop FEED Level designs for Golf course and river Taw crossings. High abrasivity at HDD entry south of river Taw.
- Develop FEED Level designs for Trench profile, Transition joint bay, Joint bays, Link boxes, Ducting, Drainage & haul road
- Develop FEED Level designs for all proposed working areas along the route (Compounds and ROW)
- Develop HAZID/HAZCON/HAZOP workshops.
- Develop FEED Level construction programme & cost estimates

6. ILLUSTRATIONS & FURTHER INFORMATION

6.1 TEMPORARY WORKS - CONSTRUCTION

Typical Sheet piled pit (Drive pit), pre-excavation.

Typical slide rail trench support.

Typical well point dewatering.

6.2 LANDFALL (DUNES CROSSING) - CONSTRUCTION

Typical piperam execution for a road crossing (same as crossing the dunes) note difference in duct diameter.


6.3 LANDFALL (CABLE PLOUGH INTERTIDAL) - CONSTRUCTION

Typical cable plough equipment for an intertidal open cut installation.


6.4 ONSHORE CABLE INSTALLATION - CONSTRUCTION

Typical duct plough execution for onshore open cut installation.

Typical "V" Bucket excavator and trench execution for onshore open cut installation.

Typical temporary trackway installation for onshore open cut installation.

6.5 ONSHORE CIVILS - CONSTRUCTION

Typical Transition joint bay for onshore open cut installation. (Note pre cast and delivered)

Typical joint bay for onshore open cut installation. (Note pre cast and delivered)

6.6 HDD (HORIZONTAL DIRECTIONAL DRILL) - CONSTRUCTION

Typical HDD Equipment for onshore Trenchless installation.

B. Ground Investigation Factual Report, FLO-WHI-REP-0100_00 & Additional Groundwater Monitoring Sheets

Appendix B: Ground Investigation Factual Report (April 2024)

is presented in:

Annex 1: Onshore Ground Investigation Factual Report of **Appendix T: Onshore Ground Investigation Interpretative Report** of the **ES Addendum**.

Additional Groundwater Monitoring Sheets

Location	Date	Time	Groundwater Depth bgl (m)	Tide Height (Appledore)	Low Tide (am)	High Tide (am)	Low Tide (pm)	High Tide (pm)	Notes
BH1	25/03/2024	15:38:00	8.234	3.94	00:19:00	06:02:00	12:41:00	18:13:00	
BH05	25/03/2024	16:43:00	0.442	5.72	00:19:00	06:02:00	12:41:00	18:13:00	
BH09	25/03/2024	17:15:00	-0.155	6.43	00:19:00	06:02:00	12:41:00	18:13:00	Borehole exhibited artesian conditions. Substantial outflow from borehole.
BH14	26/03/2024	12:26:00	0.67	0.72	00:49:00	06:29:00	13:10:00	18:41:00	
BH15	26/03/2024	10:16:00	0.163	2.97	00:49:00	06:29:00	13:10:00	18:41:00	Field water logged. Gate code to second gate did not work and substantial walk in.
BH17	26/03/2024	11:30:00	N/A	N/A	N/A	N/A	N/A	N/A	Not accessible - Gate Locked

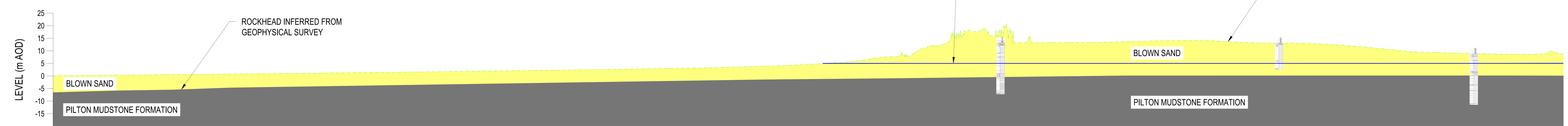
Location	Date	Time	Depth measured (m)	Cover height (m)	Depth bgl (m)	Tide Height (Appledore) m	Low Tide (am)
BH1	25/04/2024	14:30:00	8.19	0	8.19	1.49	01:52:00
BH05	25/04/2024	15:20:00	0.945	0.12	0.825	3	01:52:00
BH09	25/04/2024	15:44:00	0	0.155	-0.155	3.45	01:52:00
BH14	25/04/2024	16:23:00	1.115	0.26	0.855	4.71	01:52:00
BH15	26/04/2024	09:58:00	0.653	0.3	0.353	4.14	02:17:00
BH17	26/04/2024	10:40:00	0.71	0.2	0.51	3.03	02:17:00
BH09	26/04/2024	11:40:00	0	0.155	-0.155	1.89	02:17:00

High Tide (am)	Low Tide (pm)	High Tide (pm)	Notes
07:28:00	14:07:00	19:43:00	
07:28:00	14:07:00	20:43:00	
07:28:00	14:07:00	21:43:00	Inside cover dry. Water frose on removing bung to wtihin 1cm of top of cover and stopped.
07:28:00	14:07:00	22:43:00	
07:58:00	14:25:00	20:14:00	
07:58:00	14:25:00	20:14:00	Field very boggy. Substantial algae around borehole base.
07:58:00	14:25:00	20:14:00	Water rose on removing bung. Stopped level with cover.

C. Ground Model Drawings

OFFSHORE

ONSHORE



CHAINAGE (m)	0+000	0+010	0+020	0+030	0+040	0+050	0+060	0+070	0+080	0+090	0+100
EXISTING LEVELS (m AOD)	0.068	0.166	0.254	0.365	0.450	0.533	0.640	0.746	0.850	0.971	1.074
ROCKHEAD LEVEL (m AOD)	-6.633	-6.356	-6.079	-5.850	-5.692	-5.483	-5.125	-4.767	-4.611	-4.459	-4.306
DEPTH TO ROCKHEAD (m)	6.701	6.522	6.333	6.216	6.142	6.016	5.764	5.513	5.461	5.429	5.380

CHAINAGE (m)	0+110	0+120	0+130	0+140	0+150	0+160	0+170	0+180	0+190	0+200
EXISTING LEVELS (m AOD)	1.186	1.296	1.400	1.521	1.645	1.769	1.879	2.009	2.152	2.283
ROCKHEAD LEVEL (m AOD)	-4.154	-4.001	-3.848	-3.696	-3.543	-3.391	-3.238	-3.086	-2.933	-2.781
DEPTH TO ROCKHEAD (m)	5.339	5.297	5.248	5.217	5.188	5.160	5.117	5.095	5.085	5.063

CHAINAGE (m)	0+210	0+220	0+230	0+240	0+250	0+260	0+270	0+280	0+290	0+300
EXISTING LEVELS (m AOD)	2.454	2.596	2.739	2.888	3.052	3.254	3.486	3.773	4.100	4.566
ROCKHEAD LEVEL (m AOD)	-2.628	-2.475	-2.323	-2.170	-2.018	-1.865	-1.713	-1.560	-1.452	-1.360
DEPTH TO ROCKHEAD (m)	5.082	5.071	5.062	5.059	5.070	5.119	5.199	5.333	5.552	5.925

CHAINAGE (m)	0+310	0+320	0+330	0+340	0+350	0+360	0+370	0+380	0+390	0+400
EXISTING LEVELS (m AOD)	5.181	6.046	7.469	7.846	12.232	16.040	18.774	18.526	13.187	13.235
ROCKHEAD LEVEL (m AOD)	-1.267	-1.174	-1.082	-0.967	-0.850	-0.733	-0.617	-0.500	-0.383	-0.266
DEPTH TO ROCKHEAD (m)	6.448	7.220	8.550	8.813	13.082	16.773	19.391	19.025	13.570	13.502

CHAINAGE (m)	0+410	0+420	0+430	0+440	0+450	0+460	0+470	0+480	0+490	0+500
EXISTING LEVELS (m AOD)	13.295	13.421	13.706	13.970	14.105	14.000	13.455	13.086	13.011	12.865
ROCKHEAD LEVEL (m AOD)	-0.150	-0.033	0.037	0.039	0.040	0.041	0.042	0.043	0.044	0.046
DEPTH TO ROCKHEAD (m)	13.445	13.454	13.668	13.932	14.065	13.960	13.413	13.042	12.966	12.819

CHAINAGE (m)	0+510	0+520	0+530	0+540	0+550	0+560	0+570	0+580	0+590	0+600
EXISTING LEVELS (m AOD)	12.377	11.572	10.645	9.622	9.292	8.964	8.729	8.659	8.663	8.571
ROCKHEAD LEVEL (m AOD)	0.047	0.048	0.049	0.050	0.051	0.053	0.054	0.050	0.031	0.013
DEPTH TO ROCKHEAD (m)	12.330	11.525	10.596	9.572	9.240	8.911	8.675	8.609	8.631	8.558

GENERAL NOTES

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Rev	Date	Description	By	Chk
P01	04.04.24	ISSUED FOR INFORMATION	LP	CG

Amendments

Project
WHITE CROSS WINDFARM

Title
BEACH LANDFALL & DUNES
GEOLOGICAL CROSS SECTION

Client
FLOTATION ENERGY LTD

Broxden House Broxden Business Park Lamberkine Drive Perth PH1 1RA
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mail@watermangroup.com www.watermangroup.com

Suitability
INFORMATION S2

Designed By LP	Director CG	Waterman Ref WIE12731-153
Drawn By LP	Date APRIL 24	Scales @ A0 1:750
Stockton Checker	Stockton Approver	Date

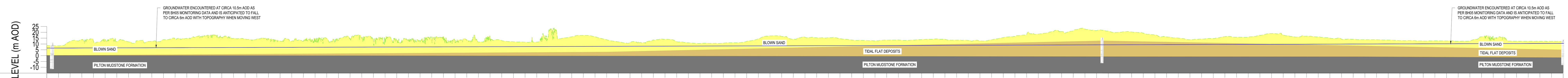
Project - Originator - Volume - Level - Type - Role - Number | Revision
12731-153-WIE-ZZ-XX-DR-C-80101 | P01

File Path
N:\Projects\WIE12731_Stockton_HDD\153 - White Cross Phase 2\7_CAD\80\

A0-Wat-SDL-S, GI Data in C3D, SDL_WC_CL_001_revB02 (CENTRELINE)

SANUTON SANDS BEACH CAR PARK ←

BRAUNTON →



CHAINAGE (m)	EXISTING LEVELS (m AOD)	ROCKHEAD LEVEL (m AOD)	DEPTH TO ROCKHEAD (m)
0+000	8.642	0.111	8.532
0+010	8.442	0.101	8.341
0+020	12.270	0.090	12.179
0+030	13.611	0.080	13.530
0+040	12.435	0.070	12.365
0+050	13.701	0.060	13.642
0+060	12.144	0.050	12.094
0+070	11.883	0.039	11.843
0+080	12.953	0.029	12.924
0+090	12.421	0.019	12.402
0+100	13.758	0.009	13.750
0+110	13.757	-0.002	13.758
0+120	14.813	-0.012	14.825
0+130	16.802	-0.022	16.824
0+140	17.164	-0.032	17.196
0+150	15.454	-0.042	15.496
0+160	14.903	-0.053	14.956
0+170	14.292	-0.063	14.355
0+180	14.280	-0.073	14.353
0+190	14.720	-0.083	14.803
0+200	12.536	-0.094	12.630
0+210	12.516	-0.104	12.619
0+220	12.683	-0.114	12.797
0+230	14.670	-0.124	14.794
0+240	14.623	-0.134	14.758
0+250	13.054	-0.145	13.199
0+260	14.714	-0.155	14.869
0+270	14.970	-0.165	15.135
0+280	13.368	-0.175	13.543
0+290	12.908	-0.187	13.095
0+300	13.316	-0.199	13.515
0+310	12.592	-0.212	12.803
0+320	13.124	-0.224	13.348
0+330	14.406	-0.236	14.642
0+340	12.750	-0.249	12.999
0+350	11.347	-0.261	11.608
0+360	13.636	-0.273	13.910
0+370	11.684	-0.286	11.970
0+380	14.983	-0.298	15.281
0+390	12.909	-0.310	13.219
0+400	11.902	-0.323	12.224
0+410	11.552	-0.335	11.887
0+420	11.614	-0.347	11.962
0+430	18.923	-0.359	19.282
0+440	14.495	-0.372	14.866
0+450	16.214	-0.384	16.598
0+460	17.375	-0.396	17.771
0+470	16.223	-0.409	16.631
0+480	13.643	-0.421	14.064
0+490	11.877	-0.433	12.311
0+500	11.326	-0.446	11.772
0+510	10.885	-0.458	11.343
0+520	13.455	-0.470	13.925
0+530	13.944	-0.483	14.427
0+540	12.002	-0.495	12.497
0+550	11.036	-0.507	11.543
0+560	10.493	-0.520	11.012
0+570	10.562	-0.532	11.094
0+580	10.750	-0.544	11.294
0+590	11.100	-0.556	11.657
0+600	12.340	-0.569	12.909
0+610	14.391	-0.581	14.972
0+620	16.978	-0.593	17.572
0+630	16.551	-0.606	17.157
0+640	14.103	-0.618	14.721
0+650	15.743	-0.630	16.374
0+660	15.419	-0.643	16.062
0+670	15.412	-0.655	16.067
0+680	14.591	-0.667	15.258
0+690	13.465	-0.680	14.145
0+700	13.111	-0.692	13.803
0+710	12.702	-0.704	13.406
0+720	13.270	-0.717	13.987
0+730	13.495	-0.729	14.224
0+740	13.245	-0.741	13.986
0+750	13.828	-0.753	14.582
0+760	14.179	-0.766	14.944
0+770	14.042	-0.778	14.820
0+780	13.318	-0.790	14.108
0+790	13.004	-0.803	13.807
0+800	12.627	-0.815	13.442
0+810	13.582	-0.827	14.409
0+820	15.540	-0.840	16.380
0+830	16.561	-0.852	17.413
0+840	18.181	-0.864	19.045
0+850	18.519	-0.877	19.395
0+860	20.391	-0.889	21.280
0+870	20.691	-0.901	21.592
0+880	21.371	-0.914	22.284
0+890	22.808	-0.926	23.734
0+900	21.523	-0.938	22.461
0+910	21.046	-0.950	21.997
0+920	20.151	-0.963	21.114
0+930	20.323	-0.973	21.295
0+940	19.402	-0.975	20.377
0+950	17.790	-0.977	18.767
0+960	16.097	-0.979	17.076
0+970	15.192	-0.982	16.174
0+980	13.634	-0.984	14.617
0+990	14.249	-0.986	15.235
1+000	14.745	-0.988	15.733
1+010	16.323	-0.990	17.313
1+020	15.850	-0.992	16.842
1+030	15.934	-0.994	16.928
1+040	17.485	-0.997	18.482
1+050	18.952	-0.999	19.951
1+060	17.678	-1.001	18.679
1+070	16.029	-1.003	17.032
1+080	16.795	-1.005	17.800
1+090	16.041	-1.007	17.049
1+100	15.058	-1.009	16.067
1+110	14.216	-1.012	15.228
1+120	14.104	-1.014	15.118
1+130	13.696	-1.040	14.737
1+140	13.673	-1.084	14.757
1+150	13.418	-1.128	14.546
1+160	12.944	-1.172	14.116
1+170	12.914	-1.216	14.130
1+180	12.622	-1.260	13.882
1+190	12.770	-1.304	14.073
1+200	12.625	-1.348	13.973
1+210	12.410	-1.392	13.802
1+220	12.605	-1.436	14.041
1+230	16.308	-1.479	17.788
1+240	13.929	-1.523	15.452
1+250	14.509	-1.567	16.077
1+260	12.504	-1.611	14.116
1+270	12.406	-1.655	14.061
1+280	12.355	-1.699	14.054
1+290	12.324	-1.743	14.067
1+300	12.529	-1.787	14.315

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Rev	Date	Description	By	Chk
P01	04.04.24	ISSUED FOR INFORMATION	LP	CG

Amendments

Project

WHITE CROSS WINDFARM

Title

GOLF COURSE CROSSING GEOLOGICAL CROSS SECTION

Client

FLOTATION ENERGY LTD

waterman
STOCKTON

Broxden House Broxden Business Park Lamberkine Drive Perth PH1 1RA
t 01738 449 801
mail@watermangroup.com www.watermangroup.com

Suitability: INFORMATION S2

Designed By	Director	Waterman Ref
LP	CG	WIE12731-153
Drawn By	Date	Scales @ A0
LP	APRIL 24	1:1000
Stockton Checker	Stockton Approver	Date

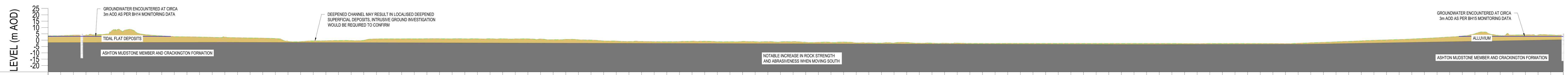
Project - Originator - Volume - Level - Type - Role - Number	Revision
12731-153-WIE-ZZ-XX-DR-C-80102	P01

File Path N:\Projects\WIE12731_Stockton_HDD\153 - White Cross Phase 2\7_CAD\80\

A0-Wat-SDL-S, GI Data in C3D

NORTH

SUBSTATION (SOUTH)



CHAINAGE (m)	0+000	0+010	0+020	0+030	0+040	0+050	0+060	0+070	0+080	0+090	0+100
EXISTING LEVELS (m AOD)	3.451	3.552	3.979	4.077	4.401	6.847	7.440	5.911	4.096	3.401	2.806
ROCKHEAD LEVEL (m AOD)	-1.953	-1.936	-1.918	-1.901	-1.883	-1.866	-1.848	-1.831	-1.813	-1.796	-1.779
DEPTH TO ROCKHEAD (m)	5.404	5.487	5.898	5.978	6.285	8.712	9.288	7.742	5.910	5.197	4.584

CHAINAGE (m)	0+110	0+120	0+130	0+140	0+150	0+160	0+170	0+180	0+190	0+200
EXISTING LEVELS (m AOD)	2.659	2.467	2.266	2.275	1.953	1.774	1.603	1.289	-0.960	-1.111
ROCKHEAD LEVEL (m AOD)	-1.761	-1.744	-1.726	-1.715	-1.741	-1.766	-1.792	-1.817	-1.842	-1.868
DEPTH TO ROCKHEAD (m)	4.420	4.211	3.992	3.990	3.694	3.540	3.395	3.106	0.882	0.757

CHAINAGE (m)	0+210	0+220	0+230	0+240	0+250	0+260	0+270	0+280	0+290	0+300
EXISTING LEVELS (m AOD)	-0.573	-0.448	-0.293	-0.338	-0.155	0.983	1.064	1.010	1.047	1.162
ROCKHEAD LEVEL (m AOD)	-1.893	-1.918	-1.944	-1.969	-1.994	-2.020	-2.045	-2.070	-2.096	-2.121
DEPTH TO ROCKHEAD (m)	1.320	1.471	1.651	1.631	1.839	3.003	3.109	3.080	3.143	3.283

CHAINAGE (m)	0+310	0+320	0+330	0+340	0+350	0+360	0+370	0+380	0+390	0+400
EXISTING LEVELS (m AOD)	1.158	1.046	1.050	1.051	1.099	1.086	0.995	1.004	0.904	0.377
ROCKHEAD LEVEL (m AOD)	-2.146	-2.172	-2.197	-2.222	-2.248	-2.273	-2.298	-2.324	-2.349	-2.374
DEPTH TO ROCKHEAD (m)	3.305	3.218	3.247	3.273	3.347	3.359	3.294	3.328	3.253	2.752

CHAINAGE (m)	0+410	0+420	0+430	0+440	0+450	0+460	0+470	0+480	0+490	0+500
EXISTING LEVELS (m AOD)	0.660	0.306	0.115	-0.605	-0.692	-1.026	-1.008	-1.180	-1.189	-1.111
ROCKHEAD LEVEL (m AOD)	-2.400	-2.425	-2.450	-2.476	-2.501	-2.526	-2.552	-2.577	-2.602	-2.628
DEPTH TO ROCKHEAD (m)	3.060	2.731	2.565	1.871	1.809	1.500	1.544	1.397	1.413	1.516

CHAINAGE (m)	0+510	0+520	0+530	0+540	0+550	0+560	0+570	0+580	0+590	0+600
EXISTING LEVELS (m AOD)	-0.814	-0.799	-1.240	-1.250	-1.001	-1.311	-1.198	-1.316	-1.119	-1.703
ROCKHEAD LEVEL (m AOD)	-2.653	-2.679	-2.704	-2.729	-2.755	-2.780	-2.805	-2.831	-2.856	-2.881
DEPTH TO ROCKHEAD (m)	1.839	1.880	1.464	1.479	1.753	1.469	1.607	1.515	1.737	1.179

CHAINAGE (m)	0+610	0+620	0+630	0+640	0+650	0+660	0+670	0+680	0+690	0+700
EXISTING LEVELS (m AOD)	-1.720	-1.806	-1.463	-2.151	-2.097	-2.256	-2.189	-1.837	-2.362	-2.372
ROCKHEAD LEVEL (m AOD)	-2.907	-2.930	-2.951	-2.972	-2.994	-3.015	-3.036	-3.057	-3.078	-3.099
DEPTH TO ROCKHEAD (m)	1.186	1.125	1.488	0.822	0.897	0.758	0.847	1.220	0.715	0.727

CHAINAGE (m)	0+710	0+720	0+730	0+740	0+750	0+760	0+770	0+780	0+790	0+800
EXISTING LEVELS (m AOD)	-2.451	-2.307	-2.493	-2.587	-2.583	-2.521	-2.533	-2.535	-2.535	-2.540
ROCKHEAD LEVEL (m AOD)	-3.120	-3.141	-3.162	-3.183	-3.204	-3.225	-3.246	-3.268	-3.289	-3.310
DEPTH TO ROCKHEAD (m)	0.669	0.834	0.669	0.596	0.622	0.704	0.713	0.732	0.754	0.769

CHAINAGE (m)	0+810	0+820	0+830	0+840	0+850	0+860	0+870	0+880	0+890	0+900
EXISTING LEVELS (m AOD)	-2.545	-2.551	-2.556	-2.561	-2.567	-2.572	-2.577	-2.583	-2.608	-2.705
ROCKHEAD LEVEL (m AOD)	-3.331	-3.352	-3.373	-3.394	-3.415	-3.427	-3.415	-3.403	-3.391	-3.379
DEPTH TO ROCKHEAD (m)	0.785	0.801	0.817	0.833	0.848	0.856	0.838	0.821	0.783	0.674

CHAINAGE (m)	0+910	0+920	0+930	0+940	0+950	0+960	0+970	0+980	0+990	1+000
EXISTING LEVELS (m AOD)	-2.720	-2.641	-2.635	-2.612	-2.656	-2.673	-2.705	-2.761	-2.448	-2.055
ROCKHEAD LEVEL (m AOD)	-3.367	-3.354	-3.342	-3.330	-3.318	-3.306	-3.294	-3.281	-3.269	-3.172
DEPTH TO ROCKHEAD (m)	0.646	0.714	0.707	0.718	0.661	0.632	0.588	0.521	0.822	1.117

CHAINAGE (m)	1+010	1+020	1+030	1+040	1+050	1+060	1+070	1+080	1+090	1+100
EXISTING LEVELS (m AOD)	-1.739	-1.303	-0.930	-0.524	-0.118	0.198	0.541	0.925	1.405	1.931
ROCKHEAD LEVEL (m AOD)	-3.032	-2.855	-2.679	-2.502	-2.326	-2.149	-1.973	-1.797	-1.620	-1.444
DEPTH TO ROCKHEAD (m)	1.293	1.552	1.749	1.978	2.208	2.347	2.514	2.722	3.025	3.374

CHAINAGE (m)	1+110	1+120	1+130	1+140	1+150	1+160	1+170	1+180	1+190	1+200
EXISTING LEVELS (m AOD)	2.518	3.264	5.033	5.635	3.681	4.004	4.240	4.114	4.118	3.949
ROCKHEAD LEVEL (m AOD)	-1.267	-1.091	-0.915	-0.738	-0.562	-0.385	-0.209	-0.032	0.144	0.320
DEPTH TO ROCKHEAD (m)	3.786	4.355	5.948	6.374	4.242	4.389	4.449	4.146	3.974	3.628

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2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
3. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
4. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
5. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

Rev	Date	Description	By	Chk
P01	04.04.24	ISSUED FOR INFORMATION	LP	CG

Amendments

Project
WHITE CROSS WINDFARM

Title
RIVER TAW
GEOLOGICAL CROSS SECTION

Client
FLOTATION ENERGY LTD

waterman
STOCKTON

Broxden House Broxden Business Park Lamberkine Drive Perth PH1 1RA

Suitability
INFORMATION S2

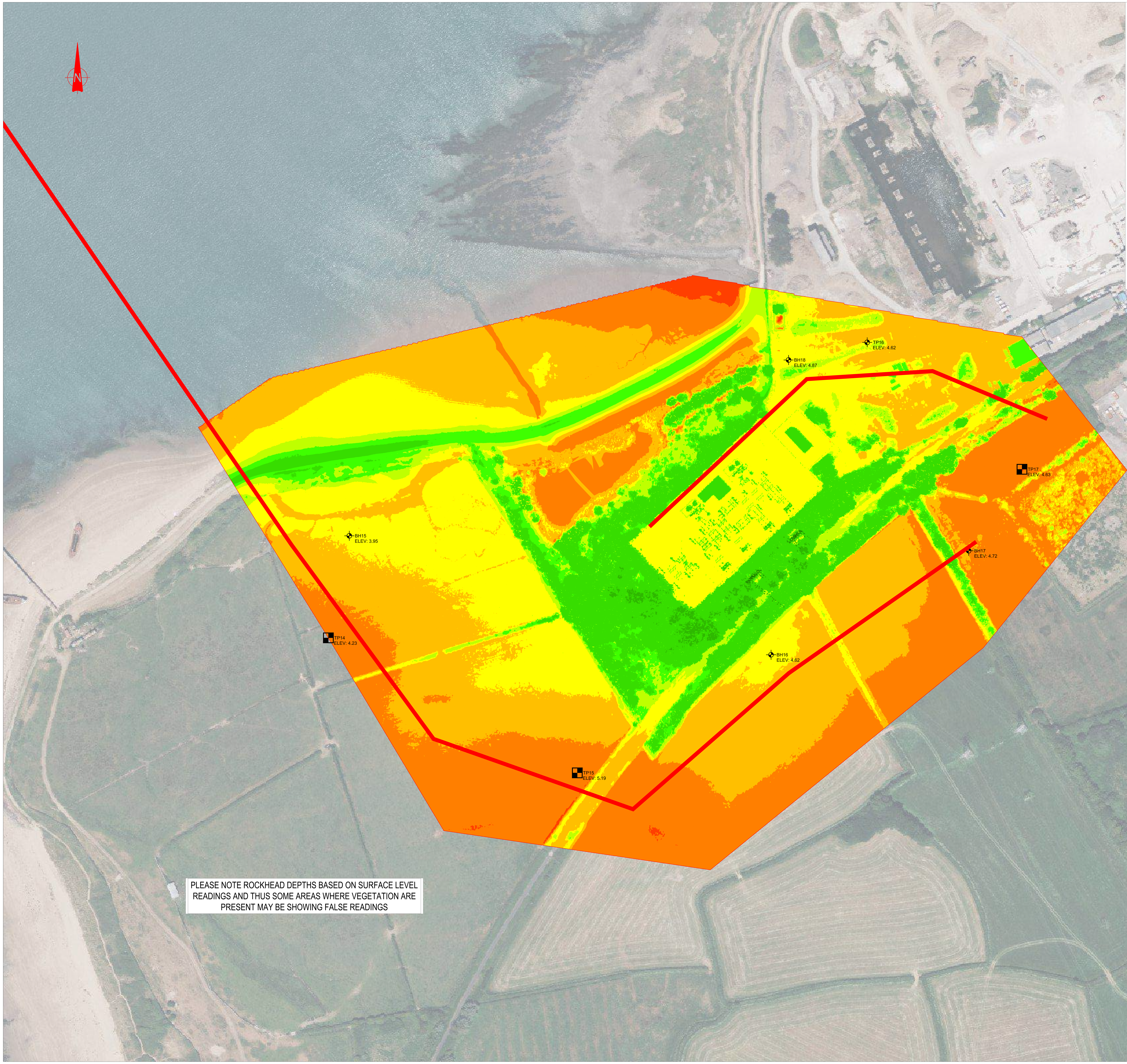
Designed By	LP	Director	CG	Waterman Ref	WIE12731-153
Drawn By	LP	Date	APRIL 24	Scales @ A0	1:1000
Stockton Checker		Stockton Approver		Date	

Project - Originator - Volume - Level - Type - Role - Number | Revision

12731-153-WIE-ZZ-XX-DR-C-80102 | P01

1:1000 0 10m 20m 30m 40m 50m 60m 70m 80m 90m 100m

A0-Wat-SDL-S, GI Data in C3D, SDL_WC_CL_001_revB02 (CENTRELINE)



SURFACE LEVEL DATA

NUMBER	DEPTH TO ROCKHEAD RANGE		COLOUR
1	0.00	1.00	
2	1.00	2.00	
3	2.00	3.00	
4	3.00	4.00	
5	4.00	5.00	
6	5.00	6.00	
7	6.00	7.00	
8	7.00	13.00	
9	14.00	19.00	
10	19.00	25.00	
11	25.00	32.00	

PLEASE NOTE ROCKHEAD DEPTHS BASED ON SURFACE LEVEL READINGS AND THUS SOME AREAS WHERE VEGETATION ARE PRESENT MAY BE SHOWING FALSE READINGS

GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
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5. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

Rev	Date	Description	By	Chk
P01	04.04.24	ISSUED FOR INFORMATION	LP	CG

Amendments

Project
WHITE CROSS WINDFARM

Title
RIVER TAW TO SUBSTATION
ROCKHEAD CONTOUR PLOT

Client
FLOTATION ENERGY LTD

waterman
STOCKTON

Suitability
INFORMATION S2

Designed By	LP	Checked	CG
Drawn By	LP	Date	APRIL 24
Waterman Ref	WIE12731-153	Scale	1:1000

12731-153-WIE-ZZ-XX-DR-C-80100 P01

A0-Wat-SDL-S, GI Data in C3D, SDL_WC_CL_001_revB02 (CENTRELINE)

D. Groundsure Report

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo
Insight

Braunton Burrows Cable

Order Details

Date: 06/05/2022

Your ref: Braunton Burrows Cable

Our Ref: GSIP-2022-12715-10377

Client: Waterman Infrastructure & Environment Limited

Site Details

Location: 246317 134895

Area: 657.92 ha

Authority: North Devon Council

groundsure.com/insightuserguide

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	20	1	7	18	-
15	1.2	Historical tanks	15	2	6	2	-
17	1.3	Historical energy features	4	2	0	1	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	1	-
18	1.6	Historical military land	0	0	0	0	-
Page	**Section**	**Past land use - un-grouped**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
19	2.1	Historical industrial land uses	42	1	13	29	-
23	2.2	Historical tanks	27	4	10	2	-
24	2.3	Historical energy features	6	3	0	1	-
25	2.4	Historical petrol stations	0	0	0	0	-
25	2.5	Historical garages	0	0	0	1	-
Page	**Section**	**Waste and landfill**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
26	3.1	Active or recent landfill	0	0	0	0	-
26	3.2	Historical landfill (BGS records)	0	0	0	1	-
27	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
27	3.4	Historical landfill (EA/NRW records)	1	0	1	1	-
28	3.5	Historical waste sites	0	0	0	0	-
28	3.6	Licensed waste sites	1	0	2	0	-
29	3.7	Waste exemptions	59	1	9	68	-
Page	**Section**	**Current industrial land use**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
40	4.1	Recent industrial land uses	21	1	7	-	-
42	4.2	Current or recent petrol stations	0	0	0	0	-
42	4.3	Electricity cables	0	0	0	0	-
42	4.4	Gas pipelines	0	0	0	0	-
43	4.5	Sites determined as Contaminated Land	0	0	0	0	-

43	**4.6**	**Control of Major Accident Hazards (COMAH)**	1	0	0	0	-
43	4.7	Regulated explosive sites	0	0	0	0	-
43	**4.8**	**Hazardous substance storage/usage**	1	0	0	0	-
44	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
44	**4.10**	**Licensed industrial activities (Part A(1))**	0	4	0	0	-
45	**4.11**	**Licensed pollutant release (Part A(2)/B)**	1	0	0	0	-
45	4.12	Radioactive Substance Authorisations	0	0	0	0	-
45	**4.13**	**Licensed Discharges to controlled waters**	9	1	1	5	-
48	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
48	4.15	Pollutant release to public sewer	0	0	0	0	-
49	4.16	List 1 Dangerous Substances	0	0	0	0	-
49	**4.17**	**List 2 Dangerous Substances**	1	0	0	0	-
49	**4.18**	**Pollution Incidents (EA/NRW)**	3	1	0	1	-
50	4.19	Pollution inventory substances	0	0	0	0	-
50	4.20	Pollution inventory waste transfers	0	0	0	0	-
50	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
51	**5.1**	**Superficial aquifer**	Identified (within 500m)				
53	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
55	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
64	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
64	5.5	Groundwater vulnerability- local information	None (within 0m)				
65	**5.6**	**Groundwater abstractions**	4	0	3	2	19
72	**5.7**	**Surface water abstractions**	0	0	0	0	2
73	**5.8**	**Potable abstractions**	0	0	1	0	9
75	5.9	Source Protection Zones	0	0	0	0	-
76	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
77	**6.1**	**Water Network (OS MasterMap)**	206	20	114	-	-

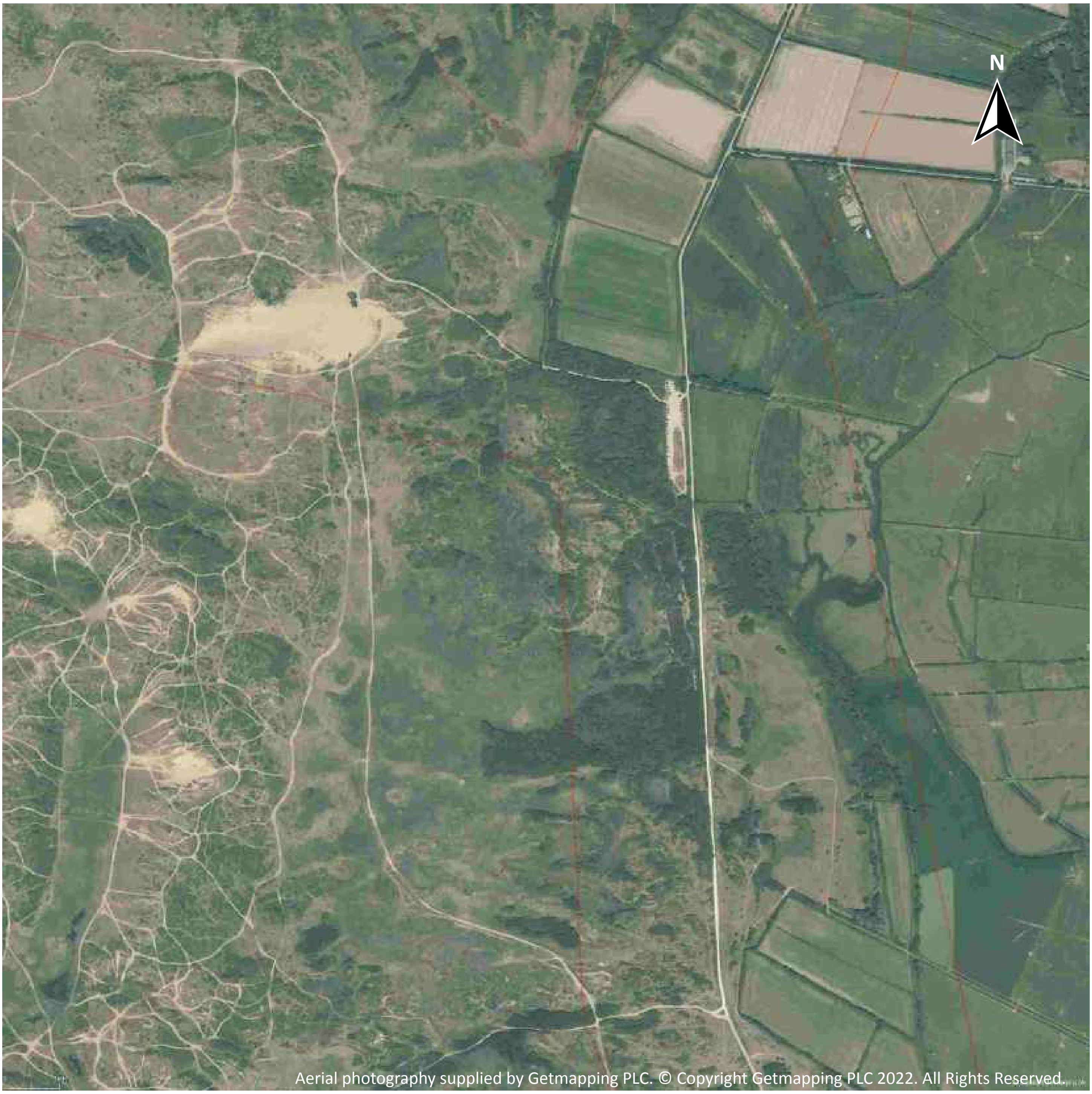
104	6.2	Surface water features	1	11	83	-	-
104	6.3	WFD Surface water body catchments	3	-	-	-	-
105	6.4	WFD Surface water bodies	2	1	0	-	-
105	6.5	WFD Groundwater bodies	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
106	7.1	Risk of flooding from rivers and the sea	High (within 50m)				
107	7.2	Historical Flood Events	0	0	0	-	-
107	7.3	Flood Defences	0	0	0	-	-
107	7.4	Areas Benefiting from Flood Defences	22	0	2	-	-
108	7.5	Flood Storage Areas	0	0	0	-	-
109	7.6	Flood Zone 2	Identified (within 50m)				
110	7.7	Flood Zone 3	Identified (within 50m)				
Page	Section	Surface water flooding					
111	8.1	Surface water flooding	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding					
113	9.1	Groundwater flooding	Moderate (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
114	10.1	Sites of Special Scientific Interest (SSSI)	8	1	1	2	10
115	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
116	10.3	Special Areas of Conservation (SAC)	1	0	0	0	7
117	10.4	Special Protection Areas (SPA)	0	0	0	0	0
117	10.5	National Nature Reserves (NNR)	0	0	0	0	0
118	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
118	10.7	Designated Ancient Woodland	0	0	0	0	1
118	10.8	Biosphere Reserves	1	0	0	0	0
119	10.9	Forest Parks	0	0	0	0	0
119	10.10	Marine Conservation Zones	5	1	2	0	9
120	10.11	Green Belt	0	0	0	0	0
120	10.12	Proposed Ramsar sites	0	0	0	0	0

120	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
120	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
120	10.15	Nitrate Sensitive Areas	0	0	0	0	0
121	10.16	Nitrate Vulnerable Zones	3	0	0	0	0
122	10.17	SSSI Impact Risk Zones	41	-	-	-	-
159	10.18	SSSI Units	12	0	3	3	14
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
174	11.1	World Heritage Sites	0	0	0	-	-
175	11.2	Area of Outstanding Natural Beauty	3	0	0	-	-
175	11.3	National Parks	0	0	0	-	-
175	11.4	Listed Buildings	0	1	6	-	-
176	11.5	Conservation Areas	0	0	0	-	-
176	11.6	Scheduled Ancient Monuments	1	0	0	-	-
177	11.7	Registered Parks and Gardens	0	0	1	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
178	12.1	Agricultural Land Classification	Grade 3b (within 250m)				
179	12.2	Open Access Land	1	0	1	-	-
180	12.3	Tree Felling Licences	0	0	0	-	-
180	12.4	Environmental Stewardship Schemes	11	3	4	-	-
181	12.5	Countryside Stewardship Schemes	17	1	6	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
183	13.1	Priority Habitat Inventory	216	9	89	-	-
199	13.2	Habitat Networks	76	5	15	-	-
203	13.3	Open Mosaic Habitat	1	0	0	-	-
203	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
204	14.1	10k Availability	Identified (within 500m)				
205	14.2	Artificial and made ground (10k)	0	0	0	0	-
206	14.3	Superficial geology (10k)	0	0	0	0	-

206	14.4	Landslip (10k)	0	0	0	0	-
207	14.5	Bedrock geology (10k)	0	0	0	0	-
207	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
208	15.1	50k Availability	Identified (within 500m)				
209	15.2	Artificial and made ground (50k)	0	1	1	0	-
210	15.3	Artificial ground permeability (50k)	0	1	-	-	-
211	15.4	Superficial geology (50k)	7	2	1	2	-
212	15.5	Superficial permeability (50k)	Identified (within 50m)				
213	15.6	Landslip (50k)	0	0	0	0	-
213	15.7	Landslip permeability (50k)	None (within 50m)				
214	15.8	Bedrock geology (50k)	6	0	0	3	-
215	15.9	Bedrock permeability (50k)	Identified (within 50m)				
216	15.10	Bedrock faults and other linear features (50k)	2	4	7	4	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
217	16.1	BGS Boreholes	4	1	5	-	-
Page	Section	Natural ground subsidence					
219	17.1	Shrink swell clays	Very low (within 50m)				
220	17.2	Running sands	Moderate (within 50m)				
222	17.3	Compressible deposits	Moderate (within 50m)				
224	17.4	Collapsible deposits	Very low (within 50m)				
225	17.5	Landslides	Low (within 50m)				
227	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
229	18.1	Natural cavities	0	0	0	0	-
230	18.2	BritPits	0	2	1	4	-
231	18.3	Surface ground workings	20	2	20	-	-
233	18.4	Underground workings	0	0	0	0	0
233	18.5	Historical Mineral Planning Areas	3	0	1	1	-

234	**18.6**	**Non-coal mining**	4	0	1	0	0
234	18.7	Mining cavities	0	0	0	0	0
235	18.8	JPB mining areas	None (within 0m)				
235	18.9	Coal mining	None (within 0m)				
235	18.10	Brine areas	None (within 0m)				
235	18.11	Gypsum areas	None (within 0m)				
235	18.12	Tin mining	None (within 0m)				
236	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
237	**19.1**	**Radon**	Between 5% and 10% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
239	**20.1**	**BGS Estimated Background Soil Chemistry**	147	15	-	-	-
248	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
248	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
249	21.1	Underground railways (London)	0	0	0	-	-
249	21.2	Underground railways (Non-London)	0	0	0	-	-
250	21.3	Railway tunnels	0	0	0	-	-
250	**21.4**	**Historical railway and tunnel features**	6	0	0	-	-
250	21.5	Royal Mail tunnels	0	0	0	-	-
251	**21.6**	**Historical railways**	1	0	0	-	-
251	21.7	Railways	0	0	0	-	-
251	21.8	Crossrail 1	0	0	0	0	-
251	21.9	Crossrail 2	0	0	0	0	-
251	21.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 30/05/2020

Site Area: 657.92ha

Recent site history - 2017 aerial photograph

Capture Date: 17/06/2017

Site Area: 657.92ha

Recent site history - 2010 aerial photograph

Capture Date: 24/05/2010

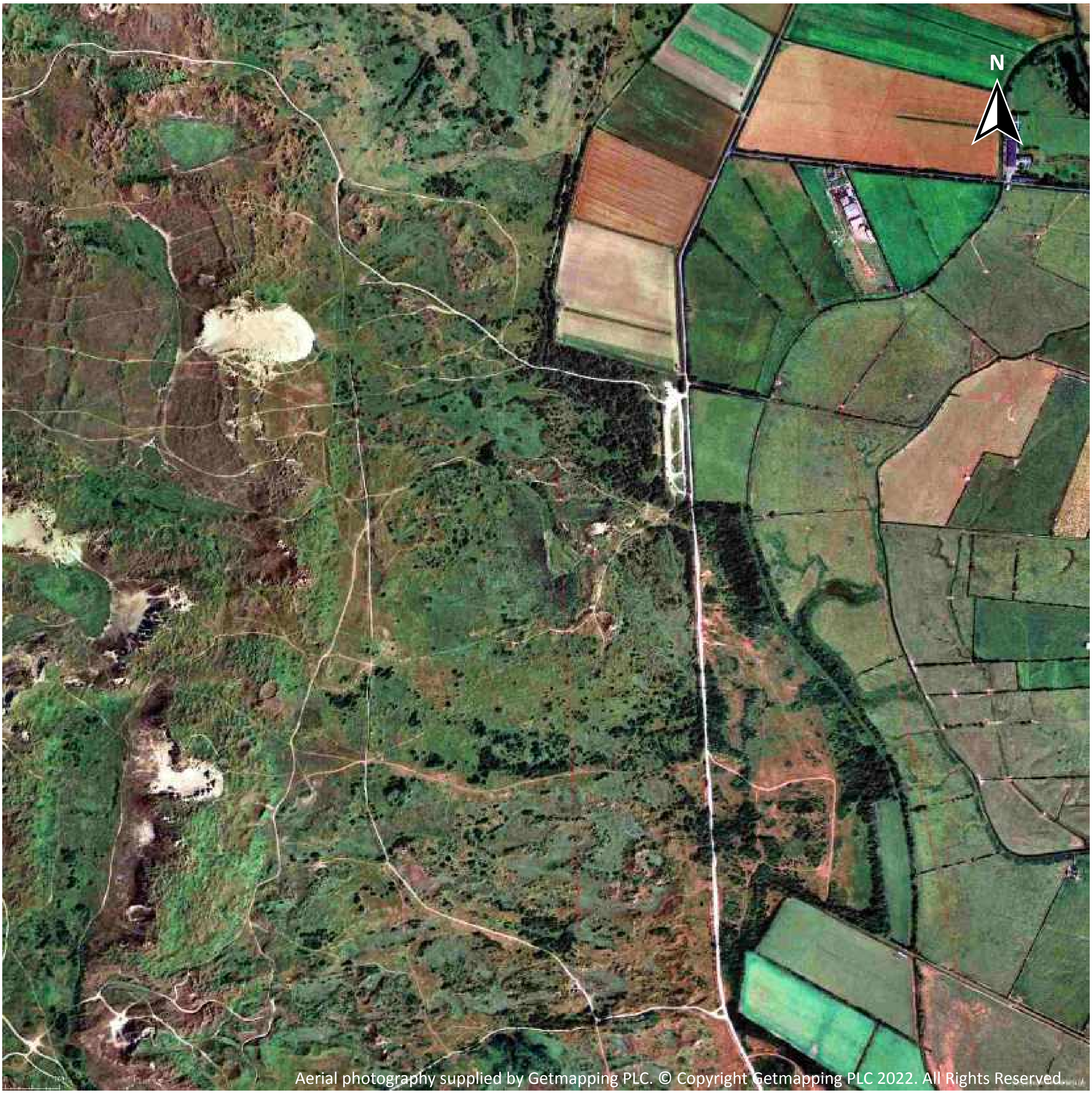
Site Area: 657.92ha

Recent site history - 2006 aerial photograph

Capture Date: 16/06/2006

Site Area: 657.92ha

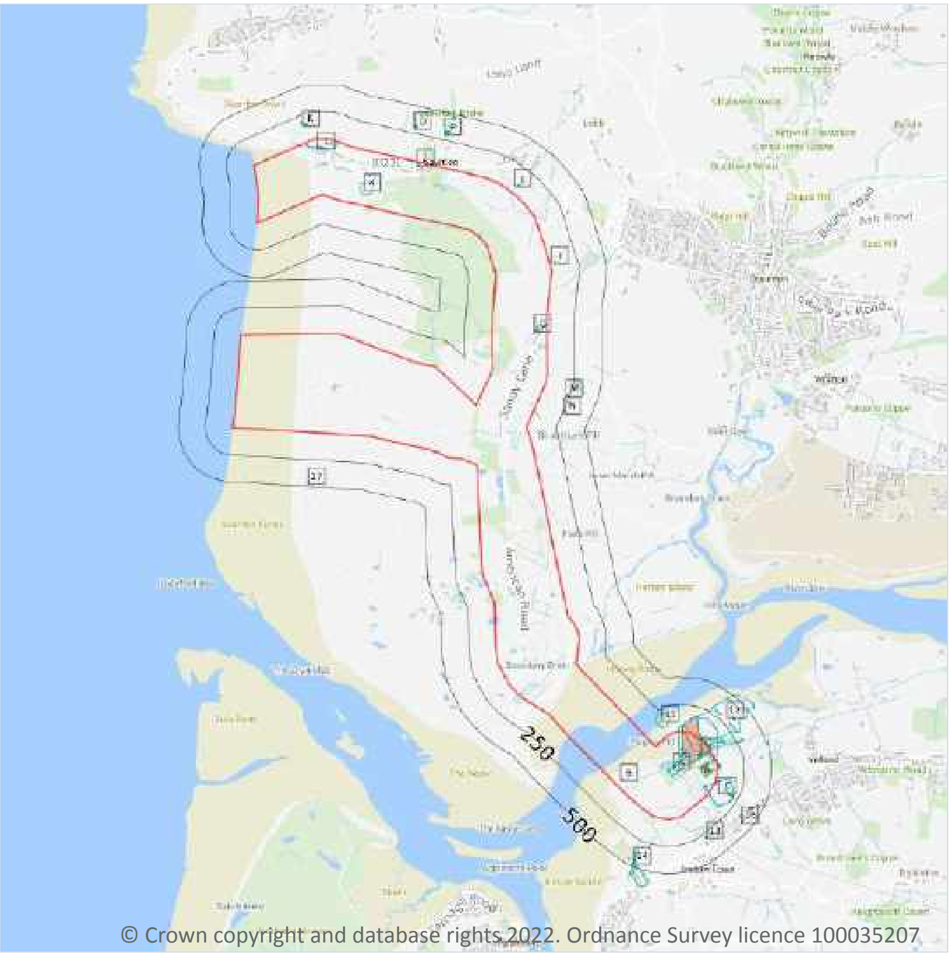
Recent site history - 1999 aerial photograph



Capture Date: 27/07/1999

Site Area: 657.92ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	46

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Unspecified Quarry**	**1905**	**325038**

ID	Location	Land use	Dates present	Group ID
2	**On site**	**Unspecified Quarry**	**1905**	**325039**
3	**On site**	**Lime Kiln**	**1886**	**331731**
4	**On site**	**Sewage Bed**	**1992**	**337366**
A	**On site**	**Electricity Substation**	**1992**	**319204**
A	**On site**	**Unspecified Works**	**1963 - 1985**	**346533**
B	**On site**	**Unspecified Quarry**	**1905**	**325040**
B	**On site**	**Unspecified Quarry**	**1905**	**325041**
C	**On site**	**Sewage Works**	**1981 - 1992**	**345823**
C	**On site**	**Unspecified Works**	**1963 - 1969**	**347201**
D	**On site**	**Power Station**	**1981 - 1985**	**355267**
D	**On site**	**Unspecified Works**	**1963 - 1969**	**356664**
D	**On site**	**Railway Sidings**	**1963 - 1985**	**362475**
E	**On site**	**Unspecified Tanks**	**1963 - 1992**	**364296**
E	**On site**	**Unspecified Tanks**	**1981 - 1992**	**370250**
E	**On site**	**Unspecified Depot**	**1963 - 1992**	**375809**
E	**On site**	**Unspecified Tanks**	**1963 - 1969**	**378894**
F	**On site**	**Unspecified Depot**	**1992**	**378684**
G	**On site**	**Unspecified Tank**	**1992**	**319774**
G	**On site**	**Unspecified Depot**	**1992**	**321572**
9	17m N	Sand Pit	1905	330751
J	85m NE	Disused Pump House	1992	322178
J	85m NE	Pump House	1963 - 1982	362207
11	86m NW	Unspecified Bed	1981 - 1985	343304
12	99m NE	Refuse Heap	1981 - 1985	369438
K	141m NW	Unspecified Old Quarry	1905	330096
K	147m NW	Unspecified Quarry	1886	325042
L	162m SE	Unspecified Tanks	1969 - 1992	367770
N	273m SE	Unspecified Tank	1963 - 1992	354457

ID	Location	Land use	Dates present	Group ID
O	302m N	Unspecified Old Quarry	1886 - 1905	374088
P	303m N	Unspecified Quarry	1905	369045
P	305m N	Unspecified Disused Quarry	1982	319340
P	305m N	Unspecified Disused Quarries	1992	320697
P	305m N	Unspecified Quarry	1963	353060
O	307m N	Unspecified Disused Quarry	1992	319339
P	311m N	Unspecified Quarry	1886	344757
14	338m S	Railway Buildings	1963 - 1992	356548
Q	342m NE	Old Lime Kiln	1905	332055
Q	343m NE	Lime Kiln	1887	331744
R	372m N	Unspecified Quarry	1905	325046
R	372m N	Unspecified Old Quarry	1886	330097
17	456m S	Lifeboat House	1903	321686
S	459m N	Unspecified Disused Quarry	1963 - 1992	380089
S	460m N	Unspecified Quarry	1886	325045
S	460m N	Unspecified Old Quarry	1905	330098
18	485m S	Unspecified Commercial/Industrial	1981 - 1992	353639

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**25**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
5	**On site**	**Unspecified Tank**	**1958 - 1972**	**43733**

ID	Location	Land use	Dates present	Group ID
6	**On site**	**Tanks**	**1992**	**39984**
7	**On site**	**Tanks**	**1972**	**39336**
D	**On site**	**Unspecified Tank**	**1958 - 1972**	**44602**
E	**On site**	**Tanks**	**1958**	**42244**
E	**On site**	**Tanks**	**1992**	**40090**
E	**On site**	**Tanks**	**1972**	**40388**
E	**On site**	**Tanks**	**1958 - 1972**	**40582**
E	**On site**	**Tanks**	**1992**	**41787**
E	**On site**	**Tanks**	**1958 - 1992**	**44039**
E	**On site**	**Unspecified Tank**	**1992**	**44239**
E	**On site**	**Tanks**	**1958 - 1972**	**44631**
F	**On site**	**Unspecified Tank**	**1992**	**40089**
G	**On site**	**Unspecified Tank**	**1972**	**37621**
G	**On site**	**Tanks**	**1972**	**39397**
H	20m E	Unspecified Tank	1992	40519
H	23m E	Unspecified Tank	1992	44120
I	53m E	Unspecified Tank	1972	42846
10	55m NE	Unspecified Tank	1958 - 1992	40766
I	56m E	Unspecified Tank	1959 - 1971	40239
L	162m SE	Tanks	1970	39335
M	224m SE	Unspecified Tank	1959	37620
M	238m SE	Unspecified Tank	1959	37619
N	275m SE	Unspecified Tank	1959	37618
13	283m SE	Unspecified Tank	1958	37617

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	7

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
8	**On site**	**Electricity Substations**	**1992**	**20086**
A	**On site**	**Electricity Substation**	**1992**	**21352**
B	**On site**	**Electricity Substation**	**1990**	**19112**
D	**On site**	**Power Station**	**1972**	**19691**
H	19m E	Electricity Substation	1972	20993
H	21m E	Electricity Substation	1992	22706
16	389m SE	Electricity Substation	1970	19017

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	1

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
15	383m SE	Garage	1970	6594

This data is sourced from Ordnance Survey / Groundsure.

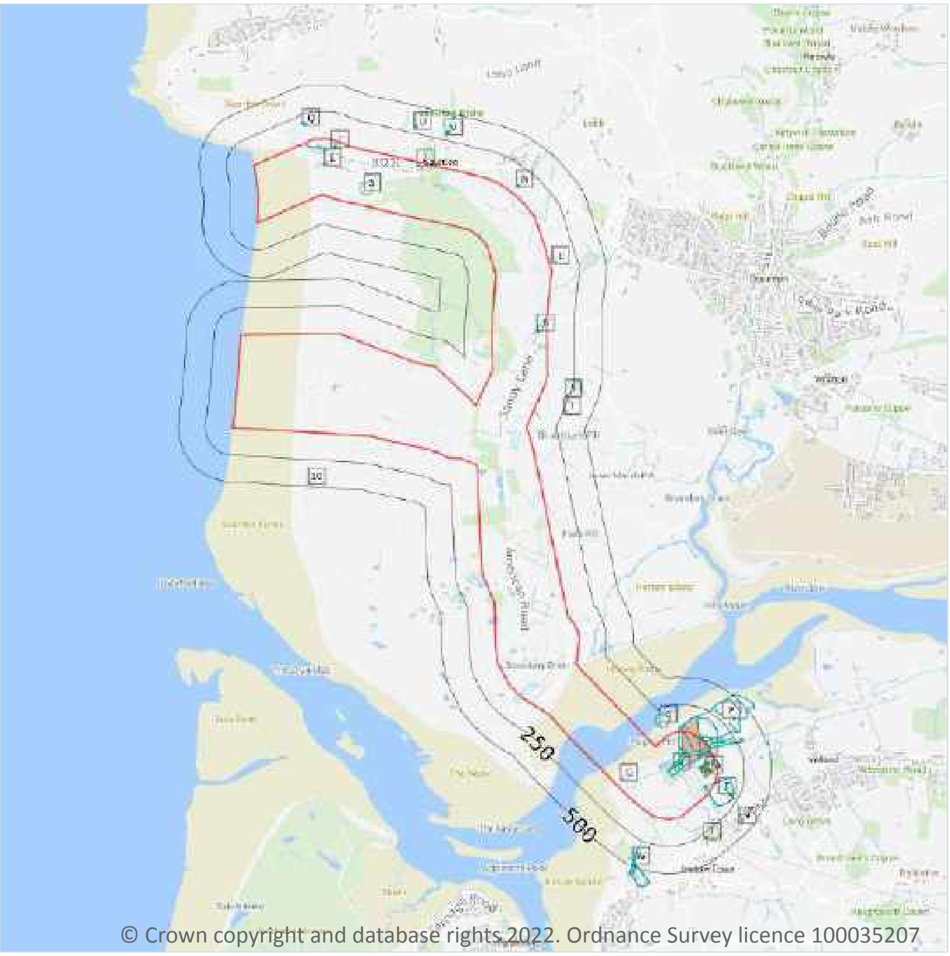
1.6 Historical military land

Records within 500m	**0**

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	85

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Lime Kiln**	**1886**	**331731**
2	**On site**	**Unspecified Quarry**	**1905**	**325039**
3	**On site**	**Unspecified Quarry**	**1905**	**325038**

ID	Location	Land Use	Date	Group ID
5	On site	Sewage Bed	1992	337366
A	On site	Unspecified Tanks	1992	370250
A	On site	Unspecified Tanks	1992	364296
A	On site	Unspecified Depot	1992	375809
A	On site	Unspecified Tanks	1985	364296
A	On site	Unspecified Tanks	1985	370250
A	On site	Unspecified Depot	1985	375809
A	On site	Unspecified Tanks	1981	364296
A	On site	Unspecified Tanks	1981	370250
A	On site	Unspecified Depot	1981	375809
A	On site	Unspecified Tanks	1969	378894
A	On site	Unspecified Tanks	1969	364296
A	On site	Unspecified Depot	1969	375809
A	On site	Unspecified Tanks	1963	364296
A	On site	Unspecified Tanks	1963	378894
A	On site	Unspecified Depot	1963	375809
B	On site	Unspecified Depot	1992	321572
B	On site	Unspecified Tank	1992	319774
C	On site	Electricity Substation	1992	319204
C	On site	Unspecified Works	1985	346533
C	On site	Unspecified Works	1981	346533
C	On site	Unspecified Works	1969	346533
C	On site	Unspecified Works	1963	346533
D	On site	Unspecified Depot	1992	378684
E	On site	Sewage Works	1992	345823
E	On site	Sewage Works	1985	345823
E	On site	Sewage Works	1981	345823
E	On site	Unspecified Works	1969	347201

ID	Location	Land Use	Date	Group ID
E	**On site**	**Unspecified Works**	**1963**	**347201**
F	**On site**	**Power Station**	**1985**	**355267**
F	**On site**	**Railway Sidings**	**1985**	**362475**
F	**On site**	**Power Station**	**1981**	**355267**
F	**On site**	**Railway Sidings**	**1981**	**362475**
F	**On site**	**Unspecified Works**	**1969**	**356664**
F	**On site**	**Railway Sidings**	**1969**	**362475**
F	**On site**	**Unspecified Works**	**1963**	**356664**
F	**On site**	**Railway Sidings**	**1963**	**362475**
I	**On site**	**Unspecified Quarry**	**1905**	**325040**
I	**On site**	**Unspecified Quarry**	**1905**	**325041**
6	17m N	Sand Pit	1905	330751
N	85m NE	Disused Pump House	1992	322178
N	85m NE	Pump House	1963	362207
N	85m NE	Pump House	1982	362207
O	86m NW	Unspecified Bed	1985	343304
O	86m NW	Unspecified Bed	1981	343304
P	99m NE	Refuse Heap	1985	369438
P	99m NE	Refuse Heap	1981	369438
Q	141m NW	Unspecified Old Quarry	1905	330096
Q	147m NW	Unspecified Quarry	1886	325042
R	162m SE	Unspecified Tanks	1992	367770
R	162m SE	Unspecified Tanks	1985	367770
R	162m SE	Unspecified Tanks	1981	367770
R	162m SE	Unspecified Tanks	1969	367770
T	273m SE	Unspecified Tank	1992	354457
T	273m SE	Unspecified Tank	1963	354457
T	273m SE	Unspecified Tank	1982	354457

ID	Location	Land Use	Date	Group ID
U	302m N	Unspecified Old Quarry	1905	374088
V	303m N	Unspecified Quarry	1905	369045
V	305m N	Unspecified Disused Quarries	1992	320697
V	305m N	Unspecified Quarry	1963	353060
V	305m N	Unspecified Disused Quarry	1982	319340
U	307m N	Unspecified Old Quarry	1886	374088
U	307m N	Unspecified Disused Quarry	1992	319339
V	311m N	Unspecified Quarry	1886	344757
W	338m S	Railway Buildings	1992	356548
W	338m S	Railway Buildings	1985	356548
W	338m S	Railway Buildings	1981	356548
W	338m S	Railway Buildings	1969	356548
W	338m S	Railway Buildings	1963	356548
X	342m NE	Old Lime Kiln	1905	332055
X	343m NE	Lime Kiln	1887	331744
Y	372m N	Unspecified Quarry	1905	325046
Y	372m N	Unspecified Old Quarry	1886	330097
10	456m S	Lifeboat House	1903	321686
Z	459m N	Unspecified Disused Quarry	1992	380089
Z	459m N	Unspecified Disused Quarry	1963	380089
Z	459m N	Unspecified Disused Quarry	1982	380089
Z	460m N	Unspecified Old Quarry	1905	330098
Z	460m N	Unspecified Quarry	1886	325045
AA	485m S	Unspecified Commercial/Industrial	1992	353639
AA	485m S	Unspecified Commercial/Industrial	1985	353639
AA	485m S	Unspecified Commercial/Industrial	1981	353639

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	43

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
4	On site	Tanks	1972	39336
A	On site	Tanks	1972	40582
A	On site	Tanks	1972	40388
A	On site	Tanks	1972	44039
A	On site	Tanks	1972	44631
A	On site	Tanks	1958	44039
A	On site	Tanks	1958	44631
A	On site	Tanks	1958	40582
A	On site	Tanks	1958	42244
A	On site	Tanks	1992	41787
A	On site	Tanks	1992	44039
A	On site	Tanks	1992	40090
A	On site	Unspecified Tank	1992	44239
A	On site	Tanks	1992	40090
A	On site	Unspecified Tank	1992	44239
A	On site	Tanks	1992	44039
A	On site	Tanks	1992	41787
B	On site	Unspecified Tank	1972	37621
B	On site	Tanks	1972	39397
D	On site	Unspecified Tank	1992	40089
D	On site	Unspecified Tank	1992	40089
F	On site	Unspecified Tank	1972	44602
F	On site	Unspecified Tank	1958	44602

ID	Location	Land Use	Date	Group ID
G	**On site**	**Tanks**	**1992**	**39984**
G	**On site**	**Tanks**	**1992**	**39984**
H	**On site**	**Unspecified Tank**	**1972**	**43733**
H	**On site**	**Unspecified Tank**	**1958**	**43733**
K	20m E	Unspecified Tank	1992	40519
K	20m E	Unspecified Tank	1992	40519
K	23m E	Unspecified Tank	1992	44120
K	23m E	Unspecified Tank	1992	44120
L	53m E	Unspecified Tank	1972	42846
M	55m NE	Unspecified Tank	1972	40766
M	55m NE	Unspecified Tank	1958	40766
L	56m E	Unspecified Tank	1959	40239
L	56m E	Unspecified Tank	1971	40239
M	57m NE	Unspecified Tank	1992	40766
M	57m NE	Unspecified Tank	1992	40766
R	162m SE	Tanks	1970	39335
S	224m SE	Unspecified Tank	1959	37620
S	238m SE	Unspecified Tank	1959	37619
T	275m SE	Unspecified Tank	1959	37618
7	283m SE	Unspecified Tank	1958	37617

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	10

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
C	**On site**	**Electricity Substation**	**1992**	**21352**
C	**On site**	**Electricity Substation**	**1992**	**21352**
F	**On site**	**Power Station**	**1972**	**19691**
I	**On site**	**Electricity Substation**	**1990**	**19112**
J	**On site**	**Electricity Substations**	**1992**	**20086**
J	**On site**	**Electricity Substations**	**1992**	**20086**
K	19m E	Electricity Substation	1972	20993
K	21m E	Electricity Substation	1992	22706
K	21m E	Electricity Substation	1992	22706
9	389m SE	Electricity Substation	1970	19017

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	1

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
8	383m SE	Garage	1970	6594

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

Site Outline
Search buffers in metres (m)
Historical landfill (EA/NRW)
Historical landfill (BGS)
Licensed waste sites
Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	1

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

Features are displayed on the Waste and landfill map on **page 26**

ID	Location	Address	BGS Number	Risk	Waste Type
9	326m NE	East Yelland Power Stn, Barnstaple, Devon	1275	No risk to aquifer	N/A

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	**0**

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	**3**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 26**

ID	Location	Details		
1	**On site**	**Site Address: East Yelland Power Station, Barnstaple, Devon** **Licence Holder Address: -**	**Waste Licence: -** **Site Reference: -** **Waste Type: Inert, Industrial** **Environmental Permitting Regulations (Waste) Reference: -** **Licence Issue: -** **Licence Surrender: -**	**Operator: Central Electricity Generating Board** **Licence Holder: -** **First Recorded 31/12/1953** **Last Recorded: -**
8	249m NE	Site Address: Old Pump House - Asbestos, East Yelland Power Station, Yelland, Barnstaple, Devon Licence Holder Address: -	Waste Licence: Yes Site Reference: L/2/96/86 Waste Type: Special Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 19/08/1986 Licence Surrender: -	Operator: - Licence Holder: National Power First Recorded 01/09/1987 Last Recorded: 01/10/1988
11	440m NE	Site Address: Old Pump House - Asbestos, East Yelland Power Station, Yelland, Barnstaple, Devon Licence Holder Address: -	Waste Licence: Yes Site Reference: L/2/96/86 Waste Type: Special Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 19/08/1986 Licence Surrender: -	Operator: - Licence Holder: National Power First Recorded 01/09/1987 Last Recorded: 01/10/1988

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	3

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 26**

ID	Location	Details		
5	**On site**	**Site Name: Yelland Quay Waste Transfer Station** **Site Address: Former Power Station, Yelland Quay, West Yelland, Barnstaple, Devon, EX31 3EZ** **Correspondence Address: -**	**Type of Site: Household, Commercial & Industrial Waste T Stn** **Size: >= 25000 tonnes 75000 tonnes** **Environmental Permitting Regulations (Waste) Licence Number: NOT003** **EPR reference: EA/EPR/DP3091HS/V002** **Operator: Notts Contractors Ltd** **Waste Management licence No: 21728** **Annual Tonnage: 74999**	**Issue Date: 15/03/2000** **Effective Date: -** **Modified: 12/12/2003** **Surrendered Date: -** **Expiry Date: -** **Cancelled Date: -** **Status: Modified**
C	110m NE	Site Name: - Site Address: Yelland Power Station, Yelland, Barnstaple, Devon, AA1 9ZZ Correspondence Address: South West Region, Bedminster Down, Bridgwater Road, Bristol, AA1 9ZZ	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: CEN001 EPR reference: - Operator: Central Electricity Generating Board Waste Management licence No: 21917 Annual Tonnage: 0	Issue Date: 19/08/1986 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Surrendered

ID	Location	Details		
C	110m NE	Site Name: - Site Address: Yelland Power Station, Yelland, Barnstaple, Devon, AA1 9ZZ Correspondence Address: -	Type of Site: - Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CEN001 EPR reference: EA/EPR/XP3597HD/S002 Operator: Central Electricity Generating Board Waste Management licence No: 21917 Annual Tonnage: 0	Issue Date: 19/08/1986 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Surrendered

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	**137**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 26**

ID	Location	Site	Reference	Category	Sub-Category	Description
2	**On site**	**-**	**WEX248584**	**Using waste exemption**	**Not on a farm**	**Use of waste in construction**
3	**On site**	**ESTUARY BUSINESS PARK, WEST YELLAND, BARNSTAPLE, EX31 3EZ**	**WEX272116**	**Using waste exemption**	**Not on a farm**	**Use of waste in construction**
4	**On site**	**LONG OVERDUNE, SAUNTON, BRAUNTON, EX33 1LG**	**WEX101879**	**Using waste exemption**	**Not on a farm**	**Use of waste in construction**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX210634**	**Using waste exemption**	**On a Farm**	**Use of waste in construction**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX210634**	**Using waste exemption**	**On a Farm**	**Use of waste for a specified purpose**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX210634**	**Using waste exemption**	**On a Farm**	**Spreading waste on agricultural land to confer benefit**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX210634	Using waste exemption	On a Farm	Use of mulch
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX210634	Using waste exemption	On a Farm	Spreading of plant matter to confer benefit
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX210634	Treating waste exemption	On a Farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX210634	Disposing of waste exemption	On a Farm	Deposit of waste from dredging of inland waters
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX210634	Disposing of waste exemption	On a Farm	Disposal by incineration
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX210634	Disposing of waste exemption	On a Farm	Burning waste in the open
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX193755	Using waste exemption	On a Farm	Use of waste in construction
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX193755	Using waste exemption	On a Farm	Spreading waste on agricultural land to confer benefit
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX193755	Using waste exemption	On a Farm	Spreading of plant matter to confer benefit
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX193755	Using waste exemption	On a Farm	Incorporation of ash into soil
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX193755	Using waste exemption	On a Farm	Pig and poultry ash
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX193755	Storing waste exemption	On a Farm	Storage of waste in a secure place
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX060731	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters

ID	Location	Site	Reference	Category	Sub-Category	Description
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Disposing of waste exemption**	**On a farm**	**Disposal by incineration**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Disposing of waste exemption**	**On a farm**	**Burning waste in the open**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Treating waste exemption**	**On a farm**	**Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Using waste exemption**	**On a farm**	**Use of waste in construction**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Using waste exemption**	**On a farm**	**Spreading waste on agricultural land to confer benefit**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Using waste exemption**	**On a farm**	**Use of mulch**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Using waste exemption**	**On a farm**	**Spreading of plant matter to confer benefit**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX060731**	**Using waste exemption**	**On a farm**	**Use of waste for a specified purpose**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX038784**	**Disposing of waste exemption**	**On a farm**	**Deposit of waste from dredging of inland waters**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX038784**	**Disposing of waste exemption**	**On a farm**	**Disposal by incineration**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX038784**	**Disposing of waste exemption**	**On a farm**	**Burning waste in the open**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX038784**	**Storing waste exemption**	**On a farm**	**Storage of waste in a secure place**
A	**On site**	**NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU**	**WEX038784**	**Treating waste exemption**	**On a farm**	**Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX038784	Using waste exemption	On a farm	Use of waste in construction
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX038784	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX038784	Using waste exemption	On a farm	Use of mulch
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX038784	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	On site	NEW CROSS FARM, VELATOR, BRAUNTON, EX33 2NU	WEX038784	Using waste exemption	On a farm	Use of waste for a specified purpose
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Disposing of waste exemption	Agricultural Waste Only	Disposal by incineration
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Treating waste exemption	Agricultural Waste Only	Screening and blending of waste
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Treating waste exemption	Agricultural Waste Only	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Using waste exemption	Agricultural Waste Only	Spreading waste on agricultural land to confer benefit
A	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/WH0171VV/A001	Using waste exemption	Agricultural Waste Only	Spreading of plant matter to confer benefit

ID	Location	Site	Reference	Category	Sub-Category	Description
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Disposing of waste exemption	Agricultural Waste Only	Disposal by incineration
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Treating waste exemption	Agricultural Waste Only	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Using waste exemption	Agricultural Waste Only	Spreading waste on agricultural land to confer benefit
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Using waste exemption	Agricultural Waste Only	Use of mulch
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Using waste exemption	Agricultural Waste Only	Spreading of plant matter to confer benefit
A	On site	New Cross Farm BRAUNTON Devon EX33 2NU	EPR/MF0330GT/A001	Using waste exemption	Agricultural Waste Only	Use of waste for a specified purpose
B	On site	SANDY LANE FARM, VELATOR, BRAUNTON, EX33 2NU	WEX188023	Disposing of waste exemption	On a Farm	Burning waste in the open
B	On site	SANDY LANE FARM, VELATOR, BRAUNTON, EX33 2NU	WEX188023	Storing waste exemption	On a Farm	Storage of waste in a secure place
B	On site	SANDY LANE FARM, VELATOR, BRAUNTON, EX33 2NU	WEX031798	Disposing of waste exemption	On a farm	Burning waste in the open
B	On site	Sandy Lane Farm BRAUNTON Devon EX33 2NU	EPR/BH0516AH/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
B	**On site**	**Sandy Lane Farm BRAUNTON Devon EX33 2NU**	**EPR/EH0871ER/A001**	**Disposing of waste exemption**	**Agricultural Waste Only**	**Burning waste in the open**
6	4m NE	-	WEX288443	Using waste exemption	Not on a farm	Use of waste in construction
D	181m NW	Park House Wykham Lane BANBURY Oxfordshire OX16 9UP	EPR/LF0933XR/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
D	181m NW	Park House Wykham Lane BANBURY Oxfordshire OX16 9UP	EPR/LF0933XR/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
D	181m NW	Park House Wykham Lane BANBURY Oxfordshire OX16 9UP	EPR/LF0933XR/A001	Treating waste exemption	Agricultural Waste Only	Cleaning, washing, spraying or coating relevant waste
D	181m NW	Park House Wykham Lane BANBURY Oxfordshire OX16 9UP	EPR/LF0933XR/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
D	181m NW	Park House Wykham Lane BANBURY Oxfordshire OX16 9UP	EPR/LF0933XR/A001	Using waste exemption	Agricultural Waste Only	Spreading waste on agricultural land to confer benefit
D	181m NW	Park House Wykham Lane BANBURY Oxfordshire OX16 9UP	EPR/LF0933XR/A001	Using waste exemption	Agricultural Waste Only	Use of waste for a specified purpose
7	215m S	-	WEX199354	Disposing of waste exemption	On a Farm	Burning waste in the open
E	221m N	Beara Barn Beara Lane BARNSTAPLE Devon EX31 4RQ	EPR/TF0303PM/A001	Disposing of waste exemption	Non-Agricultural Waste Only	Burning waste in the open
E	221m N	Beara Barn Beara Lane BARNSTAPLE Devon EX31 4RQ	EPR/TF0303PM/A001	Using waste exemption	Non-Agricultural Waste Only	Spreading waste on agricultural land to confer benefit
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Storing waste exemption	On a Farm	Storage of waste in a secure place
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Storing waste exemption	On a Farm	Storage of waste in secure containers

ID	Location	Site	Reference	Category	Sub-Category	Description
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Disposing of waste exemption	On a Farm	Burning waste in the open
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Disposing of waste exemption	On a Farm	Disposal by incineration
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Treating waste exemption	On a Farm	Aerobic composting and associated prior treatment
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Treating waste exemption	On a Farm	Treatment of waste aerosol cans
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Treating waste exemption	On a Farm	Recovery of scrap metal
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Treating waste exemption	On a Farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Treating waste exemption	On a Farm	Preparatory treatments (baling, sorting, shredding etc)
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Using waste exemption	On a Farm	Incorporation of ash into soil
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Using waste exemption	On a Farm	Spreading of plant matter to confer benefit
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Using waste exemption	On a Farm	Spreading waste on agricultural land to confer benefit
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Using waste exemption	On a Farm	Burning of waste as a fuel in a small appliance
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX202263	Using waste exemption	On a Farm	Use of waste in construction
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Using waste exemption	On a Farm	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Using waste exemption	On a Farm	Burning of waste as a fuel in a small appliance
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Using waste exemption	On a Farm	Spreading waste on agricultural land to confer benefit
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Using waste exemption	On a Farm	Spreading of plant matter to confer benefit
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Using waste exemption	On a Farm	Incorporation of ash into soil
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Treating waste exemption	On a Farm	Preparatory treatments (baling, sorting, shredding etc)
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Treating waste exemption	On a Farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Treating waste exemption	On a Farm	Recovery of scrap metal
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Disposing of waste exemption	On a Farm	Deposit of waste from dredging of inland waters
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Disposing of waste exemption	On a Farm	Disposal by incineration
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Disposing of waste exemption	On a Farm	Burning waste in the open
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Storing waste exemption	On a Farm	Storage of waste in secure containers
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX207337	Storing waste exemption	On a Farm	Storage of waste in a secure place
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters

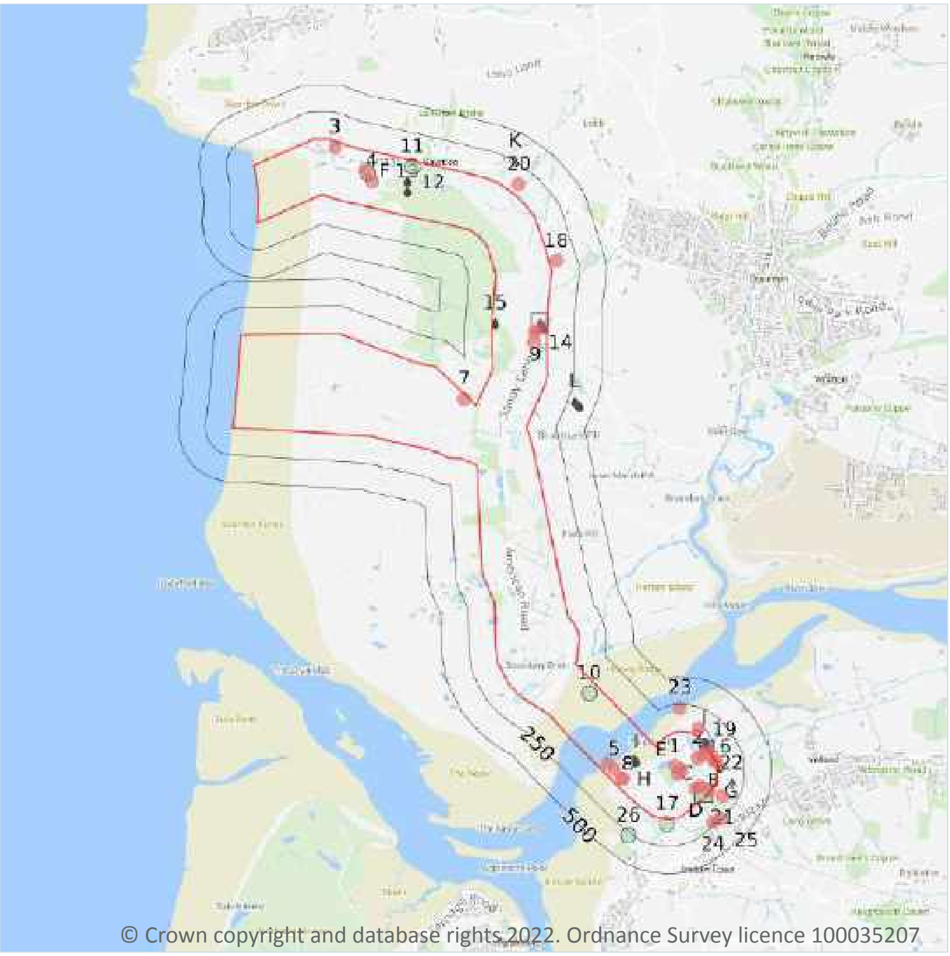
ID	Location	Site	Reference	Category	Sub-Category	Description
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Disposing of waste exemption	On a farm	Disposal by incineration
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Disposing of waste exemption	On a farm	Burning waste in the open
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Storing waste exemption	On a farm	Storage of waste in secure containers
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Storing waste exemption	On a farm	Storage of waste in a secure place
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Treating waste exemption	On a farm	Recovery of scrap metal
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Using waste exemption	On a farm	Use of waste in construction
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Using waste exemption	On a farm	Incorporation of ash into soil
F	282m NE	WEST SAUNTON FARMHOUSE, SAUNTON, BRAUNTON, EX33 1LS	WEX049702	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Disposing of waste exemption	Agricultural Waste Only	Disposal by incineration

ID	Location	Site	Reference	Category	Sub-Category	Description
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in secure containers
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in a secure place
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Treating waste exemption	Agricultural Waste Only	Cleaning, washing, spraying or coating relevant waste
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Treating waste exemption	Agricultural Waste Only	Treatment of waste aerosol cans
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Treating waste exemption	Agricultural Waste Only	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Using waste exemption	Agricultural Waste Only	Spreading waste on agricultural land to confer benefit
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Using waste exemption	Agricultural Waste Only	Spreading of plant matter to confer benefit
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Using waste exemption	Agricultural Waste Only	Incorporation of ash into soil
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Using waste exemption	Agricultural Waste Only	Burning of waste as a fuel in a small appliance
F	282m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/GF0701ZU/A001	Using waste exemption	Agricultural Waste Only	Use of waste for a specified purpose
10	373m E	-	WEX234886	Using waste exemption	Not on a farm	Use of waste in construction
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF/A001	Disposing of waste exemption	Agricultural Waste Only	Disposal by incineration
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open

ID	Location	Site	Reference	Category	Sub-Category	Description
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in secure containers
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in a secure place
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Treating waste exemption	Agricultural Waste Only	Cleaning, washing, spraying or coating relevant waste
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Treating waste exemption	Agricultural Waste Only	Treatment of waste aerosol cans
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Treating waste exemption	Agricultural Waste Only	Aerobic composting and associated prior treatment
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Treating waste exemption	Agricultural Waste Only	Treatment of sheep dip for disposal
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Treating waste exemption	Agricultural Waste Only	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Using waste exemption	Agricultural Waste Only	Spreading waste on agricultural land to confer benefit
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Using waste exemption	Agricultural Waste Only	Spreading of plant matter to confer benefit
G	429m NE	Westerley BRAUNTON Devon EX33 1LS	EPR/RF0539FF /A001	Using waste exemption	Agricultural Waste Only	Burning of waste as a fuel in a small appliance

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline
Search buffers in metres (m)
Recent industrial land uses
Control of Major Accident Hazards
Hazardous substance storage/usage
Part A(1) industrial activities
Licensed pollutant release (Part A(2)/B)
Licensed Discharges to controlled waters
List 2 Dangerous Substances
Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m **29**

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Electricity Sub Station**	**Devon, EX31**	**Electrical Features**	**Infrastructure and Facilities**
2	**On site**	**Electricity Sub Station**	**Devon, EX31**	**Electrical Features**	**Infrastructure and Facilities**
3	**On site**	**Electricity Sub Station**	**Devon, EX33**	**Electrical Features**	**Infrastructure and Facilities**

ID	Location	Company	Address	Activity	Category
4	**On site**	**Sewage Bed**	**Devon, EX33**	**Waste Storage, Processing and Disposal**	**Infrastructure and Facilities**
5	**On site**	**Jetty**	**Devon, EX31**	**Moorings and Unloading Facilities**	**Water**
6	**On site**	**Estuary Business Park**	**Devon, EX31**	**Business Parks and Industrial Estates**	**Industrial Features**
7	**On site**	**Sheep Dip**	**Devon, EX33**	**Sheep Dips and Washes**	**Farming**
8	**On site**	**Crane**	**Devon, EX31**	**Travelling Cranes and Gantries**	**Industrial Features**
9	**On site**	**Tank**	**Devon, EX33**	**Tanks (Generic)**	**Industrial Features**
14	**On site**	**R W Avery**	**Gandies, Velator, Braunton, Devon, EX33 2NU**	**Fruit, Flower and Vegetable Growers**	**Farming**
B	**On site**	**Flogas**	**Yelland Terminal, West Yelland, Barnstaple, Devon, EX31 3QW**	**Fuel Distributors and Suppliers**	**Household, Office, Leisure and Garden**
B	**On site**	**Tank**	**Devon, EX31**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Vicfibretech**	**Unit 1, Estuary Business Park, West Yelland, Barnstaple, Devon, EX31 3EZ**	**Marine Equipment Including Boats and Ships**	**Industrial Products**
D	**On site**	**Pylon**	**Devon, EX31**	**Electrical Features**	**Infrastructure and Facilities**
D	**On site**	**Pylon**	**Devon, EX31**	**Electrical Features**	**Infrastructure and Facilities**
E	**On site**	**Pylon**	**Devon, EX31**	**Electrical Features**	**Infrastructure and Facilities**
E	**On site**	**Pylon**	**Devon, EX31**	**Electrical Features**	**Infrastructure and Facilities**
F	**On site**	**Pumping Station**	**Devon, EX33**	**Water Pumping Stations**	**Industrial Features**
G	**On site**	**Solar Panels**	**Devon, EX31**	**Energy Production**	**Industrial Features**
H	**On site**	**Tank**	**Devon, EX31**	**Tanks (Generic)**	**Industrial Features**
H	**On site**	**Tank**	**Devon, EX31**	**Tanks (Generic)**	**Industrial Features**
B	6m NE	Certas Ltd	Yelland Depot, West Yelland, Barnstaple, Devon, EX31 3HB	Fuel Distributors and Suppliers	Household, Office, Leisure and Garden

ID	Location	Company	Address	Activity	Category
18	63m E	Tank	Devon, EX33	Tanks (Generic)	Industrial Features
19	66m NE	Waste Processing Facility	Devon, EX31	Waste Storage, Processing and Disposal	Infrastructure and Facilities
20	101m NE	Pumping Station	Devon, EX33	Water Pumping Stations	Industrial Features
21	118m SE	Sewage Works	Devon, EX31	Waste Storage, Processing and Disposal	Infrastructure and Facilities
23	221m N	Landing Stage (Dis)	Devon, EX31	Moorings and Unloading Facilities	Water
24	228m SE	Pylon	Devon, EX31	Electrical Features	Infrastructure and Facilities
25	239m SE	Pylon	Devon, EX31	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	**0**

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	**0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	**1**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Company	Address	Operational status	Tier
A	**On site**	**Handygas Ltd**	**Handygas Ltd, Sandy Lane, Braunton, Barnstaple, EX33 2NU**	**Historical NIHHS Site**	**-**

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	**1**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Details	
A	**On site**	**Application reference number: 16331** **Application status: Approved** **Application date: 03/11/1992** **Address: BP Oil UK Ltd t/a Handygas Ltd pka BP Gas, Sandy Lane, Braunton, Devon, England, EX33 2NU**	**Details: Application for deemed consent in respect of an established presence for filling, storage and distribution of liquefied petroleum gas in cylinders** **Enforcement: No Enforcement Notified** **Date of enforcement: No Enforcement Notified** **Comment: No Enforcement Notified**

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	**0**

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	**4**

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Details	
J	29m NE	Operator: ROLLS ROYCE POWER VENTURES LTD Installation Name: - Process: COMBUSTION; ANY FUEL =>50MW Permit Number: BK1325 Original Permit Number: BK1325	EPR Reference: - Issue Date: - Effective Date: 14/02/2002 Last date noted as effective: 03/10/2005 Status: SUPERSEDED BY VARIATION
J	29m NE	Operator: ROLLS ROYCE POWER VENTURES LTD Installation Name: - Process: COMBUSTION; ANY FUEL =>50MW Permit Number: BW9875 Original Permit Number: BK1325	EPR Reference: - Issue Date: - Effective Date: 15/12/2003 Last date noted as effective: 03/10/2005 Status: SURRENDERED
J	29m NE	Operator: ROLLS ROYCE POWER VENTURES LTD Installation Name: YELLAND POWER STATION Process: COMBUSTION; ANY FUEL =>50MW Permit Number: BW9875IR Original Permit Number: BK1325ID	EPR Reference: - Issue Date: 15/12/2003 Effective Date: 15/12/2003 Last date noted as effective: 01/01/2022 Status: SURRENDER EFFECTIVE

ID	Location	Details	
J	29m NE	Operator: ROLLS ROYCE POWER VENTURES LTD Installation Name: YELLAND POWER STATION Process: COMBUSTION; ANY FUEL =>50MW Permit Number: BK1325ID Original Permit Number: BK1325ID	EPR Reference: - Issue Date: 14/02/2002 Effective Date: 14/02/2002 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	1

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Address	Details	
C	**On site**	**Notts Contractors Ltd, Yelland Concrete And Transfer Station, Yelland, Devon, EX31 3QW**	**Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B**	**Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified**

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	16

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Address	Details	
12	On site	SAUNTON GOLF CLUB, SAUNTON, BRAUNTON, DEVON, EX33 1LG	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NRA-SW-6143/R Permit Version: 1 Receiving Water: SOAKAWAY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 23/07/1997 Effective Date: 23/07/1997 Revocation Date: -
13	On site	SAUNTON GOLF CLUB, SAUNTON, BRAUNTON, DEVON, EX33 1LG	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NRA-SW-3216 Permit Version: 1 Receiving Water: SOAKAWAY	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 10/10/1991 Effective Date: 10/10/1991 Revocation Date: -
15	On site	WC FACILITY AT SAUNTON GOLF CLUB, SAUNTON, BRAUNTON, DEVON, EX33 1LG	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRDP3720GX Permit Version: 1 Receiving Water: GROUND WATERS VIA INFILTRATION	Status: NEW ISSUED UNDER EPR 2010 Issue date: 12/10/2010 Effective Date: 11/10/2010 Revocation Date: -
F	On site	SAUNTON SANDS PS, SAUNTON, DEVON	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: 200203/PE/01 Permit Version: 1 Receiving Water: NON-TIDAL LAGOON IN BRAUNTON	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 07/01/1998 Effective Date: 07/01/1998 Revocation Date: -
I	On site	YELLAND PUMPING STATION, YELLAND, DEVON, EX31 3HB	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: 203126 Permit Version: 1 Receiving Water: RIVER TAW ESTUARY(E)	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 23/03/2004 Effective Date: 31/03/2004 Revocation Date: 30/03/2011
I	On site	YELLAND PUMPING STATION, YELLAND, DEVON, EX31 3HB	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: 203126 Permit Version: 2 Receiving Water: RIVER TAW ESTUARY(E)	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 25/03/2010 Effective Date: 31/03/2011 Revocation Date: -

ID	Location	Address	Details	
I	**On site**	**YELLAND PUMPING STATION, YELLAND, BARNSTAPLE, DEVON**	**Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY** **Permit Number: 002492** **Permit Version: 1** **Receiving Water: RIVER TAW ESTUARY (E)**	**Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)** **Issue date: 06/12/2000** **Effective Date: 01/05/2001** **Revocation Date: 30/03/2004**
I	**On site**	**YELLAND STW, OFF WEST YELLAND, YELLAND, BIDEFORD, DEVON**	**Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY** **Permit Number: 202215** **Permit Version: 1** **Receiving Water: RIVER TAW(E)**	**Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)** **Issue date: 26/06/2001** **Effective Date: 26/06/2001** **Revocation Date: 21/01/2010**
I	**On site**	**YELLAND STW, OFF WEST YELLAND, YELLAND, BIDEFORD, DEVON**	**Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY** **Permit Number: 2897/10** **Permit Version: 1** **Receiving Water: RIVER TAW ESTUARY**	**Status: REVOKED - UNSPECIFIED** **Issue date: 15/10/1987** **Effective Date: 15/10/1987** **Revocation Date: 30/04/2001**
16	20m E	FREEBIRD STP, ESTUARY BUSINESS PARK, YELLAND QUAY WEST YELLAND, BARNSTAPLE, DEVON, EX31 3HB	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRKB3395WH Permit Version: 1 Receiving Water: TRIBUTARY OF THE RIVER TAW	Status: NEW ISSUED UNDER EPR 2010 Issue date: 15/08/2018 Effective Date: 01/01/2019 Revocation Date: -
22	144m E	INSTOW SS, INSTOW STW, DEVON	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: DRA 127 Permit Version: 1 Receiving Water: -	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 23/05/1956 Revocation Date: 10/11/1997
K	251m NE	FIVE DWELLINGS, THE SHIPPEN, WEST SAUNTON, BRAUNTON, NORTH DEVON, EX33 1LS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 201461 Permit Version: 1 Receiving Water: SOAKAWAY	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 31/10/2000 Effective Date: 30/10/2000 Revocation Date: 16/12/2012

ID	Location	Address	Details	
K	251m NE	FIVE DWELLINGS, THE SHIPPEN, WEST SAUNTON, BRAUNTON, NORTH DEVON, EX33 1LS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 201461 Permit Version: 2 Receiving Water: SOAKAWAY	Status: VARIED UNDER EPR 2010 Issue date: 17/12/2012 Effective Date: 17/12/2012 Revocation Date: -
L	313m SE	WILLOWFIELD LAKE, GALLOWELL ROAD, BRAUNTON BURROWS, VELATOR, BRAUNTON DEVON, EX33 2NX	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 200905 Permit Version: 2 Receiving Water: TRIBUTARY OF SIR ARTHURS PILL	Status: VARIED UNDER EPR 2010 Issue date: 16/03/2011 Effective Date: 16/03/2011 Revocation Date: -
L	349m SE	WILLOWFIELD LAKE, GALLOWELL ROAD, BRAUNTON BURROWS, VELATOR, BRAUNTON DEVON, EX33 2NX	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 200905 Permit Version: 1 Receiving Water: SOAKAWAY	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 08/04/1999 Effective Date: 22/03/1999 Revocation Date: 15/03/2011
L	372m SE	WILLOWFIELD LAKE HOLIDAY COTTAGES, GALLOWELL ROAD, VELATORN, BRAUNTON, DEVON, EX33 2NX	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: SWWA 787 Permit Version: 1 Receiving Water: IRRIGATION AREA	Status: NEW CONSENT BY APPLICATION, GRANTED BY SEC.OF STATE Issue date: 22/01/1987 Effective Date: 22/01/1987 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	**0**

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	**1**

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Name	Status	Receiving Water	Authorised Substances
G	**On site**	**Yelland Stw**	**Not Active**	**-**	**Chromium, Copper, Lead, Nickel, Zinc**

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	**5**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Details	
10	**On site**	**Incident Date: 03/10/2002** **Incident Identification: 112417** **Pollutant: Sewage Materials** **Pollutant Description: Final Effluent**	**Water Impact: Category 4 (No Impact)** **Land Impact: Category 4 (No Impact)** **Air Impact: Category 4 (No Impact)**
11	**On site**	**Incident Date: 30/06/2003** **Incident Identification: 169888** **Pollutant: Sewage Materials** **Pollutant Description: Crude Sewage**	**Water Impact: Category 3 (Minor)** **Land Impact: Category 4 (No Impact)** **Air Impact: Category 4 (No Impact)**
F	**On site**	**Incident Date: 25/07/2001** **Incident Identification: 20243** **Pollutant: Sewage Materials** **Pollutant Description: Crude Sewage**	**Water Impact: Category 4 (No Impact)** **Land Impact: Category 3 (Minor)** **Air Impact: Category 4 (No Impact)**

ID	Location	Details	
17	44m S	Incident Date: 04/09/2015 Incident Identification: 1370596 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)
26	278m SW	Incident Date: 25/06/2003 Incident Identification: 168643 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	**0**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

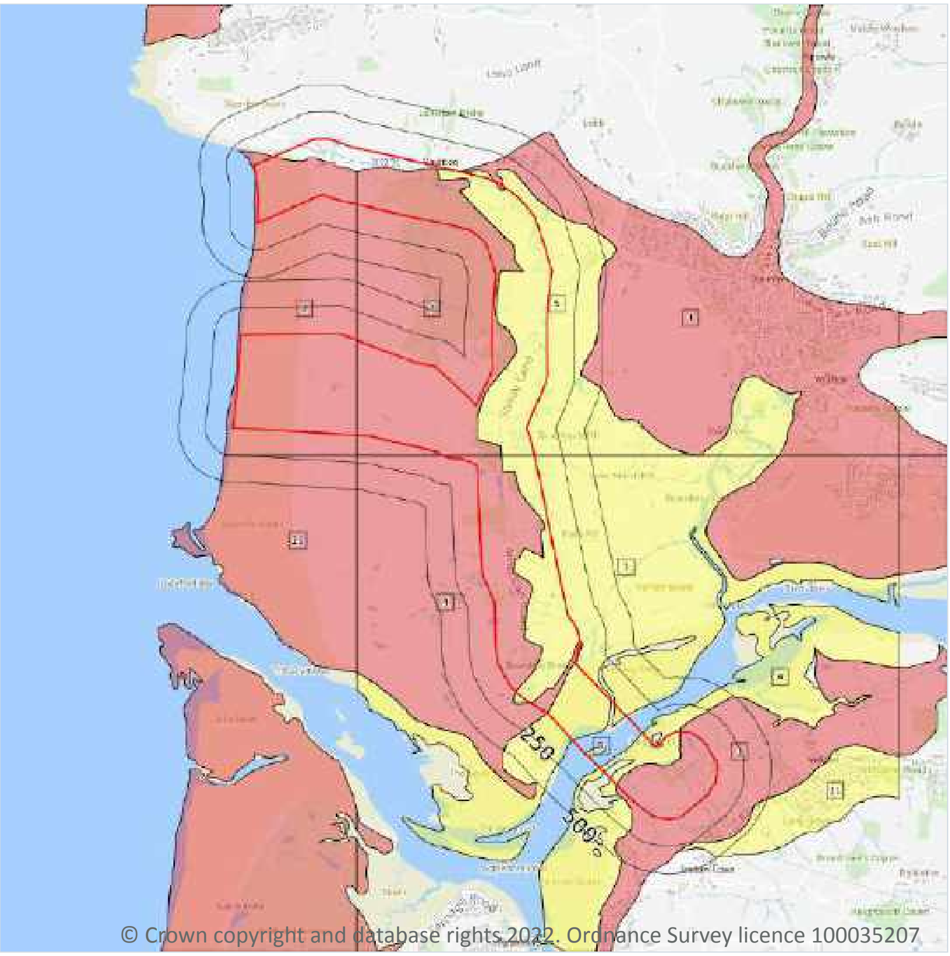
4.21 Pollution inventory radioactive waste

Records within 500m	**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m **11**

Aquifer status of groundwater held within superficial geology.

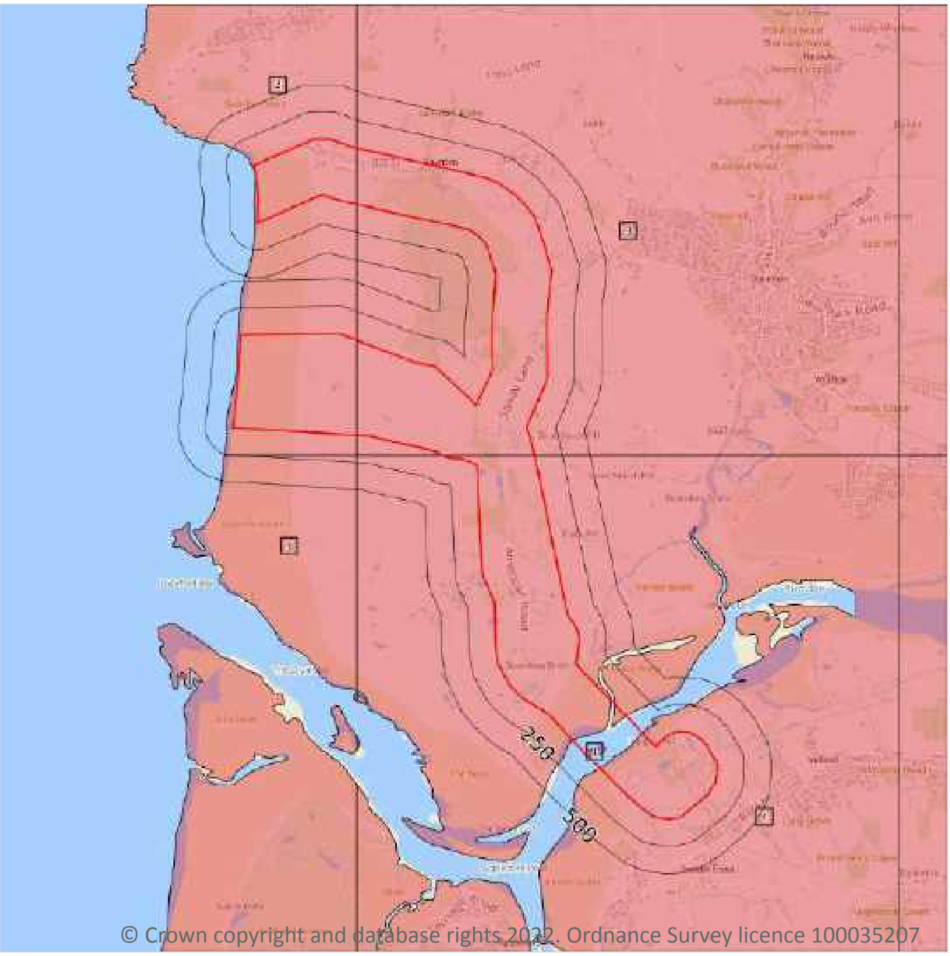
Features are displayed on the Hydrogeology map on **page 51**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
4	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
5	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
6	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
7	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
8	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
9	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
10	185m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
11	270m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	5

Aquifer status of groundwater held within bedrock geology.

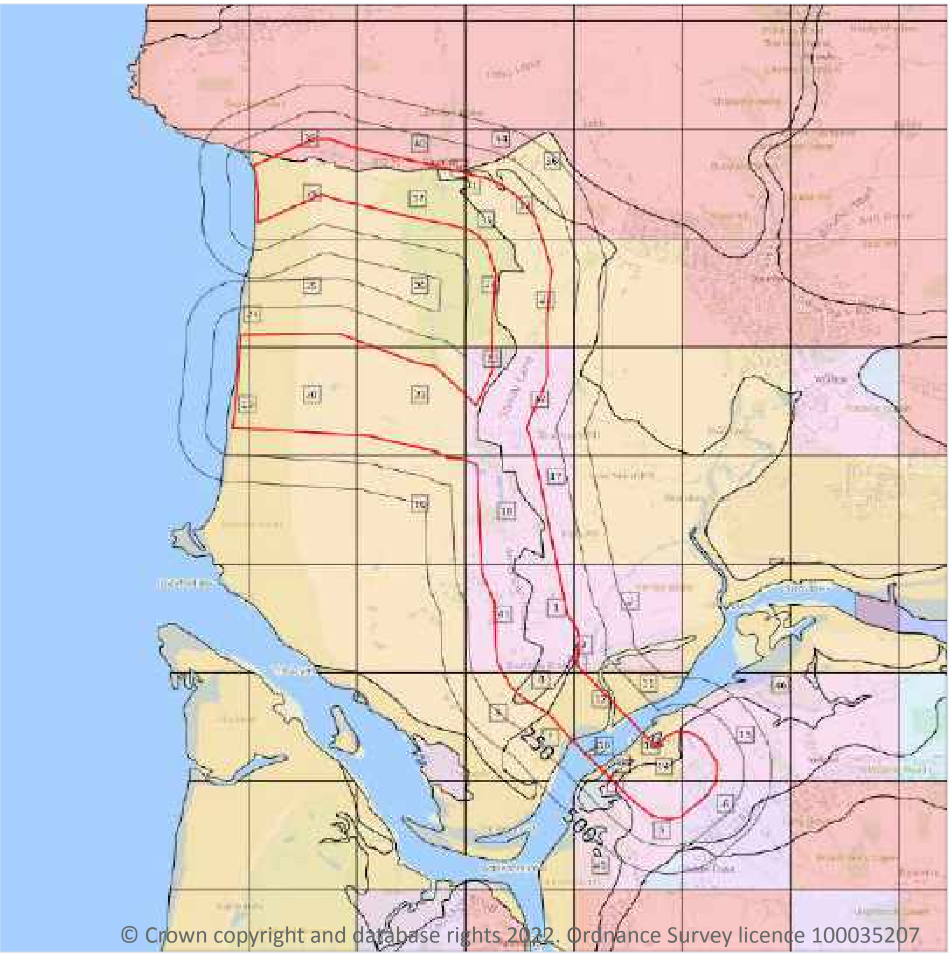
Features are displayed on the Bedrock aquifer map on **page 53**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
4	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
5	185m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	48

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 55**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
4	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
5	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
6	On site	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: Medium	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
7	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
8	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
9	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
10	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
11	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
12	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
13	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
14	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
15	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
16	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
17	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
18	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
19	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: No Data Infiltration value: No Data% Dilution value: No Datamm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
20	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: No Data% Dilution value: No Datamm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
21	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
22	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
23	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
24	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: No Data Infiltration value: No Data% Dilution value: No Datamm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
25	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: No Data% Dilution value: No Datamm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
26	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
27	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
28	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
29	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
30	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
31	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
32	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
33	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
34	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
35	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
36	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
37	**On site**	**Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: >90% Recharge potential: No Data**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
38	**On site**	**Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: >90% Recharge potential: No Data**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
39	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
40	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
41	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures**
A	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
A	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures**
42	11m N	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
43	19m SW	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
44	28m N	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
45	44m SW	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
46	47m N	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

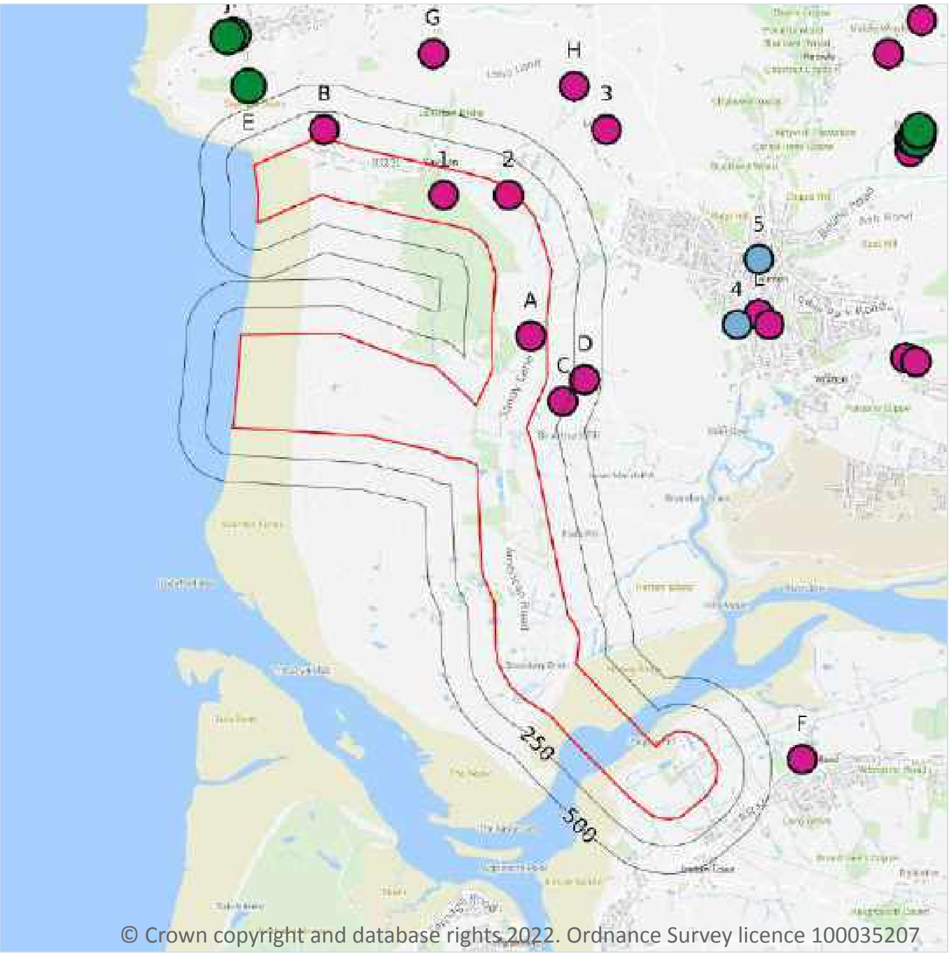
5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



- Site Outline

Search buffers in metres (m)

- Source Protection Zone 1
  Inner catchment
- Source Protection Zone 2
  Outer catchment
- Source Protection Zone 3
  Total catchment
- Source Protection Zone 4
  Zone of Special Interest
- Source Protection Zone 1c
  Inner catchment - confined aquifer
- Source Protection Zone 2c
  Outer catchment - confined aquifer
- Source Protection Zone 3c
  Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences
  Polygon features
- Drinking water abstraction licences
  Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	28

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 65**

ID	Location	Details	
1	**On site**	**Status: Active** **Licence No: 14/50/008/0661** **Details: Spray Irrigation - Direct** **Direct Source: Ground Water - Fresh** **Point: SAUNTON GOLF CLUB BOREHOLE NO. 1.** **Data Type: Point** **Name: The Christie Estate Trustees** **Easting: 245800** **Northing: 137400**	**Annual Volume (m^3): 26,185.48** **Max Daily Volume (m^3): 218.21** **Original Application No: 10687** **Original Start Date: 20/08/1976** **Expiry Date: -** **Issue No: 100** **Version Start Date: 10/03/1983** **Version End Date: -**
2	**On site**	**Status: Active** **Licence No: 14/50/008/0661** **Details: Spray Irrigation - Direct** **Direct Source: Ground Water - Fresh** **Point: SAUNTON GOLF CLUB BOREHOLE NO.2** **Data Type: Point** **Name: The Christie Estate Trustees** **Easting: 246400** **Northing: 137400**	**Annual Volume (m^3): 26,185.48** **Max Daily Volume (m^3): 218.21** **Original Application No: 10687** **Original Start Date: 20/08/1976** **Expiry Date: -** **Issue No: 100** **Version Start Date: 10/03/1983** **Version End Date: -**
A	**On site**	**Status: Historical** **Licence No: 14/50/008/0732** **Details: Process water** **Direct Source: Ground Water - Fresh** **Point: "HANDY GAS, BOREHOLE"** **Data Type: Point** **Name: Handy Gas Ltd** **Easting: 246600** **Northing: 136100**	**Annual Volume (m^3): -** **Max Daily Volume (m^3): -** **Original Application No: -** **Original Start Date: 07/06/1989** **Expiry Date: -** **Issue No: 100** **Version Start Date: 17/06/1989** **Version End Date: -**
A	**On site**	**Status: Historical** **Licence No: 14/50/008/0732** **Details: Process water** **Direct Source: Ground Water - Fresh** **Point: HANDY GAS, BOREHOLE** **Data Type: Point** **Name: Handy Gas Ltd** **Easting: 246600** **Northing: 136100**	**Annual Volume (m^3): -** **Max Daily Volume (m^3): -** **Original Application No: -** **Original Start Date: 07/06/1989** **Expiry Date: -** **Issue No: 100** **Version Start Date: 17/06/1989** **Version End Date: -**
B	86m N	Status: Historical Licence No: 14/50/008/0514 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - Fresh Point: PROPERTIES IN THE PARISH OF BRAUNTON - TAPPED SPRING Data Type: Point Name: Mr & Mrs G W L Christie & Trustees of the Christie Estate Easting: 244700 Northing: 138000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 02/02/1968 Expiry Date: - Issue No: 100 Version Start Date: 02/02/1968 Version End Date: -

ID	Location	Details	
B	86m N	Status: Historical Licence No: 14/50/008/0470 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - Fresh Point: SAUNTON COURT - WELL Data Type: Point Name: Freshcombe Farm Ltd Easting: 244700 Northing: 138000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 03/02/1967 Expiry Date: - Issue No: 100 Version Start Date: 03/02/1967 Version End Date: -
C	214m SE	Status: Historical Licence No: 14/50/008/0715 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: WILLOWFIELD - BOREHOLE Data Type: Point Name: Reed Easting: 246900 Northing: 135500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 16/04/1986 Expiry Date: - Issue No: 100 Version Start Date: 19/04/1988 Version End Date: -
D	347m E	Status: Historical Licence No: 14/50/008/0660 Details: Spray Irrigation - Direct Direct Source: Ground Water - Fresh Point: BRAUNTON GREAT FEILD - SPRING FED EXCAVATION Data Type: Point Name: Avery & Son Easting: 247100 Northing: 135700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 06/08/1976 Expiry Date: - Issue No: 100 Version Start Date: 10/06/1996 Version End Date: -
D	347m E	Status: Active Licence No: 14/50/008/0660 Details: Spray Irrigation - Direct Direct Source: Ground Water - Fresh Point: BRAUNTON GREAT FIELD - SPRING FED EXCAVATION Data Type: Point Name: Avery & Son Easting: 247100 Northing: 135700	Annual Volume (m^3): 1,091 Max Daily Volume (m^3): 72.70 Original Application No: 10698 Original Start Date: 06/08/1976 Expiry Date: - Issue No: 100 Version Start Date: 01/11/2012 Version End Date: -

ID	Location	Details	
E	689m NW	Status: Historical Licence No: 14/50/008/0481 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: Ground Water - Fresh Point: MARIGOLD COTTAGE, TAPPED SPRING Data Type: Point Name: Killiard-Leavey Easting: 244000 Northing: 138400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 29/04/1991 Version End Date: -
E	689m NW	Status: Historical Licence No: 14/50/008/0481 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household" Direct Source: Ground Water - Fresh Point: "MARIGOLD COTTAGE, TAPPED SPRING" Data Type: Point Name: Killiard-Leavey Easting: 244000 Northing: 138400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 29/04/1991 Version End Date: -
F	783m E	Status: Historical Licence No: 14/50/008/0771 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - Fresh Point: LOWER YELLAND FARM - BOREHOLE Data Type: Point Name: Day Easting: 249100 Northing: 132200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/05/1995 Expiry Date: - Issue No: 101 Version Start Date: 09/05/2002 Version End Date: -
F	783m E	Status: Historical Licence No: 14/50/008/0771 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: LOWER YELLAND FARM - BOREHOLE Data Type: Point Name: Day Easting: 249100 Northing: 132200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/05/1995 Expiry Date: - Issue No: 101 Version Start Date: 09/05/2002 Version End Date: -

ID	Location	Details	
G	1003m N	Status: Historical Licence No: 14/50/008/0684 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: "SOUTH HOLE FARM, TAPPED SPRING" Data Type: Point Name: Shapland Bros Easting: 245700 Northing: 138700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 13/01/1967 Version End Date: -
G	1003m N	Status: Historical Licence No: 14/50/008/0684 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: SOUTH HOLE FARM, TAPPED SPRING Data Type: Point Name: Shapland Bros Easting: 245700 Northing: 138700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 13/01/1967 Version End Date: -
3	1022m NE	Status: Historical Licence No: 14/50/008/0202 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - Fresh Point: LAND AT SOUTH LOBB - WELL Data Type: Point Name: Bater Easting: 247300 Northing: 138000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/12/1984 Version End Date: -
H	1127m NE	Status: Historical Licence No: 14/50/008/0327 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - Fresh Point: KNILLS FARM - TAPPED SPRING Data Type: Point Name: Mr M W Laramy Easting: 247000 Northing: 138400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 16/12/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/12/1966 Version End Date: -
H	1127m NE	Status: Historical Licence No: 14/50/008/0489 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - Fresh Point: NORTH LOBB FARM - TAPPED SPRING Data Type: Point Name: Laramy Easting: 247000 Northing: 138400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/04/1967 Expiry Date: - Issue No: 100 Version Start Date: 07/04/1967 Version End Date: -

ID	Location	Details	
I	1162m NW	Status: Historical Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243870 Northing: 138860	Annual Volume (m^3): 10000 Max Daily Volume (m^3): 60 Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -
J	1168m NW	Status: Active Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243812 Northing: 138841	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 60 Original Application No: NPS/WR/024197 Original Start Date: 17/02/1999 Expiry Date: - Issue No: 102 Version Start Date: 09/02/2018 Version End Date: -
I	1173m NW	Status: Active Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243865 Northing: 138869	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 60 Original Application No: NPS/WR/024197 Original Start Date: 17/02/1999 Expiry Date: - Issue No: 102 Version Start Date: 09/02/2018 Version End Date: -
J	1177m NW	Status: Historical Licence No: 14/50/008/0803 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - Fresh Point: "PILTON BEDS, BOREHOLE" Data Type: Point Name: Unison Easting: 243810 Northing: 138850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1999 Version End Date: -

ID	Location	Details	
J	1177m NW	Status: Historical Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: PILTON BEDS, BOREHOLE Data Type: Point Name: Unison Easting: 243810 Northing: 138850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1999 Version End Date: -
J	1177m NW	Status: Historical Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243810 Northing: 138850	Annual Volume (m^3): 10000 Max Daily Volume (m^3): 60 Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -
-	1708m N	Status: Historical Licence No: 14/50/008/0681 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: "NORTH HOLE FARM, WELL" Data Type: Point Name: Heywood Easting: 245800 Northing: 139400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 02/12/1966 Expiry Date: - Issue No: 100 Version Start Date: 02/12/1966 Version End Date: -
-	1708m N	Status: Historical Licence No: 14/50/008/0681 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: NORTH HOLE FARM, WELL Data Type: Point Name: Heywood Easting: 245800 Northing: 139400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 02/12/1966 Expiry Date: - Issue No: 100 Version Start Date: 02/12/1966 Version End Date: -
L	1934m E	Status: Historical Licence No: 14/50/008/0353 Details: Process water Direct Source: Ground Water - Fresh Point: "HORDENS, WELL" Data Type: Point Name: Watts & Sons Easting: 248700 Northing: 136300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 06/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 30/03/1984 Version End Date: -

ID	Location	Details	
L	1934m E	Status: Historical Licence No: 14/50/008/0353 Details: Process water Direct Source: Ground Water - Fresh Point: HORDENS, WELL Data Type: Point Name: Watts & Sons Easting: 248700 Northing: 136300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 06/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 30/03/1984 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**2**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 65**

ID	Location	Details	
4	1745m E	Status: Historical Licence No: 14/50/008/0004 Details: Process water Direct Source: Surface Water - Fresh Point: R CAEN Data Type: Point Name: Brannoc Fibres Limited Easting: 248500 Northing: 136200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 09/04/1993 Version End Date: -
5	1904m E	Status: Historical Licence No: 14/50/008/0668 Details: Spray Irrigation - Direct Direct Source: Surface Water - Fresh Point: R CAEN Data Type: Point Name: Braunton Bowling Club Easting: 248700 Northing: 136800	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 04/07/1977 Expiry Date: - Issue No: 100 Version Start Date: 21/05/1993 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**10**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 65**

ID	Location	Details	
C	214m SE	Status: Historical Licence No: 14/50/008/0715 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: WILLOWFIELD - BOREHOLE Data Type: Point Name: Reed Easting: 246900 Northing: 135500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 16/04/1986 Expiry Date: - Issue No: 100 Version Start Date: 19/04/1988 Version End Date: -
E	689m NW	Status: Historical Licence No: 14/50/008/0481 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: Ground Water - Fresh Point: MARIGOLD COTTAGE, TAPPED SPRING Data Type: Point Name: Killiard-Leavey Easting: 244000 Northing: 138400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 29/04/1991 Version End Date: -
E	689m NW	Status: Historical Licence No: 14/50/008/0481 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household" Direct Source: Ground Water - Fresh Point: "MARIGOLD COTTAGE, TAPPED SPRING" Data Type: Point Name: Killiard-Leavey Easting: 244000 Northing: 138400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 29/04/1991 Version End Date: -

ID	Location	Details	
F	783m E	Status: Historical Licence No: 14/50/008/0771 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: LOWER YELLAND FARM - BOREHOLE Data Type: Point Name: Day Easting: 249100 Northing: 132200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/05/1995 Expiry Date: - Issue No: 101 Version Start Date: 09/05/2002 Version End Date: -
I	1162m NW	Status: Historical Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243870 Northing: 138860	Annual Volume (m^3): 10000 Max Daily Volume (m^3): 60 Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -
J	1168m NW	Status: Active Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243812 Northing: 138841	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 60 Original Application No: NPS/WR/024197 Original Start Date: 17/02/1999 Expiry Date: - Issue No: 102 Version Start Date: 09/02/2018 Version End Date: -
I	1173m NW	Status: Active Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243865 Northing: 138869	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 60 Original Application No: NPS/WR/024197 Original Start Date: 17/02/1999 Expiry Date: - Issue No: 102 Version Start Date: 09/02/2018 Version End Date: -

ID	Location	Details	
J	1177m NW	Status: Historical Licence No: 14/50/008/0803 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - Fresh Point: "PILTON BEDS, BOREHOLE" Data Type: Point Name: Unison Easting: 243810 Northing: 138850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1999 Version End Date: -
J	1177m NW	Status: Historical Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: PILTON BEDS, BOREHOLE Data Type: Point Name: Unison Easting: 243810 Northing: 138850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1999 Version End Date: -
J	1177m NW	Status: Historical Licence No: 14/50/008/0803 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - Fresh Point: CROYDE BAY HOLIDAY CENTRE BOREHOLE Data Type: Point Name: Unison Easting: 243810 Northing: 138850	Annual Volume (m^3): 10000 Max Daily Volume (m^3): 60 Original Application No: - Original Start Date: 17/02/1999 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	**0**

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	**0**

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	340

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 77**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
2	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
3	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
4	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
6	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
7	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
8	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Boundary Drain
9	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Boundary Drain
10	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
11	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
12	On site	Tidal river or stream.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
13	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
14	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
15	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
16	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**Boundary Drain**
17	**On site**	**Lake, loch or reservoir.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
18	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
19	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**Boundary Drain**
20	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
21	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
22	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
23	**On site**	**Tidal river or stream.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**River Taw**
24	**On site**	**Tidal river or stream.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
25	**On site**	**Tidal river or stream.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**River Taw**
26	**On site**	**Tidal river or stream.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
27	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
28	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Boundary Drain
29	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Boundary Drain
30	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
31	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
32	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
33	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
34	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
35	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
36	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
37	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
38	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
69	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
E	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	On site	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
F	On site	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
G	On site	Marsh. An area that is predominantly waterlogged by freshwater.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
I	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
J	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Boundary Drain
K	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Boundary Drain
K	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
K	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Boundary Drain
L	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
N	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
R	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
S	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
T	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
U	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
V	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
X	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
X	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
X	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Y	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AA	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AB	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
BA	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BA	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BA	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AC	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BB	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BC	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AE	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BD	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AF	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AF	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AF	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AF	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AF	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AF	On site	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BE	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AG	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BF	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
BG	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AI	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BH	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BH	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AJ	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BI	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AK	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BJ	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BJ	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AL	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BK	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AM	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BL	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BL	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AN	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BM	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AO	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AO	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AO	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AO	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AO	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AO	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
BN	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AP	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
BO	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AQ	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
BP	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AR	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
BQ	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AS	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
BR	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AT	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
BS	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	-
BS	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-
AU	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BT	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BT	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AV	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
BU	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BU	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AV	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AV	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AW	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BV	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BW	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AX	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AX	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
AX	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
AY	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
AZ	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
AZ	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
AZ	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
AZ	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
AZ	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
AZ	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
AZ	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
CC	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
71	6m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CD	10m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
72	15m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Sir Arthur's Pill
CD	16m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CD	19m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CC	20m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
A	20m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	20m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CE	22m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CC	24m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	25m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
74	26m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Inner Marsh Pill
75	26m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Sir Arthur's Pill
A	27m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CF	30m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
76	34m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Flats Pill
77	35m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Flats Pill
79	41m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
80	45m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CG	53m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CG	53m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
81	53m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
82	55m E	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
CD	58m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CI	64m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CD	66m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	69m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	69m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
CK	69m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CJ	69m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	69m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	69m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	70m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	70m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	77m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CK	80m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CD	81m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CD	81m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CL	85m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	85m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
84	85m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
85	85m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	88m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CM	88m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CN	91m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CD	92m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CK	93m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	93m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CM	93m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CO	95m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CP	95m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CN	96m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
88	101m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CP	102m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
CS	114m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CQ	114m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CQ	114m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
CD	115m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	116m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	116m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CP	117m E	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	118m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CT	125m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	127m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CU	127m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
90	129m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
91	129m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
CK	131m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
93	132m E	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
94	133m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Sir Arthur's Pill
CK	133m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CW	138m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
95	138m E	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CK	139m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
96	141m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CX	141m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CY	141m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CZ	141m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CV	145m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
98	146m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Boundary Drain

ID	Location	Type of water feature	Ground level	Permanence	Name
CD	147m S	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
99	148m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
102	158m NE	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
DA	161m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
DB	162m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	163m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
103	165m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
DC	167m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
DD	169m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CS	169m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
DC	170m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	171m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DE	174m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
DF	179m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DG	185m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
106	186m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DE	188m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DH	191m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DI	197m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
108	198m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DJ	198m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DK	201m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DK	202m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
BR	202m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DL	204m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CD	206m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
111	207m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
DM	207m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
112	207m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
CW	208m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DN	215m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DO	215m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DN	216m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DN	216m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DC	216m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
DC	219m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DQ	224m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DM	224m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DC	233m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
DC	233m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DR	233m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DS	234m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
114	237m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DT	239m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
115	240m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DU	240m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DM	241m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
116	243m E	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DM	244m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DM	244m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DT	247m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
DT	247m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
DT	249m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	95

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 77**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	3

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 77**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
63	**On site**	**River**	**Taw Estuary**	**GB108050020000**	**Taw and North Devon Streams**	**North Devon**
64	**On site**	**Coastal Catchment**	**Not part of a river WB catchment**	**198**	**Taw and North Devon Streams**	**North Devon**
65	**On site**	**Coastal Catchment**	**Not part of a river WB catchment**	**235**	**Taw and North Devon Streams**	**North Devon**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	**3**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 77**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
66	**On site**	**Transi**	**TAW / TORRIDGE**	**GB540805015500**	**Moderate**	**Fail**	**Moderate**	**2019**
67	**On site**	**Coast a**	**Barnstaple Bay**	**GB610807680003**	**Moderate**	**Fail**	**Good**	**2019**
78	37m E	River	Taw Estuary	GB108050020000	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**1**

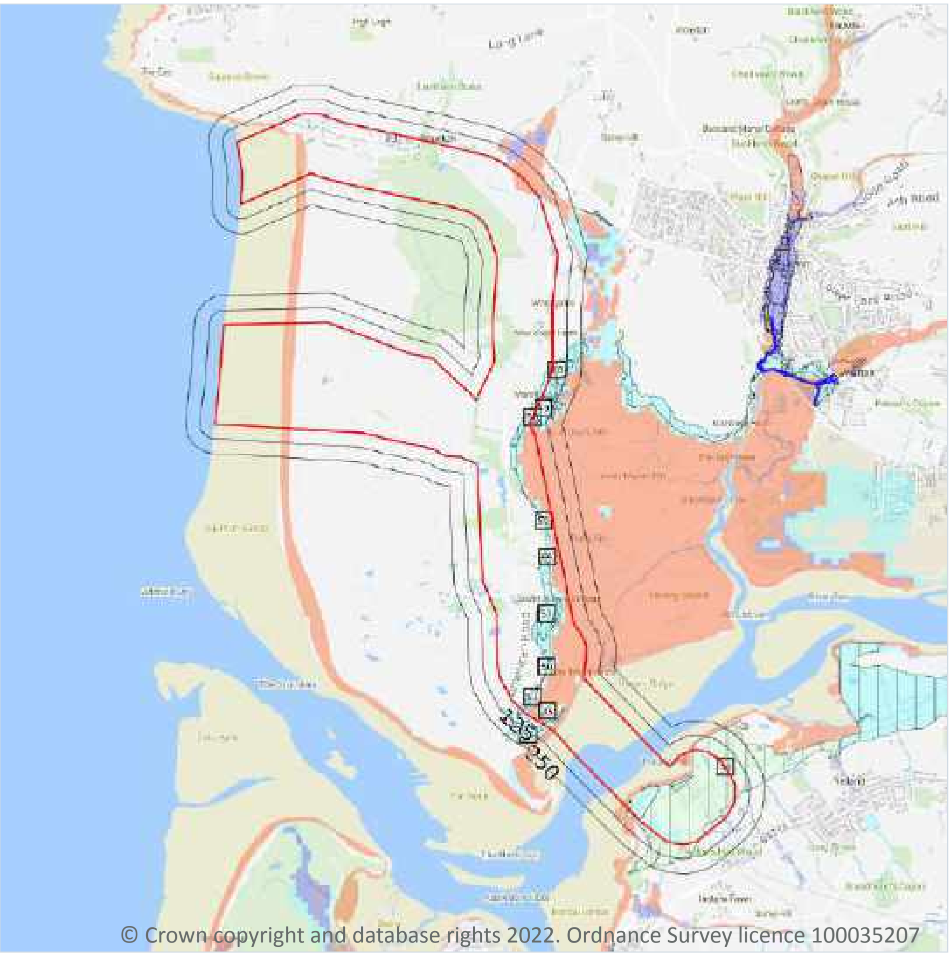
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 77**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
68	**On site**	**River Taw and North Devon Streams**	**GB40802G801000**	**Poor**	**Poor**	**Good**	**2019**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding



Site Outline
Search buffers in metres (m)

River and coastal flooding:

- High
- Medium
- Low
- Very Low

- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences

- Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m	61

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 106**

Distance	Flood risk category
On site	**High**
0 - 50m	High

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	**24**

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 106**

ID	Location	
44	**On site**	**Area benefiting from flood defences**
45	**On site**	**Area benefiting from flood defences**
46	**On site**	**Area benefiting from flood defences**
47	**On site**	**Area benefiting from flood defences**
48	**On site**	**Area benefiting from flood defences**

ID	Location	
49	**On site**	**Area benefiting from flood defences**
50	**On site**	**Area benefiting from flood defences**
51	**On site**	**Area benefiting from flood defences**
52	**On site**	**Area benefiting from flood defences**
53	**On site**	**Area benefiting from flood defences**
54	**On site**	**Area benefiting from flood defences**
55	**On site**	**Area benefiting from flood defences**
56	**On site**	**Area benefiting from flood defences**
57	**On site**	**Area benefiting from flood defences**
A	**On site**	**Area benefiting from flood defences**
C	**On site**	**Area benefiting from flood defences**
D	**On site**	**Area benefiting from flood defences**
E	**On site**	**Area benefiting from flood defences**
E	**On site**	**Area benefiting from flood defences**
F	**On site**	**Area benefiting from flood defences**
G	**On site**	**Area benefiting from flood defences**
G	**On site**	**Area benefiting from flood defences**
66	57m SW	Area benefiting from flood defences
L	173m E	Area benefiting from flood defences

This data is sourced from the Environment Agency and Natural Resources Wales.

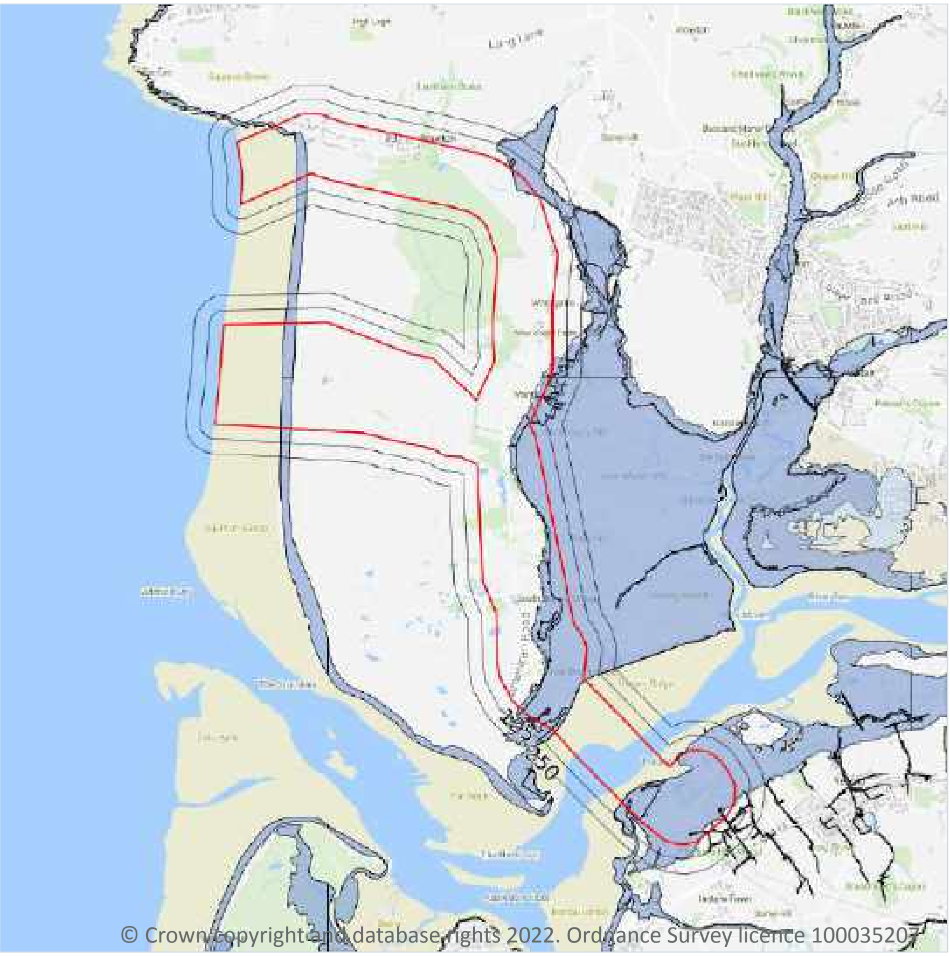
7.5 Flood Storage Areas

Records within 250m	**0**

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

Features are displayed on the River and coastal flooding map on **page 106**

Location	Type
On site	**Zone 2 - (Fluvial /Tidal Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	**1**

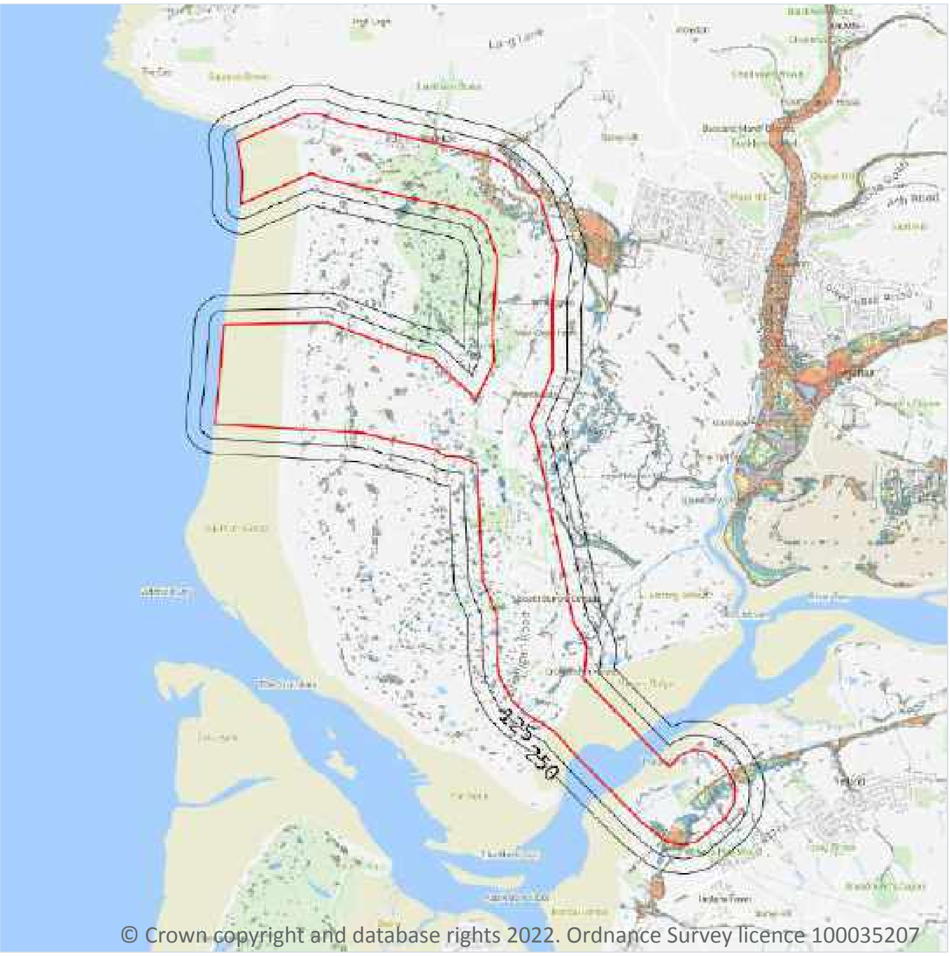
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 106**

Location	Type
On site	**Zone 3 - (Fluvial Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, Greater than 1.0m**
Highest risk within 50m	**1 in 30 year, Greater than 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 111**

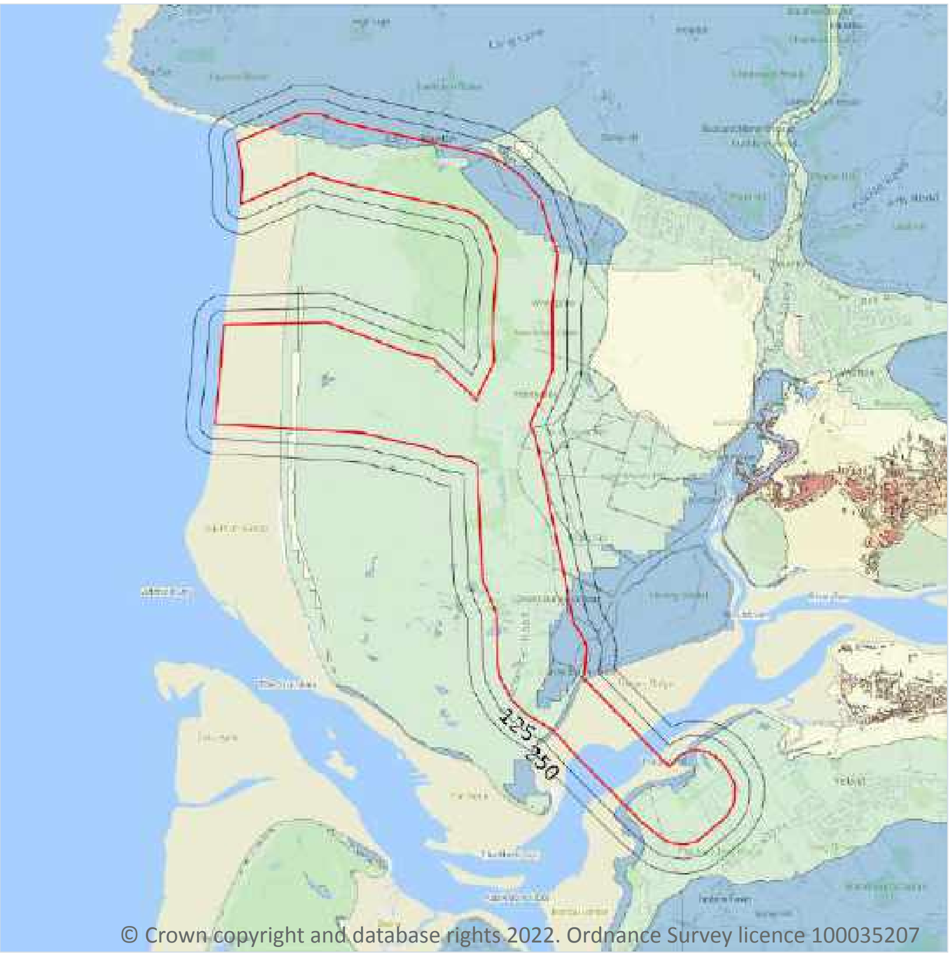
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline
Search buffers in metres (m)

High
Moderate - High
Moderate
Low
Negligible

9.1 Groundwater flooding

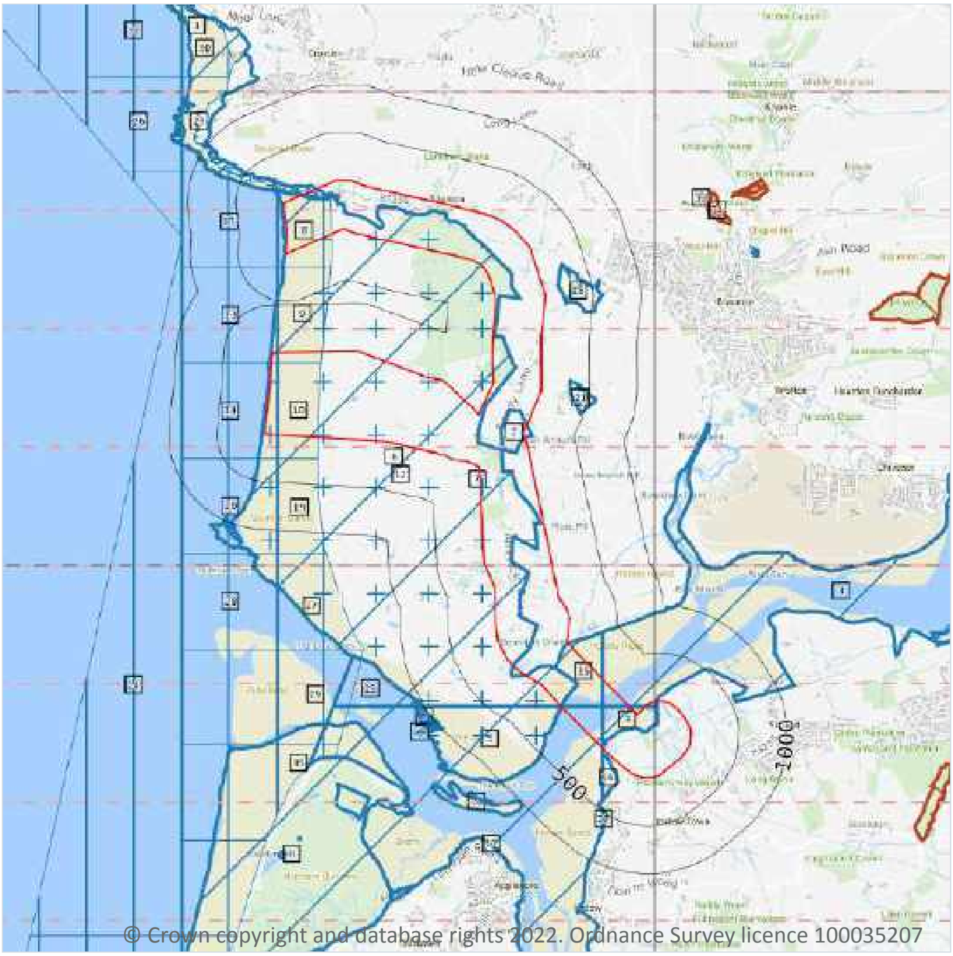
Highest risk on site	**Moderate**
Highest risk within 50m	**Moderate**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 113**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline
Search buffers in metres (m)
Sites of Special Scientific Interest (SSSI)
Special Areas of Conservation (SAC)
Local Nature Reserves (LNR)
Designated Ancient Woodland
Biosphere Reserves
Marine Conservation Zones

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	22

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 114**

ID	Location	Name	Data source
1	**On site**	**Saunton to Baggy Point Coast**	**Natural England**

ID	Location	Name	Data source
2	**On site**	**Greenaways and Freshmarsh, Braunton**	**Natural England**
3	**On site**	**Taw-Torridge Estuary**	**Natural England**
4	**On site**	**Taw-Torridge Estuary**	**Natural England**
5	**On site**	**Braunton Burrows**	**Natural England**
6	**On site**	**Braunton Burrows**	**Natural England**
11	**On site**	**Taw-Torridge Estuary**	**Natural England**
15	**On site**	**Taw-Torridge Estuary**	**Natural England**
16	34m SW	Taw-Torridge Estuary	Natural England
18	154m E	Braunton Swanpool	Natural England
21	295m E	Greenaways and Freshmarsh, Braunton	Natural England
22	480m SW	Taw-Torridge Estuary	Natural England
A	1007m SW	Braunton Burrows	Natural England
25	1028m SW	Taw-Torridge Estuary	Natural England
B	1046m SW	Braunton Burrows	Natural England
B	1052m SW	Braunton Burrows	Natural England
B	1053m SW	Braunton Burrows	Natural England
B	1069m SW	Braunton Burrows	Natural England
B	1073m SW	Braunton Burrows	Natural England
C	1159m SW	Braunton Burrows	Natural England
31	1637m SW	Northam Burrows	Natural England
33	1847m E	Caen Valley Bats	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**8**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

Features are displayed on the Environmental designations map on **page 114**

ID	Location	Name	Features of interest	Habitat description	Data source
12	**On site**	**Braunton Burrows**	**Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.**	**Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)**	**Natural England**
A	1007m SW	Braunton Burrows	Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.	Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)	Natural England
B	1046m SW	Braunton Burrows	Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.	Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)	Natural England
B	1052m SW	Braunton Burrows	Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.	Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)	Natural England
B	1053m SW	Braunton Burrows	Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.	Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)	Natural England

ID	Location	Name	Features of interest	Habitat description	Data source
B	1069m SW	Braunton Burrows	Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.	Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)	Natural England
B	1073m SW	Braunton Burrows	Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.	Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)	Natural England
C	1159m SW	Braunton Burrows	Intertidal mudflats and sandflats; Shifting dunes with marram; Dune grassland; Dunes with creeping willow; Humid dune slacks; Petalwort; Early gentian.	Shingle, Sea cliffs, Islets; Improved grassland; Broad-leaved deciduous woodland; Coastal sand dunes, Sand beaches, Machair; Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water)	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	1

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 114**

ID	Location	Name	Woodland Type
34	1893m E	Unknown	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	1

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

Features are displayed on the Environmental designations map on **page 114**

ID	Location	Name	Status
7	**On site**	**North Devon**	**Declared**

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	17

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

Features are displayed on the Environmental designations map on **page 114**

ID	Location	Name	Status
8	**On site**	**Bideford to Foreland Point**	**Designated**
9	**On site**	**Bideford to Foreland Point**	**Designated**
10	**On site**	**Bideford to Foreland Point**	**Designated**
13	**On site**	**Bideford to Foreland Point**	**Designated**
14	**On site**	**Bideford to Foreland Point**	**Designated**
17	50m W	Bideford to Foreland Point	Designated
19	221m S	Bideford to Foreland Point	Designated
20	247m S	Bideford to Foreland Point	Designated
23	617m NW	Bideford to Foreland Point	Designated
24	857m W	Bideford to Foreland Point	Designated
26	1100m W	Bideford to Foreland Point	Designated
27	1214m S	Bideford to Foreland Point	Designated
28	1245m S	Bideford to Foreland Point	Designated
29	1402m W	Bideford to Foreland Point	Designated
30	1442m NW	Bideford to Foreland Point	Designated
32	1694m NW	Bideford to Foreland Point	Designated
35	1980m SW	Bideford to Foreland Point	Designated

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	**0**

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	**0**

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	**0**

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	**0**

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	**0**

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	3

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	**Taw Estuary**	**Eutrophic Water**	**6**	**Existing**
On site	**Taw Estuary**	**Eutrophic Water**	**6**	**Existing**
On site	**Taw Estuary**	**Eutrophic Water**	**6**	**Existing**

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units

- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	41

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 122**

ID	Location	Type of developments requiring consultation
1	**On site**	**All applications - All planning applications - except householder applications.** **Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**
2	**On site**	**All applications - All planning applications.**

ID	Location	Type of developments requiring consultation
3	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 50 units or more. Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause air pollution or dust either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply . Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**

ID	Location	Type of developments requiring consultation
4	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 50 units or more. Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units. Air pollution - Any development that could cause air pollution (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply . Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**

ID	Location	Type of developments requiring consultation
5	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 100 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause air pollution (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 2m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply . Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**

ID	Location	Type of developments requiring consultation
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A	**On site**	**All applications - All planning applications.**

ID	Location	Type of developments requiring consultation
A	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures.** **Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals.** **Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines.** **Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction.** **Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha.** **Residential - Residential development of 50 units or more.** **Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas.** **Air pollution - Any development that could cause air pollution or dust either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores).** **Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.** **Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management.** **Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.** **Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream.** **Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply .** **Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**

ID	Location	Type of developments requiring consultation
B	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures.** **Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals.** **Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines.** **Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction.** **Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha.** **Residential - Residential development of 50 units or more.** **Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas.** **Air pollution - Any development that could cause air pollution or dust either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores).** **Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.** **Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management.** **Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.** **Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream.** **Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply .** **Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**

ID	Location	Type of developments requiring consultation
B	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 50 units or more. Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause air pollution or dust either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 2m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply . Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**

ID	Location	Type of developments requiring consultation
C	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 50 units or more. Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause air pollution or dust either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply . Notes: New residential/tourist accommodation in this area requires an hra/financial contributions to address recreational impacts on braunton burrows sac. check with local planning authority.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**32**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 122**

ID:	36
Location:	On site
SSSI name:	Braunton Burrows
Unit name:	Crow Point & Broad Sands
Broad habitat:	Supralittoral Sediment
Condition:	Unfavourable - Declining

Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Favourable	09/10/2006
H2120 Shifting dunes along the shoreline with Ammophila arenaria ('White dunes')	Unfavourable - Declining	09/10/2006
IA - Coastal Geomorphology	Unfavourable - No change	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: 37
Location: On site
SSSI name: Braunton Burrows
Unit name: The Flats Enclosure
Broad habitat: Supralittoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Favourable	26/10/2012
H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')	Favourable	26/10/2012
H2190 Humid dune slacks	Favourable	26/10/2012
Humid dune slacks	Favourable	26/10/2012
IA - Coastal Geomorphology	Favourable	26/10/2012
Population of Schedule 8 liverwort - Petalophyllum ralfsi, Petalwort	Favourable	26/10/2012
Vascular plant assemblage	Favourable	26/10/2012
Wet woodland	Favourable	26/10/2012

ID: 38
Location: On site
SSSI name: Braunton Burrows
Unit name: The Flats Enclosure
Broad habitat: Supralittoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Favourable	26/10/2012
H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')	Favourable	26/10/2012
H2190 Humid dune slacks	Favourable	26/10/2012
Humid dune slacks	Favourable	26/10/2012
IA - Coastal Geomorphology	Favourable	26/10/2012
Population of Schedule 8 liverwort - Petalophyllum ralfsi, Petalwort	Favourable	26/10/2012
Vascular plant assemblage	Favourable	26/10/2012
Wet woodland	Favourable	26/10/2012

ID: 39
Location: On site
SSSI name: Braunton Burrows
Unit name: Saunton Golf Club
Broad habitat: Supralittoral Sediment
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Unfavourable - Recovering	26/06/2012
H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')	Unfavourable - Recovering	26/06/2012
H2190 Humid dune slacks	Favourable	26/06/2012
Humid dune slacks	Favourable	26/06/2012
IA - Coastal Geomorphology	Favourable	26/06/2012
Vascular plant assemblage	Favourable	26/06/2012
Wet woodland	Favourable	26/06/2012

ID: 40
Location: On site
SSSI name: Braunton Burrows
Unit name: The Roughs And Strawberry Ridge
Broad habitat: Supralittoral Sediment
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Unfavourable - Recovering	02/07/2012
H2120 Shifting dunes along the shoreline with Ammophila arenaria ('White dunes')	Unfavourable - Recovering	02/07/2012
H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')	Unfavourable - Recovering	02/07/2012
H2170 Dunes with Salix repens ssp. argentea (Salicion arenariae)	Unfavourable - Recovering	02/07/2012
Humid dune slacks	Unfavourable - Recovering	02/07/2012
IA - Coastal Geomorphology	Favourable	02/07/2012
Lichen assemblage	Unfavourable - Recovering	02/07/2012
Population of Schedule 5 mollusc - Catinella arenaria, Sandbowl Snail	Unfavourable - Recovering	02/07/2012
S1395 Petalwort, Petalophyllum ralfsii	Favourable	02/07/2012
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Favourable	02/07/2012
Vascular plant assemblage	Favourable	02/07/2012
Wet woodland	Unfavourable - Recovering	02/07/2012

ID: 41
Location: On site
SSSI name: Taw-Torridge Estuary
Unit name: River Taw
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Curlew, Numenius arquata	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Golden plover, Pluvialis apricaria	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Lapwing, Vanellus vanellus	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900

ID: 42
Location: On site
SSSI name: Braunton Burrows
Unit name: Fox Slack, Soay Plain & Lamprey's Plot Enclosure
Broad habitat: Supralittoral Sediment
Condition: Unfavourable - Recovering

Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Unfavourable - Recovering	02/07/2012
H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')	Unfavourable - Recovering	02/07/2012
H2170 Dunes with Salix repens ssp. argentea (Salicion arenariae)	Unfavourable - Recovering	02/07/2012
H2190 Humid dune slacks	Unfavourable - Recovering	02/07/2012
Humid dune slacks	Unfavourable - Recovering	02/07/2012
IA - Coastal Geomorphology	Favourable	02/07/2012
Lichen assemblage	Unfavourable - Recovering	02/07/2012
Population of Schedule 5 mollusc - Catinella arenaria, Sandbowl Snail	Unfavourable - Recovering	02/07/2012
Population of Schedule 8 plant - Teucrium scordium, Water Germander	Unfavourable - Recovering	02/07/2012
Vascular plant assemblage	Favourable	02/07/2012
Wet woodland	Favourable	02/07/2012

ID: 43
Location: On site
SSSI name: Saunton to Baggy Point Coast
Unit name: Saunton Cliffs And Foreshore
Broad habitat: Earth Heritage
Condition: Unfavourable - Declining
Reportable features:

Feature name	Feature condition	Date of assessment
EC - Marine Devonian	Favourable	19/09/2012
EC - Quaternary of South-West England	Favourable	19/09/2012
IS - Quaternary of South-West England	Favourable	19/09/2012
Lichen assemblage	Unfavourable - Declining	19/09/2012
Population of Schedule 8 moss - Didymodon cordatus, Cordate Beard-moss	Favourable	30/11/2012
Vascular plant assemblage	Favourable	19/09/2012

ID: 44
Location: On site
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: 45
Location: On site
SSSI name: Braunton Burrows
Unit name: Northern Training Area
Broad habitat: Supralittoral Sediment
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Unfavourable - Recovering	04/07/2012
H2120 Shifting dunes along the shoreline with Ammophila arenaria ('White dunes')	Favourable	04/07/2012
H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')	Unfavourable - Recovering	04/07/2012
H2170 Dunes with Salix repens ssp. argentea (Salicion arenariae)	Unfavourable - Recovering	04/07/2012
H2190 Humid dune slacks	Unfavourable - Recovering	04/07/2012
Humid dune slacks	Unfavourable - Recovering	04/07/2012
IA - Coastal Geomorphology	Favourable	04/07/2012
Lichen assemblage	Unfavourable - Recovering	04/07/2012
Population of Schedule 5 mollusc - Catinella arenaria, Sandbowl Snail	Unfavourable - Recovering	04/07/2012
Population of Schedule 8 liverwort - Petalophyllum ralfsi, Petalwort	Unfavourable - Recovering	04/07/2012
Population of Schedule 8 plant - Liparis loeselii, Fen Orchid	Unfavourable - Recovering	04/07/2012

Feature name	Feature condition	Date of assessment
Population of Schedule 8 plant - Teucrium scordium, Water Germander	Unfavourable - Recovering	04/07/2012
S1395 Petalwort, Petalophyllum ralfsii	Unfavourable - Recovering	04/07/2012
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Favourable	04/07/2012
Vascular plant assemblage	Unfavourable - Recovering	04/07/2012
Wet woodland	Favourable	04/07/2012

ID: 46
Location: On site
SSSI name: Braunton Burrows
Unit name: Southern Training Area
Broad habitat: Supralittoral Sediment
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Unfavourable - Recovering	04/07/2012
H2120 Shifting dunes along the shoreline with Ammophila arenaria ('White dunes')	Unfavourable - Recovering	04/07/2012
H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')	Unfavourable - Recovering	04/07/2012
H2170 Dunes with Salix repens ssp. argentea (Salicion arenariae)	Unfavourable - Recovering	04/07/2012
H2190 Humid dune slacks	Unfavourable - Recovering	04/07/2012
Humid dune slacks	Unfavourable - Recovering	04/07/2012
IA - Coastal Geomorphology	Favourable	04/07/2012
Lichen assemblage	Unfavourable - Recovering	04/07/2012
Population of Schedule 5 mollusc - Catinella arenaria, Sandbowl Snail	Unfavourable - Recovering	04/07/2012
Population of Schedule 8 liverwort - Petalophyllum ralfsi, Petalwort	Unfavourable - Recovering	04/07/2012
Population of Schedule 8 plant - Teucrium scordium, Water Germander	Unfavourable - Recovering	04/07/2012
S1395 Petalwort, Petalophyllum ralfsii	Unfavourable - Recovering	04/07/2012
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Favourable	04/07/2012
Vascular plant assemblage	Unfavourable - Recovering	04/07/2012
Wet woodland	Favourable	04/07/2012

ID: A
Location: On site
SSSI name: Greenaways and Freshmarsh, Braunton
Unit name: Freshmarsh
Broad habitat: Neutral Grassland - Upland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland wet neutral grassland (MG11, MG13)	Unfavourable - Recovering	19/08/2013

ID: F
Location: 154m E
SSSI name: Braunton Swanpool
Unit name: Nicholl
Broad habitat: Neutral Grassland - Upland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Filipendula ulmaria - Angelica sylvestris mire (M27)	Unfavourable - Recovering	10/02/2021

ID: F
Location: 171m E
SSSI name: Braunton Swanpool
Unit name: Dyer
Broad habitat: Fen, Marsh And Swamp - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Carex riparia swamp (S6)	-	-

ID: C
Location: 194m E
SSSI name: Braunton Swanpool
Unit name: Dwt
Broad habitat: Neutral Grassland - Upland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Carex riparia swamp (S6)	-	-

ID: D
Location: 295m E
SSSI name: Greenaways and Freshmarsh, Braunton
Unit name: Greenaways
Broad habitat: Neutral Grassland - Upland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland fens, including basin, flood-plain, open water transition and valley fens	Favourable	22/06/2012

ID: F
Location: 298m E
SSSI name: Braunton Swanpool
Unit name: Nicholl
Broad habitat: Neutral Grassland - Upland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Filipendula ulmaria - Angelica sylvestris mire (M27)	Unfavourable - Recovering	10/02/2021

ID: 71
Location: 379m SW
SSSI name: Taw-Torridge Estuary
Unit name: River Torridge
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Curlew, Numenius arquata	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Golden plover, Pluvialis apricaria	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Lapwing, Vanellus vanellus	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Littoral sediment	Not Recorded	01/01/1900

ID: 103
Location: 1007m SW
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: I
Location: 1046m SW
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: I
Location: 1052m SW
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable

Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: I
Location: 1053m SW
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: I
Location: 1069m SW
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: I
Location: 1073m SW
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: 111
Location: 1159m SW
SSSI name: Braunton Burrows
Unit name: Saunton Sands
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H1140 Mudflats and sandflats not covered by seawater at low tide	Not Recorded	01/01/1900
IA - Coastal Geomorphology	Favourable	29/10/2009
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

ID: 114
Location: 1281m NW
SSSI name: Saunton to Baggy Point Coast
Unit name: Croyde Burrows And Beach
Broad habitat: Supralittoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
EC - Quaternary of South-West England	Favourable	14/09/2012

Feature name	Feature condition	Date of assessment
IS - Quaternary of South-West England	Favourable	14/09/2012
Vascular plant assemblage	Favourable	14/09/2012

ID: 120
Location: 1515m SW
SSSI name: Taw-Torridge Estuary
Unit name: Two Rivers Estuary Mouth & The Skern
Broad habitat: Littoral Sediment
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Curlew, Numenius arquata	Favourable	25/11/2011
Aggregations of non-breeding birds - Golden plover, Pluvialis apricaria	Favourable	25/11/2011
Aggregations of non-breeding birds - Lapwing, Vanellus vanellus	Favourable	25/11/2011
Littoral sediment	Unfavourable - No change	25/11/2011

ID: 131
Location: 1637m SW
SSSI name: Northam Burrows
Unit name: Westward Ho! Cobble Ridge
Broad habitat: Earth Heritage
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
IA - Coastal Geomorphology	Unfavourable - Recovering	06/09/2010

ID: 142
Location: 1744m SW
SSSI name: Northam Burrows
Unit name: Ridge Dunes & Grey Sand Hill
Broad habitat: Supralittoral Sediment
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Unfavourable - No change	22/07/2011
IA - Coastal Geomorphology	Unfavourable - No change	22/07/2011
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Unfavourable - No change	22/07/2011
Vascular plant assemblage	Unfavourable - Recovering	22/07/2011

ID: M
Location: 1847m E
SSSI name: Caen Valley Bats
Unit name: Former Stable Buildings
Broad habitat: Built Up Areas And Gardens
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Hibernating populations of bats - Barbastelle, Bechstein's bat, Greater Horseshoe bat, Lesser Horseshoe bat and mixed assemblages	Favourable	05/12/2012
Maternity colonies of bats - Greater Horseshoe bat, Rhinolophus ferrumequinum and Lesser Horseshoe bat, Rhinolophus hipposideros	Favourable	07/07/2012

ID: 158
Location: 1937m NW
SSSI name: Saunton to Baggy Point Coast
Unit name: Baggy Point Cliffs And Foreshore
Broad habitat: Earth Heritage
Condition: Favourable
Reportable features:

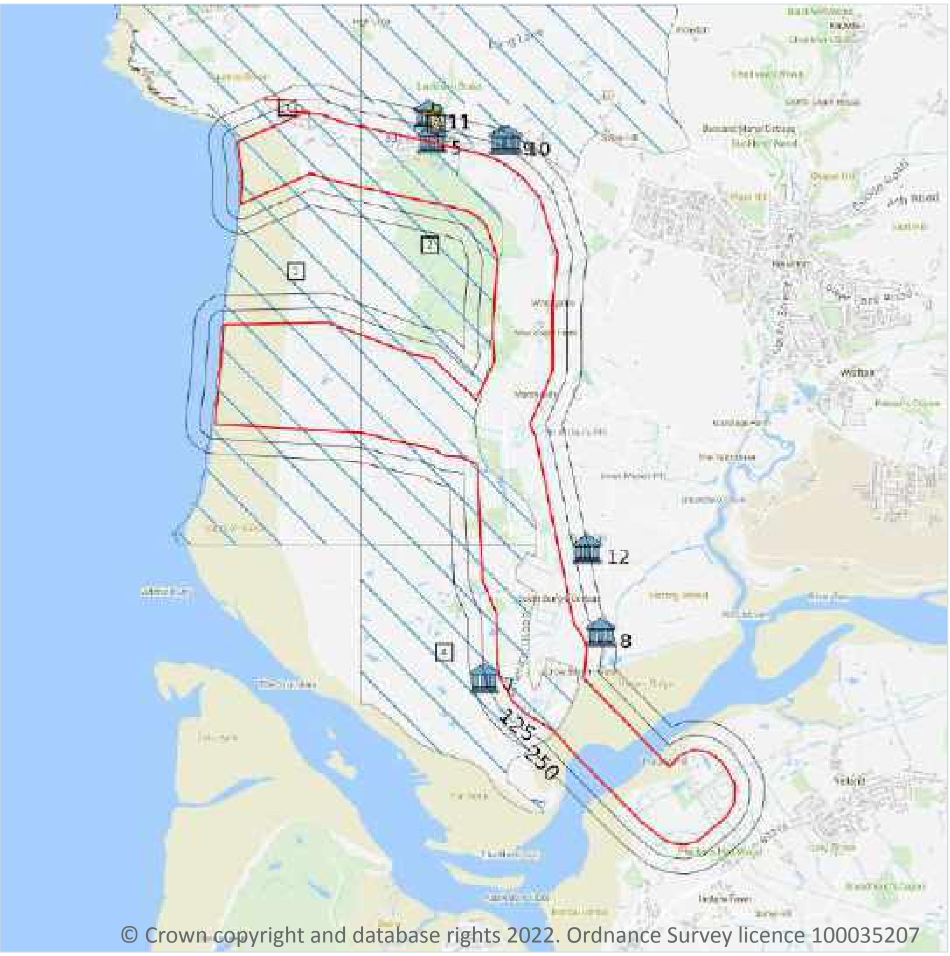
Feature name	Feature condition	Date of assessment
EC - Marine Devonian	Favourable	01/10/2012
EC - Quaternary of South-West England	Favourable	01/10/2012
IS - Quaternary of South-West England	Favourable	01/10/2012
Lichen assemblage	Favourable	01/10/2012
Vascular plant assemblage	Favourable	01/10/2012

ID: 159
Location: 1946m SW
SSSI name: Northam Burrows
Unit name: Grey Sand Lake
Broad habitat: Supralittoral Sediment
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Fixed dune grassland	Unfavourable - Recovering	26/07/2011
Humid dune slacks	Unfavourable - No change	26/07/2011
IA - Coastal Geomorphology	Unfavourable - No change	26/07/2011
Population of Schedule 8 plant - Teucrium scordium, Water Germander	Unfavourable - No change	26/07/2011
Vascular plant assemblage	Unfavourable - No change	26/07/2011

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline
Search buffers in metres (m)
Listed buildings
Conservation areas
Conservation areas - no data
National Parks
Areas of Outstanding Natural Beauty
Registered parks and gardens
Scheduled Monuments
World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	**3**

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

Features are displayed on the Visual and cultural designations map on **page 174**

ID	Location	NAME	Data Source
1	**On site**	**North Devon**	**Natural England**
2	**On site**	**North Devon**	**Natural England**
4	**On site**	**North Devon**	**Natural England**

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	**0**

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	**7**

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 174**

ID	Location	Name	Grade	Reference Number	Listed date
5	26m N	The Chapel of St Anne With Lych Gate, Saunton, Braunton, North Devon, Devon, EX33	II	1444584	21/07/2017
7	135m W	Eight Second World War Concrete Replica Landing Craft Structures, Braunton, North Devon, Devon, EX33	II	1463671	31/05/2019
8	156m NE	Stile and Flanking Walls 900 Metres South-West of The Great Sluice, Braunton, North Devon, Devon, EX33	II	1310081	14/11/1985
9	176m N	Bramble Cottage, Braunton, North Devon, Devon, EX33	II	1161840	14/11/1985
10	189m N	Warren Farmhouse and Attached Barn and Stables, Braunton, North Devon, Devon, EX33	II	1107096	14/11/1985
11	228m N	Saunton Court including Garden Structures To East incorporating Gateway, Garden Walls and Gatepiers, Gazebo, Grotto and Flight of Steps, Saunton Court, North Devon, Devon, EX33	II*	1107095	25/02/1965
12	244m E	Cattle Shelter and Adjoining Wall 700 Metres West of The Great Sluice, Braunton, North Devon, Devon, EX33	II	1310131	14/11/1985

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	**0**

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	**1**

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

Features are displayed on the Visual and cultural designations map on **page 174**

ID	Location	Ancient monument name	Reference number
3	**On site**	**Lynchets approximately 34m north-west of Saunton Sands Hotel**	**1424711**

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m	1

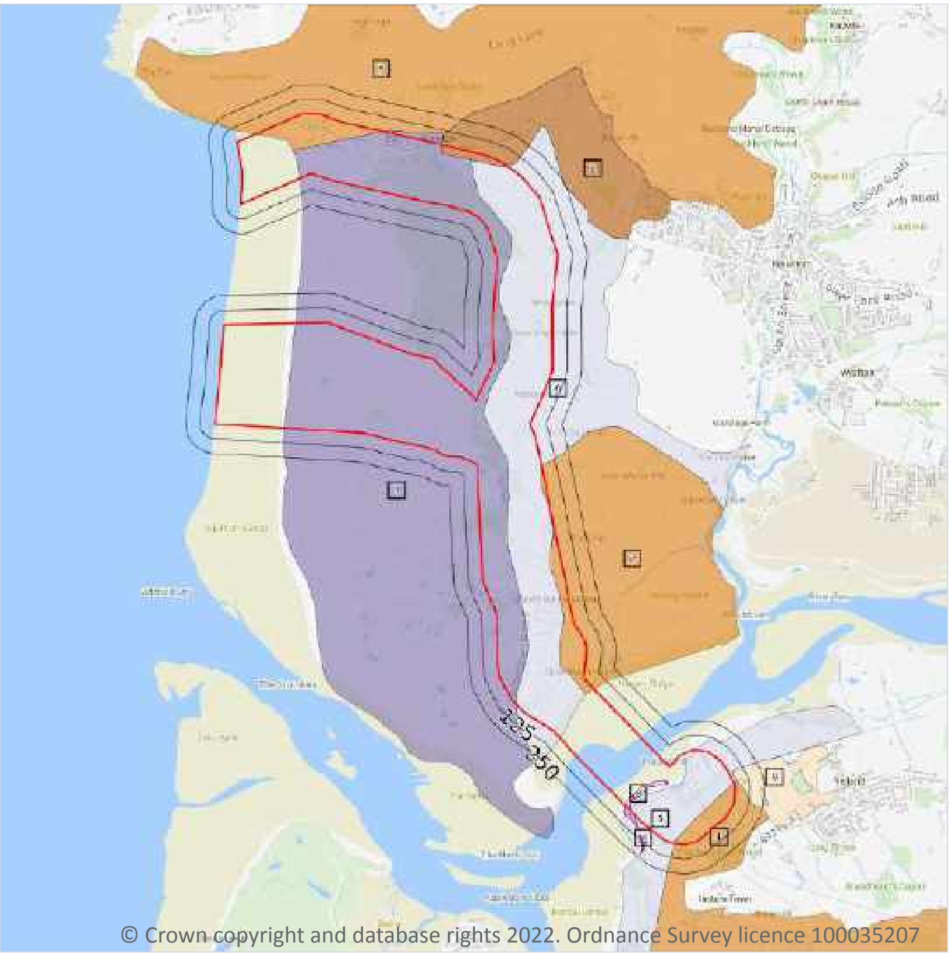
Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

Features are displayed on the Visual and cultural designations map on **page 174**

ID	Location	Name	Grade
6	70m N	Saunton Court	II

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline
Search buffers in metres (m)
Grade 1 - excellent quality
Grade 2 - very good quality
Grade 3 - good to moderate quality
Grade 3a - good quality
Grade 3b - moderate quality
Grade 4 - poor quality
Grade 5 - very poor quality
Non-agricultural land
Urban land
Exclusion land
Tree felling licences
Open Access land

12.1 Agricultural Land Classification

Records within 250m	8

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 178**

ID	Location	Classification	Description
1	**On site**	**Non Agricultural**	-

ID	Location	Classification	Description
2	**On site**	**Grade 2**	**Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.**
3	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**
4	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**
5	**On site**	**Grade 4**	**Poor quality agricultural land. Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.**
6	**On site**	**Grade 4**	**Poor quality agricultural land. Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.**
7	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**
9	25m NE	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	**2**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

Features are displayed on the Agricultural designations map on **page 178**

ID	Location	Name	Classification	Other relevant legislation
8	**On site**	**Land comprising sands, sandhills and grass areas above high water mark**	**Section 4 Conclusive Registered Common Land**	**-**
11	86m SW	Land comprising sands, sandhills and grass areas above high water mark	Section 4 Conclusive Registered Common Land	-

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	**0**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	**18**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

Location	Reference	Scheme	Start Date	End date
On site	**AG00505559**	**Entry Level Stewardship**	**01/10/2013**	**30/09/2018**
On site	**AG00343604**	**Entry Level plus Higher Level Stewardship**	**01/04/2011**	**31/03/2021**
On site	**AG00505559**	**Entry Level Stewardship**	**01/10/2013**	**30/09/2018**
On site	**AG00343604**	**Entry Level plus Higher Level Stewardship**	**01/04/2011**	**31/03/2021**
On site	**AG00505559**	**Entry Level Stewardship**	**01/10/2013**	**30/09/2018**
On site	**AG00505559**	**Entry Level Stewardship**	**01/10/2013**	**30/09/2018**
On site	**AG00343604**	**Entry Level plus Higher Level Stewardship**	**01/04/2011**	**31/03/2021**
On site	**AG00505559**	**Entry Level Stewardship**	**01/10/2013**	**30/09/2018**
On site	**AG00343604**	**Entry Level plus Higher Level Stewardship**	**01/04/2011**	**31/03/2021**
On site	**AG00689393**	**Higher Level Stewardship**	**01/05/2008**	**30/04/2018**
On site	**AG00512475**	**Entry Level Stewardship**	**01/11/2013**	**31/10/2018**

Location	Reference	Scheme	Start Date	End date
2m N	AG00505559	Entry Level Stewardship	01/10/2013	30/09/2018
26m E	AG00343604	Entry Level plus Higher Level Stewardship	01/04/2011	31/03/2021
49m NE	AG00343604	Entry Level plus Higher Level Stewardship	01/04/2011	31/03/2021
69m N	AG00505559	Entry Level Stewardship	01/10/2013	30/09/2018
129m N	AG00343604	Entry Level plus Higher Level Stewardship	01/04/2011	31/03/2021
146m E	AG00343604	Entry Level plus Higher Level Stewardship	01/04/2011	31/03/2021
209m N	AG00505559	Entry Level Stewardship	01/10/2013	30/09/2018

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	24

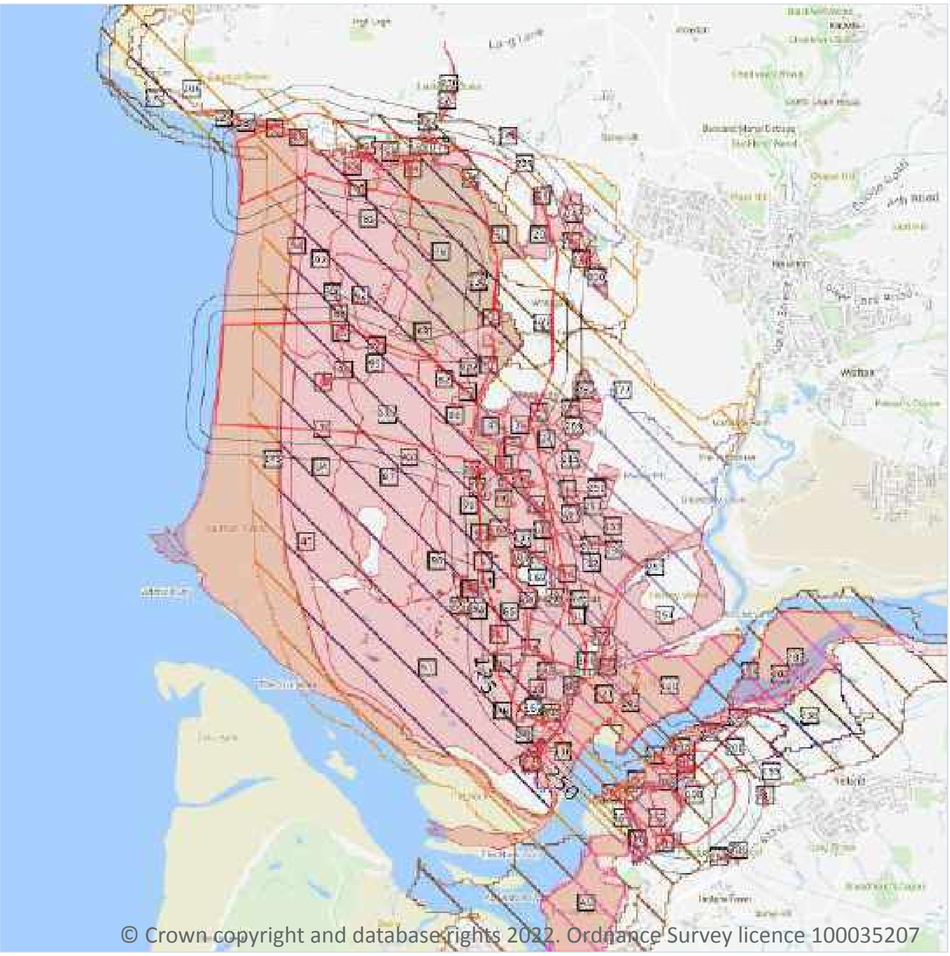
Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
On site	**644076**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**520200**	**Countryside Stewardship (Middle Tier)**	**01/01/2018**	**31/12/2022**
On site	**604573**	**Countryside Stewardship (Middle Tier)**	**01/01/2017**	**31/12/2021**
On site	**644212**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**644076**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**644076**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**604573**	**Countryside Stewardship (Middle Tier)**	**01/01/2017**	**31/12/2021**
On site	**533240**	**Countryside Stewardship (Higher Tier)**	**01/01/2017**	**31/12/2026**
On site	**625225**	**Countryside Stewardship (Higher Tier)**	**01/01/2019**	**31/12/2023**

Location	Reference	Scheme	Start Date	End Date
On site	**644212**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**644076**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**604573**	**Countryside Stewardship (Middle Tier)**	**01/01/2017**	**31/12/2021**
On site	**644076**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**644212**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**644076**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
On site	**474123**	**Countryside Stewardship (Higher Tier)**	**01/01/2018**	**31/12/2022**
On site	**604573**	**Countryside Stewardship (Middle Tier)**	**01/01/2017**	**31/12/2021**
17m SE	644076	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023
65m NW	604573	Countryside Stewardship (Middle Tier)	01/01/2017	31/12/2021
84m N	604573	Countryside Stewardship (Middle Tier)	01/01/2017	31/12/2021
138m NE	301142	Countryside Stewardship (Higher Tier)	01/01/2017	31/12/2026
169m NE	533240	Countryside Stewardship (Higher Tier)	01/01/2017	31/12/2026
241m E	644076	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023
245m N	604573	Countryside Stewardship (Middle Tier)	01/01/2017	31/12/2021

This data is sourced from Natural England.

13 Habitat designations



Site Outline
Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks
Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	314

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 183**

ID	Location	Main Habitat	Other habitats
1	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
2	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**

ID	Location	Main Habitat	Other habitats
3	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
4	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
5	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
6	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
7	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
8	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
9	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
10	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
11	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
12	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
13	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
14	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
15	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
16	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
17	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
18	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
19	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
20	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)

ID	Location	Main Habitat	Other habitats
21	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
22	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
23	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
24	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
25	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
26	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
27	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
28	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
29	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
30	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
31	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
32	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
33	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
34	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%); Additional: LFENS (INV 50%)**
35	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%); Additional: LFENS (INV 50%)**
36	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%); Additional: LFENS (INV 50%)**
37	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%); Additional: LFENS (INV 50%)**
38	**On site**	**Coastal saltmarsh**	**Main habitat: MUDFL (INV > 50%); SALTM (INV > 50%)**
39	**On site**	**Coastal saltmarsh**	**Main habitat: SALTM (INV > 50%)**

ID	Location	Main Habitat	Other habitats
40	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
41	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
42	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
43	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
44	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
45	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
46	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
47	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
48	**On site**	**Coastal sand dunes**	**Main habitat: MCSLP (INV > 50%); CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
49	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
50	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
51	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
52	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
53	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
54	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)**
55	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%)**
56	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%)**
57	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%)**
58	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%)**
59	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%)**
60	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%)**
61	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
62	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
63	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
64	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**

ID	Location	Main Habitat	Other habitats
65	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)

ID	Location	Main Habitat	Other habitats
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
A	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
B	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
B	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
66	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
C	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
C	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)

ID	Location	Main Habitat	Other habitats
67	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
D	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
68	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
E	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
E	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
69	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
F	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
70	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
G	On site	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
G	On site	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
71	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
G	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
G	On site	No main habitat but additional habitats present	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
H	On site	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
H	On site	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
72	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
I	On site	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
I	On site	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
73	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
74	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)

ID	Location	Main Habitat	Other habitats
J	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
J	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
J	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
75	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
K	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
K	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
K	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
K	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
76	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
L	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
L	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
L	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
77	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
M	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%)
78	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
N	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%); CSDUN (ENSIS L1)
79	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
O	On site	Deciduous woodland	Main habitat: CFPGM (INV > 50%); DWOOD (INV > 50%); CSDUN (ENSIS L1)
80	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)

ID	Location	Main Habitat	Other habitats
P	**On site**	**Maritime cliff and slope**	**Main habitat: MCSLP (INV > 50%)**
P	**On site**	**Maritime cliff and slope**	**Main habitat: MCSLP (INV > 50%)**
81	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
Q	**On site**	**No main habitat but additional habitats present**	**Additional: CFPGM (INV 50%)**
82	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
R	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
R	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
83	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
S	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
84	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
T	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
85	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
U	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
86	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
V	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
V	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
87	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
W	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
88	**On site**	**Coastal sand dunes**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**

ID	Location	Main Habitat	Other habitats
X	On site	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
89	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
90	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
91	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
92	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
93	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
94	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
95	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
96	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
97	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
98	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
99	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
100	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
101	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%)
102	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
103	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
104	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
105	On site	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
106	On site	Coastal sand dunes	Main habitat: CFPGM (INV > 50%); CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)

ID	Location	Main Habitat	Other habitats
107	**On site**	**Coastal sand dunes**	**Main habitat: CFPGM (INV > 50%); CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
108	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
109	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
110	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
111	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
112	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
113	**On site**	**Deciduous woodland**	**Main habitat: CFPGM (INV > 50%); DWOOD (INV > 50%)**
114	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%); CSDUN (ENSIS L1)**
115	**On site**	**Maritime cliff and slope**	**Main habitat: MCSLP (INV > 50%)**
116	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%); CSDUN (ENSIS L1)**
117	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
118	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
119	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
120	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
121	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
122	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
123	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
124	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
125	**On site**	**Mudflats**	**Main habitat: MUDFL (INV > 50%)**
126	**On site**	**No main habitat but additional habitats present**	**Additional: CSDUN (FEP 50%)**
127	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
128	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
129	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
130	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
131	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**

ID	Location	Main Habitat	Other habitats
132	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
133	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
134	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
135	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
136	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
137	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
138	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
139	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
140	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
141	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
142	**On site**	**Coastal and floodplain grazing marsh**	**Main habitat: CFPGM (INV > 50%)**
143	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
144	**On site**	**No main habitat but additional habitats present**	**Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)**
145	**On site**	**No main habitat but additional habitats present**	**Additional: MUDFL (ENSIS L2); CSDUN (ENSIS L2)**
209	3m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
211	17m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
213	25m NE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
214	27m W	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
215	28m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)

ID	Location	Main Habitat	Other habitats
216	33m SW	No main habitat but additional habitats present	Additional: CFPGM (INV 50%)
Y	38m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
218	42m W	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
219	44m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
221	55m NW	Maritime cliff and slope	Main habitat: MCSLP (INV > 50%)
222	58m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
223	67m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
Z	75m SW	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
224	83m NW	Maritime cliff and slope	Main habitat: MCSLP (INV > 50%)
225	84m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
226	85m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
228	87m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
229	93m NW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
230	94m W	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
AA	95m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
231	99m W	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
AB	101m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
232	102m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
234	111m NW	Maritime cliff and slope	Main habitat: MCSLP (INV > 50%)
Z	116m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)

ID	Location	Main Habitat	Other habitats
235	118m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
236	118m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
237	120m W	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
240	124m SW	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2)
241	124m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
242	127m NE	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
243	128m W	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
244	129m SW	Coastal saltmarsh	Main habitat: MUDFL (INV > 50%); SALTM (INV > 50%); CSDUN (ENSIS L1)
245	132m NW	Maritime cliff and slope	Main habitat: MCSLP (INV > 50%)
Z	133m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
246	136m N	Coastal saltmarsh	Main habitat: MUDFL (INV > 50%); SALTM (INV > 50%)
247	139m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
248	142m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
250	148m SW	Mudflats	Main habitat: MUDFL (INV > 50%); CSDUN (ENSIS L1)
251	149m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
AC	150m SW	Mudflats	Main habitat: MUDFL (INV > 50%)
252	151m NW	Maritime cliff and slope	Main habitat: MCSLP (INV > 50%)
253	151m NE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
254	154m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
AD	155m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
255	157m N	Mudflats	Main habitat: MUDFL (INV > 50%)

ID	Location	Main Habitat	Other habitats
256	159m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); Additional: LFENS (INV 50%, ENSIS L2)
257	160m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
258	161m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
260	163m N	Mudflats	Main habitat: MUDFL (INV > 50%)
261	164m SW	Coastal sand dunes	Main habitat: CSDUN (ENSIS L1); Additional: DWOOD (ENSIS L2); MUDFL (ENSIS L2)
262	165m W	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
AE	166m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
263	168m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
264	170m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
265	171m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); LFENS (ENSIS L1, FEP + HLS)
266	171m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
267	172m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
268	184m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
269	188m SE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
270	192m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
271	193m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); Additional: LFENS (ENSIS L2)
AF	195m E	Deciduous woodland	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); DWOOD (INV > 50%); Additional: LFENS (INV 50%, ENSIS L2)
272	199m N	Traditional orchard	Main habitat: TORCH (INV > 50%)
AG	199m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
273	200m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
275	205m N	Coastal saltmarsh	Main habitat: MUDFL (INV > 50%); SALTM (INV > 50%)

ID	Location	Main Habitat	Other habitats
276	205m SW	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
277	207m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
278	208m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
279	209m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
AF	212m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); Additional: LFENS (INV 50%, ENSIS L2)
280	213m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
281	214m N	Mudflats	Main habitat: MUDFL (INV > 50%)
282	215m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
AH	216m NE	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset
284	217m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
285	217m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
286	219m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
287	220m W	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
288	220m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
AI	221m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); LFENS (FEP + HLS)
289	221m NE	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
AE	221m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
290	222m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
291	222m SE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
AJ	226m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); Additional: LFENS (INV 50%)
AJ	229m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); Additional: LFENS (INV 50%, ENSIS L2)

ID	Location	Main Habitat	Other habitats
292	231m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
293	236m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
AH	240m NE	Traditional orchard	Main habitat: TORCH (INV > 50%)
295	242m SW	No main habitat but additional habitats present	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
296	242m E	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%); RBEDS (INV > 50%); Additional: LFENS (INV 50%)
297	243m SE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
298	245m SW	Coastal saltmarsh	Main habitat: SALTM (INV > 50%); CSDUN (ENSIS L1); Additional: MUDFL (ENSIS L2)
299	247m SE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
300	247m N	Coastal sand dunes	Main habitat: CSDUN (INV > 50%, ENSIS L1); Additional: DWOOD (ENSIS L2)
AH	250m N	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**96**

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 183**

ID	Location	Type	Habitat
C	**On site**	**Habitat Restoration-Creation**	**Not specified**
D	**On site**	**Habitat Restoration-Creation**	**Not specified**
F	**On site**	**Habitat Restoration-Creation**	**Not specified**
K	**On site**	**Habitat Restoration-Creation**	**Not specified**
L	**On site**	**Network Enhancement Zone 1**	**Not specified**
M	**On site**	**Primary Habitat**	**Coastal sand dunes**

ID	Location	Type	Habitat
N	On site	Habitat Restoration-Creation	Not specified
O	On site	Habitat Restoration-Creation	Not specified
Q	On site	Habitat Restoration-Creation	Not specified
S	On site	Network Enhancement Zone 2	Not specified
T	On site	Network Enhancement Zone 2	Not specified
U	On site	Habitat Restoration-Creation	Not specified
W	On site	Network Enhancement Zone 2	Not specified
X	On site	Network Enhancement Zone 2	Not specified
146	On site	Habitat Restoration-Creation	Not specified
147	On site	Habitat Restoration-Creation	Not specified
148	On site	Habitat Restoration-Creation	Not specified
149	On site	Restorable Habitat	Not specified
150	On site	Restorable Habitat	Not specified
151	On site	Restorable Habitat	Not specified
152	On site	Restorable Habitat	Not specified
153	On site	Restorable Habitat	Not specified
154	On site	Network Enhancement Zone 2	Not specified
155	On site	Network Enhancement Zone 2	Not specified
156	On site	Network Enhancement Zone 2	Not specified
157	On site	Network Enhancement Zone 2	Not specified
158	On site	Network Enhancement Zone 2	Not specified
159	On site	Network Enhancement Zone 2	Not specified
160	On site	Network Enhancement Zone 2	Not specified
161	On site	Network Enhancement Zone 2	Not specified
162	On site	Network Enhancement Zone 2	Not specified
163	On site	Network Enhancement Zone 2	Not specified
164	On site	Network Enhancement Zone 2	Not specified
165	On site	Network Enhancement Zone 2	Not specified

ID	Location	Type	Habitat
166	On site	Network Enhancement Zone 2	Not specified
167	On site	Network Enhancement Zone 2	Not specified
168	On site	Network Enhancement Zone 2	Not specified
169	On site	Network Enhancement Zone 2	Not specified
170	On site	Network Enhancement Zone 2	Not specified
171	On site	Network Enhancement Zone 2	Not specified
172	On site	Network Enhancement Zone 2	Not specified
173	On site	Network Enhancement Zone 2	Not specified
174	On site	Network Enhancement Zone 2	Not specified
175	On site	Network Enhancement Zone 2	Not specified
176	On site	Network Enhancement Zone 2	Not specified
177	On site	Network Enhancement Zone 1	Not specified
178	On site	Network Enhancement Zone 1	Not specified
179	On site	Network Enhancement Zone 1	Not specified
180	On site	Network Enhancement Zone 1	Not specified
181	On site	Network Enhancement Zone 1	Not specified
182	On site	Network Enhancement Zone 1	Not specified
183	On site	Network Enhancement Zone 1	Not specified
184	On site	Network Enhancement Zone 1	Not specified
185	On site	Network Enhancement Zone 1	Not specified
186	On site	Network Enhancement Zone 1	Not specified
187	On site	Network Enhancement Zone 1	Not specified
188	On site	Network Enhancement Zone 1	Not specified
189	On site	Network Enhancement Zone 1	Not specified
190	On site	Network Enhancement Zone 1	Not specified
191	On site	Network Enhancement Zone 1	Not specified
192	On site	Network Enhancement Zone 1	Not specified
193	On site	Network Enhancement Zone 1	Not specified

ID	Location	Type	Habitat
194	**On site**	**Network Enhancement Zone 1**	**Not specified**
195	**On site**	**Network Enhancement Zone 1**	**Not specified**
196	**On site**	**Network Enhancement Zone 1**	**Not specified**
197	**On site**	**Network Enhancement Zone 1**	**Not specified**
198	**On site**	**Network Enhancement Zone 1**	**Not specified**
199	**On site**	**Network Enhancement Zone 1**	**Not specified**
200	**On site**	**Network Enhancement Zone 1**	**Not specified**
201	**On site**	**Primary Habitat**	**Coastal sand dunes**
202	**On site**	**Associated Habitats**	**Other associated habitats**
203	**On site**	**Associated Habitats**	**Other associated habitats**
204	**On site**	**Associated Habitats**	**Other associated habitats**
205	**On site**	**Associated Habitats**	**Other associated habitats**
206	**On site**	**Primary Habitat**	**Maritime cliff and slope**
207	**On site**	**Primary Habitat**	**Saltmarsh**
210	12m W	Network Enhancement Zone 2	Not specified
212	22m NE	Network Enhancement Zone 1	Not specified
217	35m W	Network Enhancement Zone 2	Not specified
Y	39m SW	Habitat Restoration-Creation	Not specified
220	49m SW	Network Enhancement Zone 2	Not specified
227	87m NE	Network Enhancement Zone 2	Not specified
AA	97m SW	Habitat Restoration-Creation	Not specified
233	109m SW	Primary Habitat	Saltmarsh
AB	118m SW	Habitat Restoration-Creation	Not specified
238	122m N	Primary Habitat	Saltmarsh
239	124m E	Network Enhancement Zone 2	Not specified
AC	135m SW	Associated Habitats	Other associated habitats
249	144m E	Network Enhancement Zone 2	Not specified
259	163m E	Network Enhancement Zone 2	Not specified

ID	Location	Type	Habitat
AD	163m SW	Habitat Restoration-Creation	Not specified
274	204m NE	Network Enhancement Zone 2	Not specified
AG	208m SW	Habitat Restoration-Creation	Not specified
283	216m E	Network Enhancement Zone 1	Not specified
AI	229m E	Habitat Restoration-Creation	Not specified
294	240m NE	Network Enhancement Zone 2	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	1

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

Features are displayed on the Habitat designations map on **page 183**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
208	**On site**	**NLUD Ref: 111800070**	**Low**	**National Land Use Database - Previously Developed Land**	**Environment Agency Historic Landfill Sites**	**UK Perspectives Aerial Photography**

This data is sourced from Natural England.

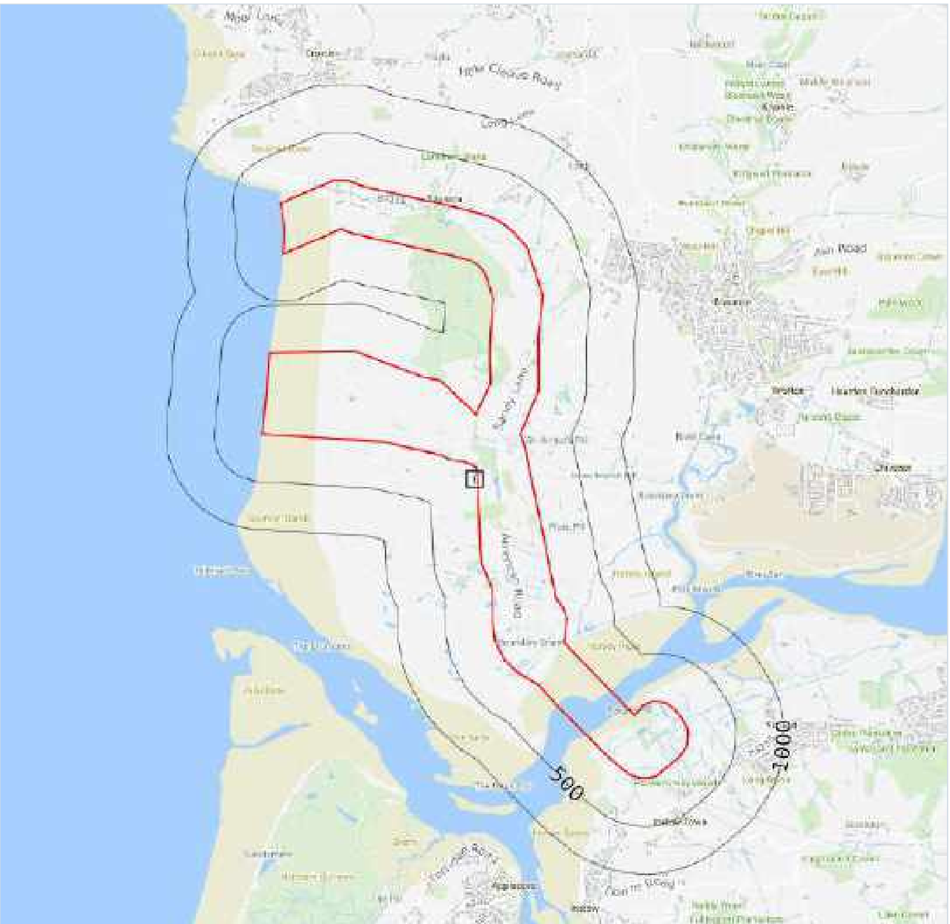
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 204**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	No coverage	No coverage	No coverage	NoCov

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

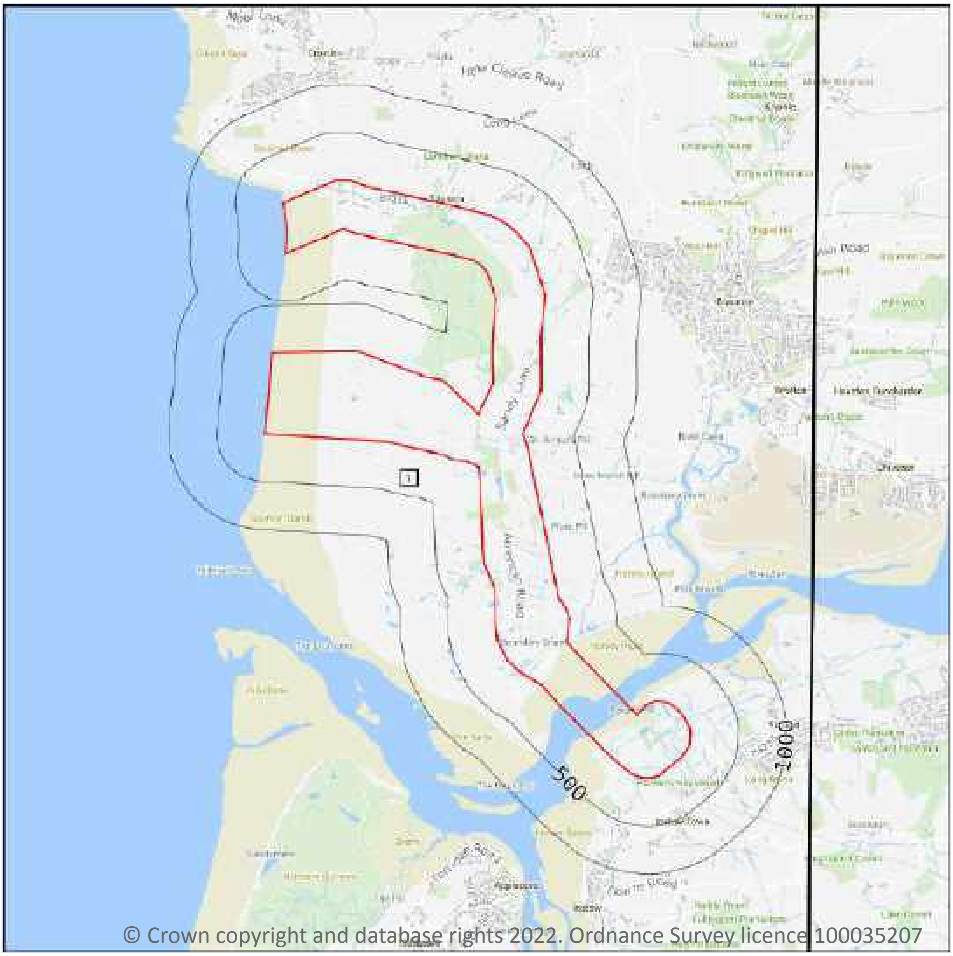
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

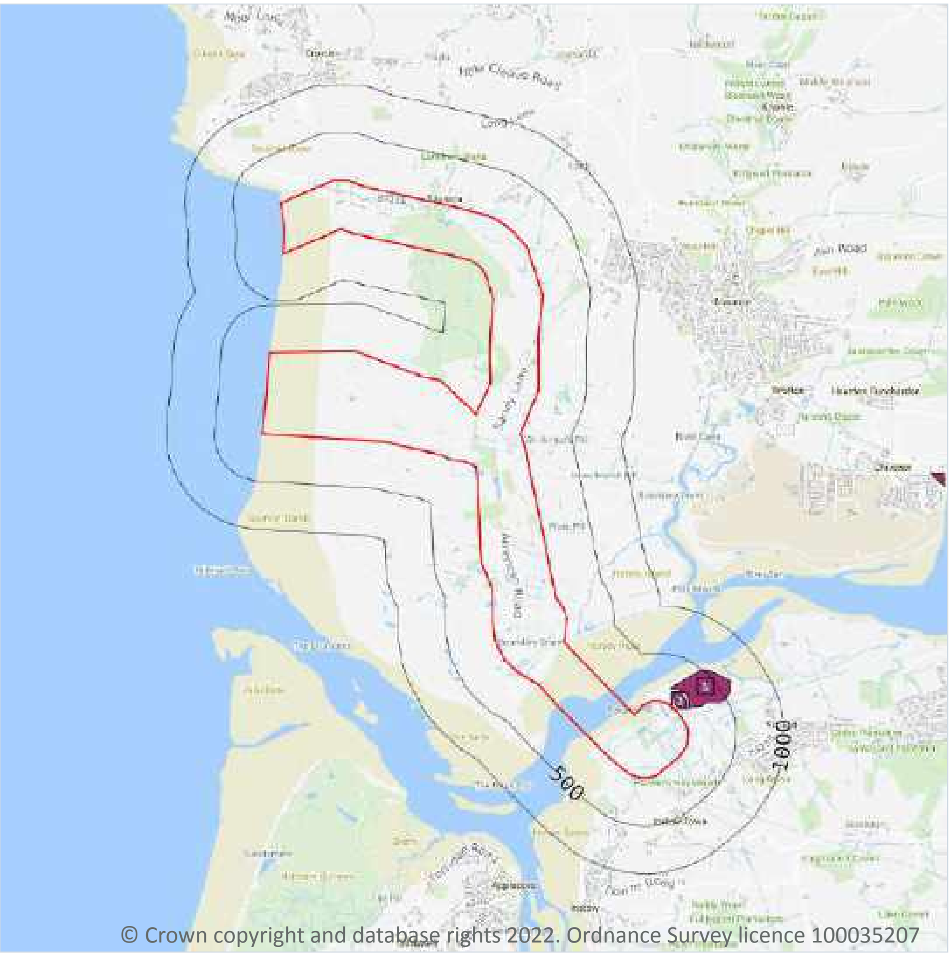
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 208**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW276_292_woolacombe_and_bideford_v4

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



Site Outline
Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m 2

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 209**

ID	Location	LEX Code	Description	Rock description
1	39m NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	131m NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

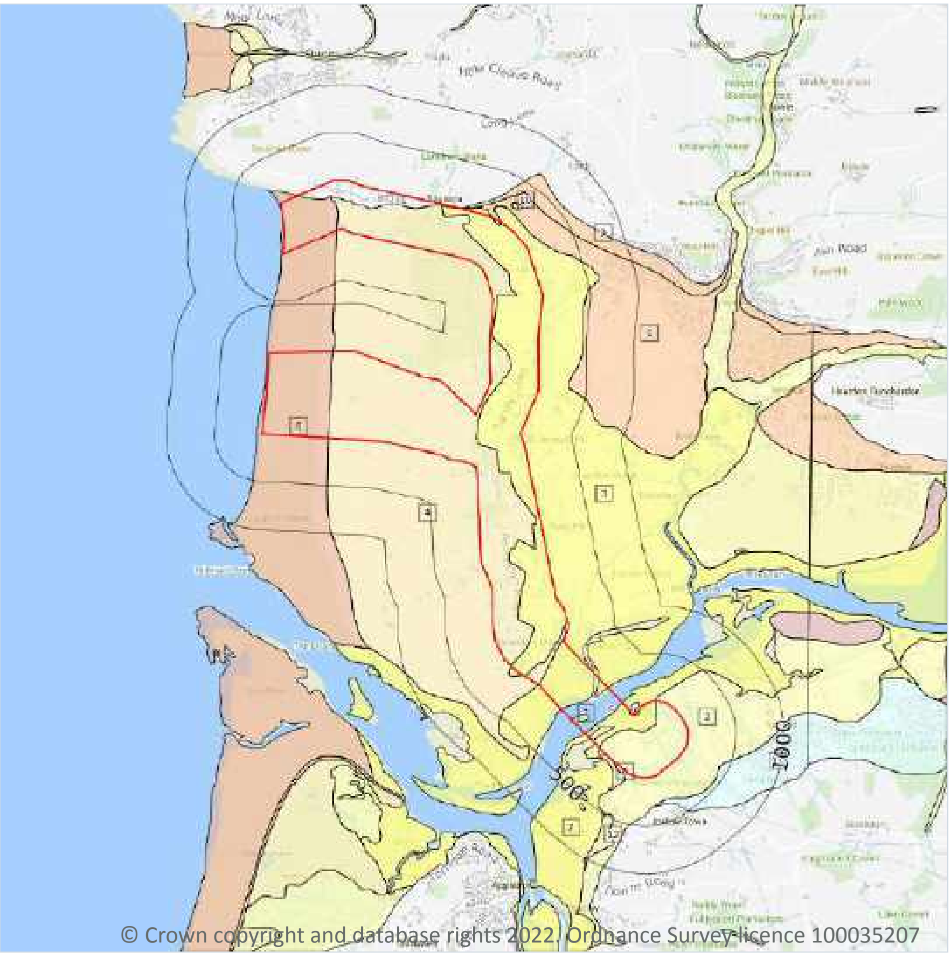
Records within 50m	**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
39m SE	Mixed	Very High	Low

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m	12

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 211**

ID	Location	LEX Code	Description	Rock description
1	On site	TFD-XCZS	TIDAL FLAT DEPOSITS	CLAY, SILT AND SAND
2	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	On site	TFD-XCZS	TIDAL FLAT DEPOSITS	CLAY, SILT AND SAND
4	On site	BSA-S	BLOWN SAND	SAND

ID	Location	LEX Code	Description	Rock description
5	**On site**	**RTD1-XVSZ**	**RIVER TERRACE DEPOSITS, 1**	**GRAVEL, SAND AND SILT**
6	**On site**	**MBD-XSV**	**MARINE BEACH DEPOSITS**	**SAND AND GRAVEL**
7	**On site**	**TFD-XCZS**	**TIDAL FLAT DEPOSITS**	**CLAY, SILT AND SAND**
8	0m SW	BSA-S	BLOWN SAND	SAND
9	12m N	RTD2-XVSZ	RIVER TERRACE DEPOSITS, 2	GRAVEL, SAND AND SILT
10	198m NE	RTD2-XVSZ	RIVER TERRACE DEPOSITS, 2	GRAVEL, SAND AND SILT
11	270m S	TILMP-DMTN	TILL, MID PLEISTOCENE	DIAMICTON
12	469m SW	BSA-S	BLOWN SAND	SAND

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	12

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Moderate**	**Very Low**
On site	**Intergranular**	**Moderate**	**Very Low**
On site	**Intergranular**	**High**	**High**
On site	**Intergranular**	**High**	**High**
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**High**	**Very Low**
On site	**Intergranular**	**Moderate**	**Very Low**
On site	**Intergranular**	**Moderate**	**Very Low**
On site	**Intergranular**	**High**	**High**
On site	**Intergranular**	**High**	**High**
On site	**Intergranular**	**Very High**	**Moderate**
12m NE	Intergranular	Very High	Moderate

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

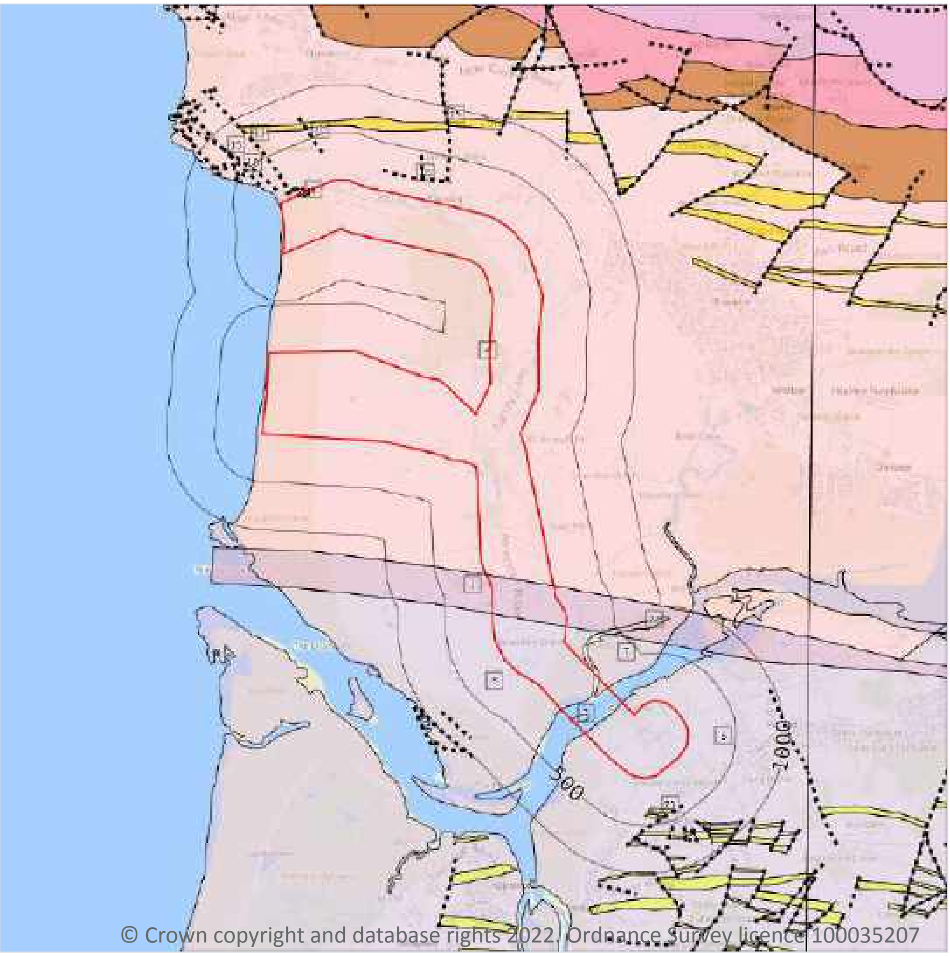
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline
Search buffers in metres (m)
Bedrock faults and other linear features (50k)
Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m 9

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 214**

ID	Location	LEX Code	Description	Rock age
1	On site	ANCK-MDSI	ASHTON MUDSTONE MEMBER AND CRACKINGTON FORMATION (UNDIFFERENTIATED) - MUDSTONE AND SILTSTONE	NAMURIAN
3	On site	DCCH-MDST	DODDISCOMBE FORMATION AND CODDEN HILL CHERT FORMATION (UNDIFFERENTIATED) - MUDSTONE	TOURNAISIAN

ID	Location	LEX Code	Description	Rock age
4	**On site**	**PLT-MDST**	**PILTON MUDSTONE FORMATION - MUDSTONE**	**FAMENNIAN**
6	**On site**	**ANCK-MDSI**	**ASHTON MUDSTONE MEMBER AND CRACKINGTON FORMATION (UNDIFFERENTIATED) - MUDSTONE AND SILTSTONE**	**NAMURIAN**
7	**On site**	**ANCK-MDSI**	**ASHTON MUDSTONE MEMBER AND CRACKINGTON FORMATION (UNDIFFERENTIATED) - MUDSTONE AND SILTSTONE**	**NAMURIAN**
8	**On site**	**ANCK-MDSI**	**ASHTON MUDSTONE MEMBER AND CRACKINGTON FORMATION (UNDIFFERENTIATED) - MUDSTONE AND SILTSTONE**	**NAMURIAN**
21	322m S	CKF-SDST	CRACKINGTON FORMATION - SANDSTONE	NAMURIAN
22	344m NE	DCCH-MDST	DODDISCOMBE FORMATION AND CODDEN HILL CHERT FORMATION (UNDIFFERENTIATED) - MUDSTONE	TOURNAISIAN
23	376m S	CKF-SDST	CRACKINGTON FORMATION - SANDSTONE	NAMURIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**8**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	17

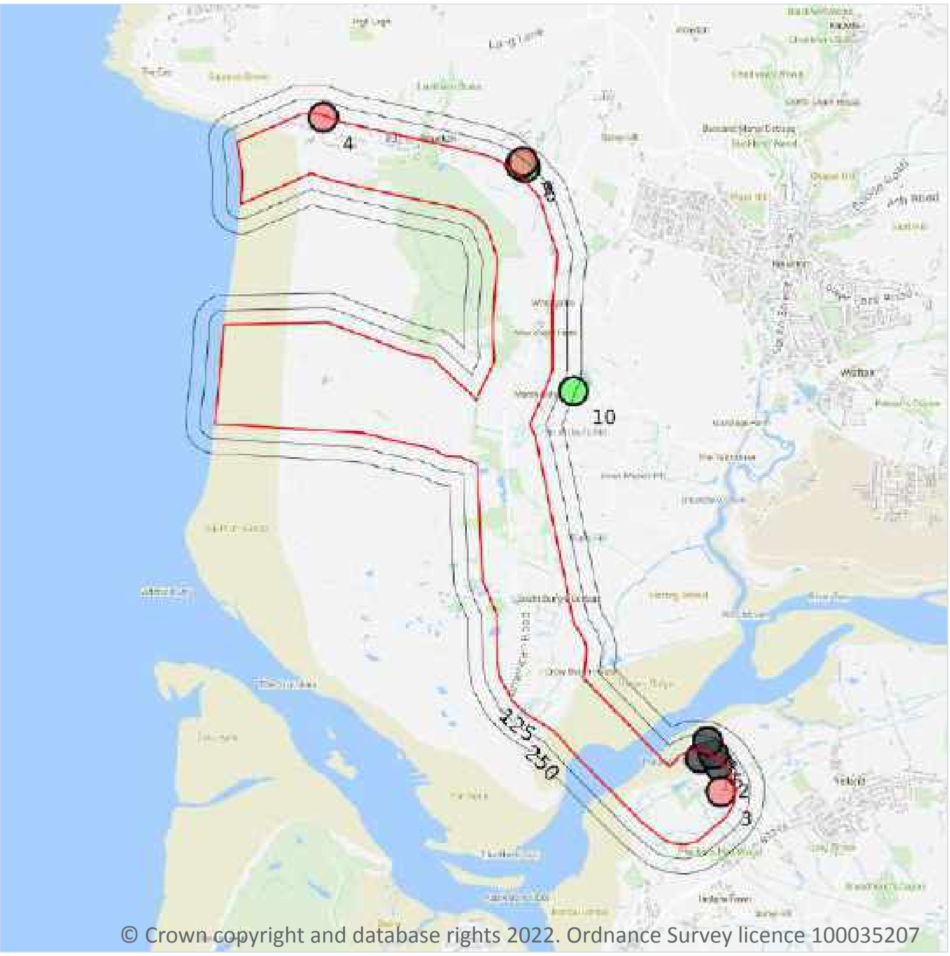
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 214**

ID	Location	Category	Description
2	**On site**	**FAULT**	**Fault, observed, displacement unknown**
5	**On site**	**FAULT**	**Fault, observed, displacement unknown**
9	1m NW	FAULT	Fault, observed, displacement unknown
10	2m NW	FAULT	Fault, observed, displacement unknown
11	7m NW	FAULT	Fault, observed, displacement unknown
12	12m NW	FAULT	Fault, observed, displacement unknown
13	50m NW	FAULT	Fault, inferred, displacement unknown
14	60m NW	FAULT	Fault, observed, displacement unknown
15	123m NW	FAULT	Fault, inferred, displacement unknown
16	198m N	FAULT	Fault, inferred, displacement unknown
17	212m N	FAULT	Fault, inferred, displacement unknown
18	226m NW	FAULT	Fault, inferred, displacement unknown
19	244m N	FAULT	Fault, inferred, displacement unknown
20	284m N	FAULT	Fault, inferred, displacement unknown
24	413m SE	FAULT	Fault, inferred, displacement unknown
25	463m NW	FAULT	Fault, inferred, displacement unknown
26	471m NW	FAULT	Fault, observed, displacement unknown

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m	10

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

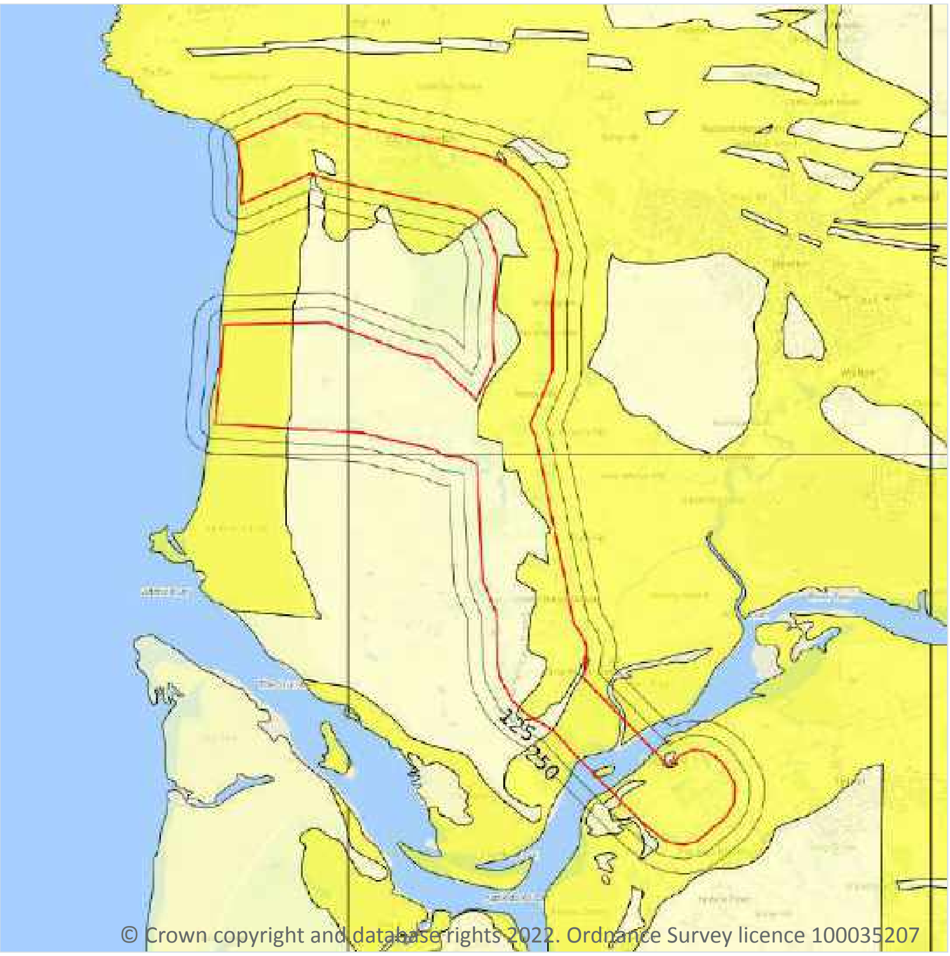
Features are displayed on the Boreholes map on **page 217**

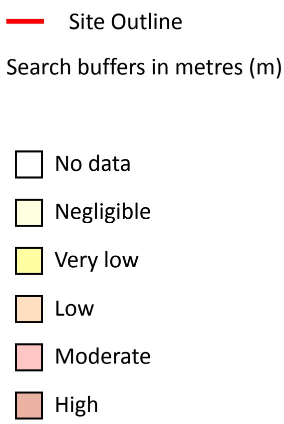
ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	248021 132387	BRAUNTON BURROWS NO 4	-	Y	N/A
2	On site	248177 132330	BRAUNTON BURROWS NO 1	-	Y	N/A
3	On site	248200 132100	Not Entered	37.18	N	629993

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	**On site**	**244790 137880**	**SAUNTON SANDS HOTEL**	**120.0**	**N**	**609713**
5	1m NE	248129 132416	BRAUNTON BURROWS NO 2	-	Y	N/A
6	79m NE	246520 137450	SAUNTON SANDS HOTEL	11.0	N	630023
7	79m NE	246480 137480	WELL 292/4	24.38	N	630022
8	86m N	248080 132532	BRAUNTON BURROWS NO 3	-	Y	N/A
9	107m NE	246500 137500	SAUNTON GOLF CLUB BRAUNTON	62.0	N	630028
10	226m SE	246930 135540	WELL 292/16	16.61	N	630024

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays





17.1 Shrink swell clays

Records within 50m	2

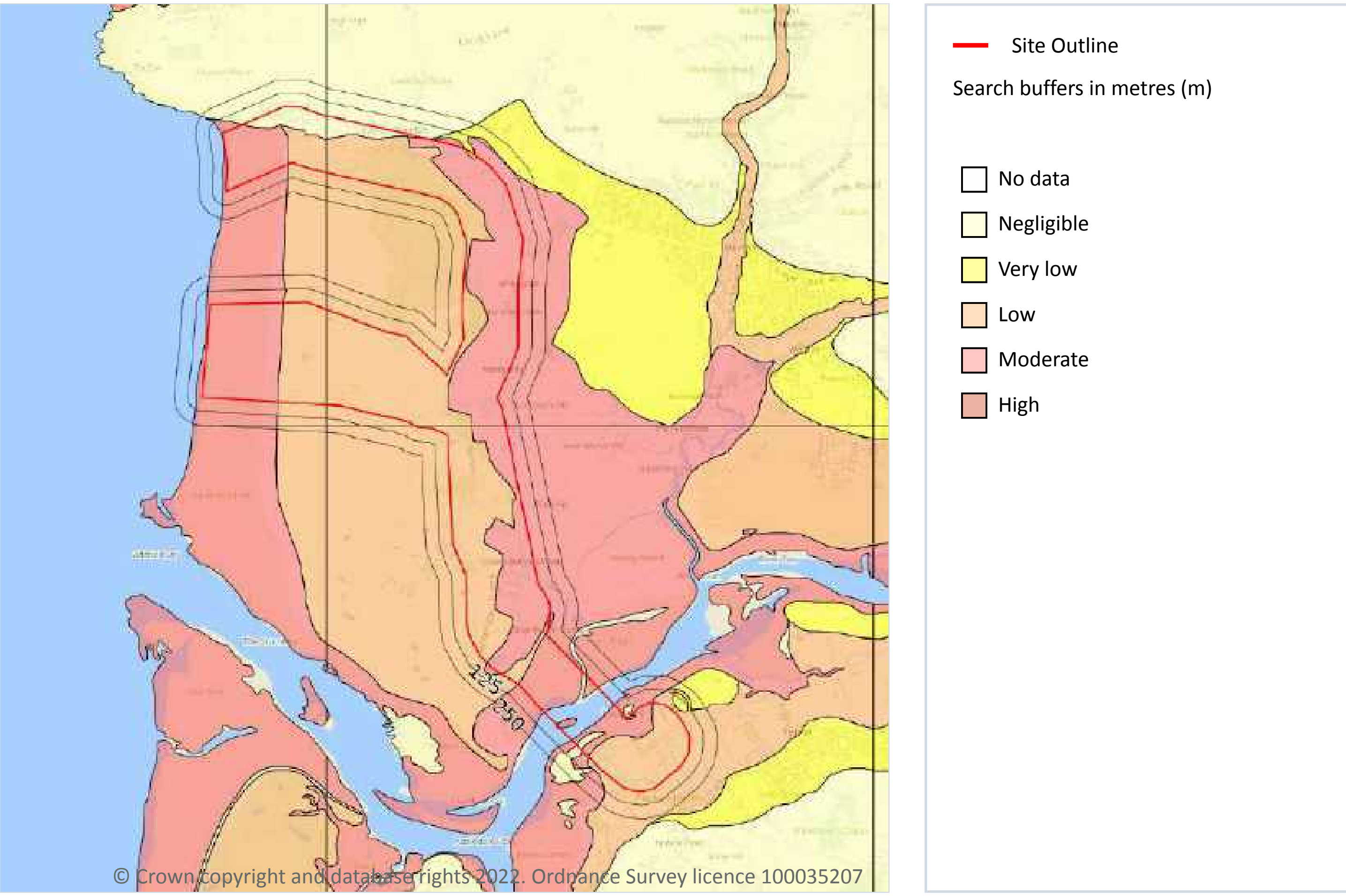
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 219**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Very low**	**Ground conditions predominantly low plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m	5

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

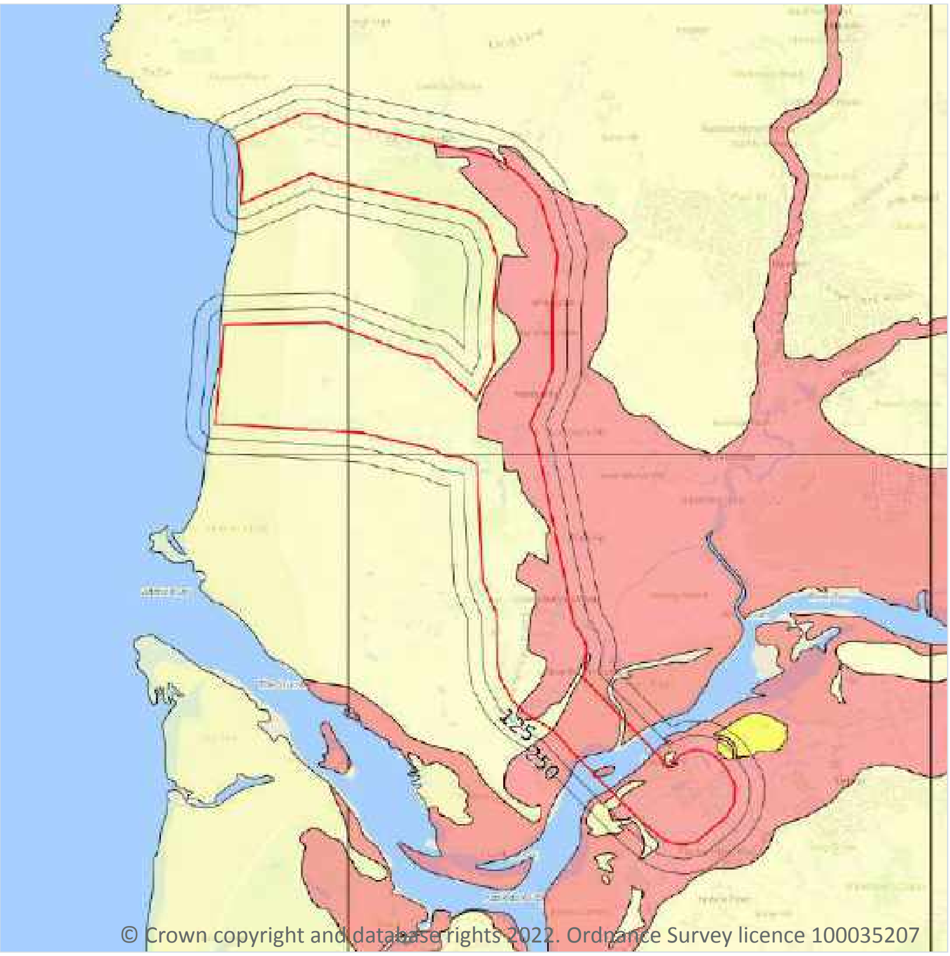
Features are displayed on the Natural ground subsidence - Running sands map on **page 220**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**
On site	**Moderate**	**Running sand conditions are probably present. Constraints may apply to land uses involving excavation or the addition or removal of water.**
39m NE	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	3

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

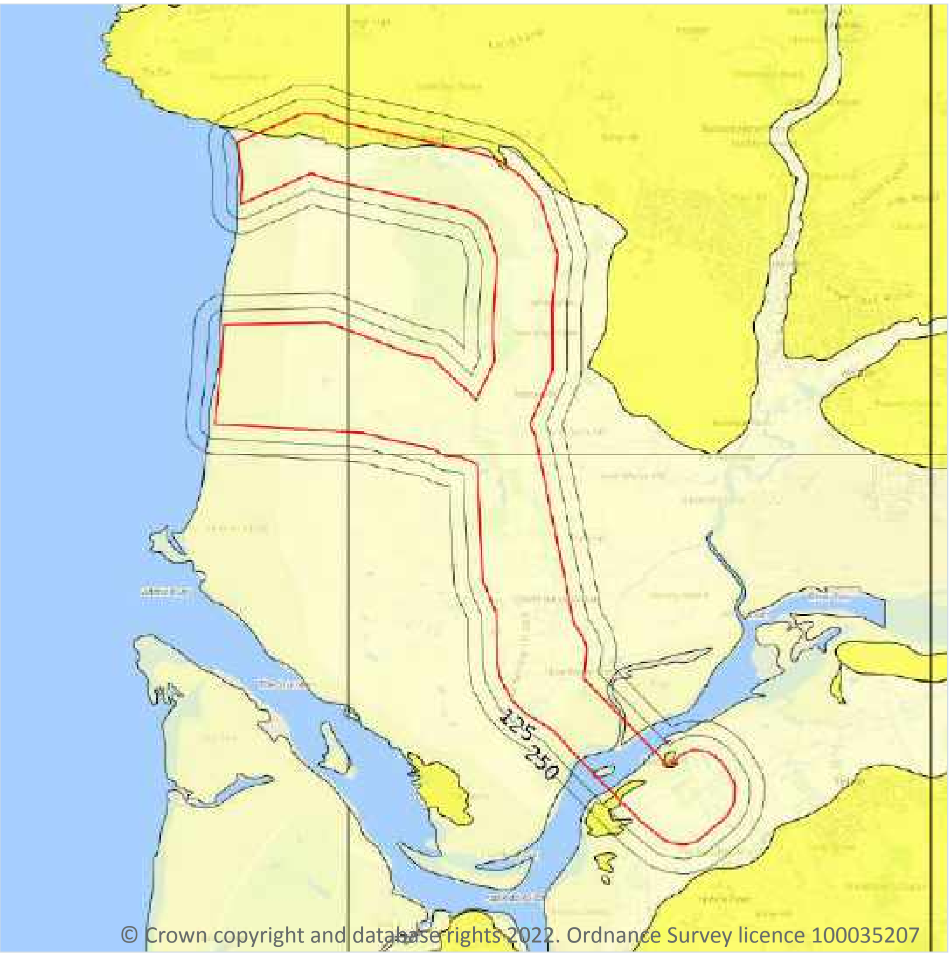
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 222**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**Moderate**	**Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.**

Location	Hazard rating	Details
39m NE	Very low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	2

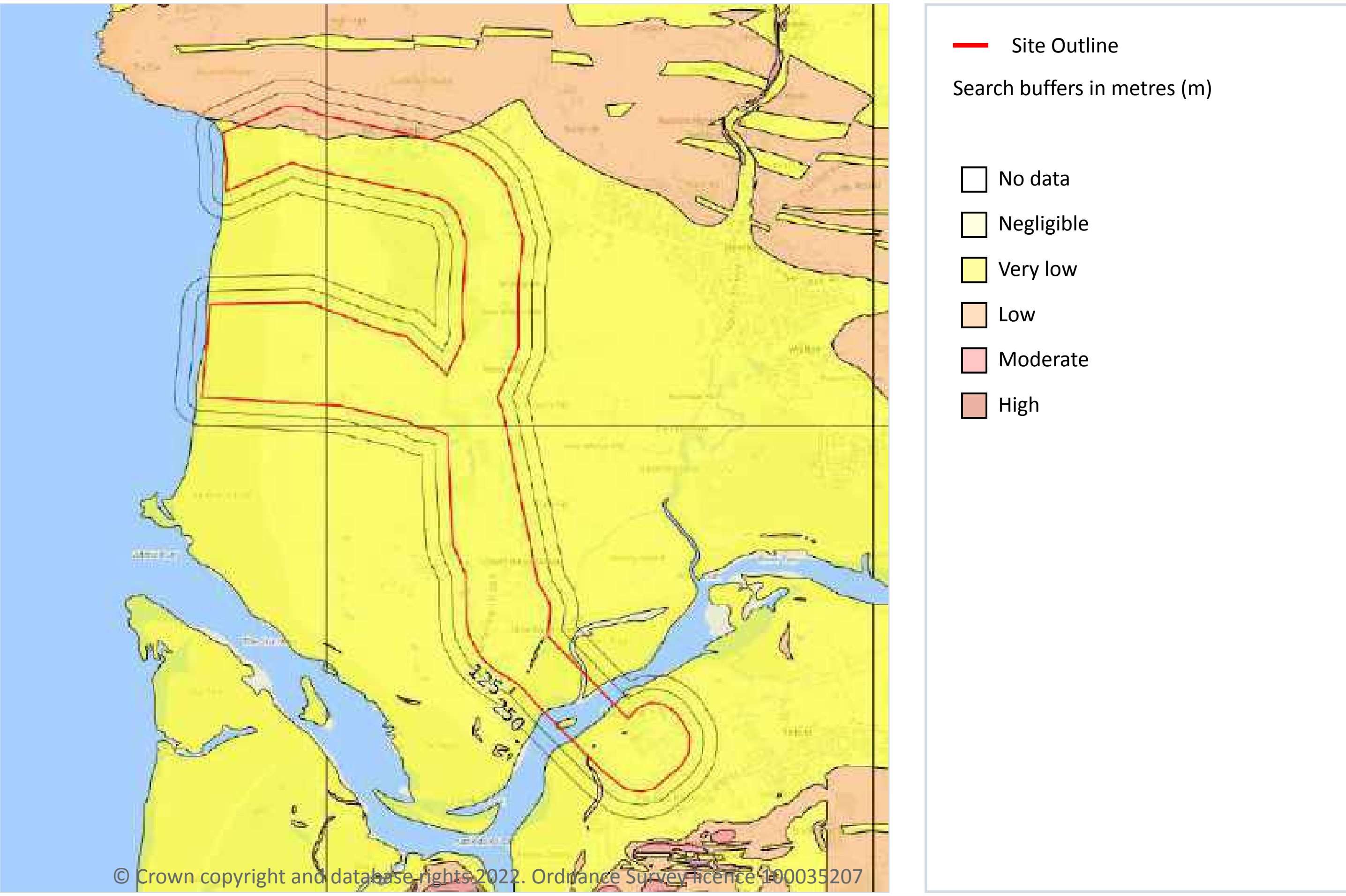
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 224**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



17.5 Landslides

Records within 50m	3

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

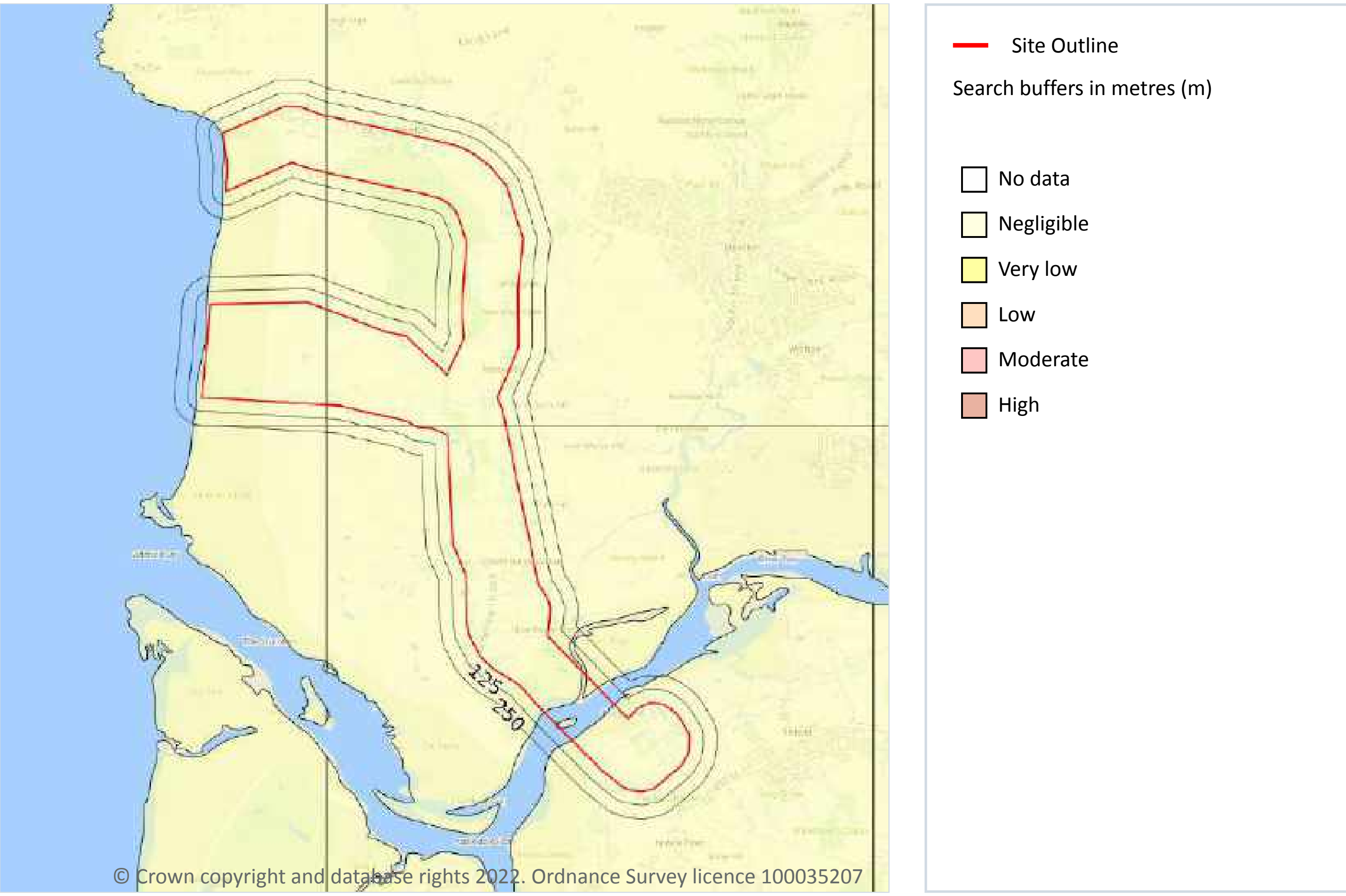
Features are displayed on the Natural ground subsidence - Landslides map on **page 225**

Location	Hazard rating	Details
On site	Very low	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

Location	Hazard rating	Details
On site	**Low**	**Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.**
48m SW	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m	1

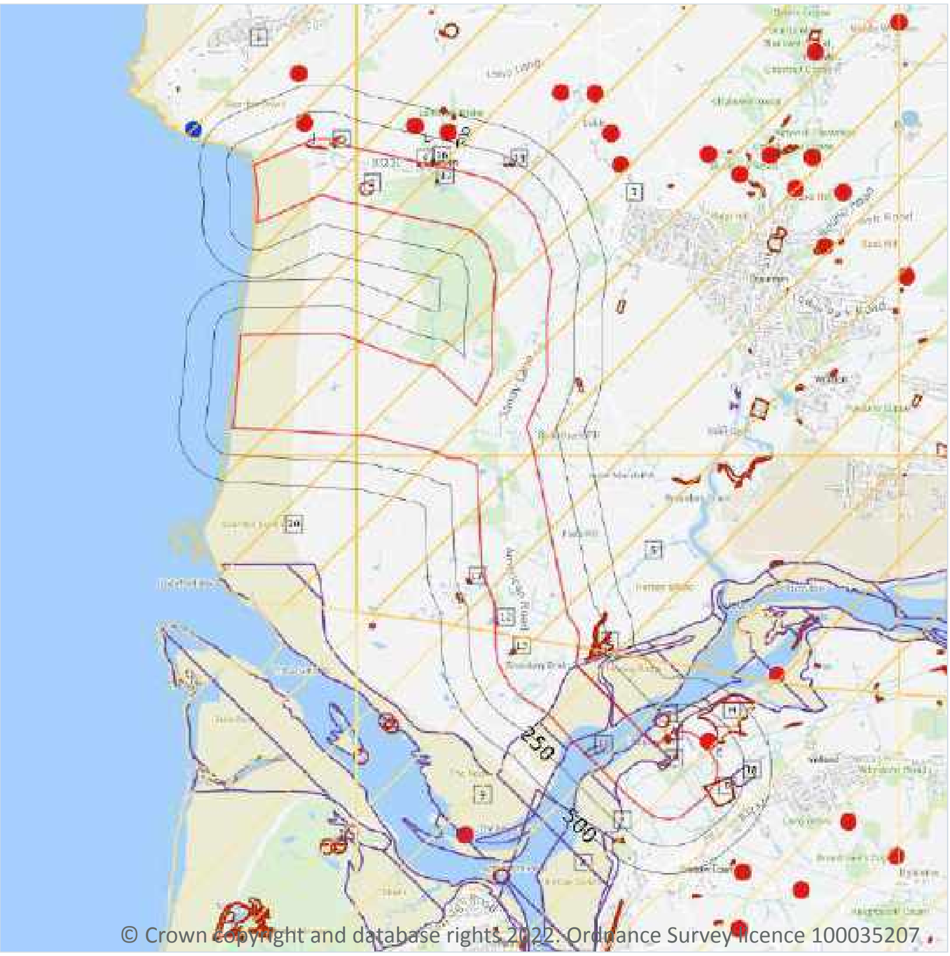
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 227**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	7

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 229**

ID	Location	Details	Description
E	40m NE	Name: Yelland Wharf Address: Yelland, BARNSTAPLE, Devon Commodity: Crushed Rock Status: Active	Type: Sea, river or canal wharf where mineral commodities are unloaded and stored Status description: Site which is actively extracting mineral products, or in the case of wharfs and rail depots, is actively handing minerals
E	40m NE	Name: Yelland Wharf Address: Yelland, BARNSTAPLE, Devon Commodity: Marine Sand & Gravel Status: Active	Type: Sea, river or canal wharf where mineral commodities are unloaded and stored Status description: Site which is actively extracting mineral products, or in the case of wharfs and rail depots, is actively handing minerals
J	168m NW	Name: Down House Address: Saunton, BARNSTAPLE, Devon Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
L	316m N	Name: Saunton Court Address: Saunton, BARNSTAPLE, Devon Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
M	325m N	Name: Saunton Court Address: Saunton, BARNSTAPLE, Devon Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

ID	Location	Details	Description
P	382m N	Name: Saunton Court Address: Saunton, BARNSTAPLE, Devon Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
Q	470m N	Name: Saunton Court Address: Saunton, BARNSTAPLE, Devon Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	**42**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 229**

ID	Location	Land Use	Year of mapping	Mapping scale
2	**On site**	**Sewage Bed**	**1992**	**1:10000**
3	**On site**	**Unspecified Quarry**	**1905**	**1:10560**
4	**On site**	**Unspecified Quarry**	**1905**	**1:10560**
11	**On site**	**Reservoir**	**1992**	**1:10000**
12	**On site**	**Pond**	**1992**	**1:10000**
13	**On site**	**Pond**	**1992**	**1:10000**
14	**On site**	**Pond**	**1992**	**1:10000**
A	**On site**	**Ponds**	**1985**	**1:10000**
A	**On site**	**Ponds**	**1981**	**1:10000**
A	**On site**	**Ponds**	**1969**	**1:10560**
A	**On site**	**Ponds**	**1963**	**1:10560**
A	**On site**	**Ponds**	**1905**	**1:10560**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Ponds**	**1887**	**1:10560**
B	**On site**	**Sewage Works**	**1992**	**1:10000**
B	**On site**	**Sewage Works**	**1985**	**1:10000**
B	**On site**	**Sewage Works**	**1981**	**1:10000**
C	**On site**	**Pond**	**1905**	**1:10560**
C	**On site**	**Pond**	**1887**	**1:10560**
D	**On site**	**Unspecified Quarry**	**1905**	**1:10560**
D	**On site**	**Unspecified Quarry**	**1905**	**1:10560**
15	16m N	Reservoir	1905	1:10560
16	17m N	Sand Pit	1905	1:10560
F	81m E	Water Body	1905	1:10560
F	83m E	Water Body	1887	1:10560
G	86m NW	Unspecified Bed	1985	1:10000
G	86m NW	Unspecified Bed	1981	1:10000
H	99m NE	Refuse Heap	1985	1:10000
H	99m NE	Refuse Heap	1981	1:10000
I	118m E	Pond	1992	1:10000
I	118m E	Pond	1985	1:10000
I	118m E	Pond	1981	1:10000
I	118m E	Pond	1969	1:10560
I	118m E	Pond	1963	1:10560
17	121m SW	Ponds	1992	1:10000
J	141m NW	Unspecified Old Quarry	1905	1:10560
J	147m NW	Unspecified Quarry	1886	1:10560
19	170m N	Pond	1886	1:10560
K	186m E	Pond	1992	1:10000
K	186m E	Pond	1985	1:10000
K	186m E	Pond	1981	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
K	186m E	Pond	1969	1:10560
K	186m E	Pond	1963	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	**0**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**5**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

Features are displayed on the Mining, ground workings and natural cavities map on **page 229**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
8	**On site**	**Clarence Wharf**	**Sand and gravel**	**Surface mineral working**	**Valid**	**11/60**
9	**On site**	**Dredging Taw and Torridge**	**Sand and gravel**	**Surface mineral working**	**Valid**	**3/66**
10	**On site**	**Clarence Wharf**	**Sand and gravel**	**Surface mineral working**	**Valid**	**3/66**
18	128m E	Yelland	Concrete	Surface mineral working	Refused	8/2/73
23	392m SW	Clarence Wharf	Sand and gravel	Surface mineral working	Valid	11/60

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	5

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining, ground workings and natural cavities map on **page 229**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Vein Mineral**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
5	**On site**	**Not available**	**Vein Mineral**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
6	**On site**	**Not available**	**Vein Mineral**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
7	**On site**	**Not available**	**Vein Mineral**	**A**	**Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered**
20	185m S	Not available	Vein Mineral	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

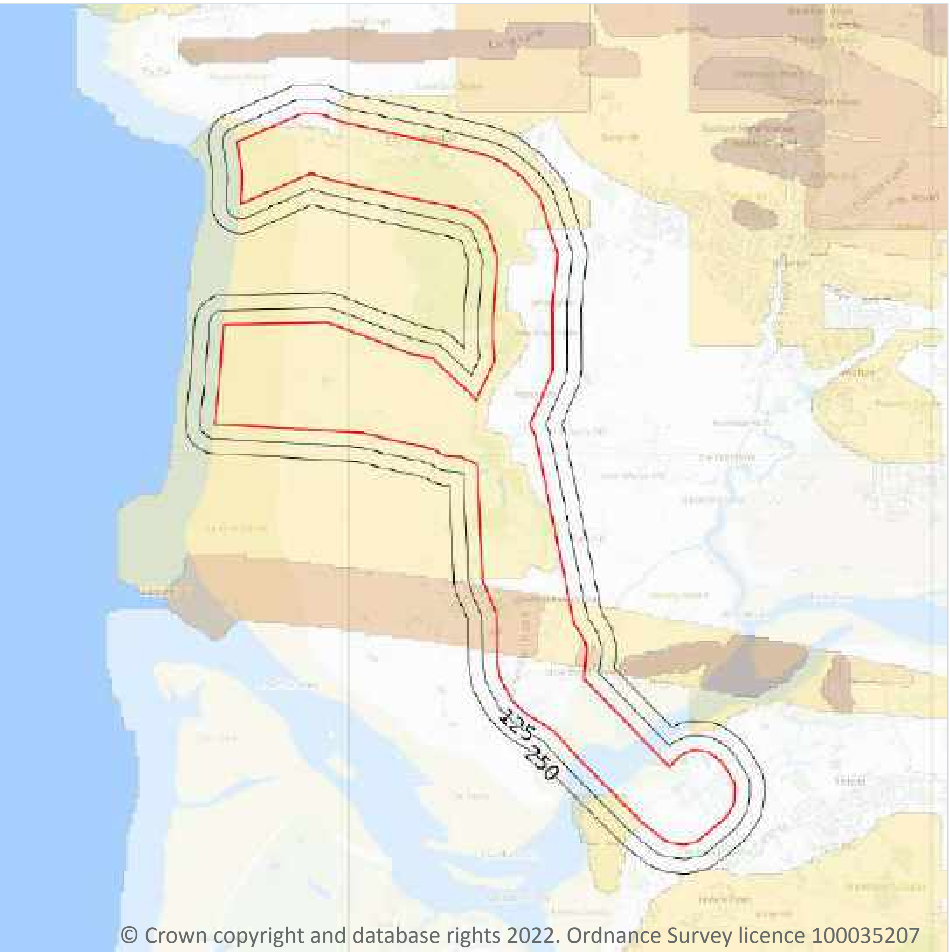
18.13 Clay mining

Records on site	**0**

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

19.1 Radon

Records on site	3

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 237**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****
On site	**Between 1% and 3%**	**None**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 5% and 10%**	**Basic**

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	162

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**No Data**	**No Data**	**No Data**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**No Data**	**No Data**	**No Data**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
12m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
18m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
19m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
19m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
19m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
23m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
28m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
28m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
41m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
43m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
43m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
43m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
44m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
47m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
47m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

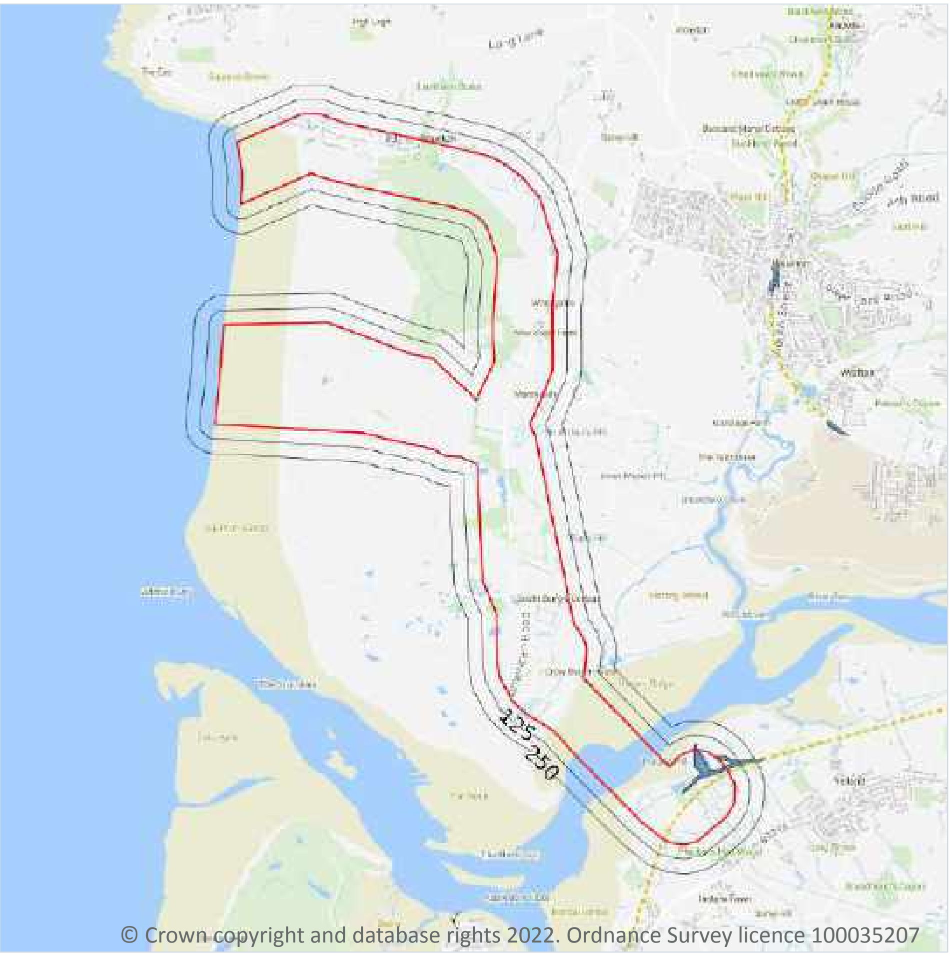
20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	6

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 249**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1972**	**2500**
On site	**Railway Sidings**	**1958**	**2500**
On site	**Railway Sidings**	**1985**	**10000**
On site	**Railway Sidings**	**1981**	**10000**
On site	**Railway Sidings**	**1969**	**10560**
On site	**Railway Sidings**	**1963**	**10560**

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	1

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 249**

Location	Description
On site	**Abandoned**

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

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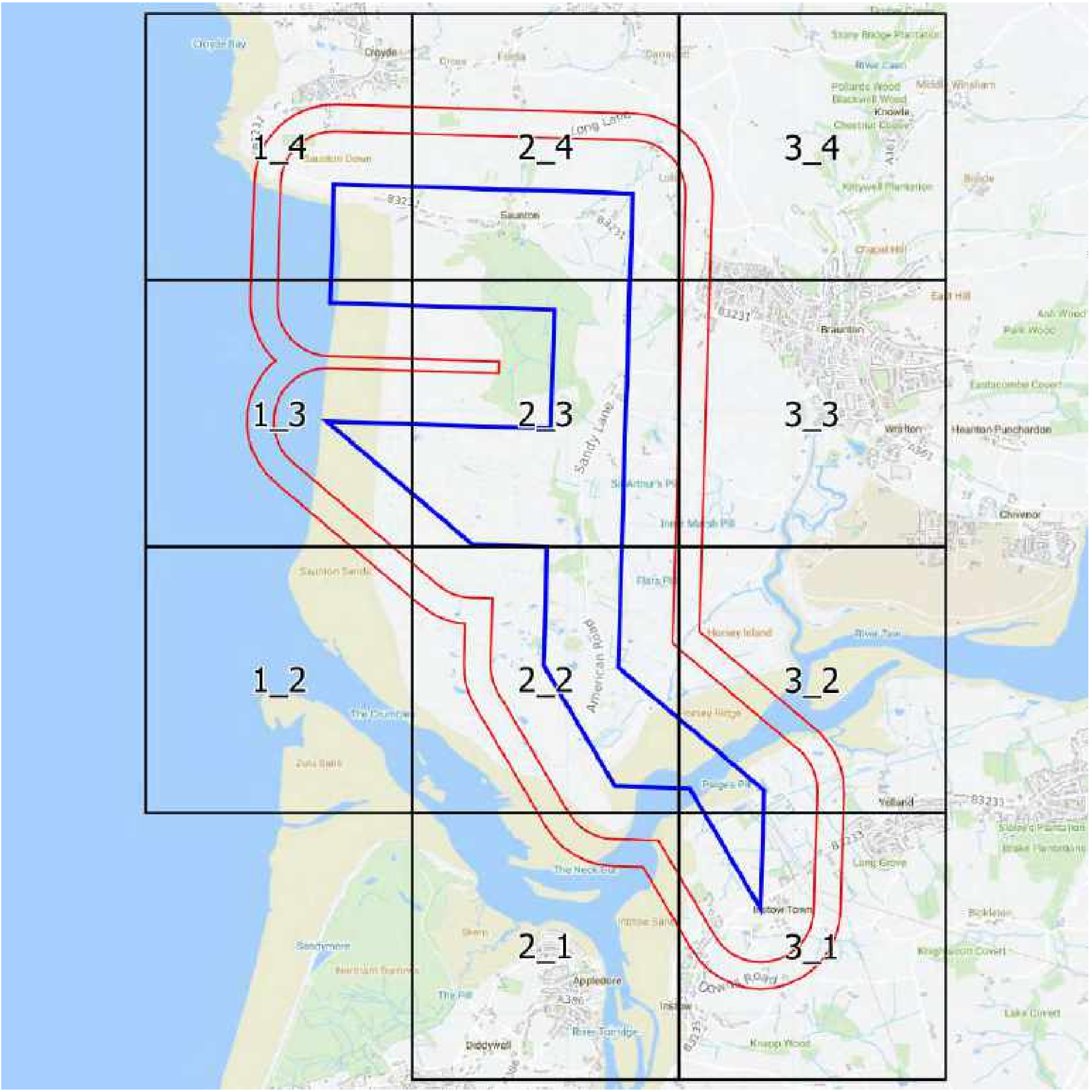
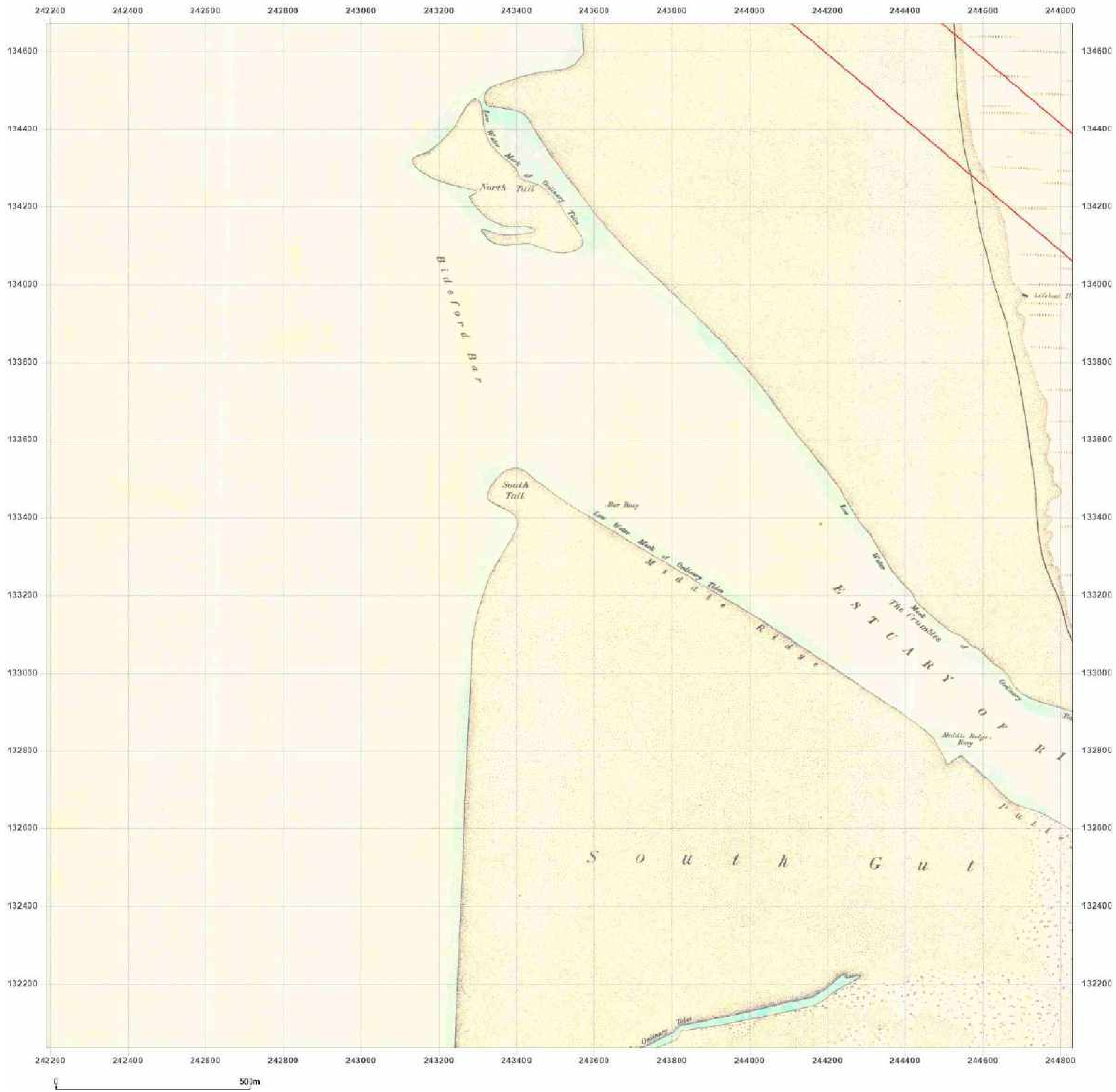


Small Scale Grid Index



Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_2
Grid Ref: 243511, 133352

Map Name: County Series

Map date: **1887**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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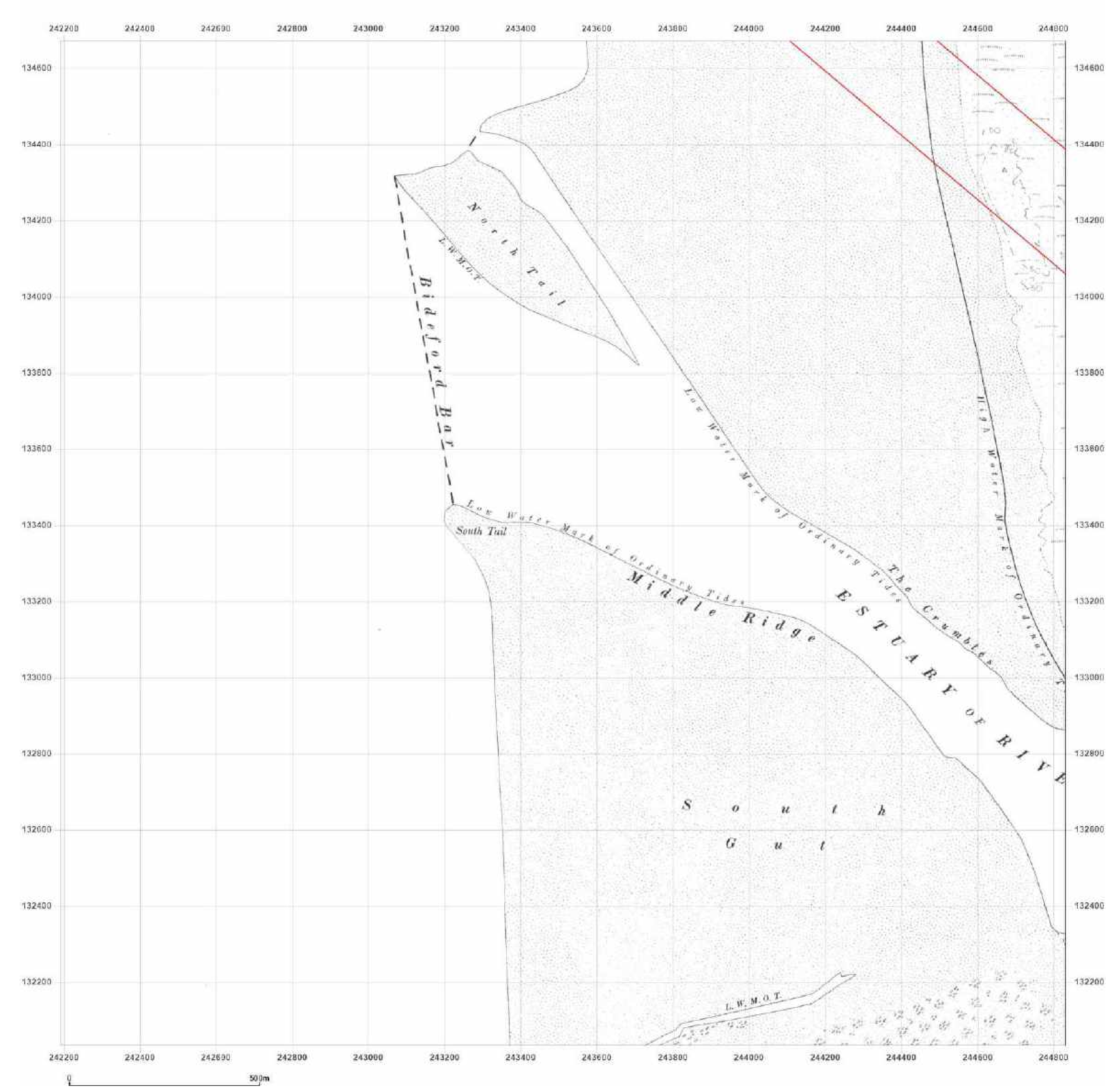

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_2
Grid Ref: 243511, 133352

Map Name: County Series

Map date: 1903

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1885
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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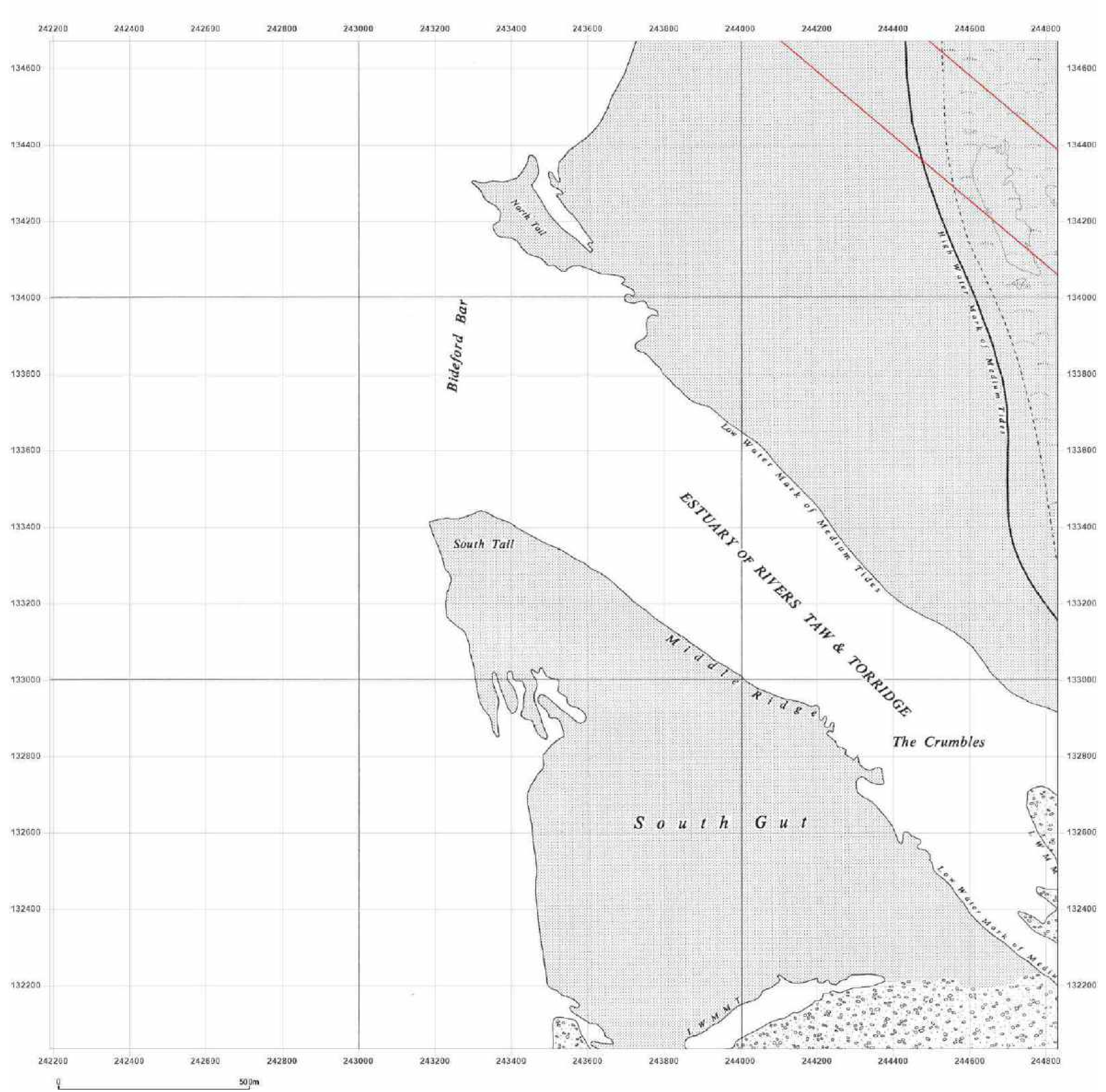

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_2
Grid Ref: 243511, 133352

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

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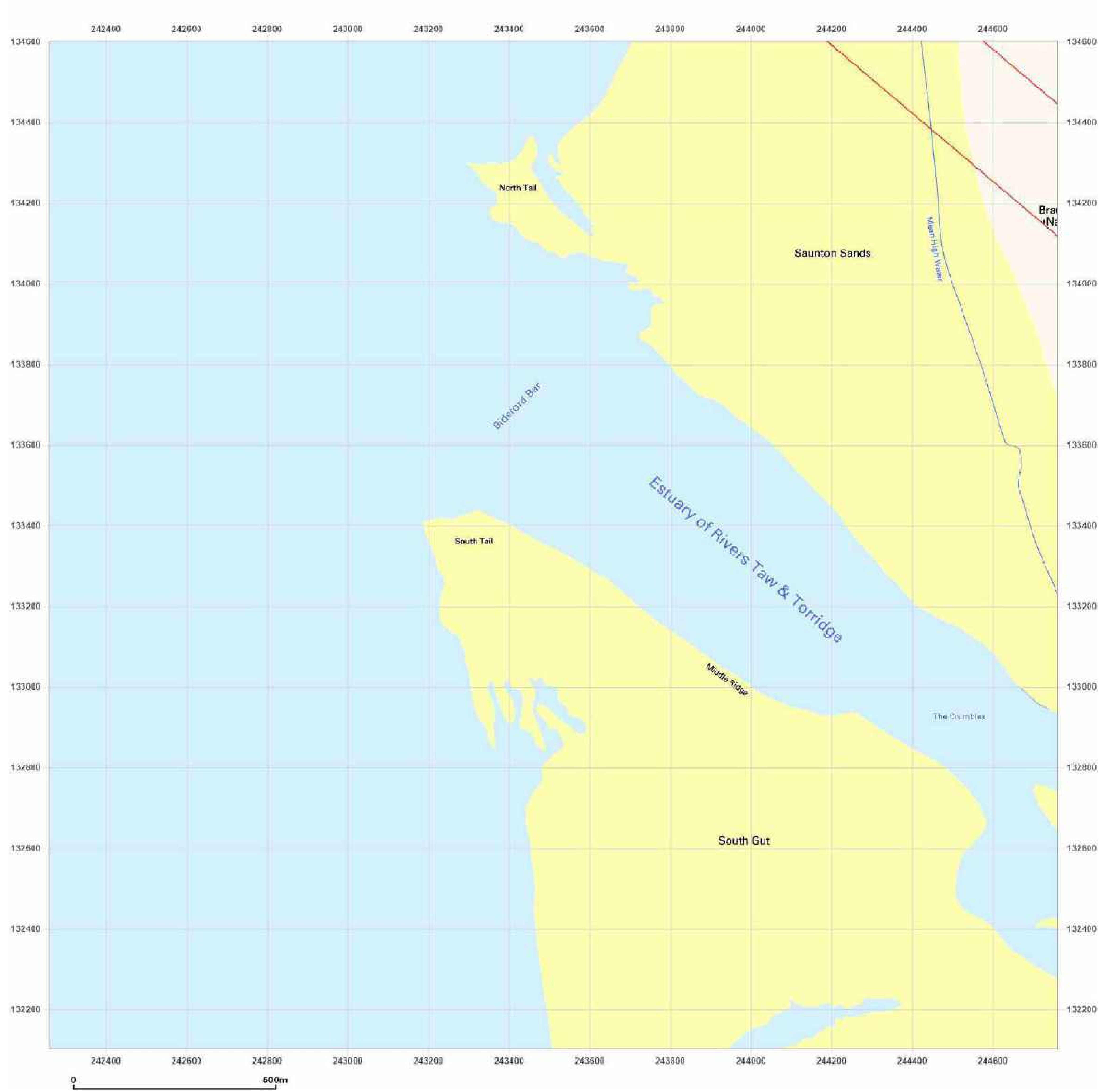

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_2
Grid Ref: 243511, 133352

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2001

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Production date: 05 May 2022

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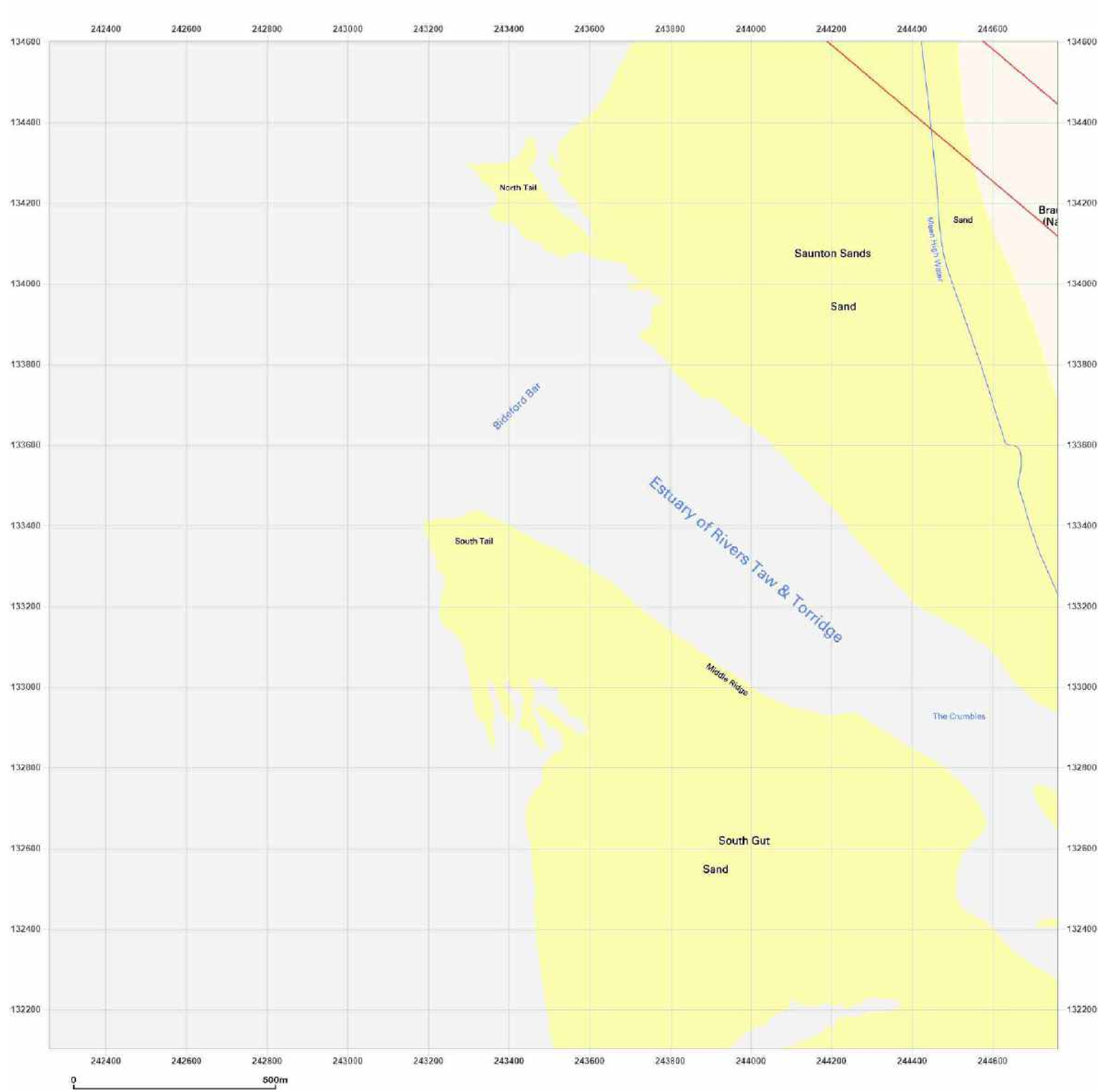

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_2
Grid Ref: 243511, 133352

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

2010

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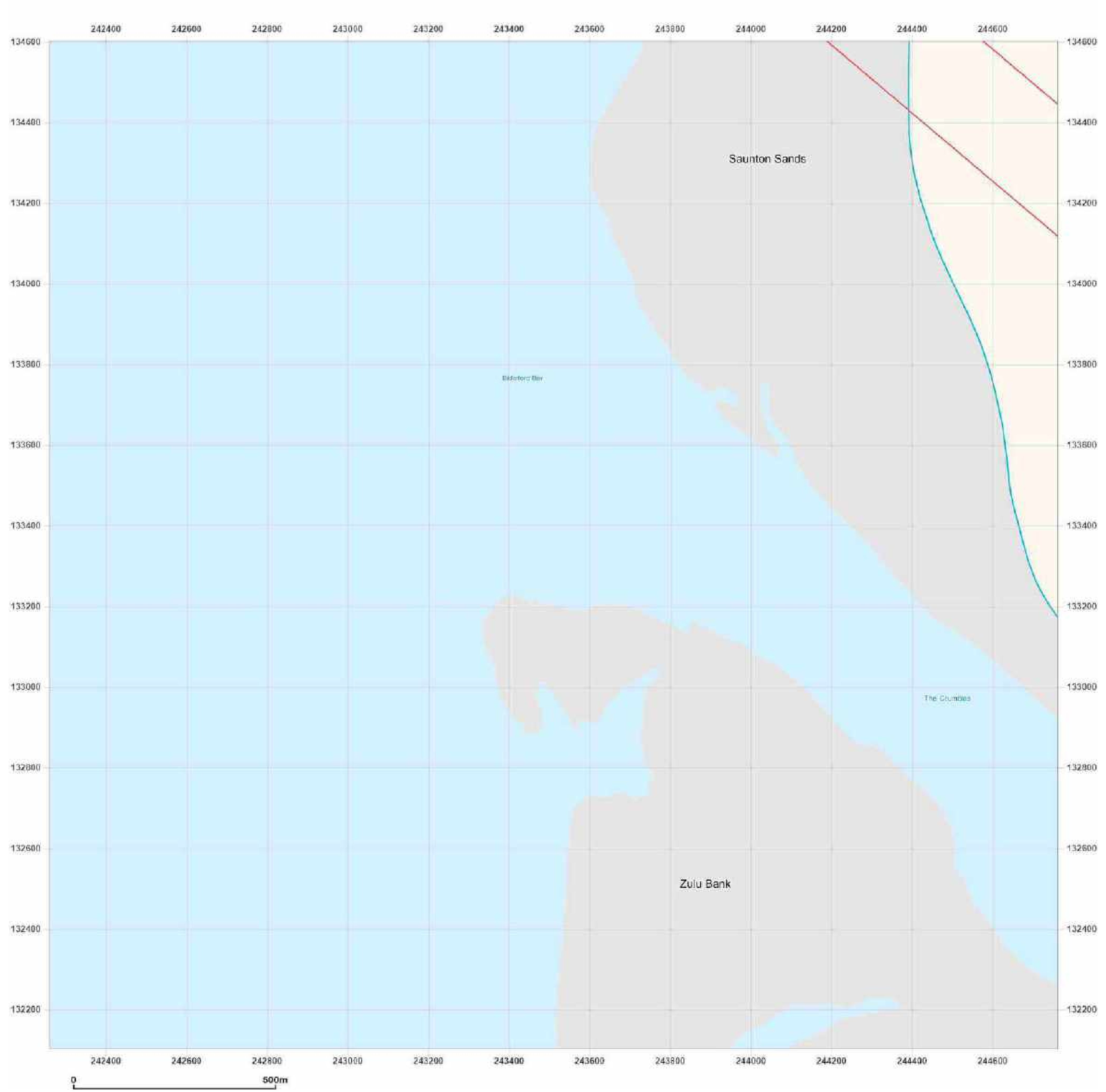

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_2
Grid Ref: 243511, 133352

Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

Printed at: 1:10,000

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Production date: 05 May 2022

Map legend available at:
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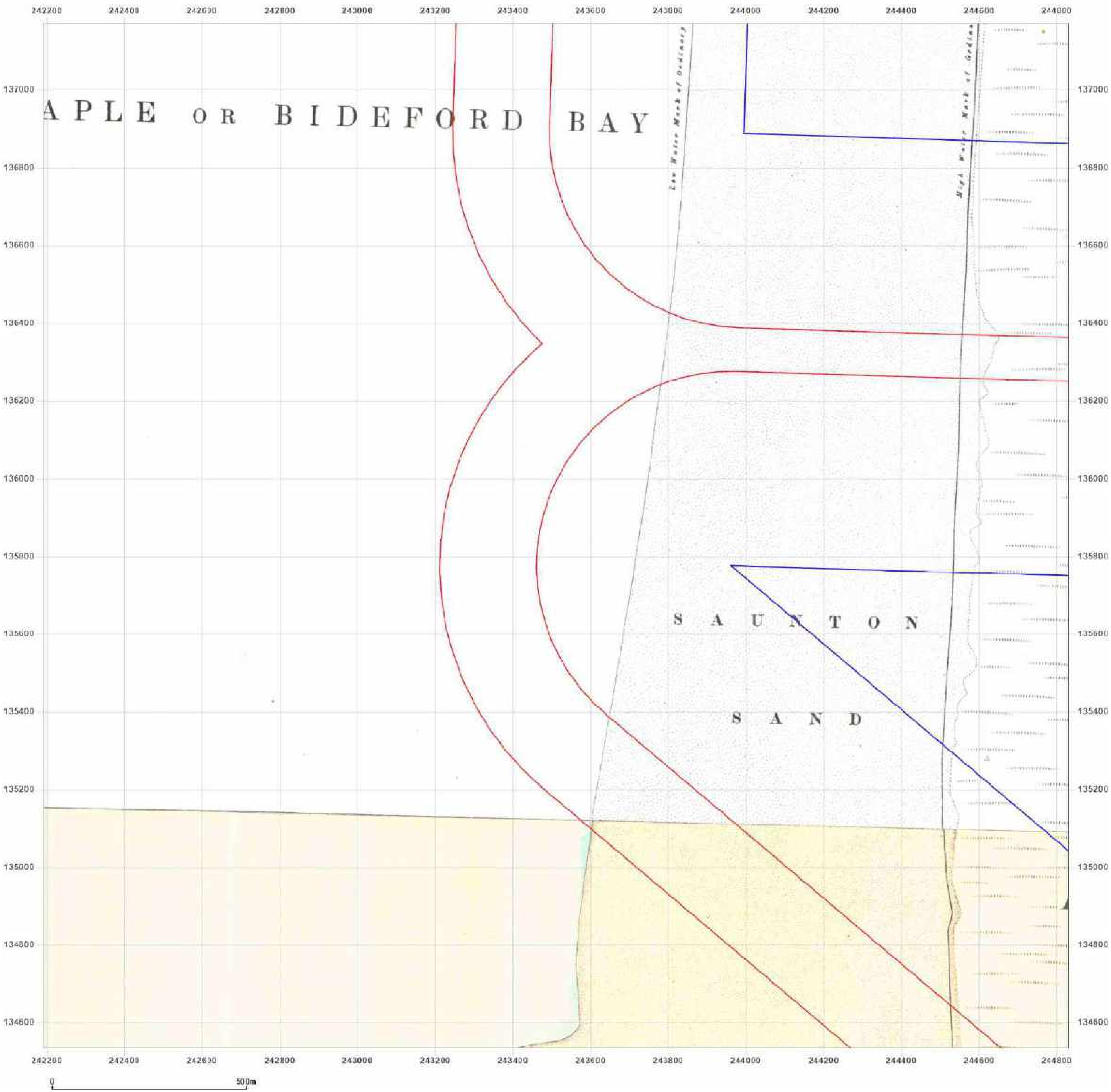

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_3
Grid Ref: 243511, 135852

Map Name: County Series

Map date: 1886-1887

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 05 May 2022

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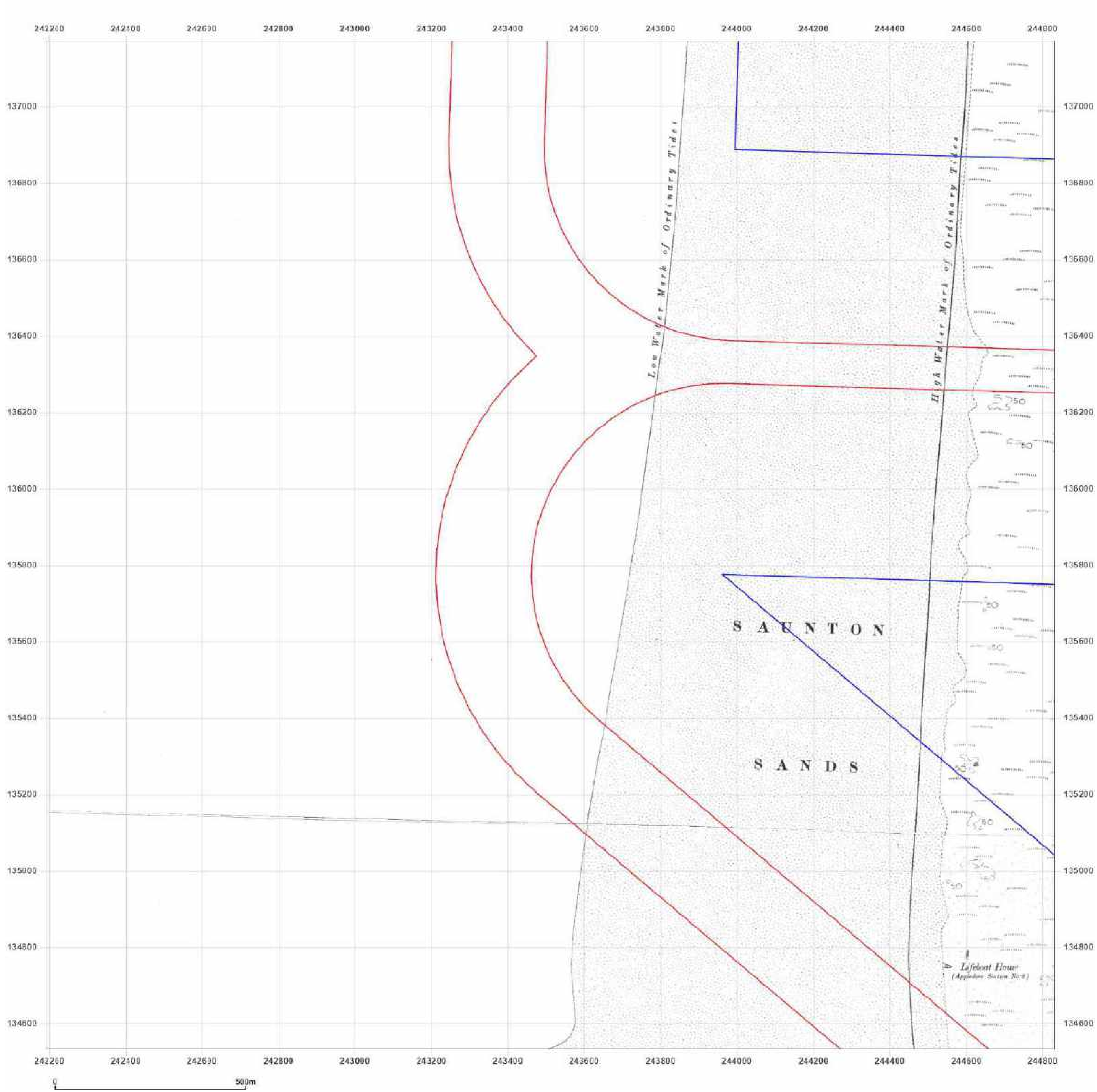

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_3
Grid Ref: 243511, 135852

Map Name: County Series

Map date: **1903-1905**

Scale: 1:10,560

Printed at: 1:10,560

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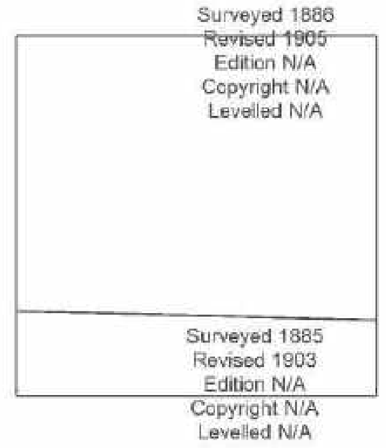

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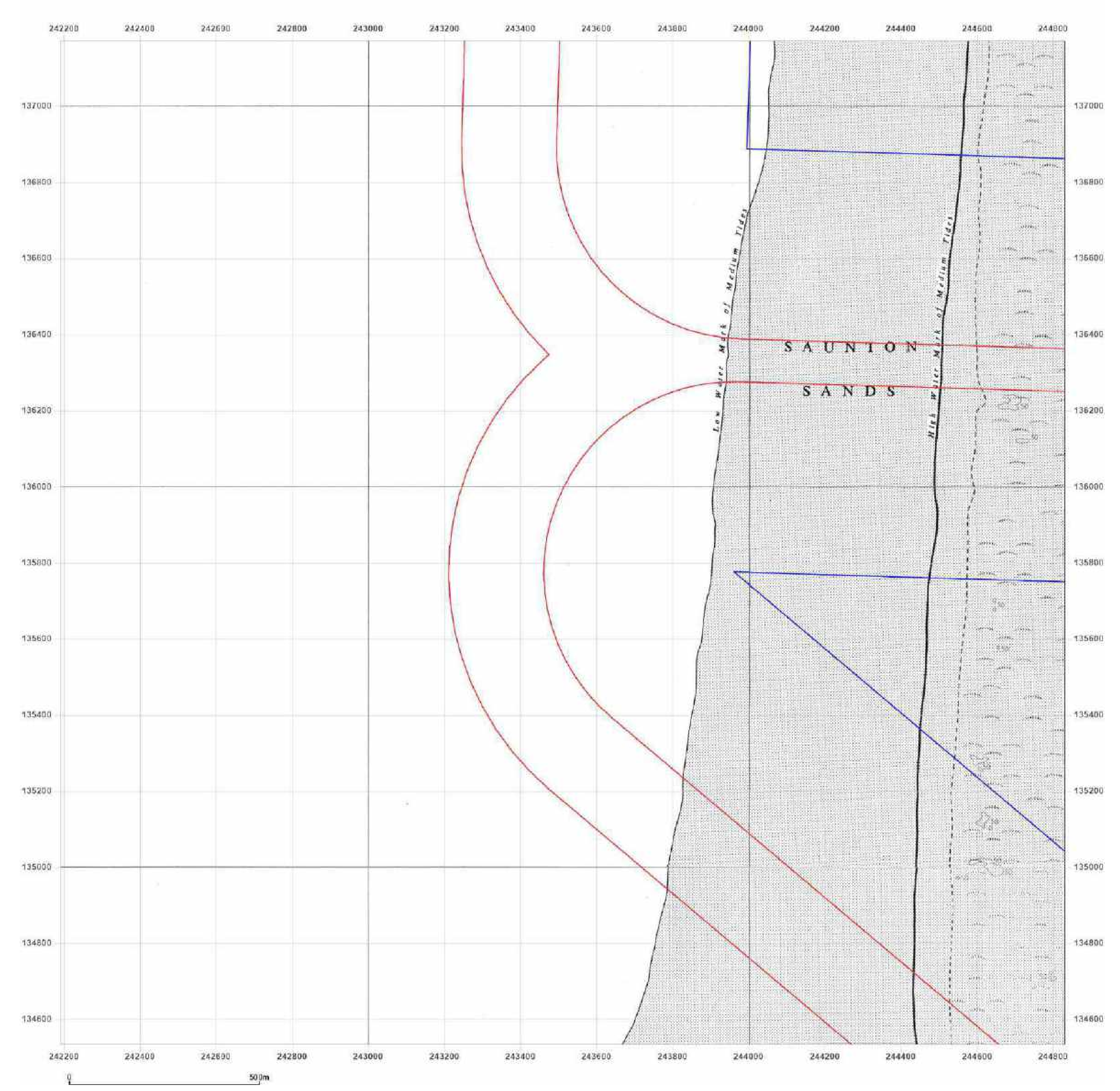

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_3
Grid Ref: 243511, 135852

Map Name: Provisional

Map date: **1963**

Scale: 1:10,560

Printed at: 1:10,560

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
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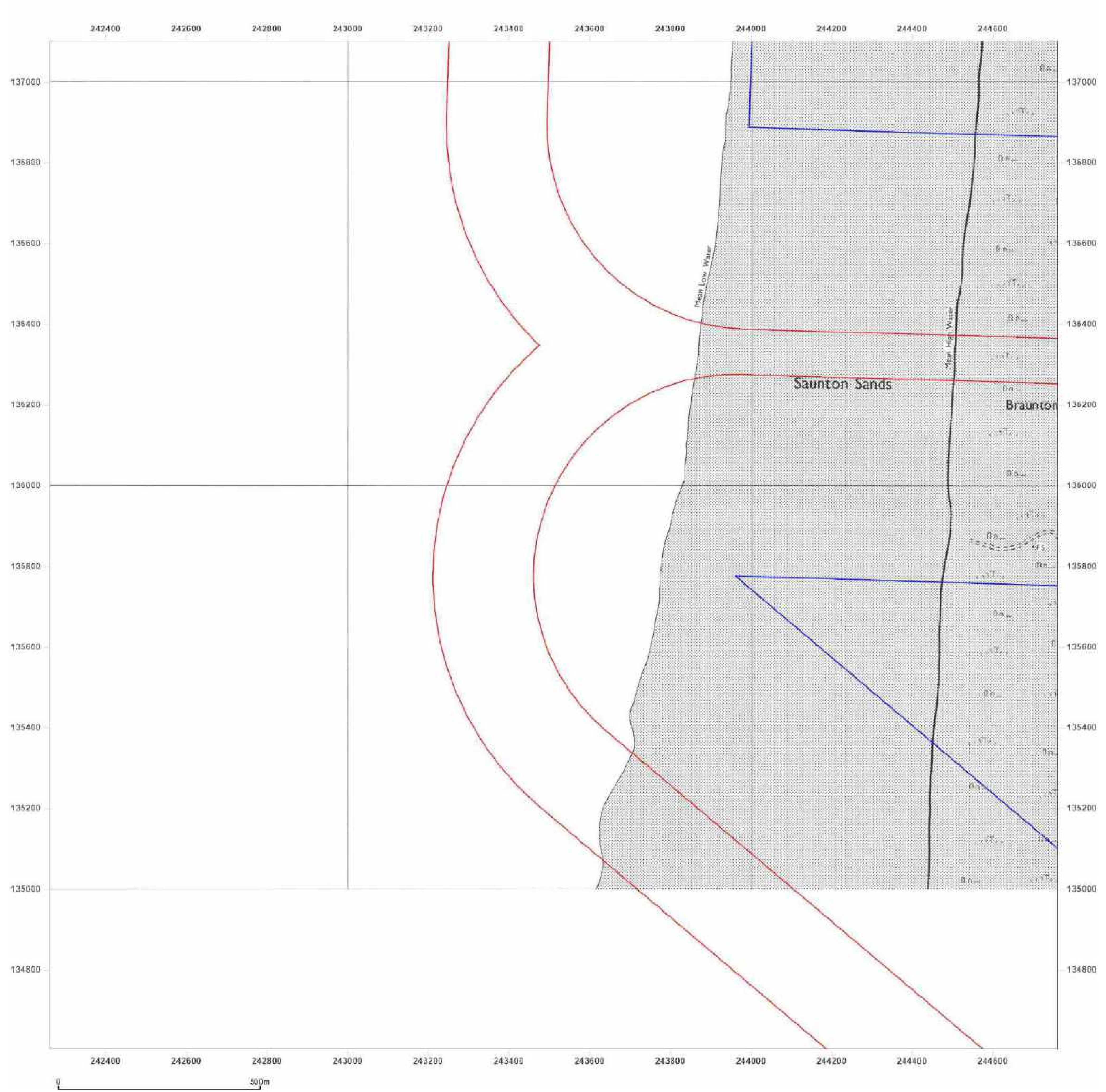

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_3
Grid Ref: 243511, 135852

Map Name: National Grid

Map date: **1991**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

Surveyed 1991
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A

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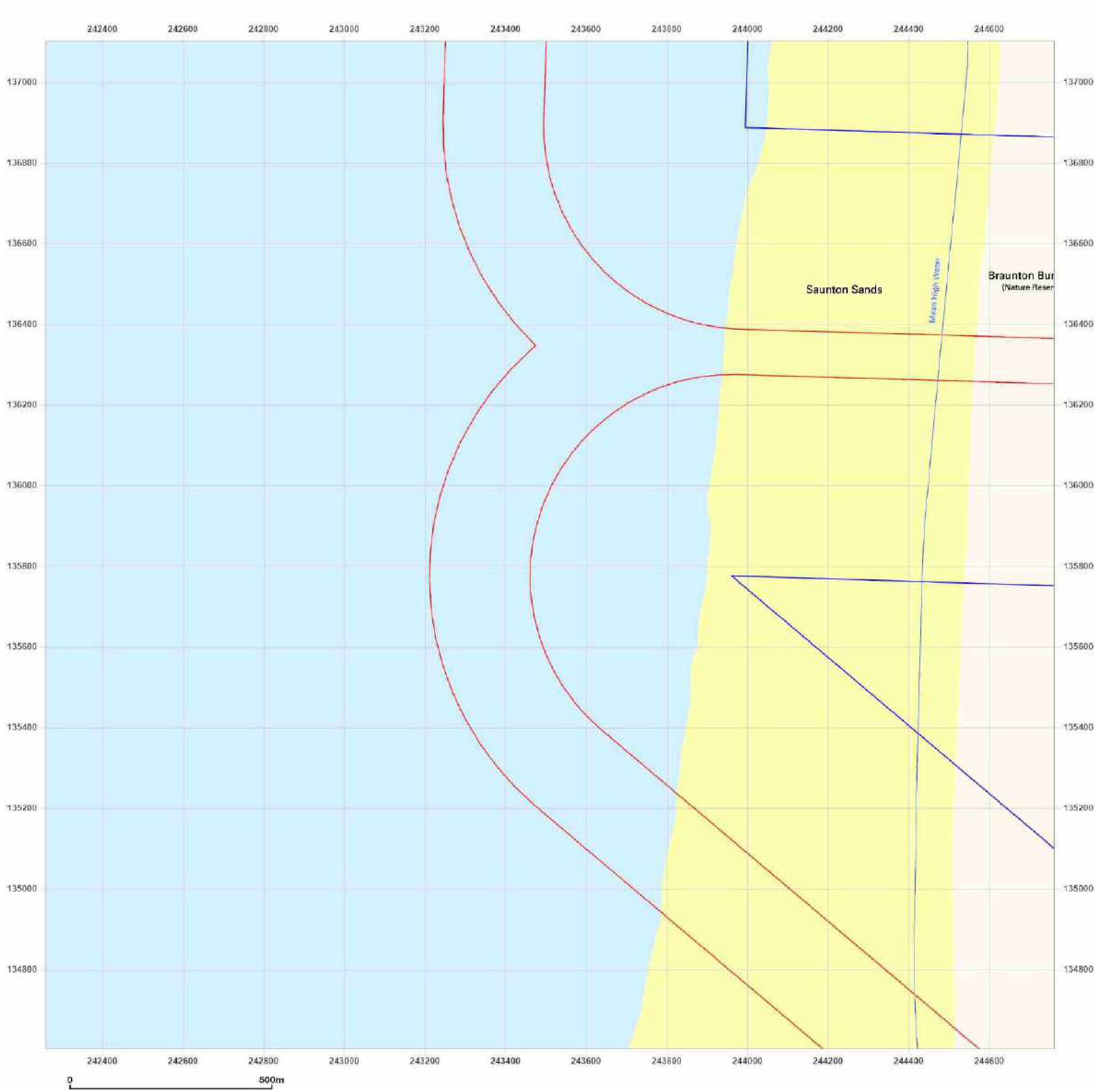

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_3
Grid Ref: 243511, 135852

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

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2001

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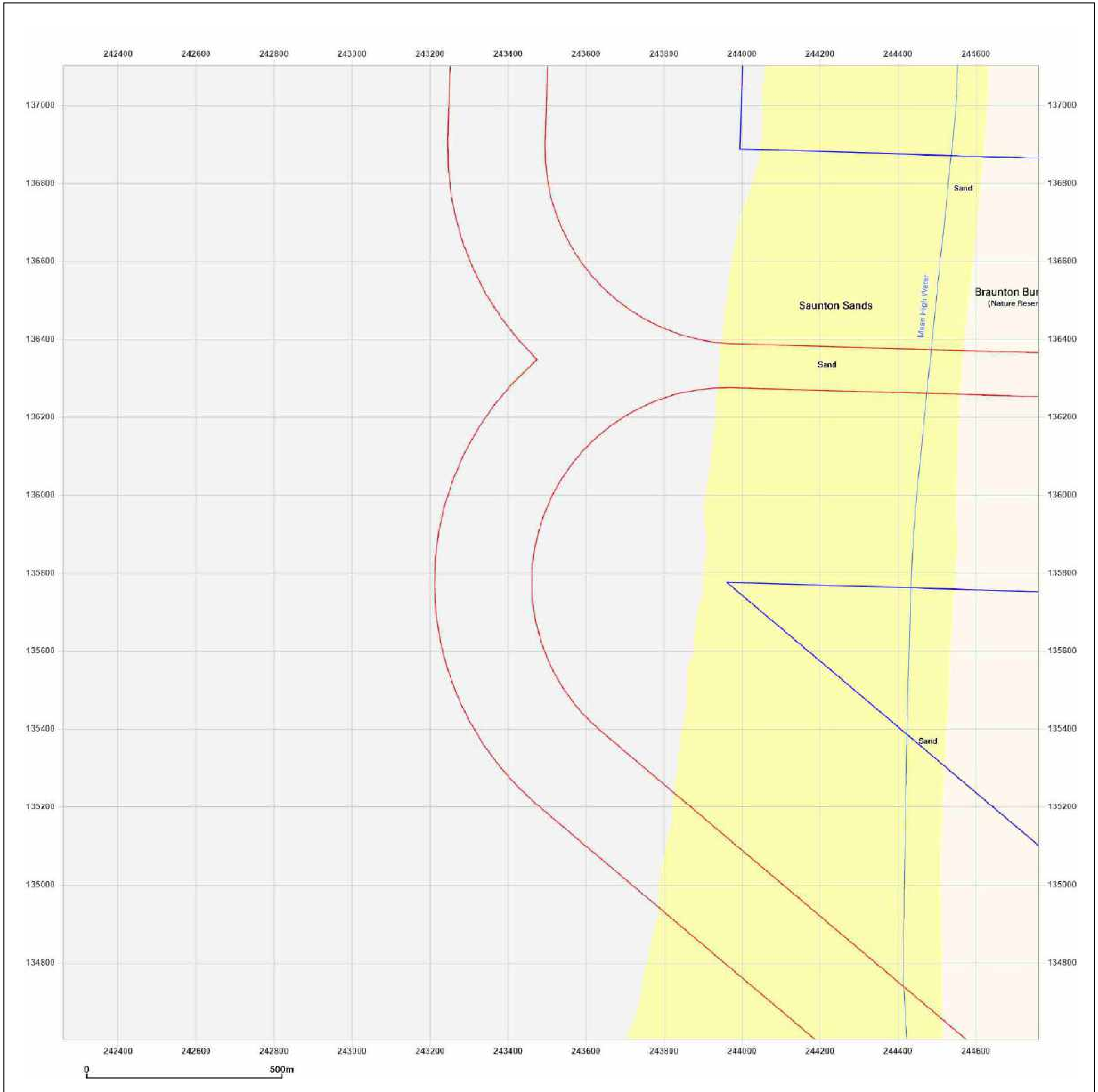

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_3
Grid Ref: 243511, 135852

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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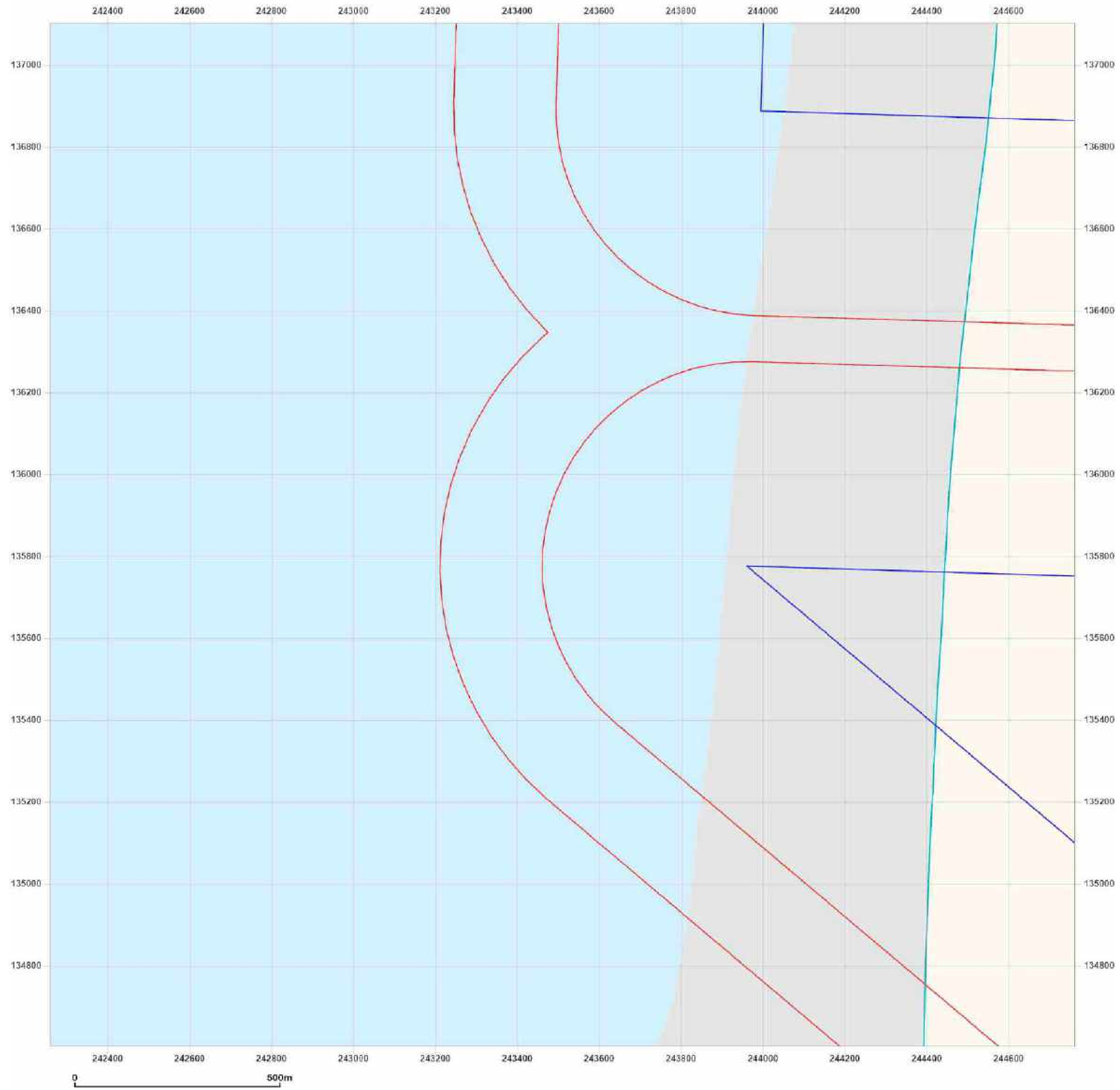

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_3
Grid Ref: 243511, 135852

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000

N
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2022

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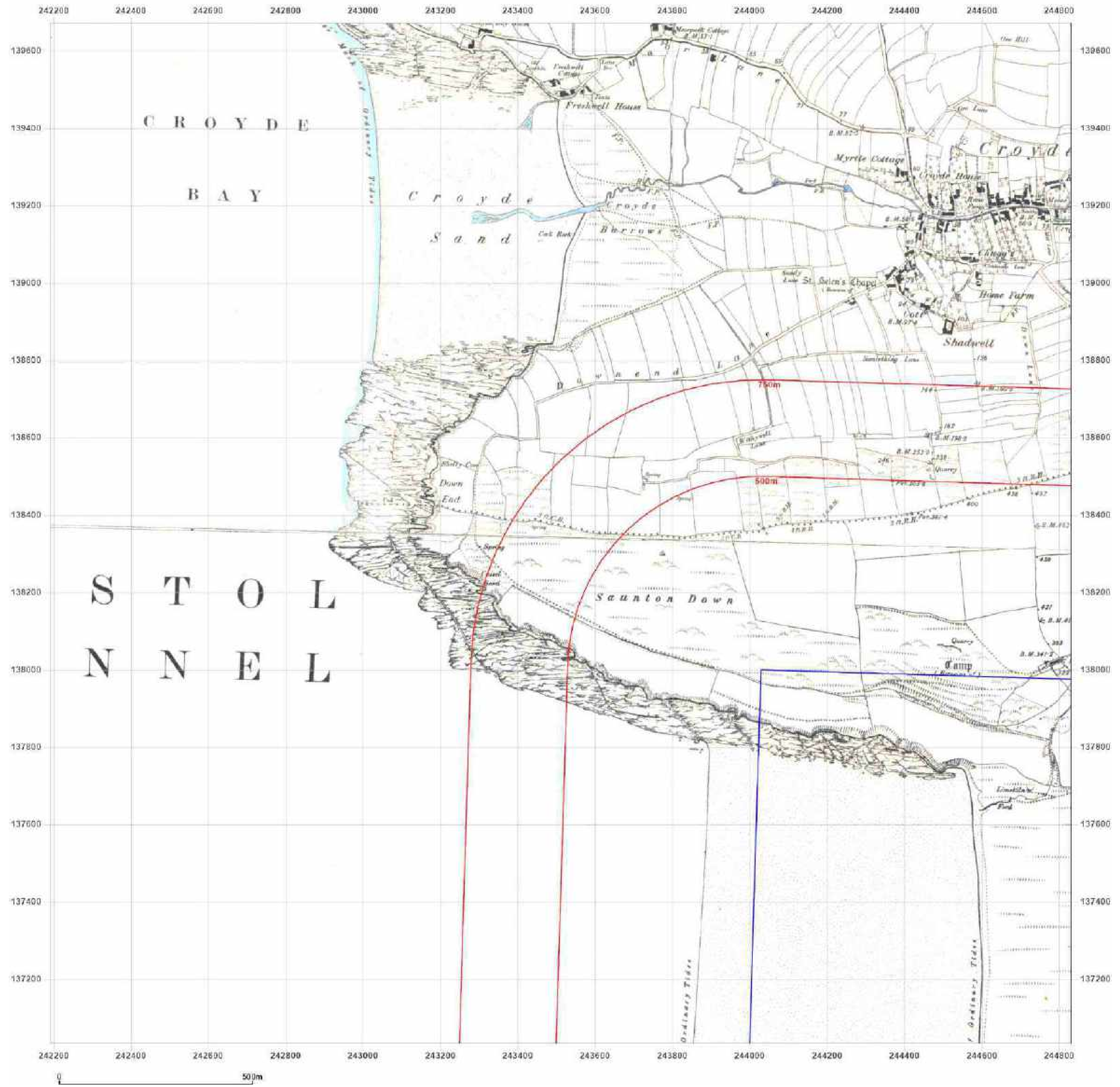

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_4
Grid Ref: 243511, 138352

Map Name: County Series

Map date: **1886**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 05 May 2022

Map legend available at:
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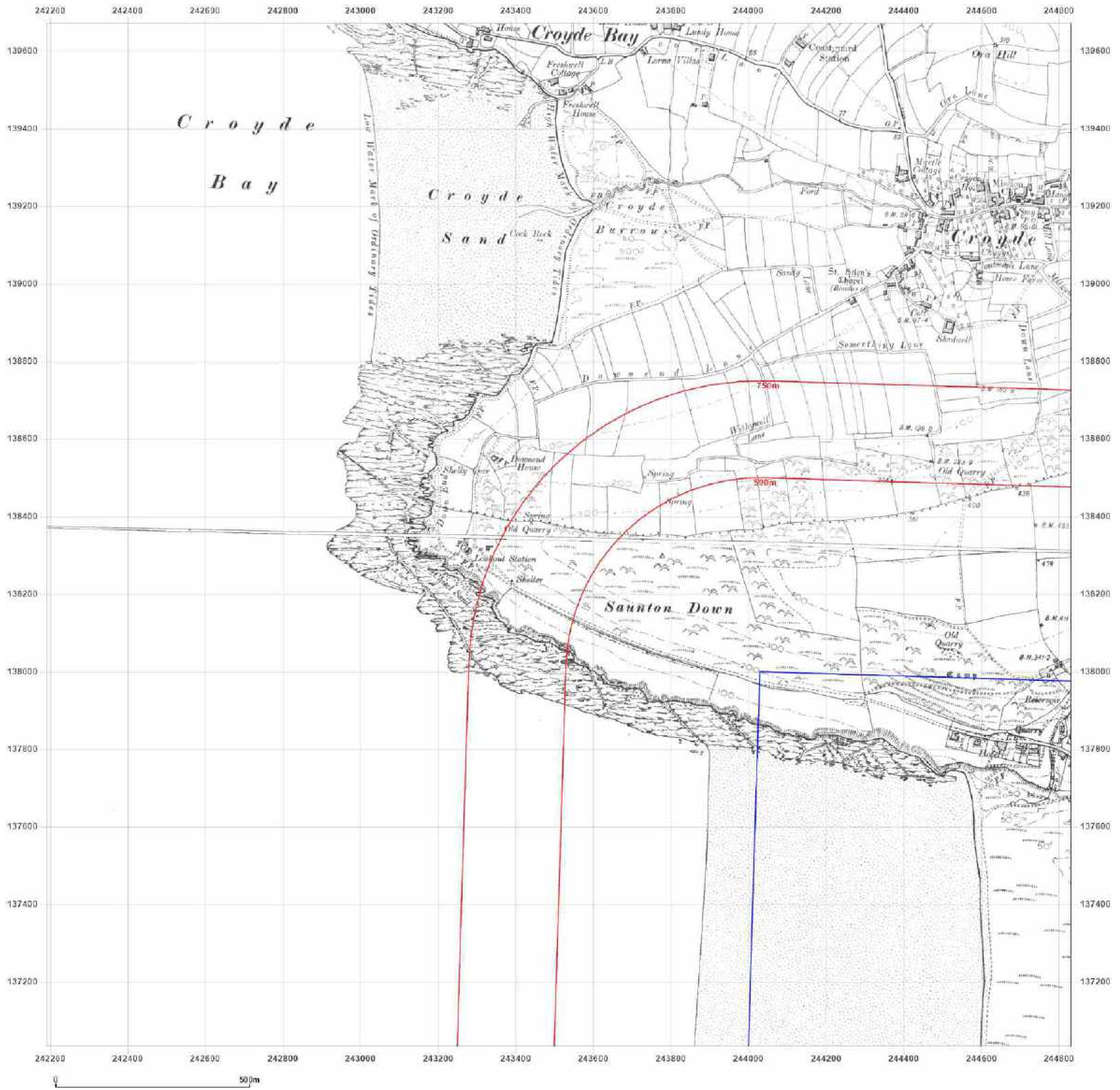

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_4
Grid Ref: 243511, 138352

Map Name: County Series

Map date: 1903-1905

Scale: 1:10,560

Printed at: 1:10,560

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Production date: 05 May 2022

Map legend available at:
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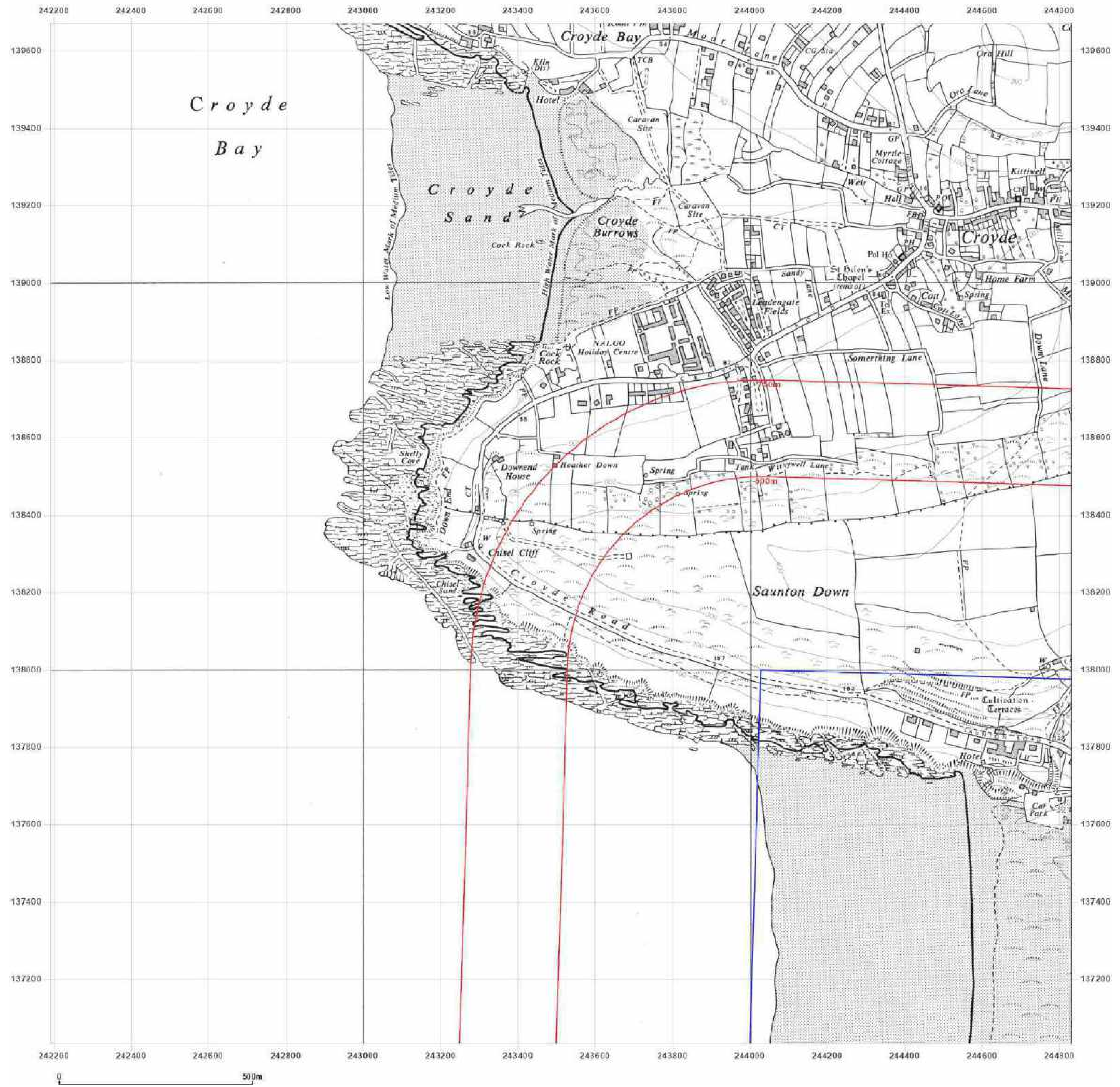

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_4
Grid Ref: 243511, 138352

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

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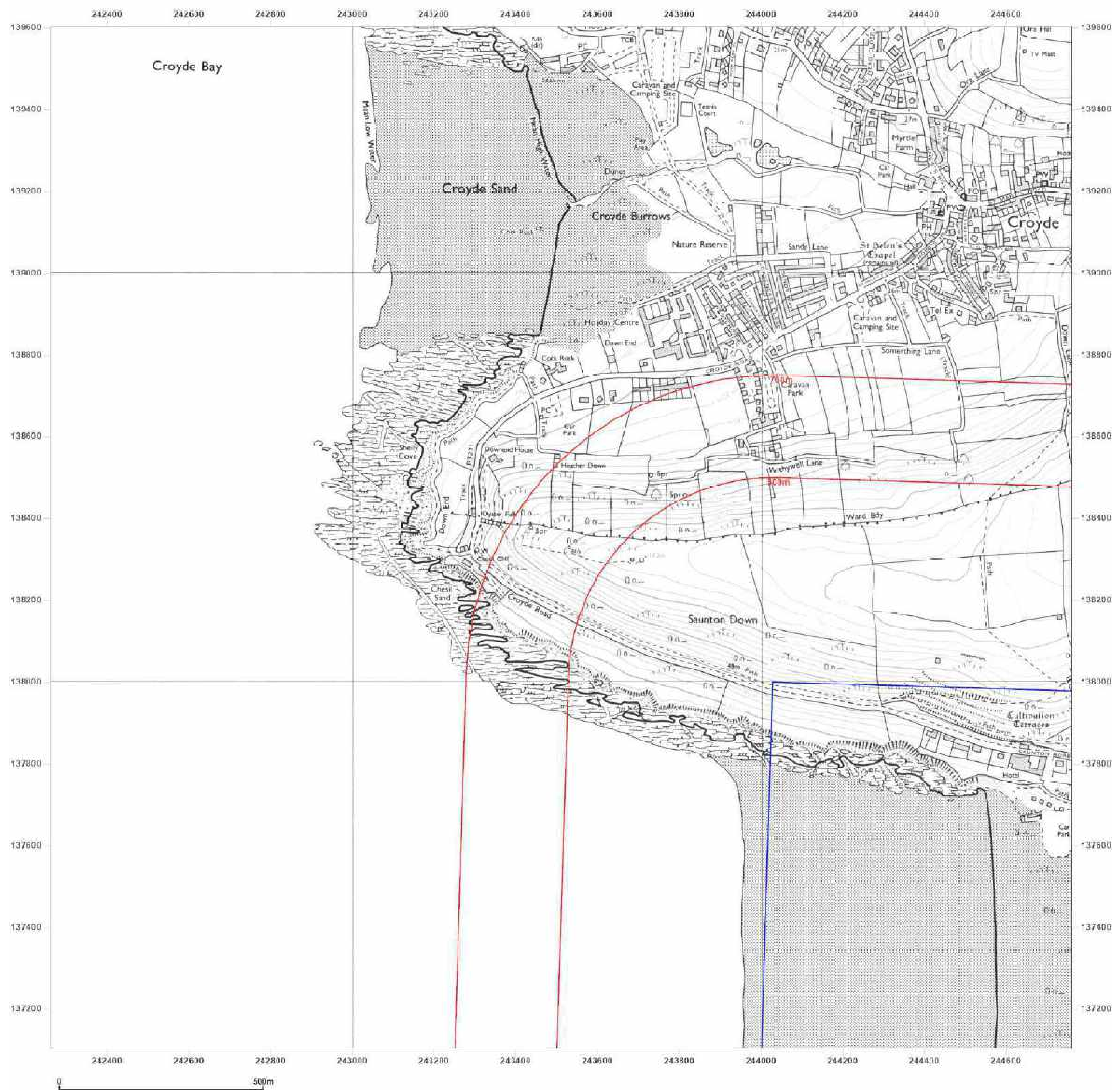

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_4
Grid Ref: 243511, 138352

Map Name: National Grid

Map date: 1991

Scale: 1:10,000

Printed at: 1:10,000

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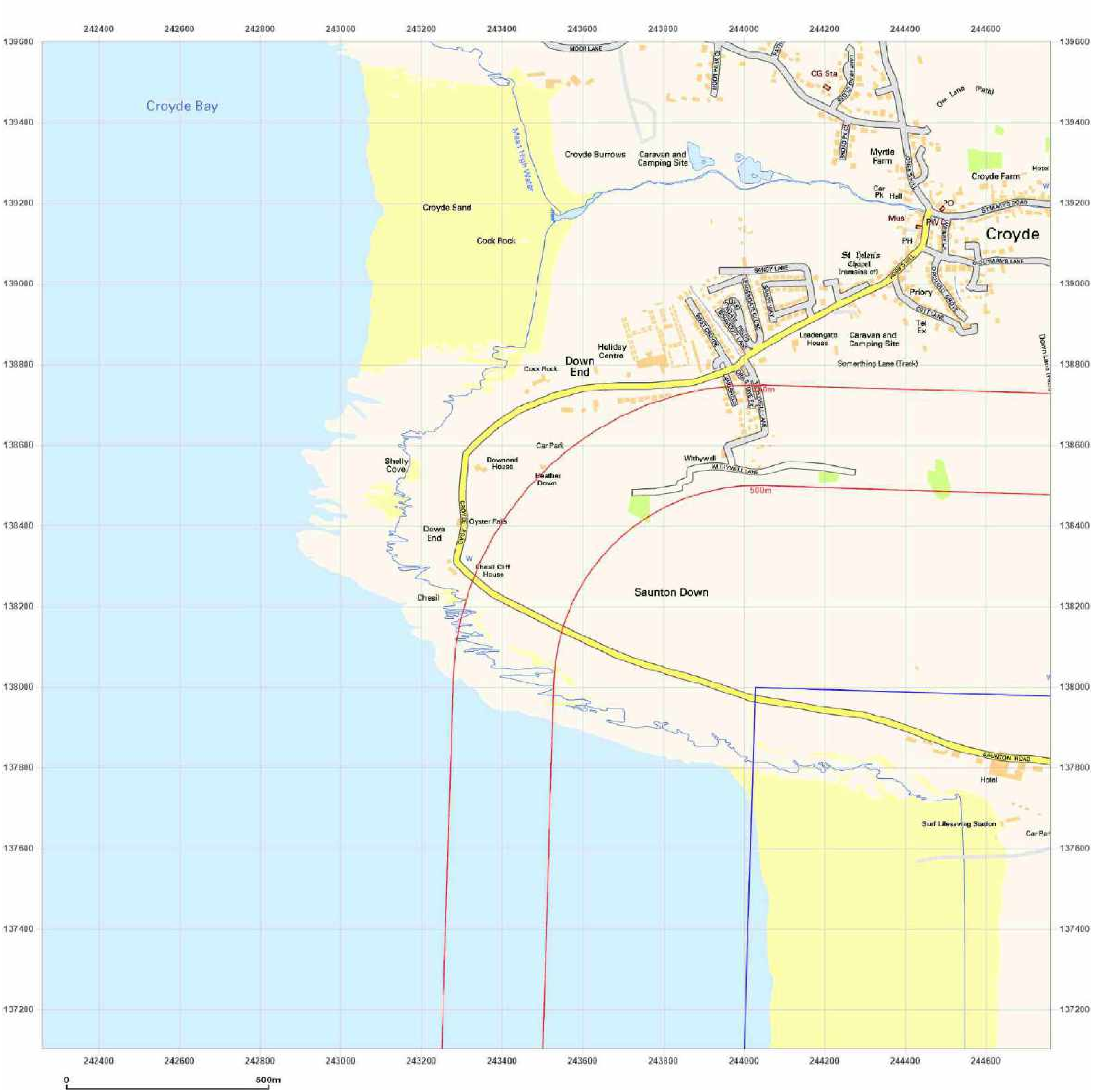

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_4
Grid Ref: 243511, 138352

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

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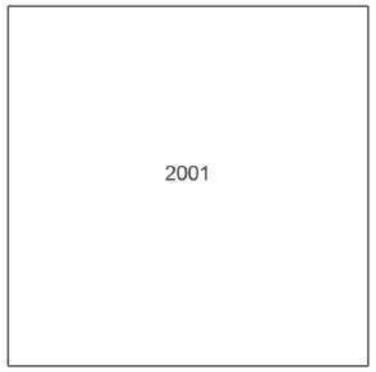

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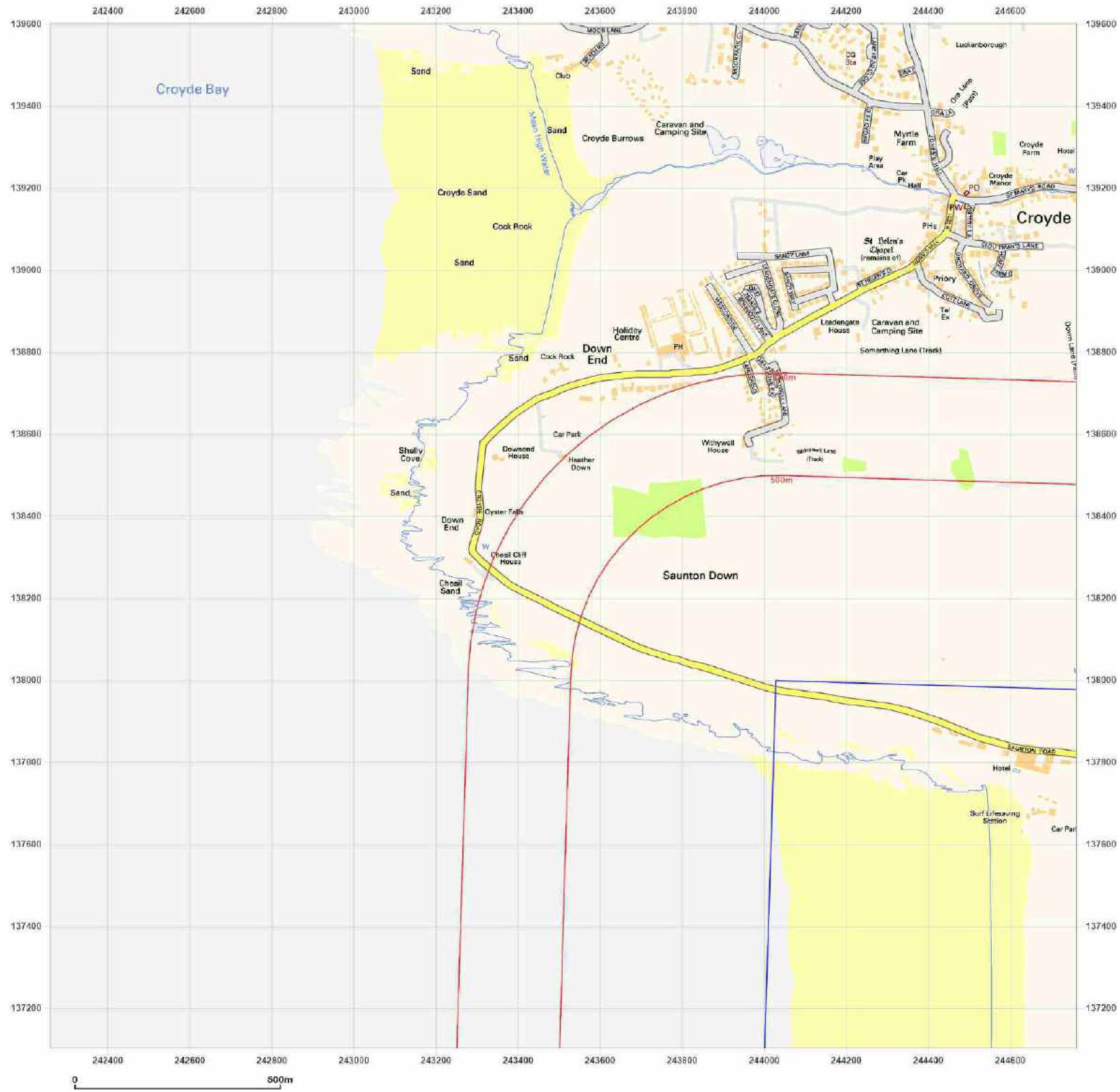

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_4
Grid Ref: 243511, 138352

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

2010

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Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_1_4
Grid Ref: 243511, 138352

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000

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2022

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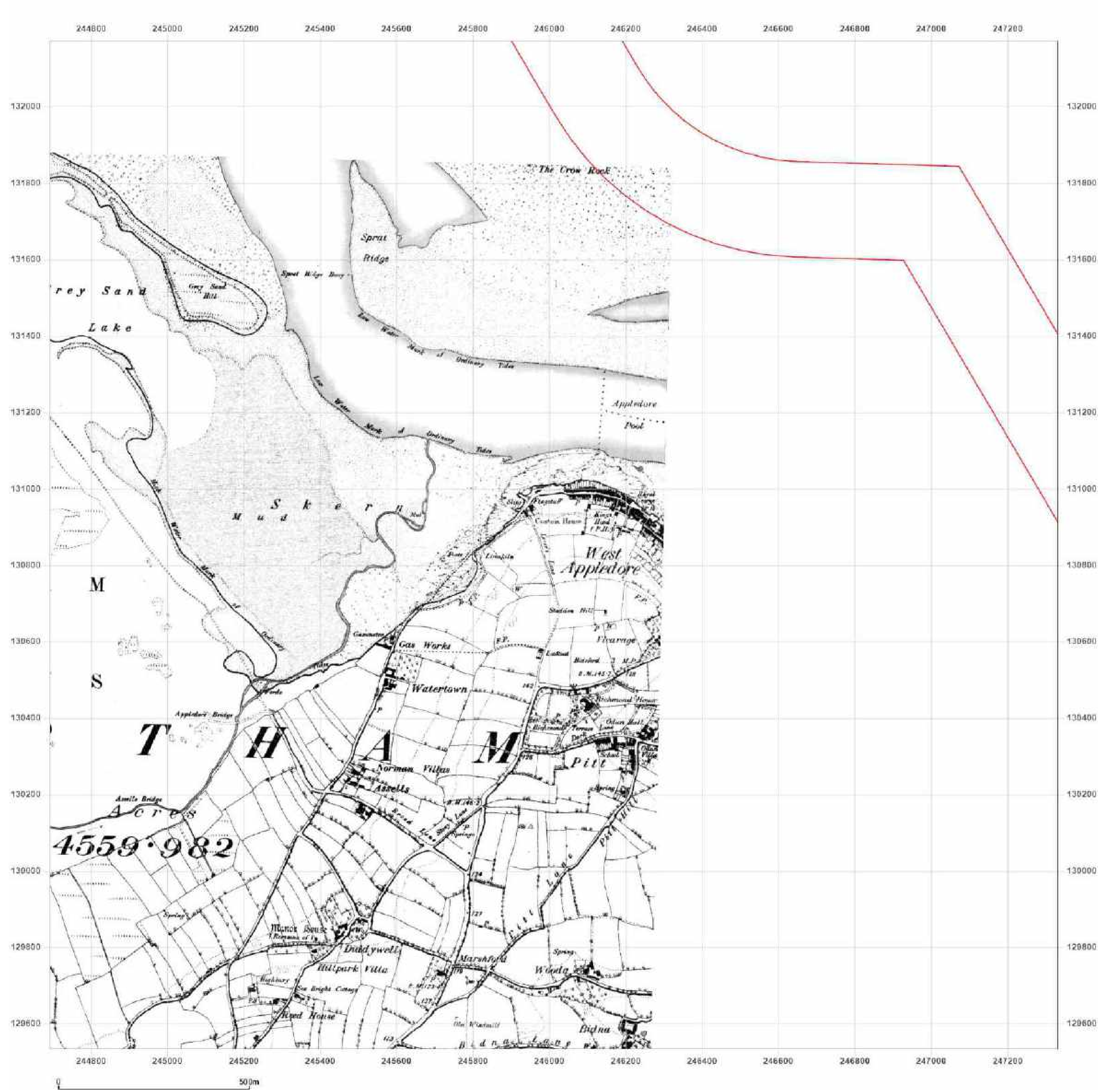


Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

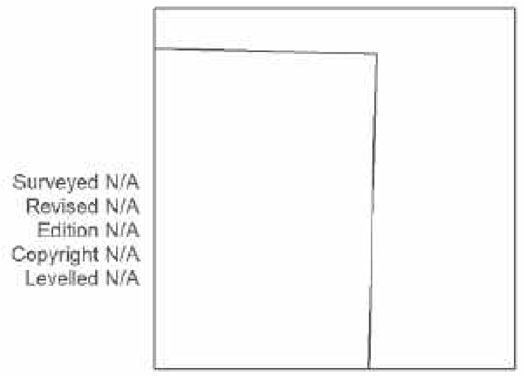
Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: County Series

Map date: **1885**

Scale: 1:10,560

Printed at: 1:10,560



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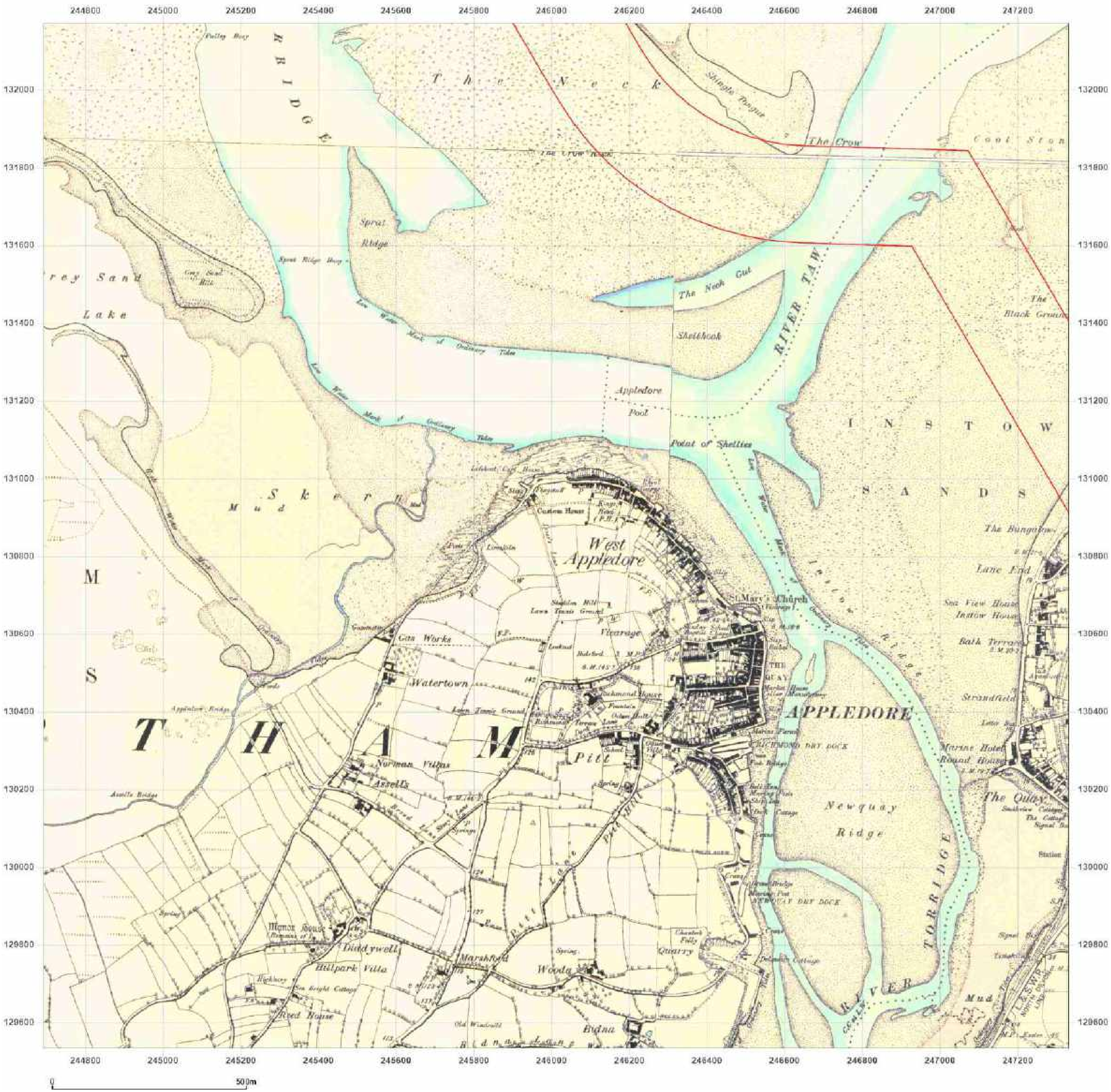
Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure
INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: County Series

Map date: **1886-1887**

Scale: 1:10,560

Printed at: 1:10,560

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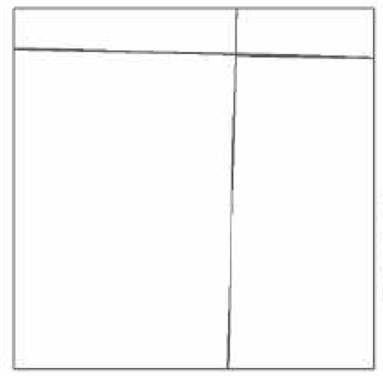
Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

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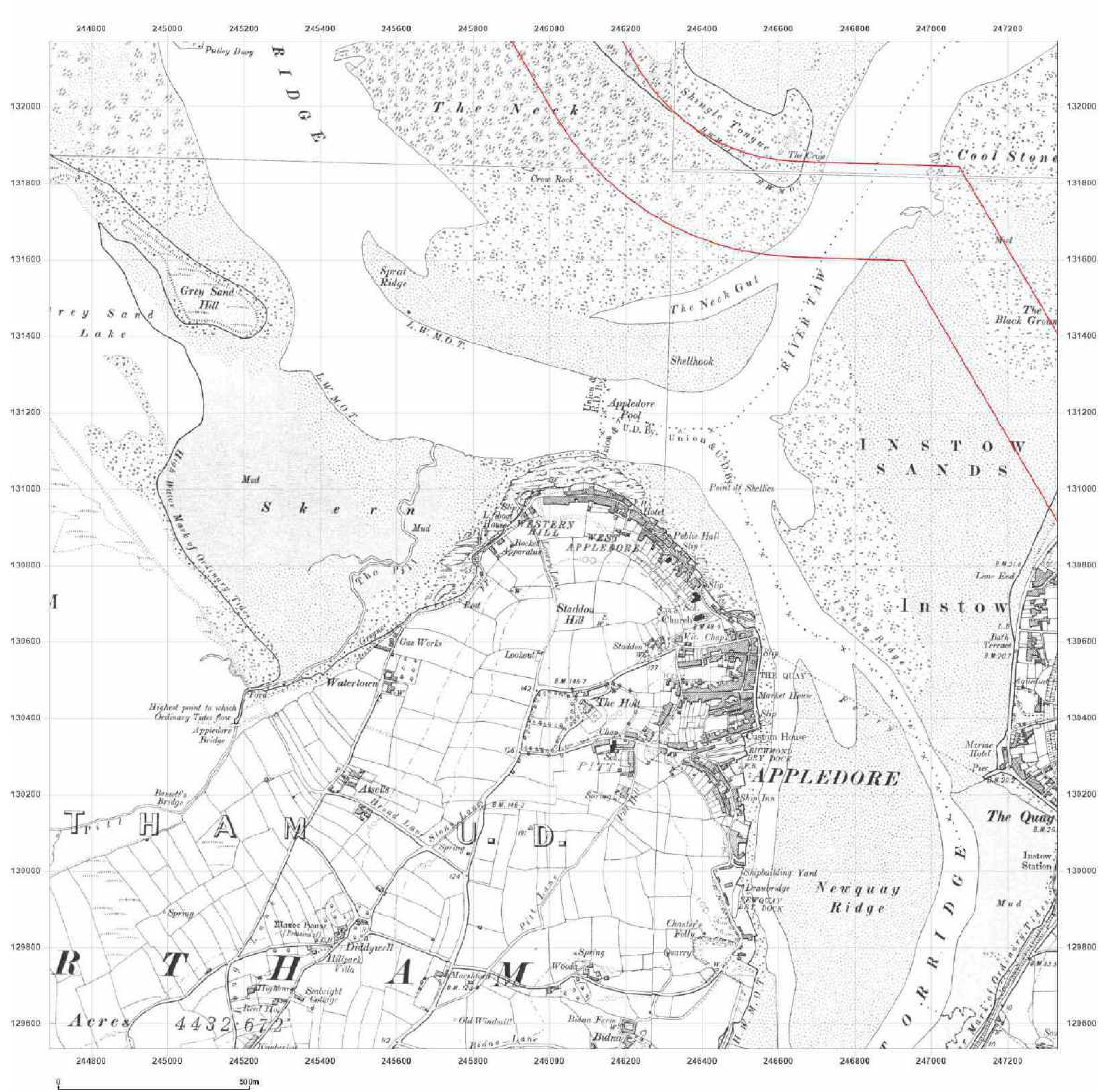
Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: County Series

Map date: **1903-1905**

Scale: 1:10,560

Printed at: 1:10,560

Surveyed 1885
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

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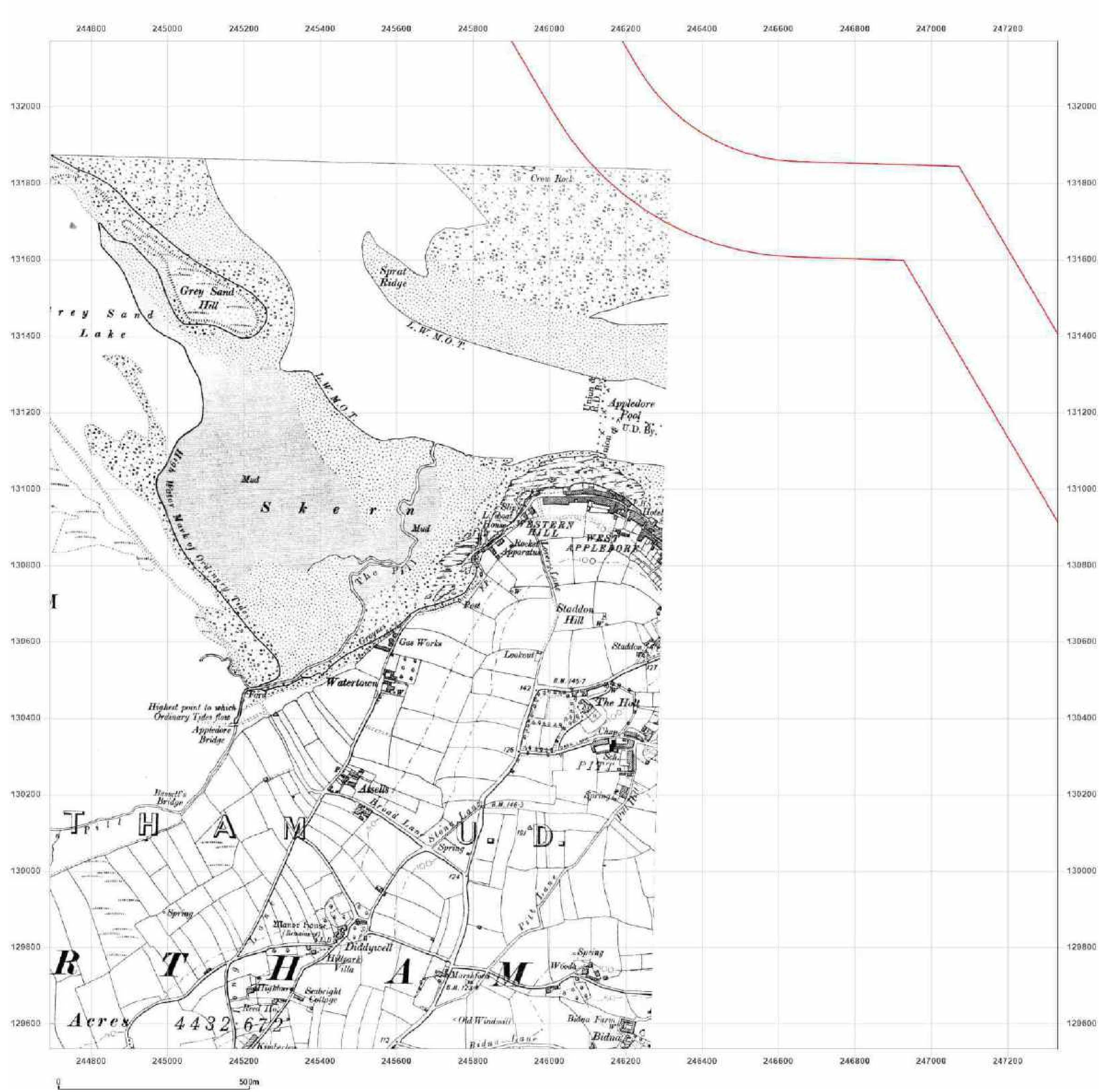

Site Details:

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Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: County Series

Map date: **1907**

Scale: 1:10,560

Printed at: 1:10,560

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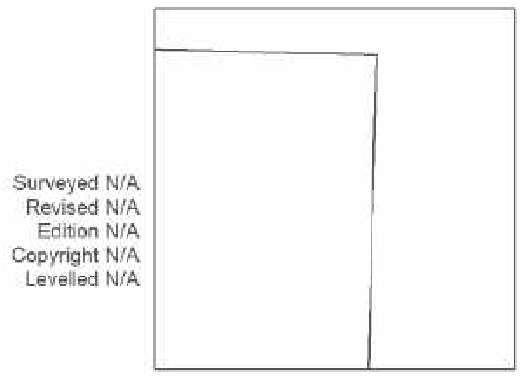

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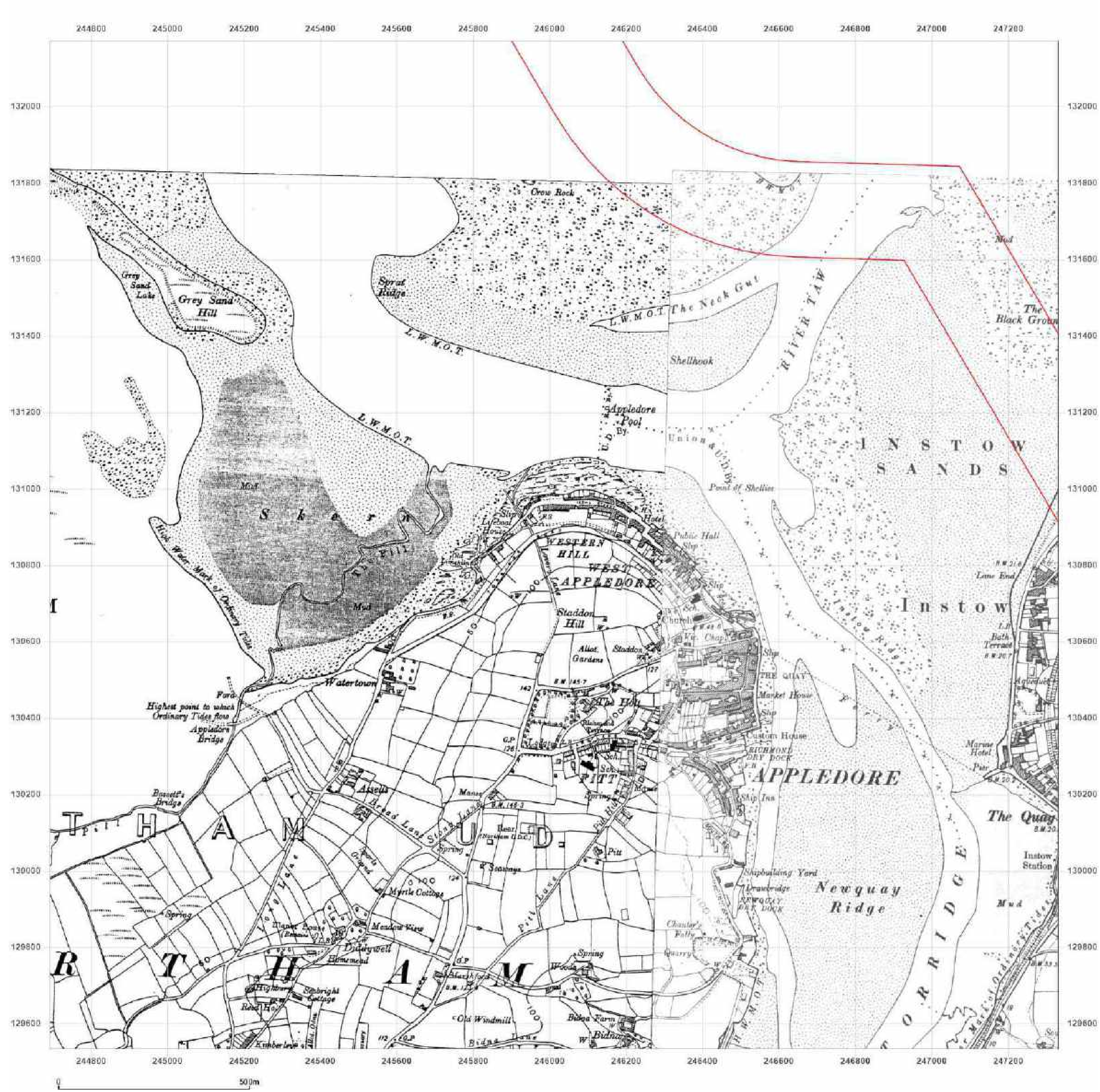
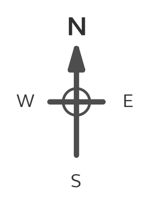




Site Details:

Braunton Burrows Cable

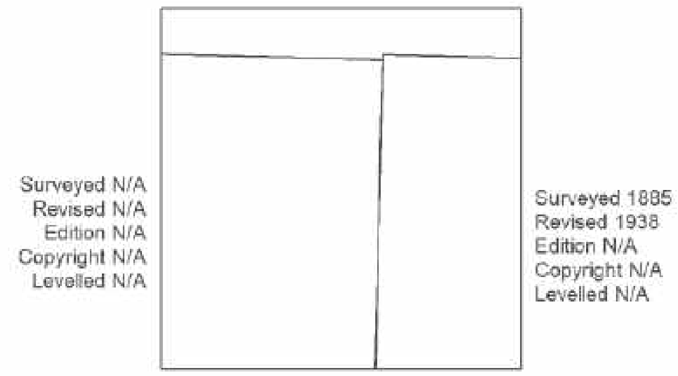
Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: County Series

Map date: 1933-1938

Scale: 1:10,560

Printed at: 1:10,560



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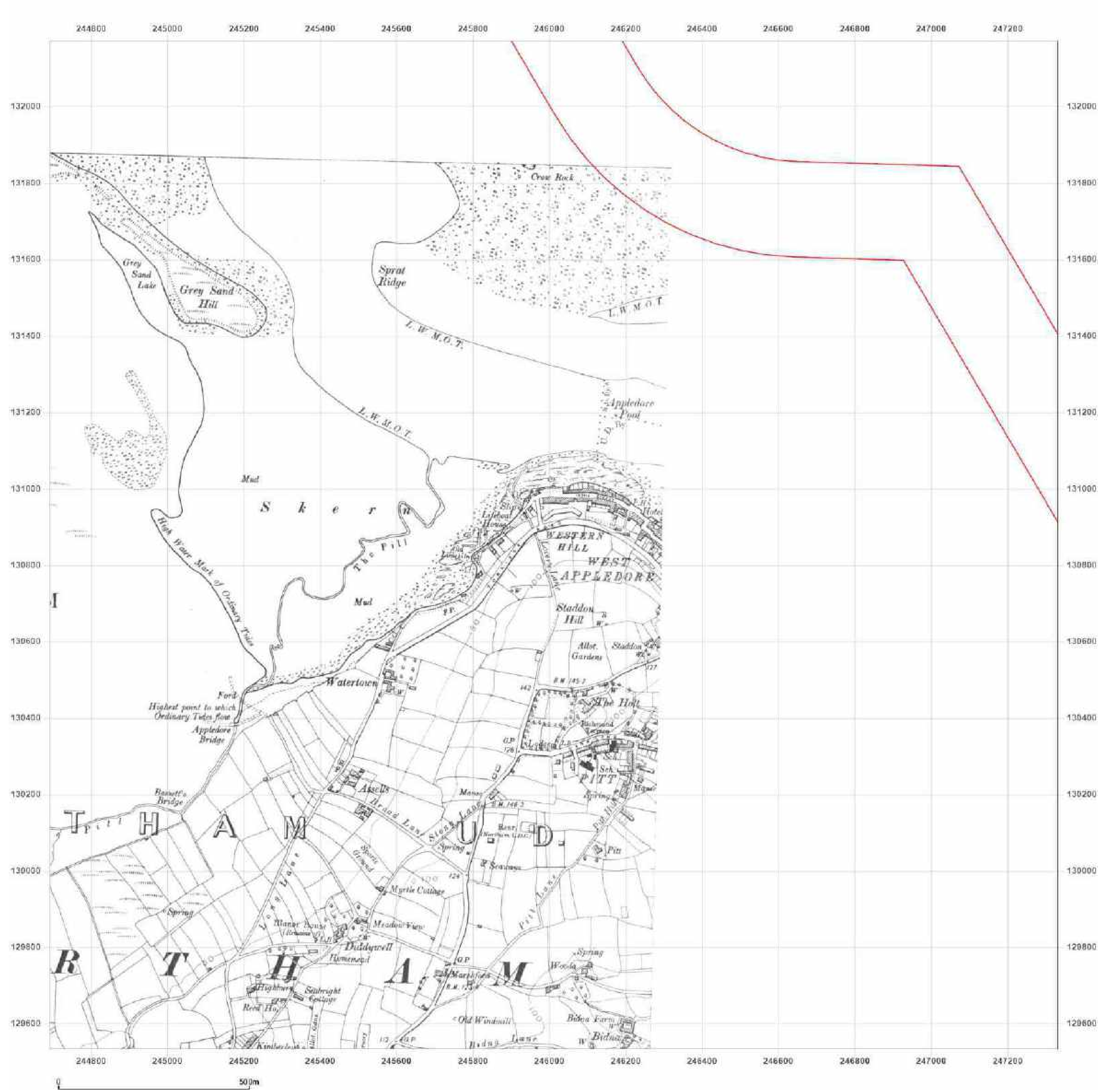

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560

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Production date: 05 May 2022

Map legend available at:
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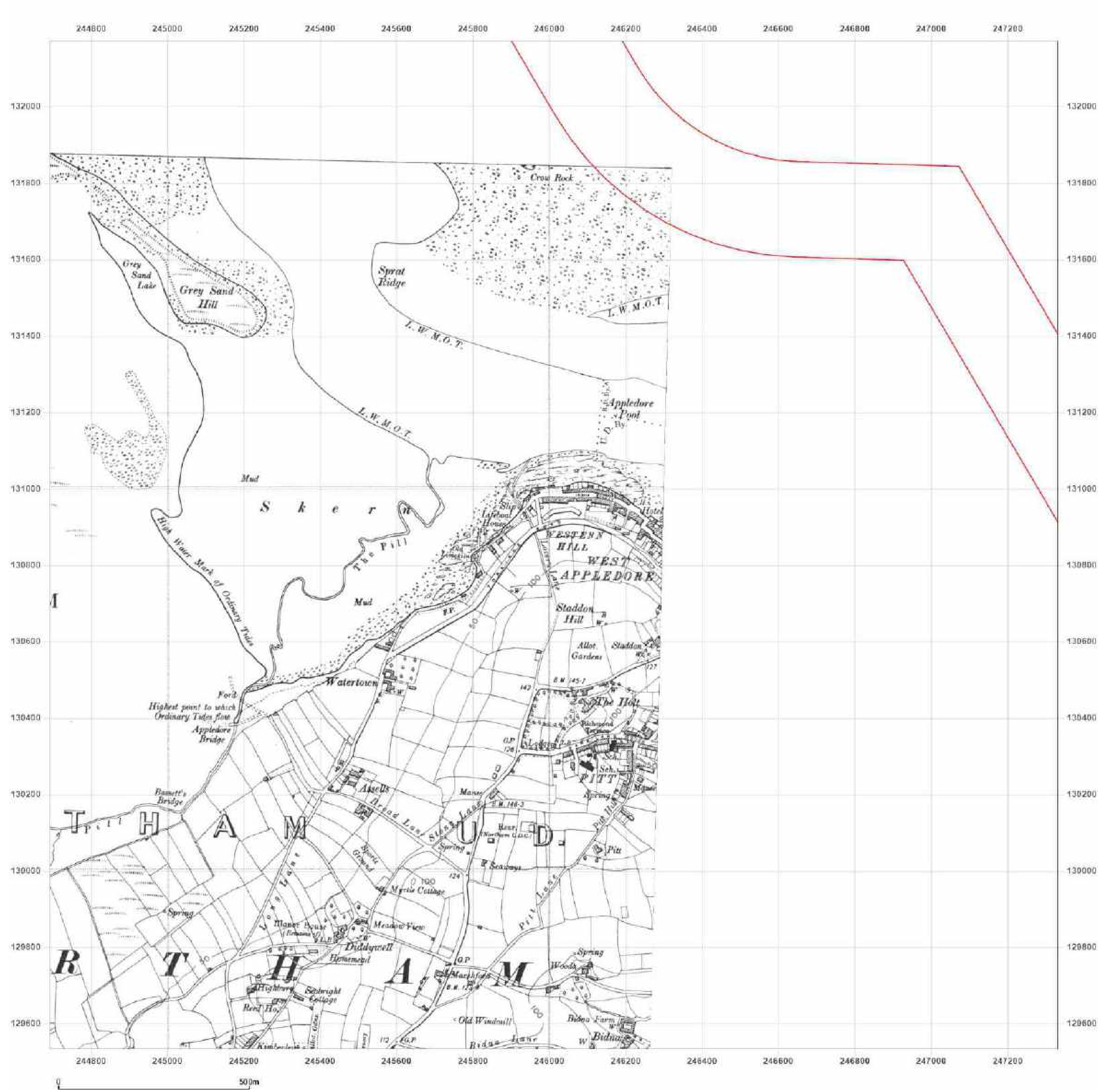

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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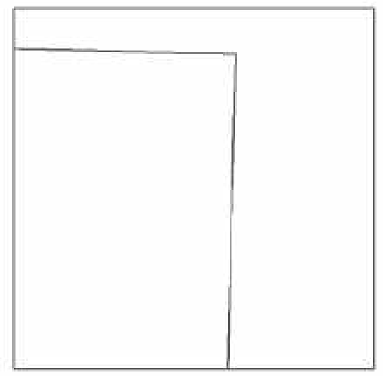

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Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: Provisional

Map date: **1963**

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

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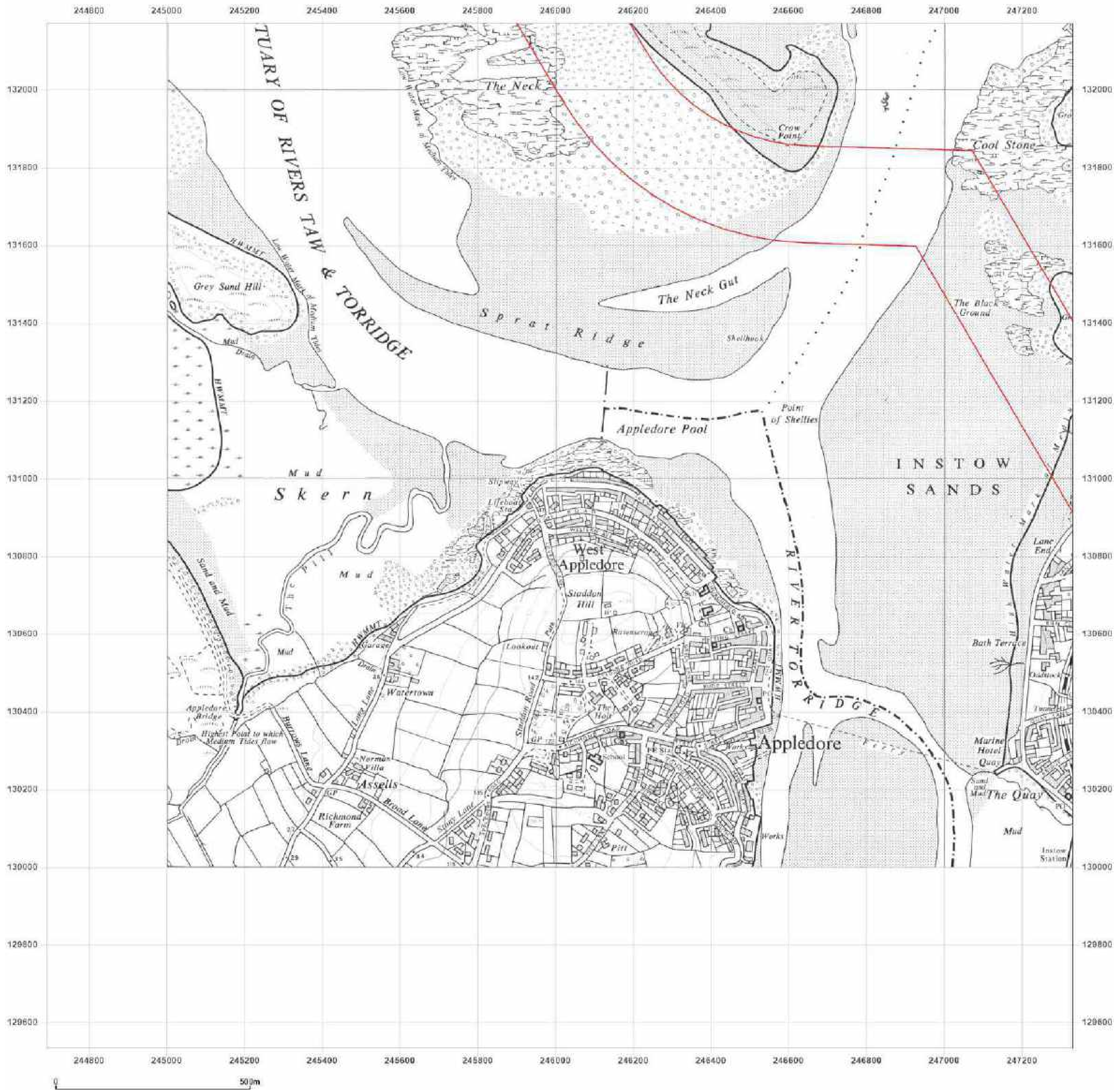

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: Provisional

Map date: 1969

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1969
Revised 1969
Edition N/A
Copyright N/A
Levelled N/A

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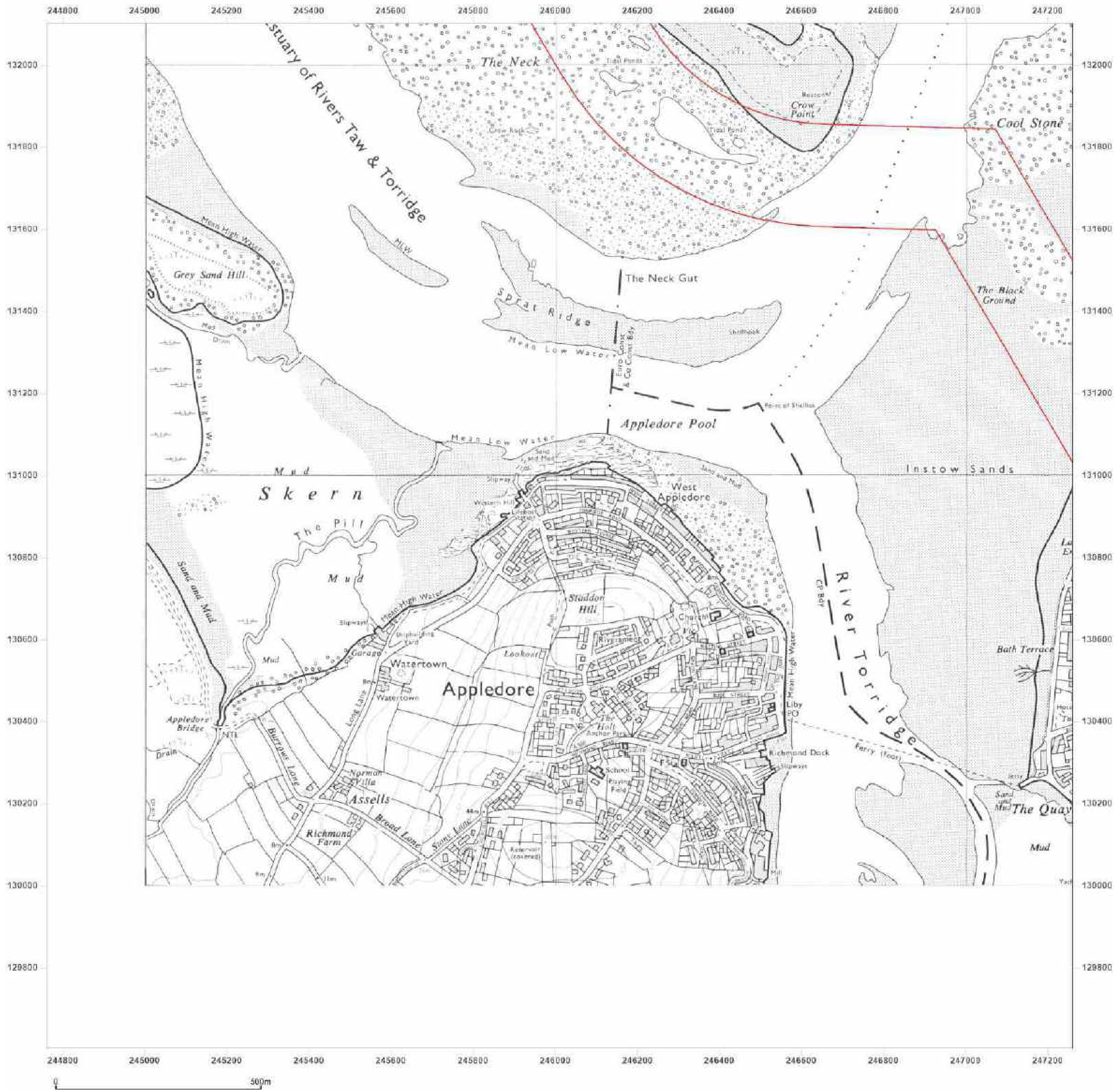

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: National Grid

Map date: 1981

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

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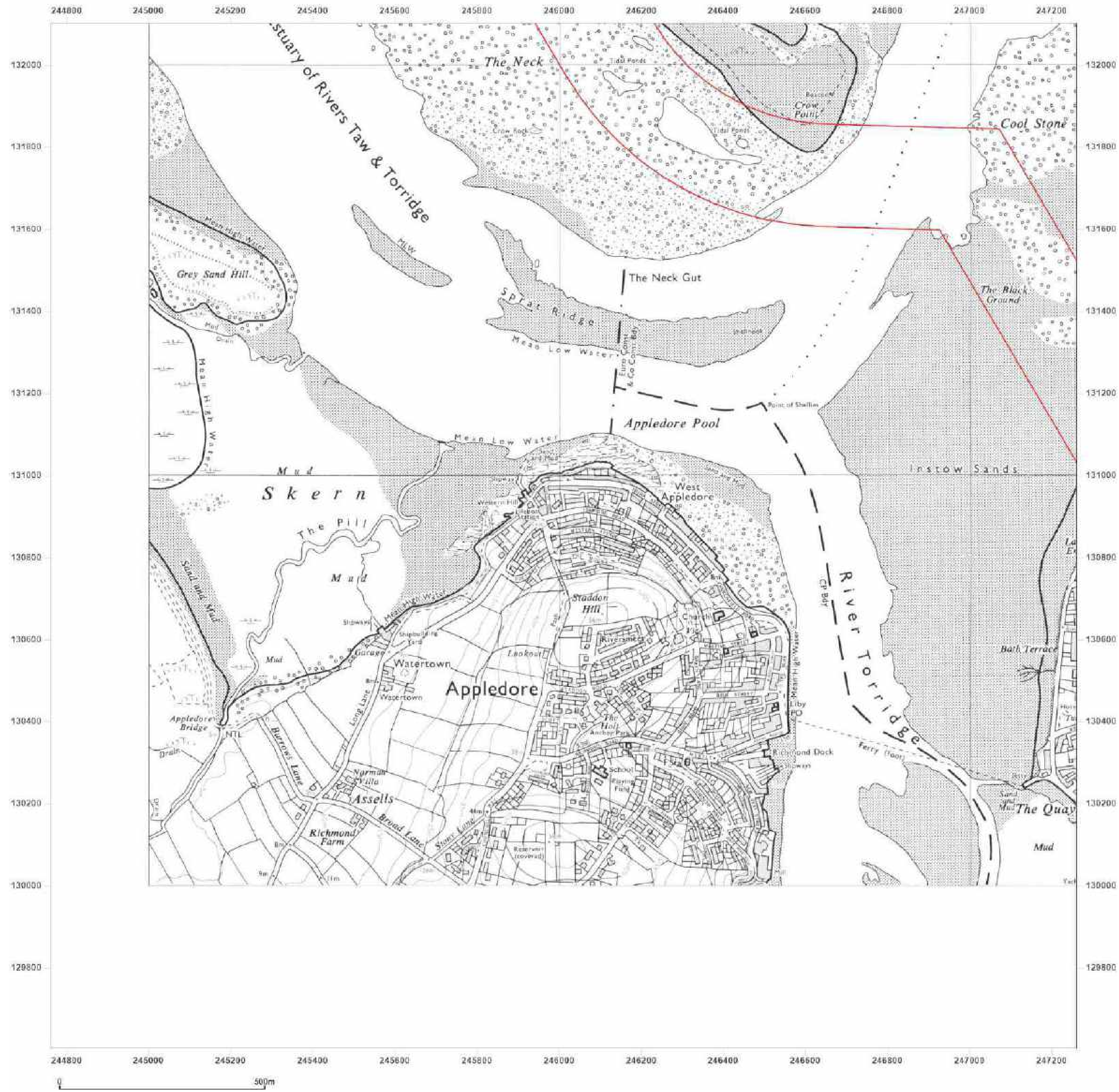

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: National Grid

Map date: 1985

Scale: 1:10,000

Printed at: 1:10,000

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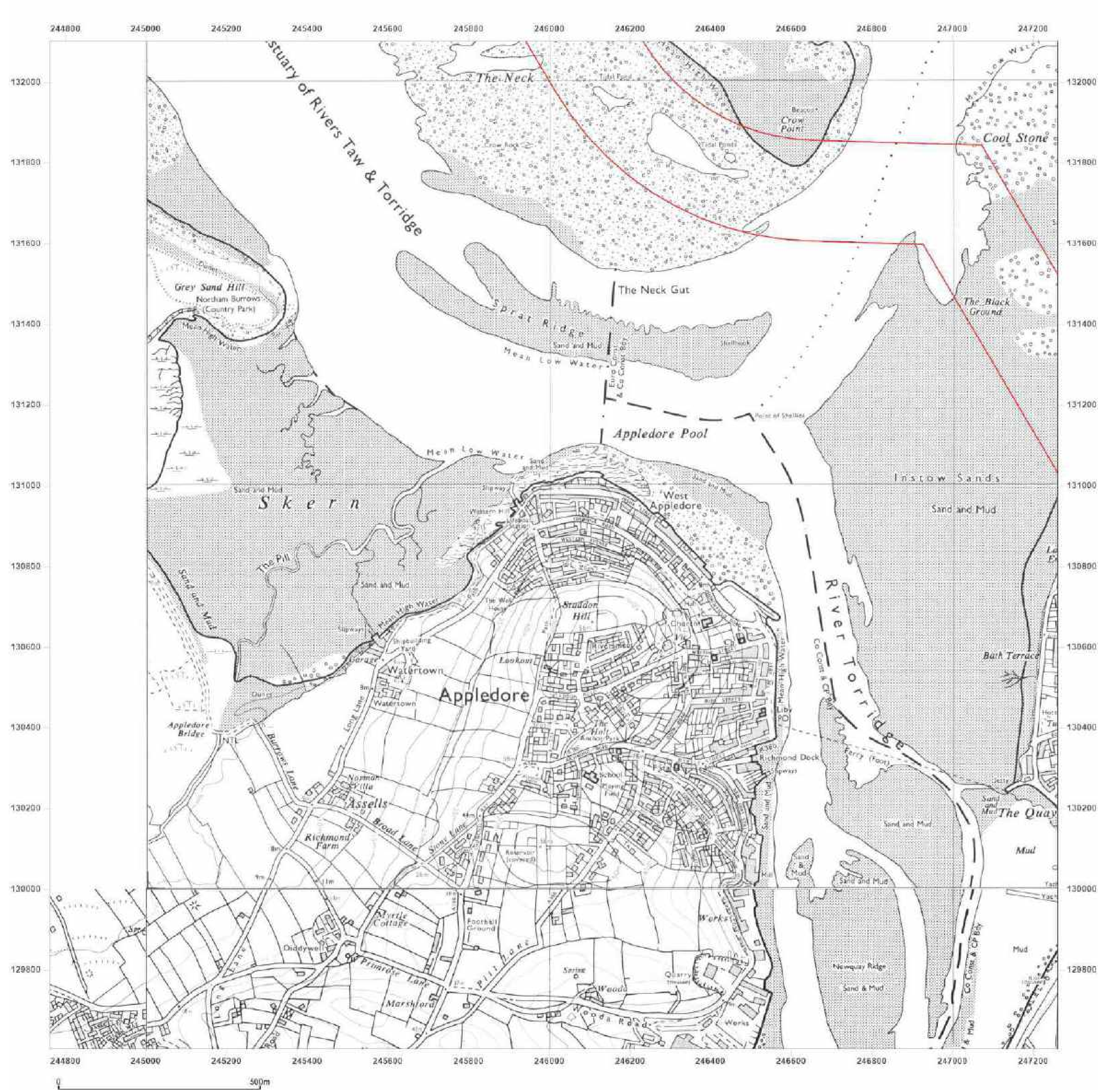

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: National Grid

Map date: **1992-1994**

Scale: 1:10,000

Printed at: 1:10,000

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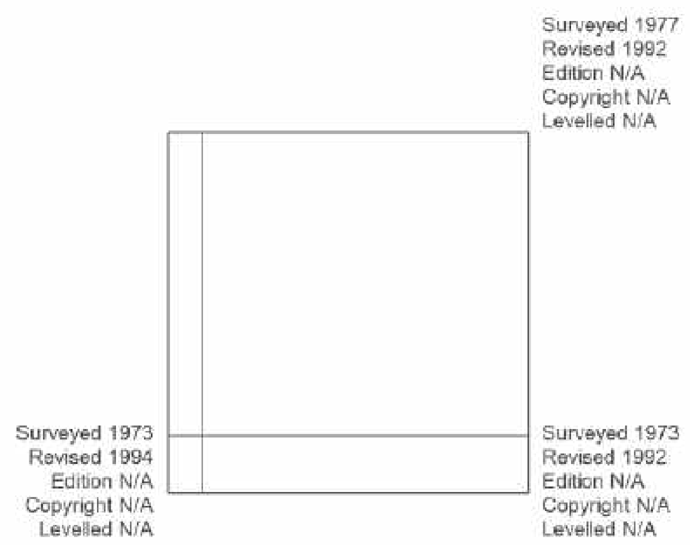

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Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

N
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2001

Powered by OS

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Production date: 05 May 2022

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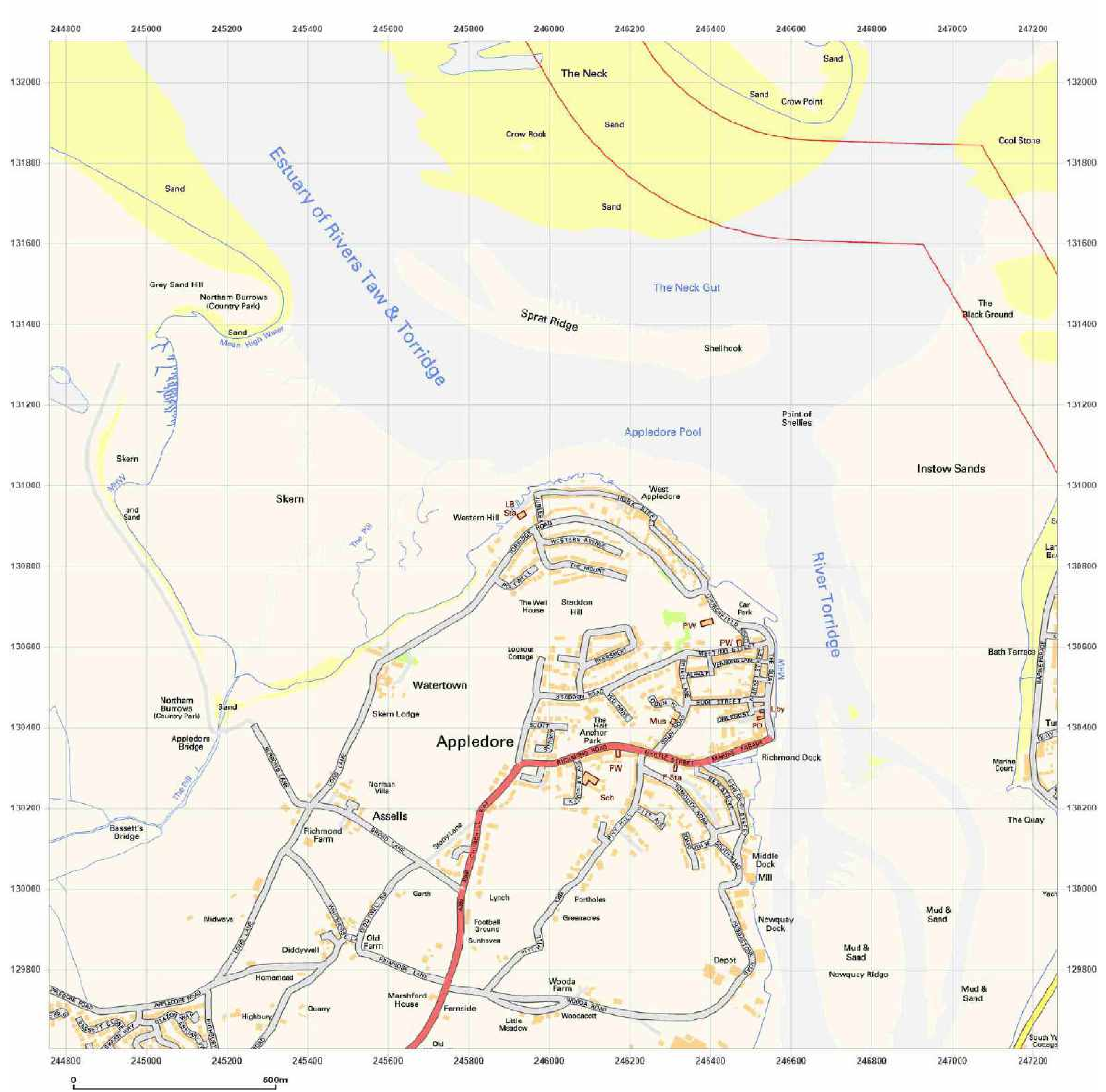

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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Production date: 05 May 2022

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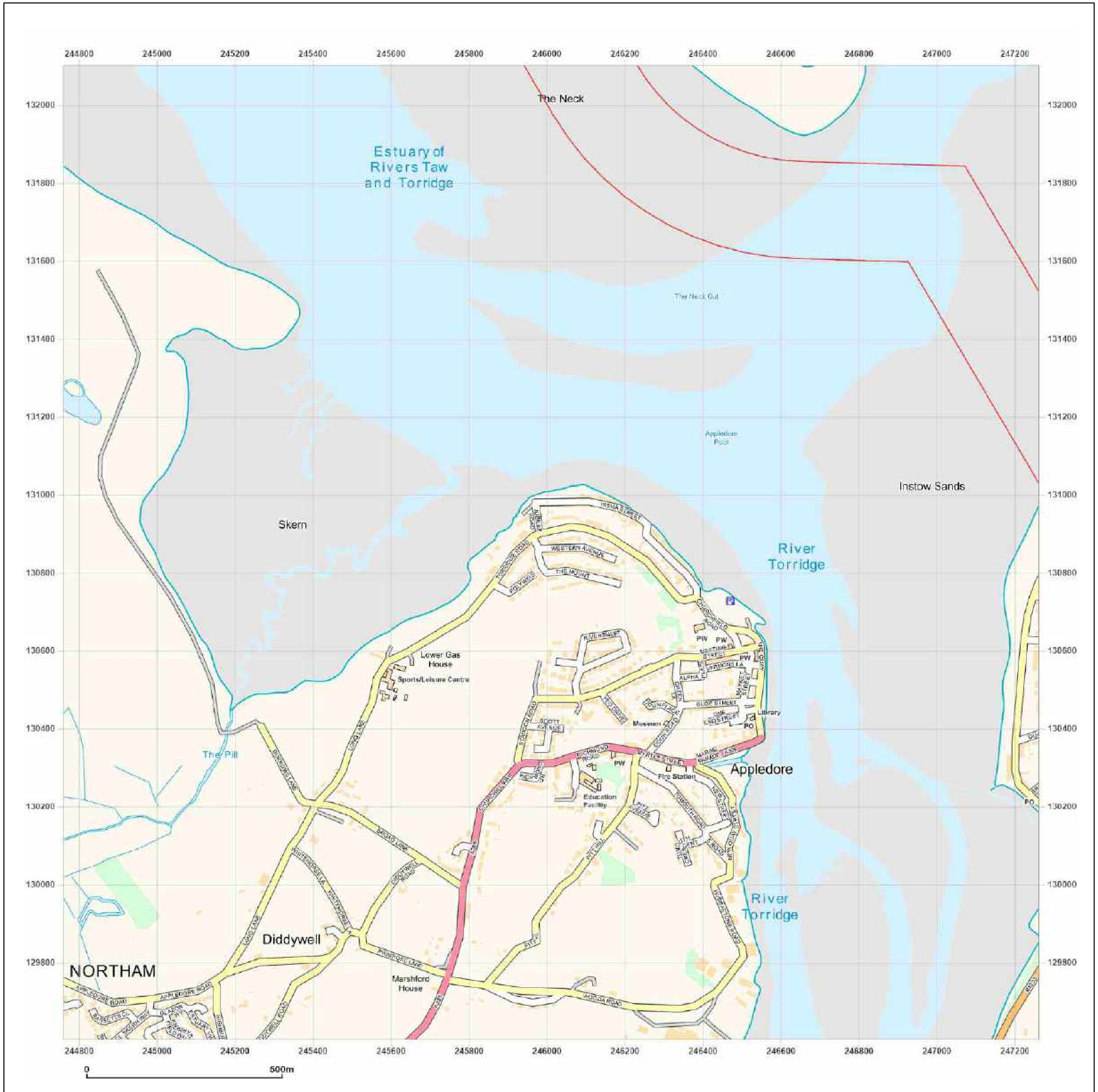

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_1
Grid Ref: 246011, 130852

Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2022

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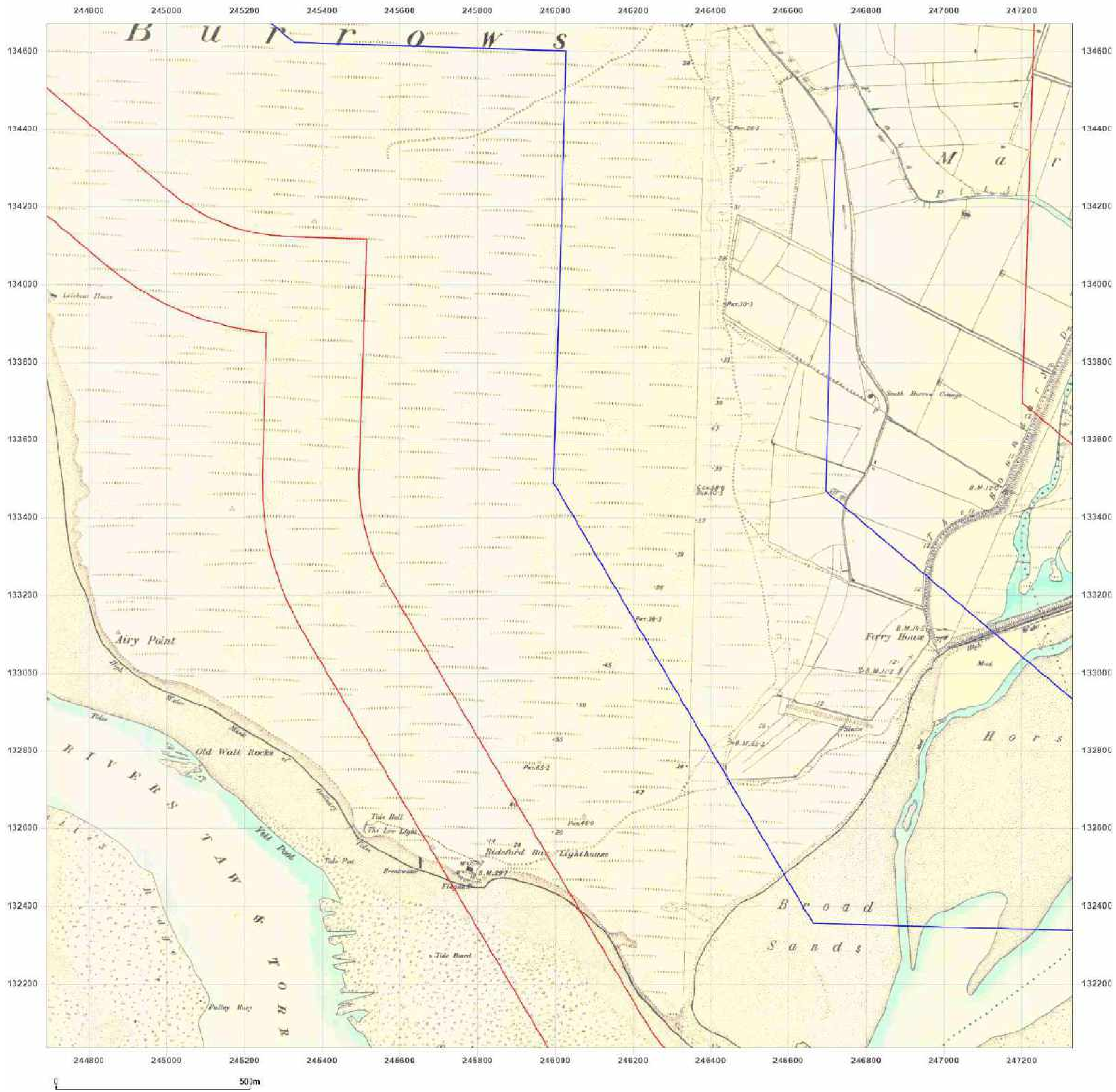

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: County Series

Map date: **1887**

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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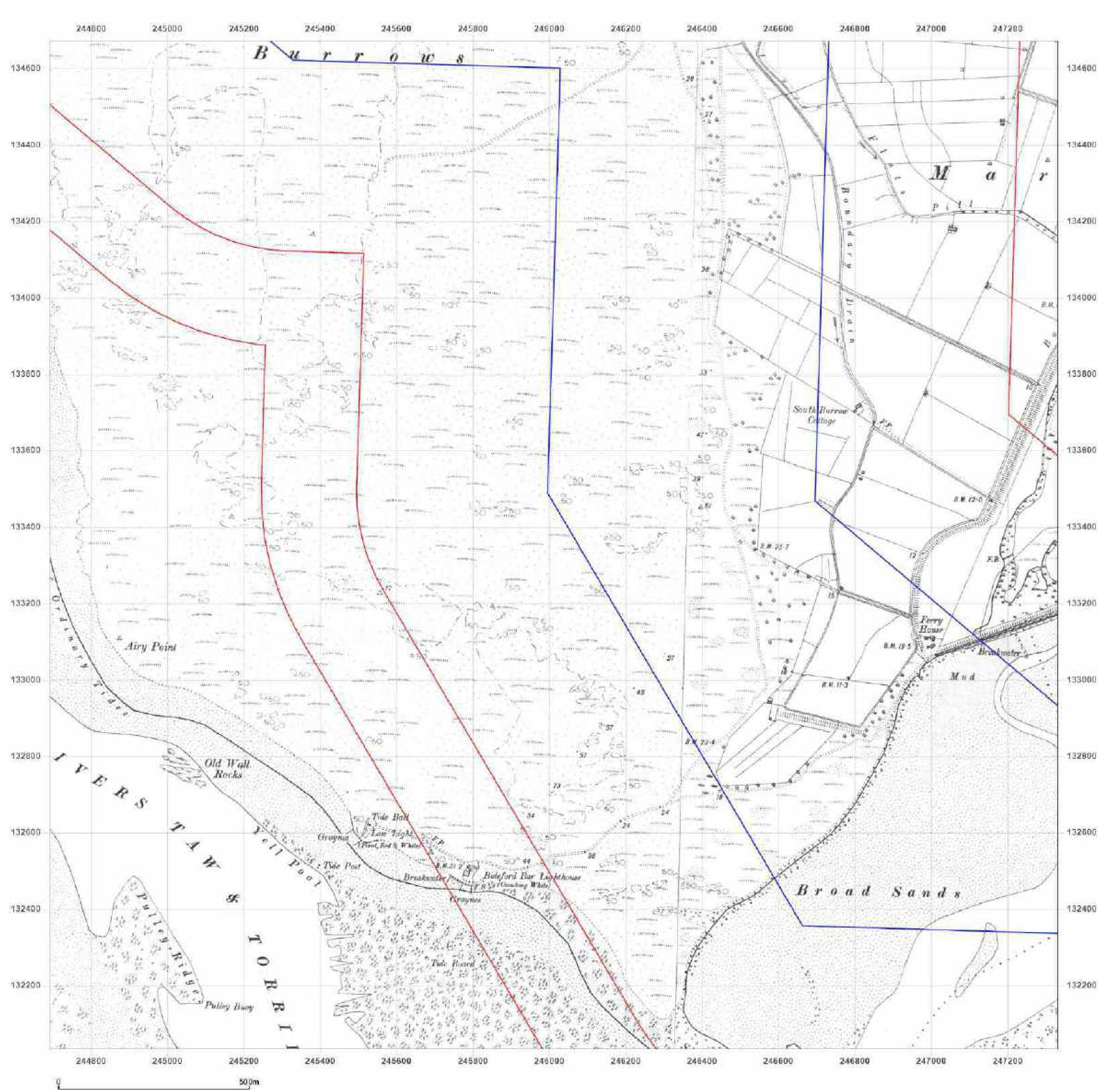

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: County Series

Map date: **1903-1905**

Scale: 1:10,560

Printed at: 1:10,560

N
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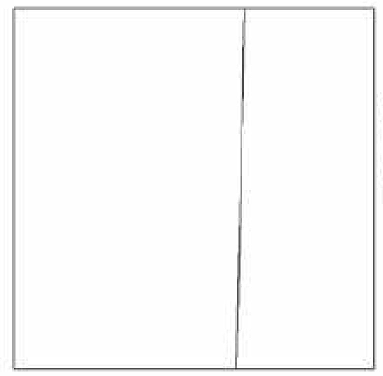
Surveyed 1885
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1885
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

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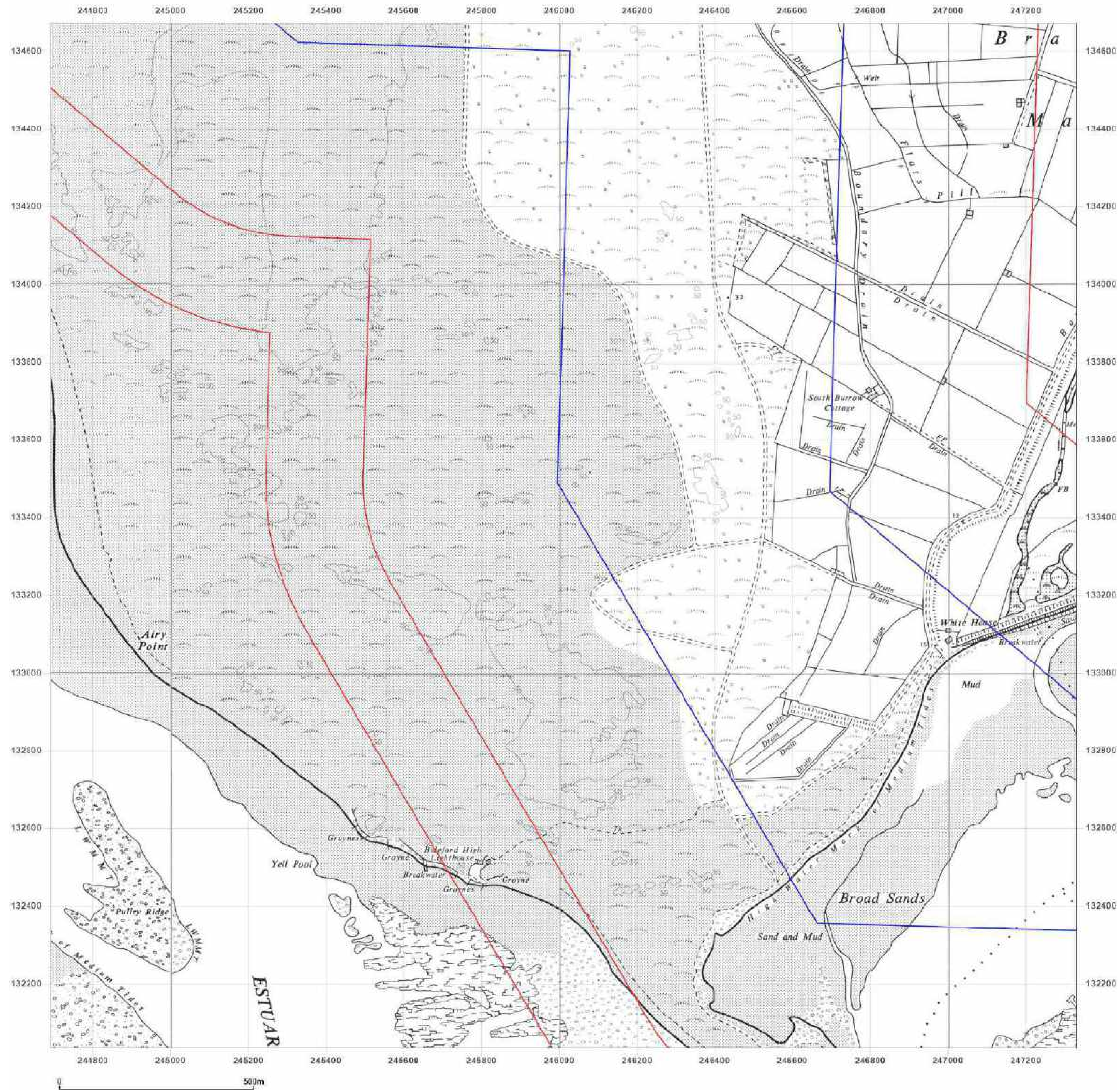

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

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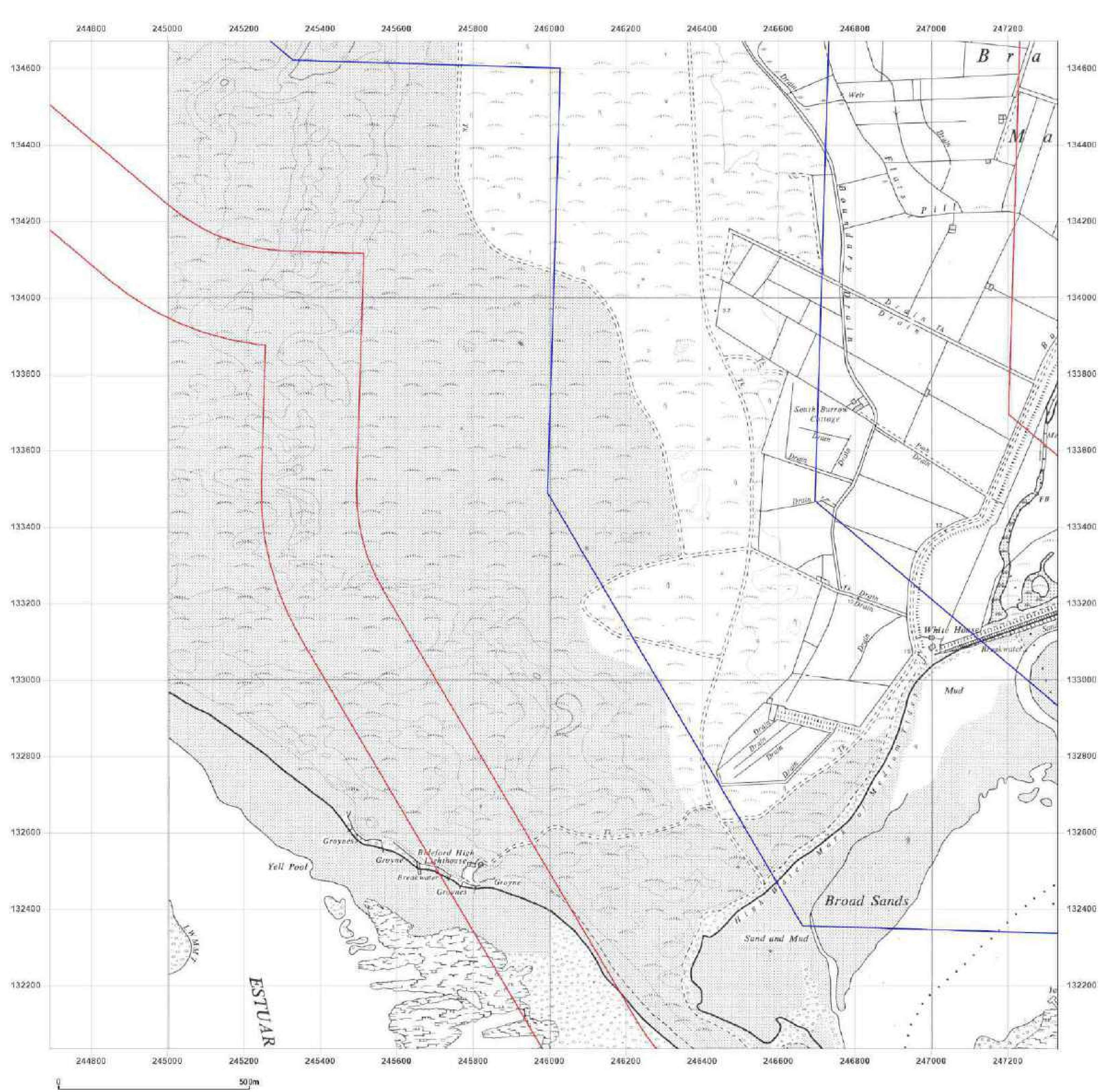

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: Provisional

Map date: 1969

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1969
Revised 1969
Edition N/A
Copyright N/A
Levelled N/A

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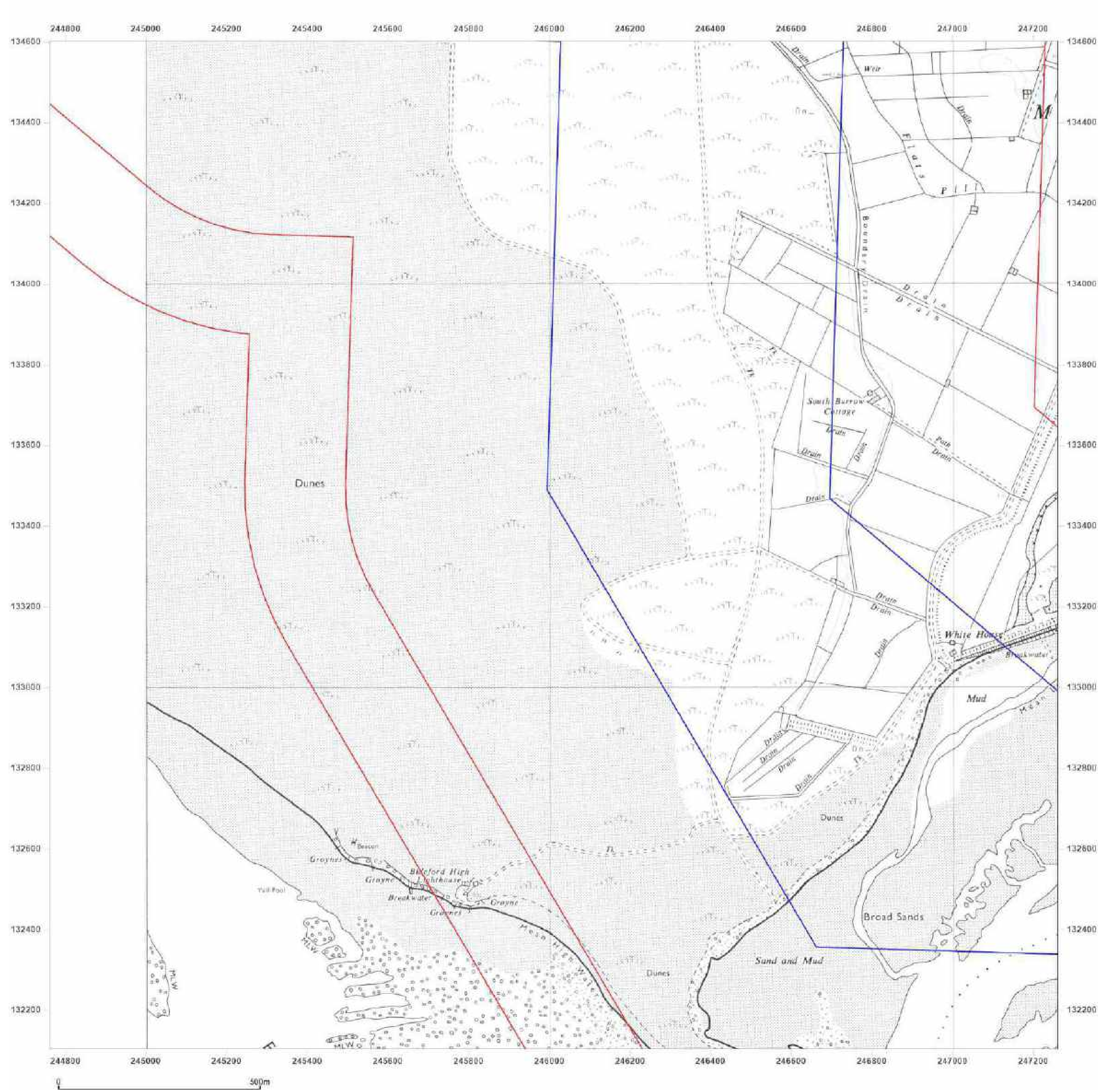

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: National Grid

Map date: **1981**

Scale: 1:10,000

Printed at: 1:10,000

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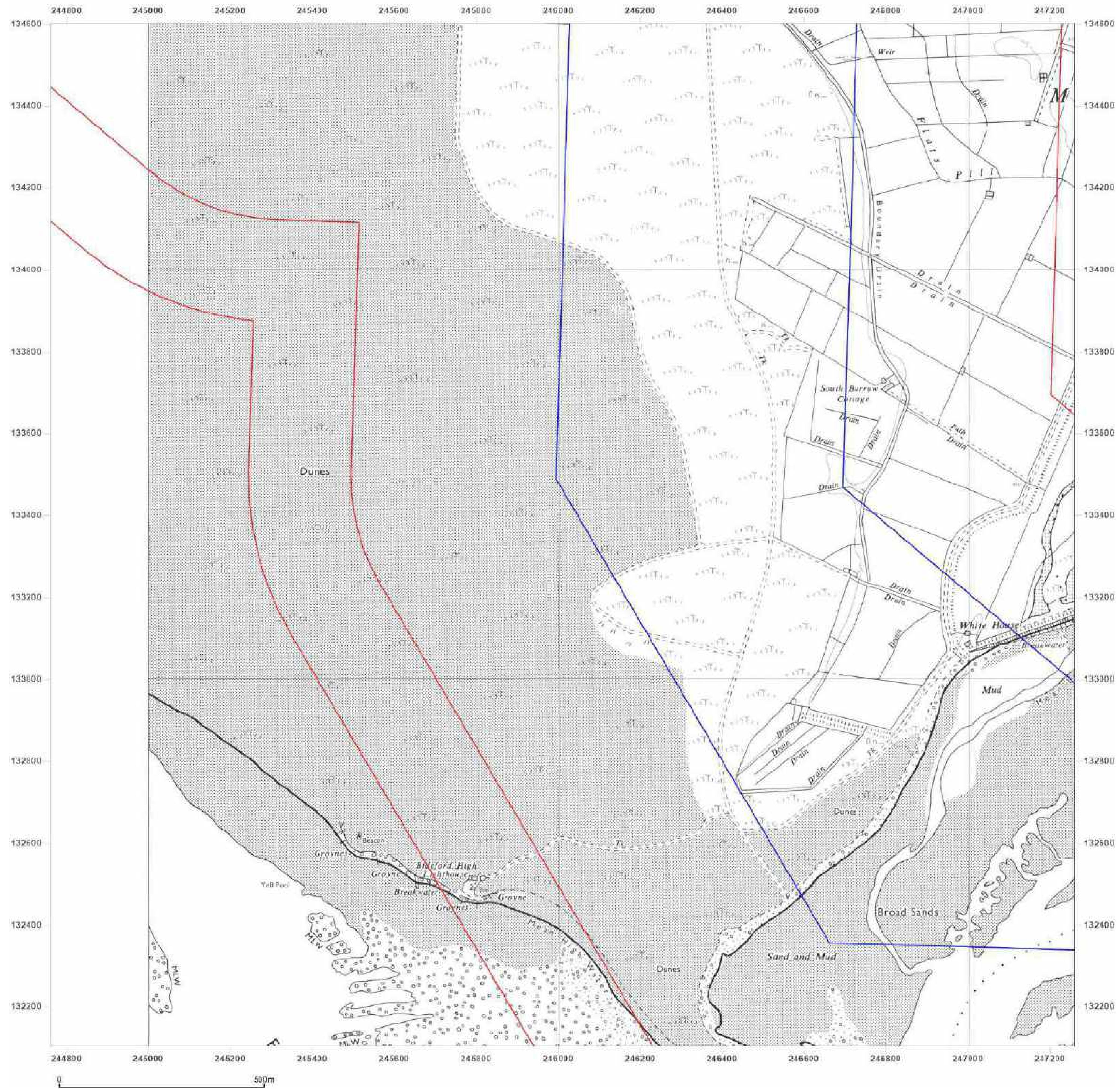

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: National Grid

Map date: 1985

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1977
Revised 1985
Edition N/A
Copyright N/A
Levelled N/A

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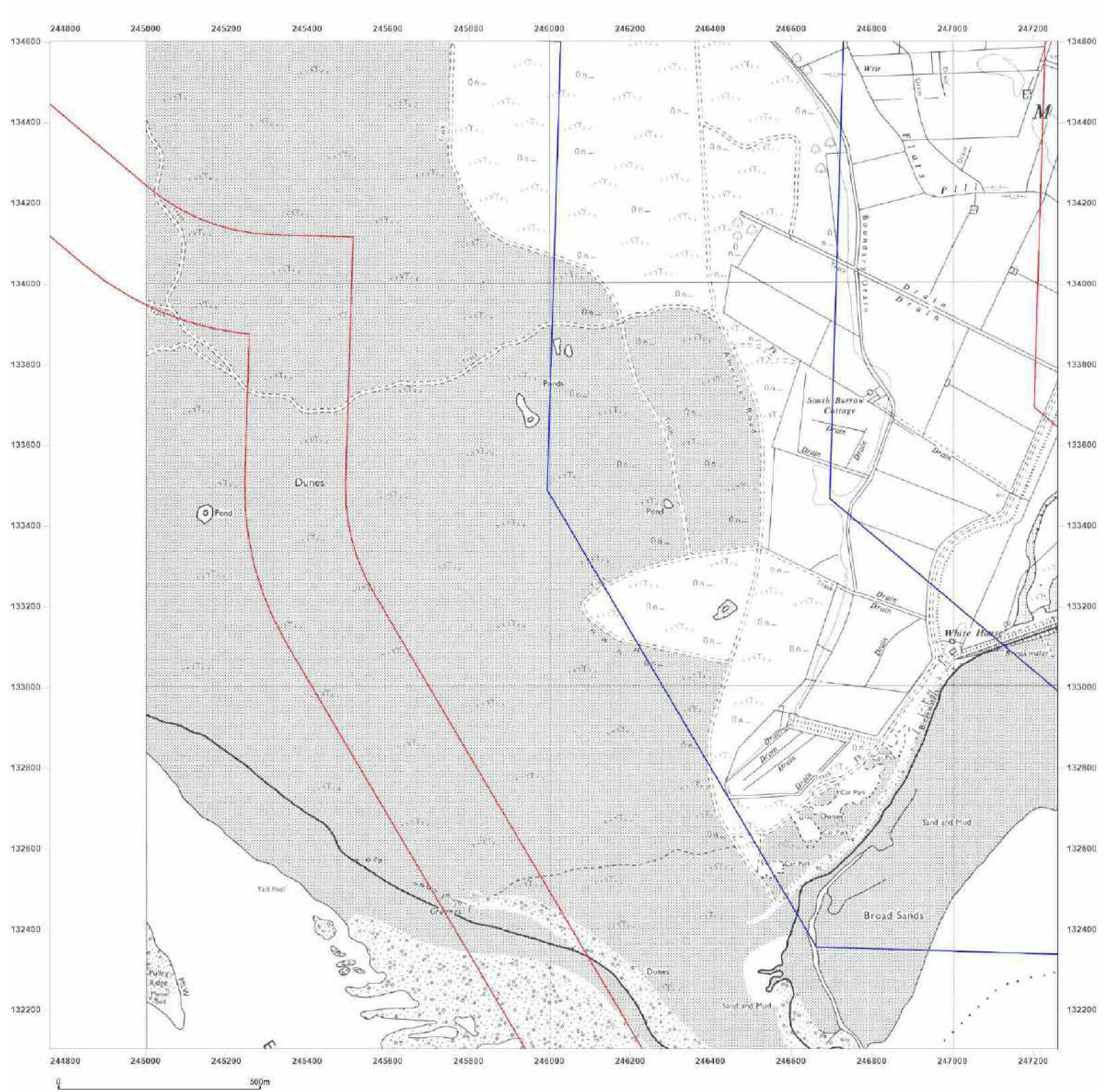

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1977
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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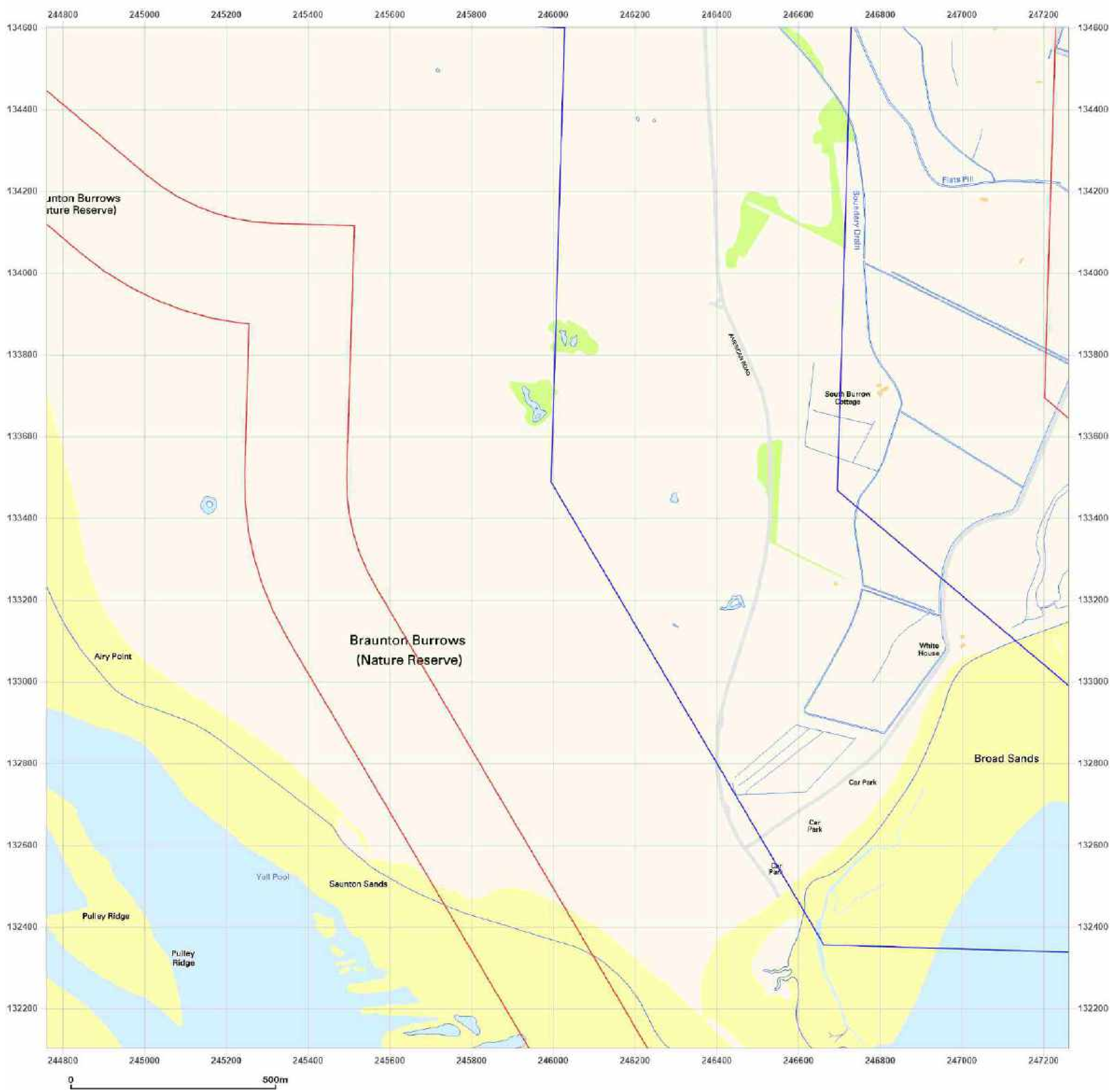

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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2001

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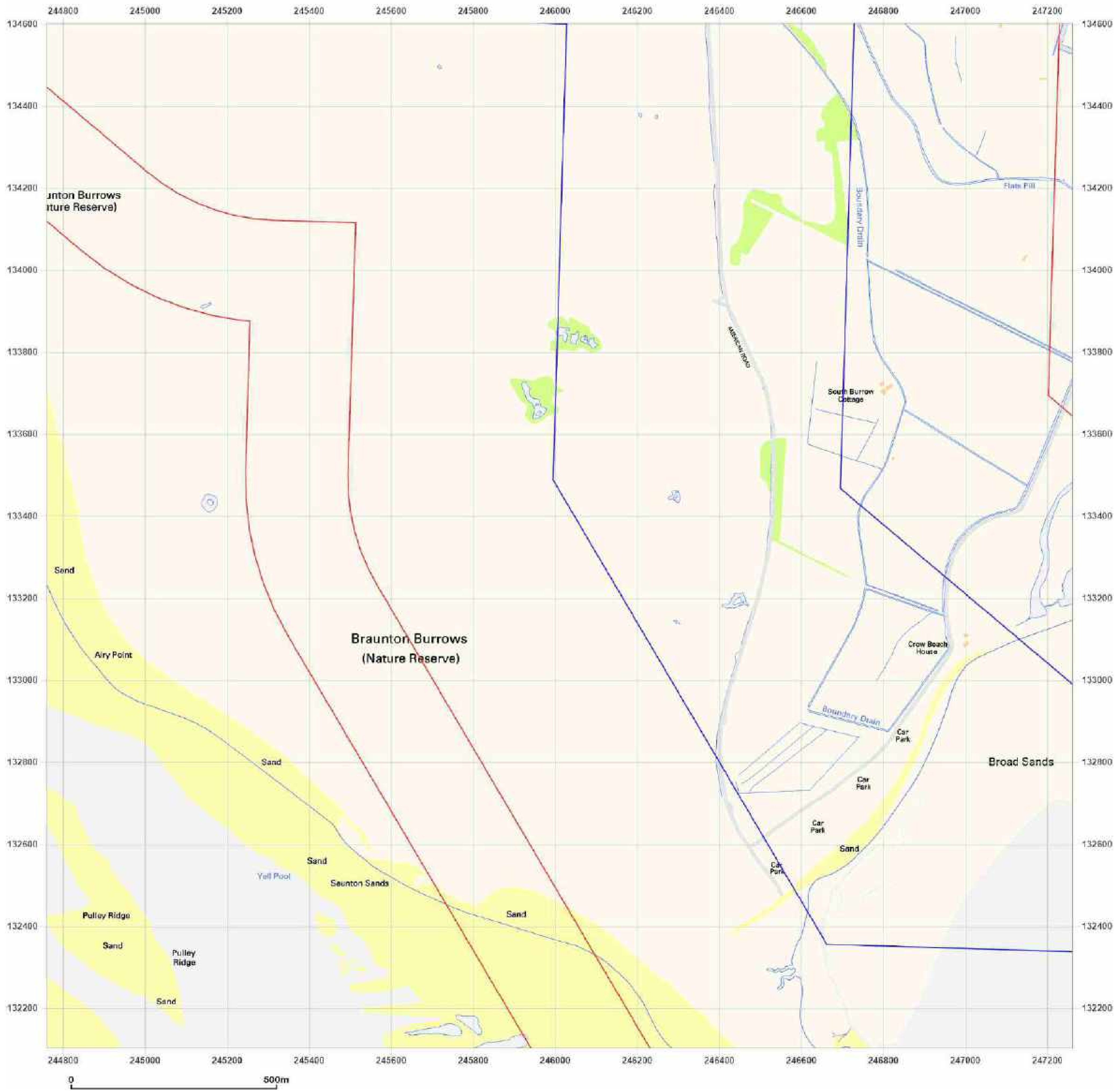

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2010

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Production date: 05 May 2022

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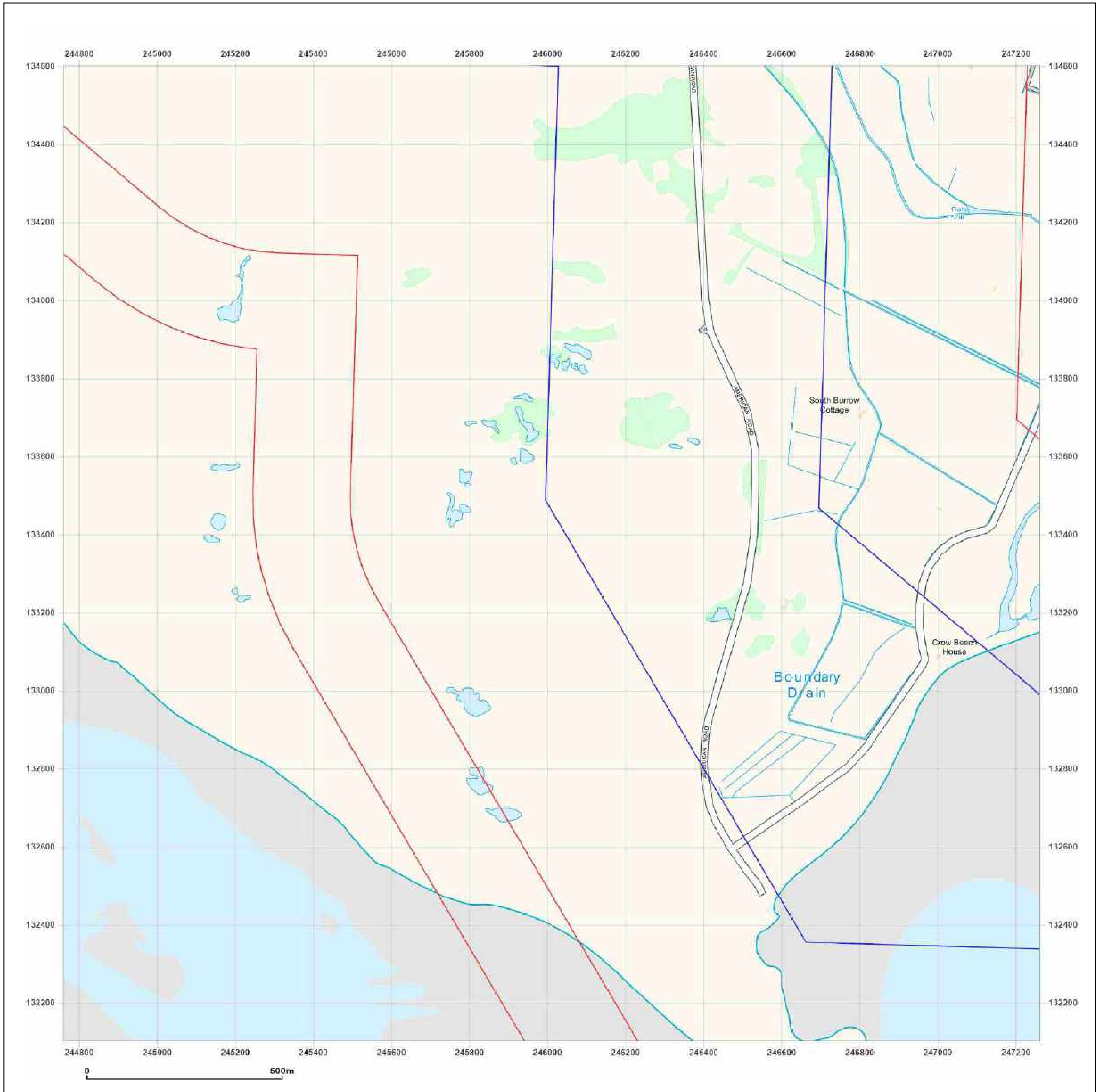

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_2
Grid Ref: 246011, 133352

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000

2022

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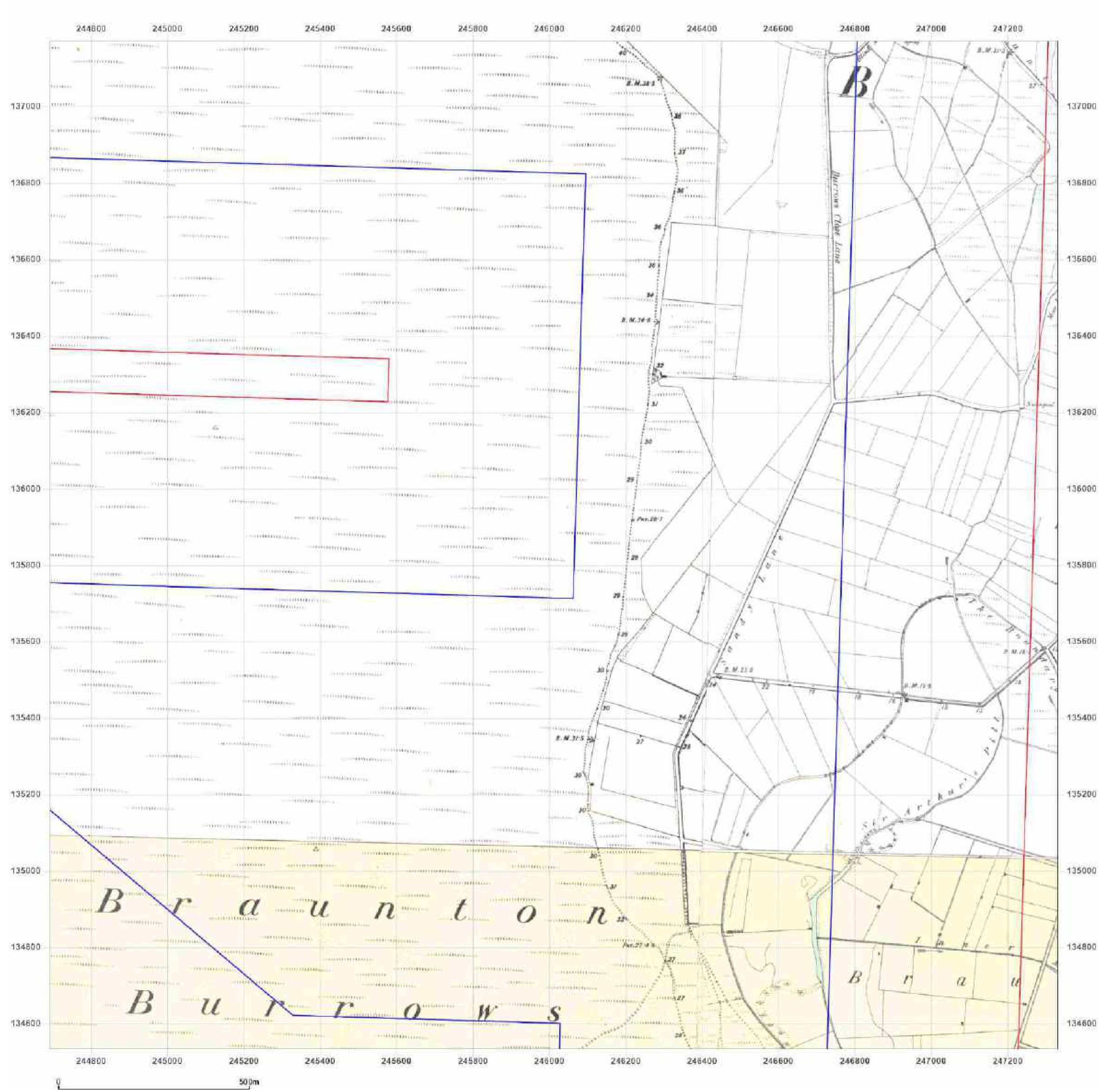


Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

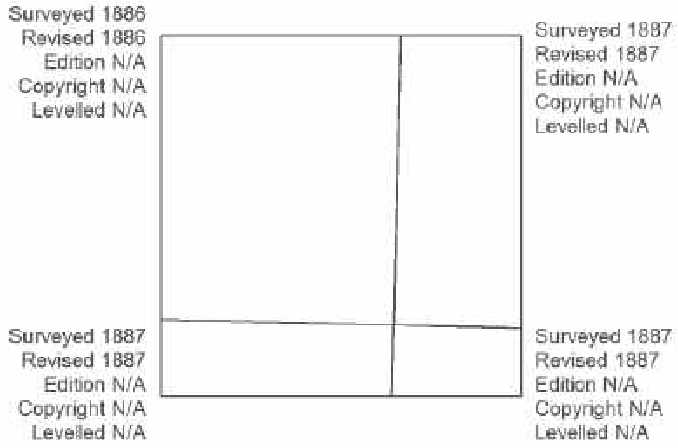
Map Name: County Series

Map date: **1886-1887**

Scale: 1:10,560

Printed at: 1:10,560

N W E S



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Map legend available at:
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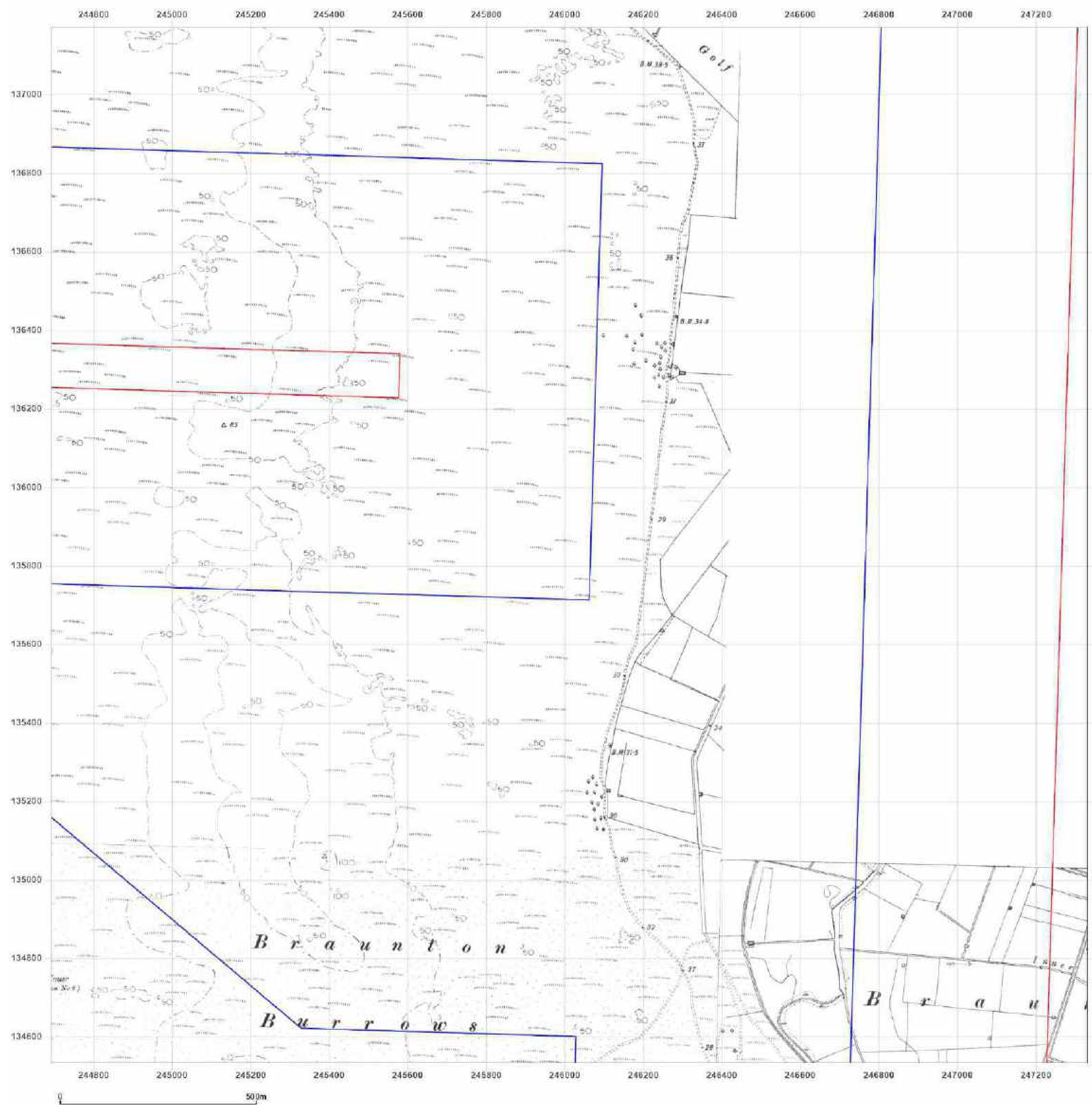


Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

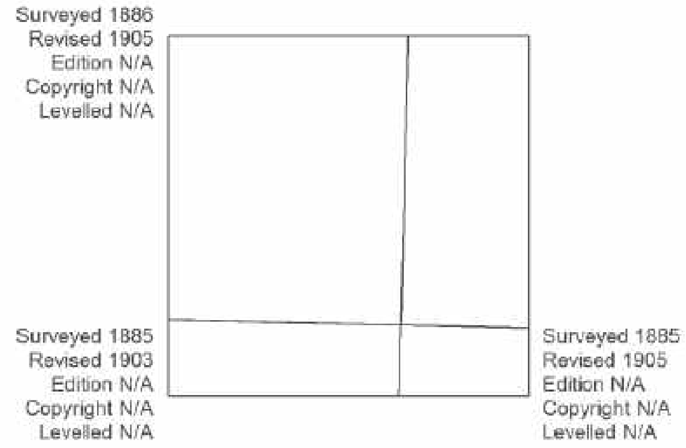
Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: County Series

Map date: **1903-1905**

Scale: 1:10,560

Printed at: 1:10,560



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Production date: 05 May 2022

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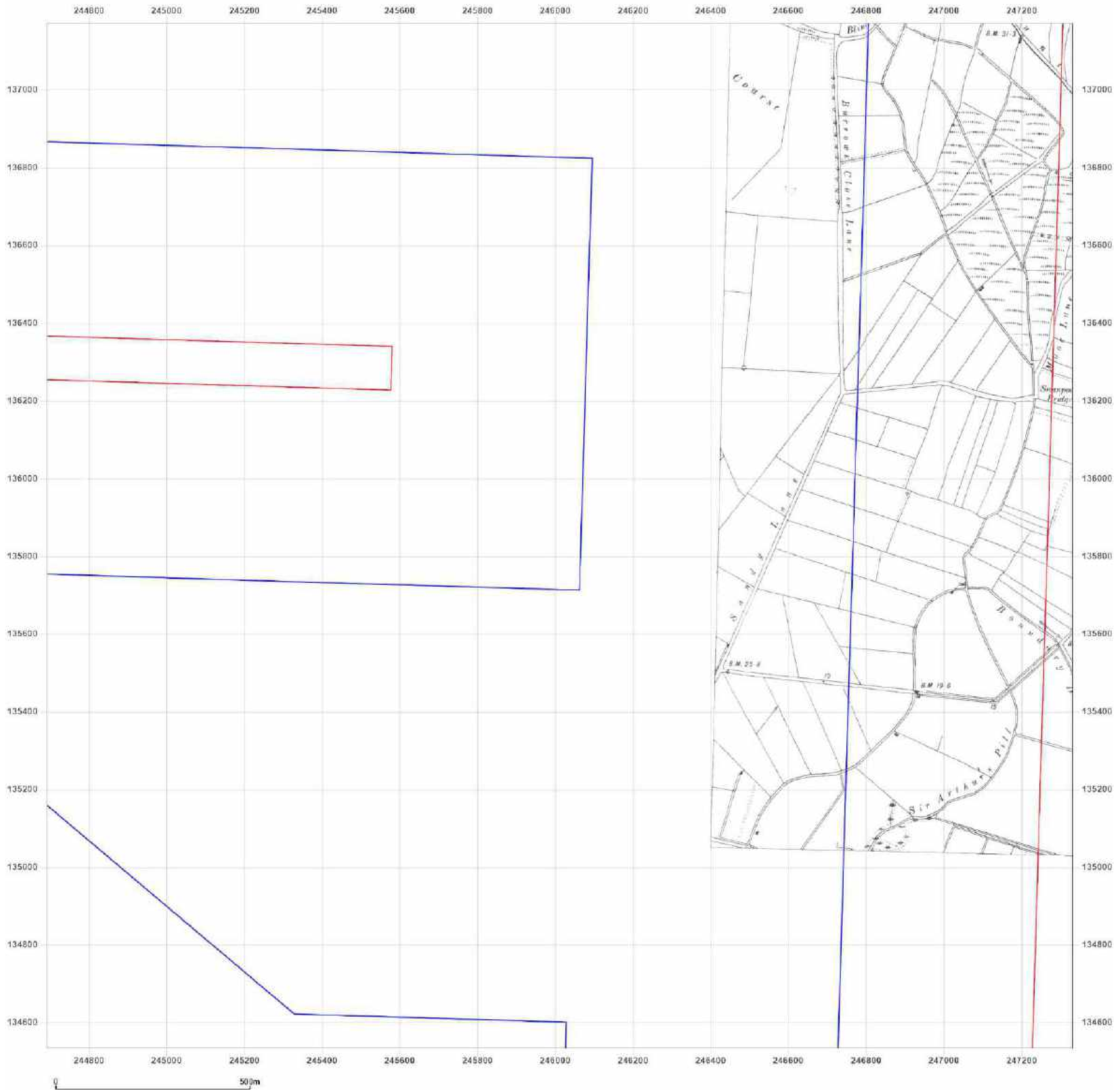

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1887
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 05 May 2022

Map legend available at:
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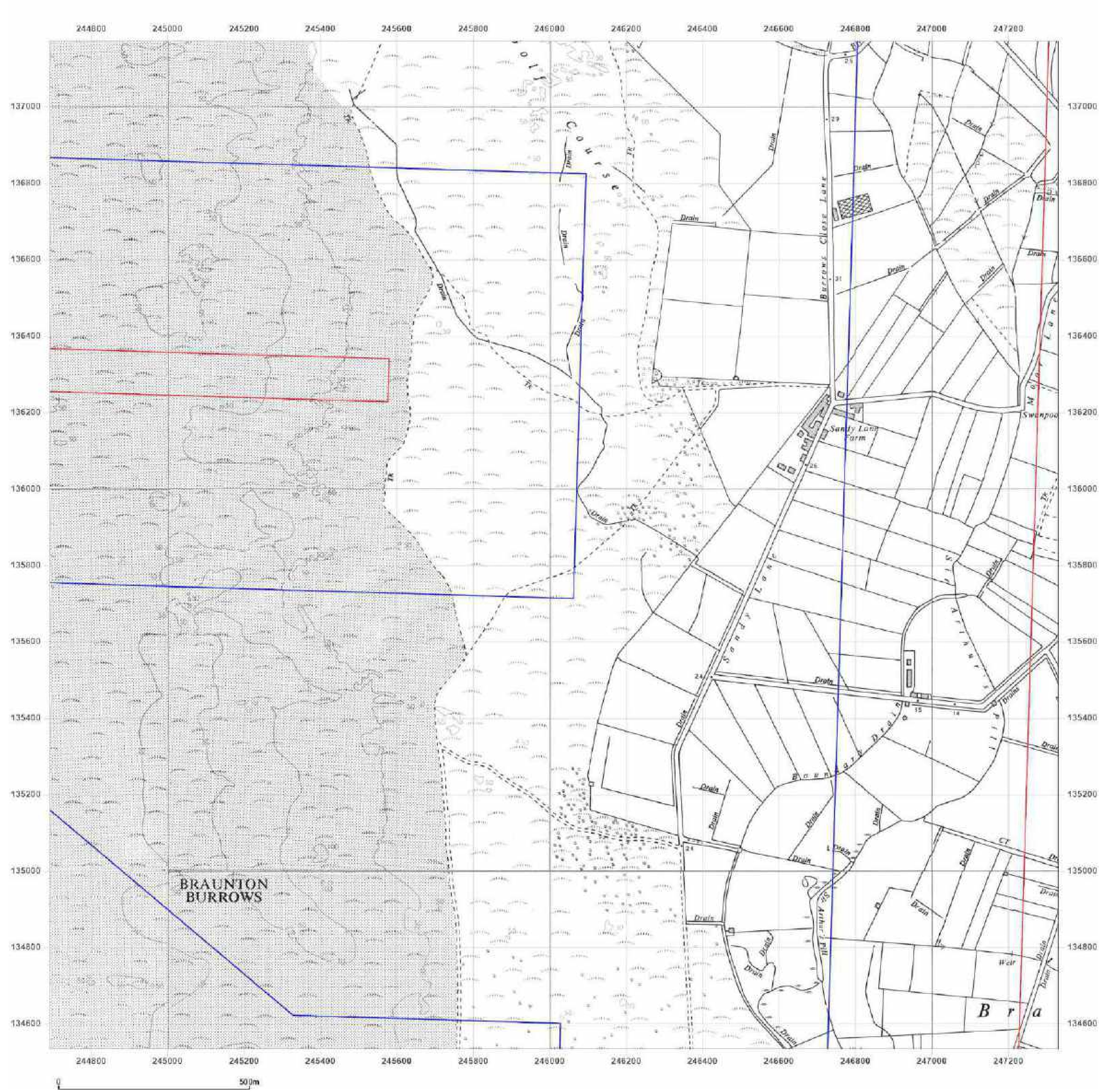

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
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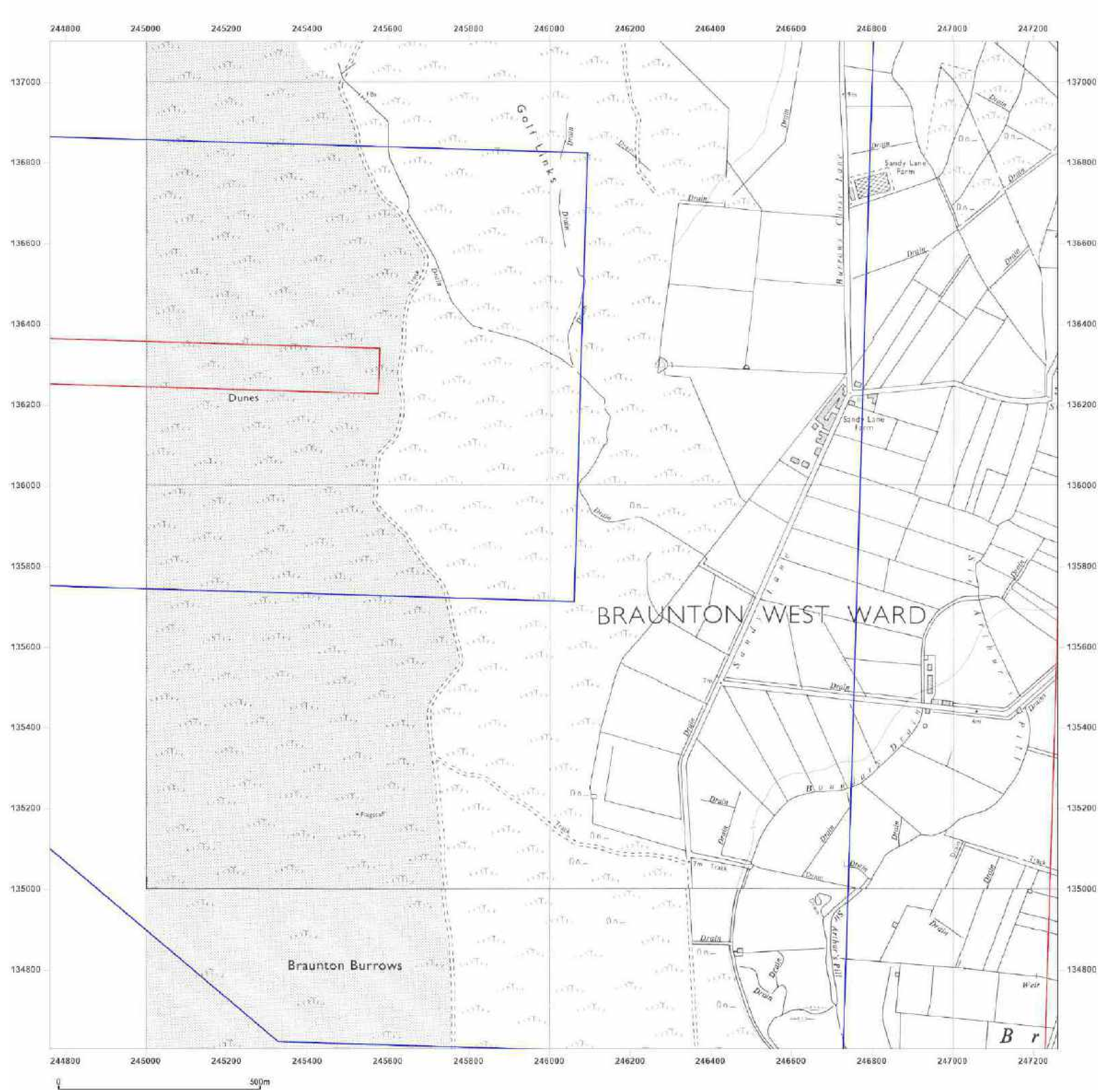

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: National Grid

Map date: **1981-1982**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1982
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

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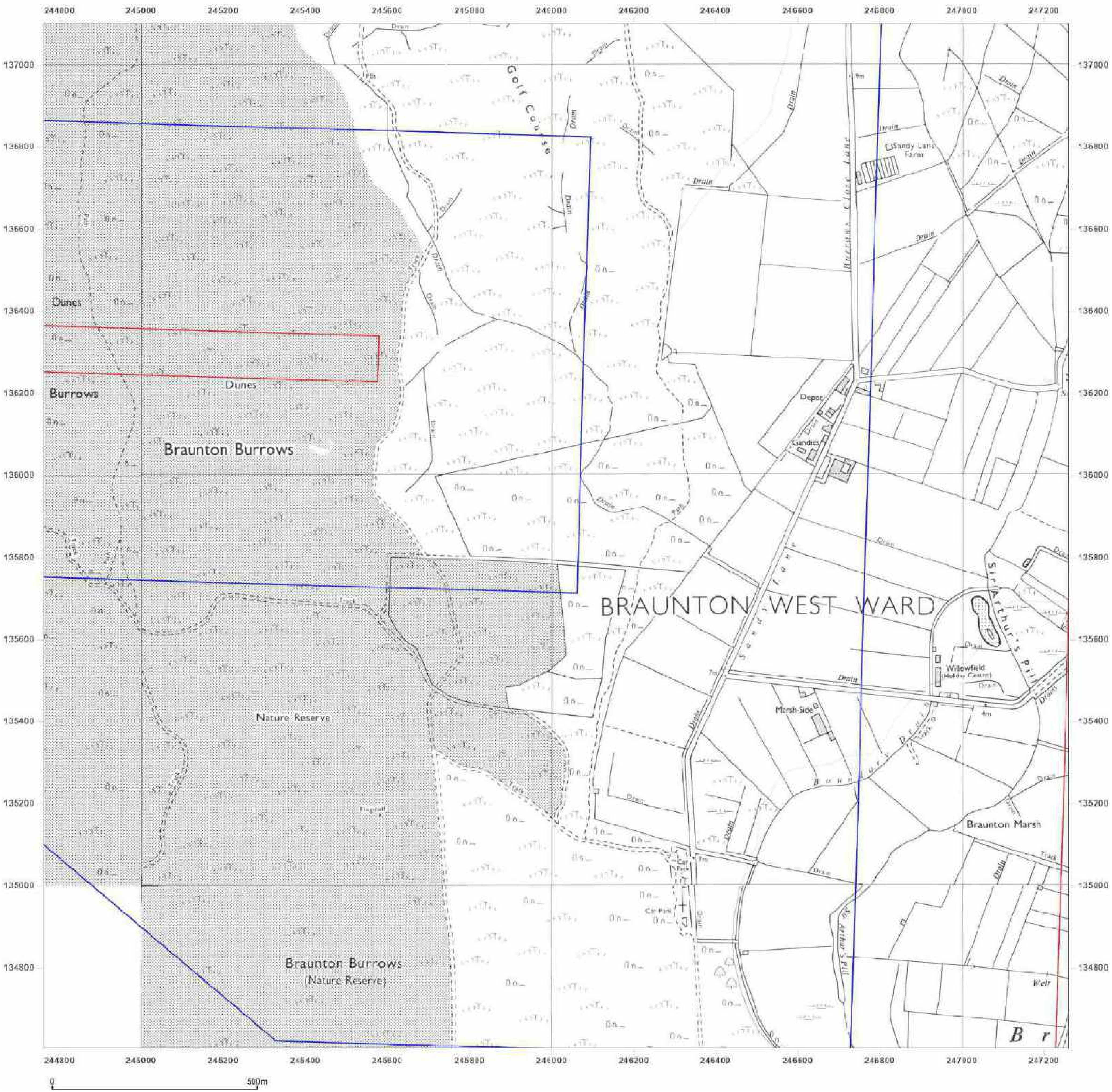

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: National Grid

Map date: **1991-1992**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

2001

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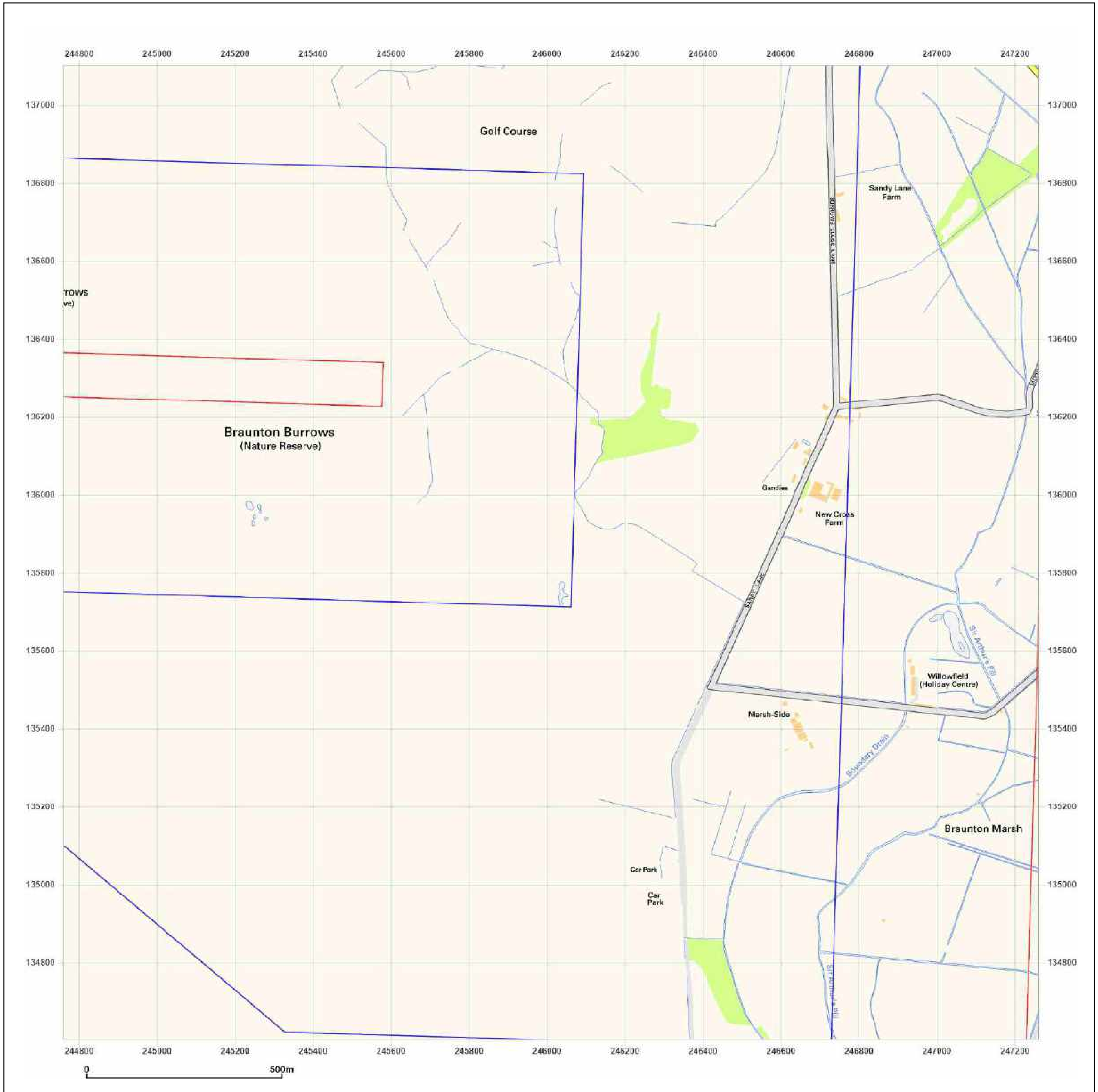

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2010

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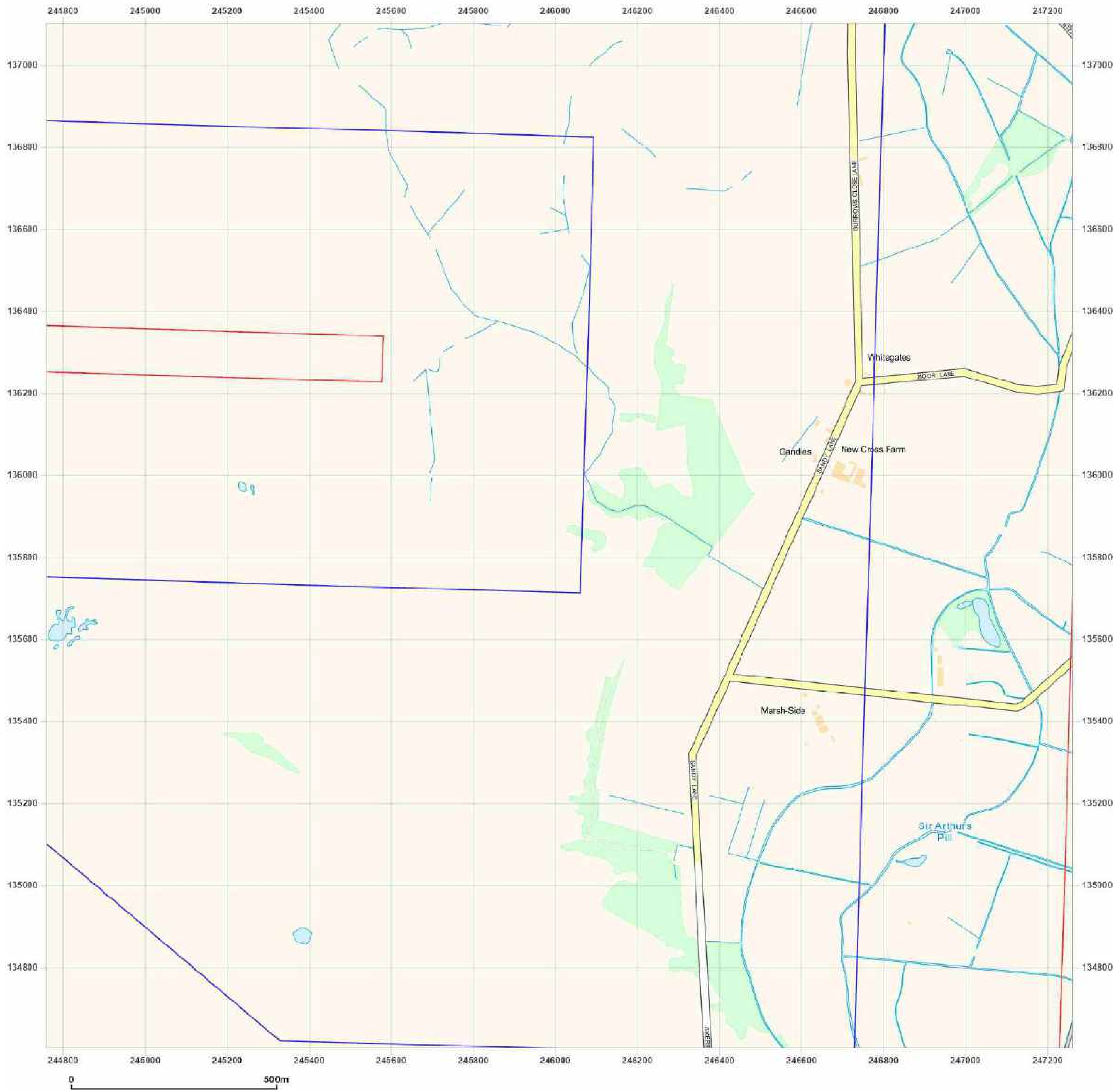


Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

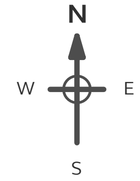
Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_3
Grid Ref: 246011, 135852

Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

Printed at: 1:10,000



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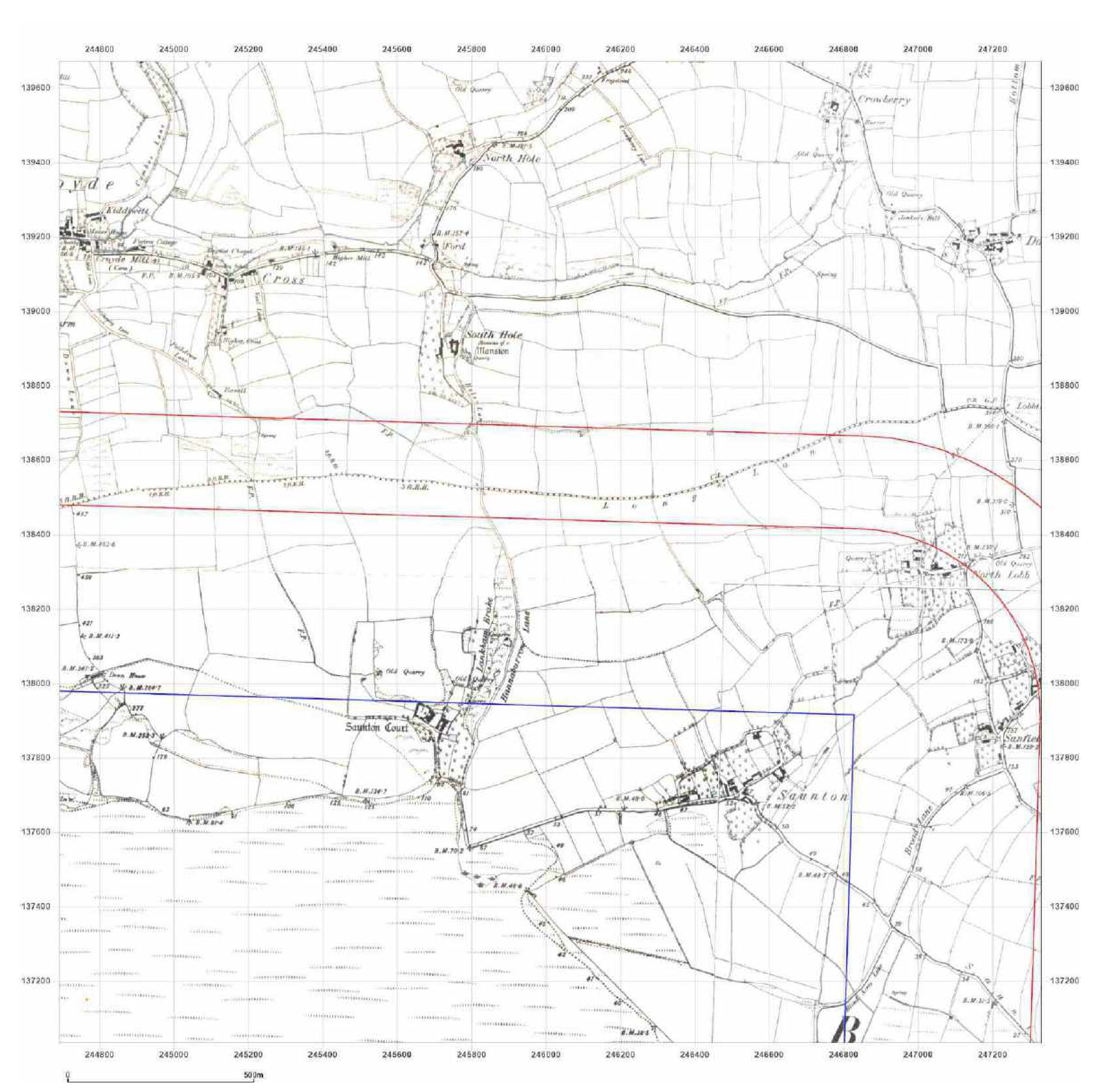
Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

Braunton Burrows Cable

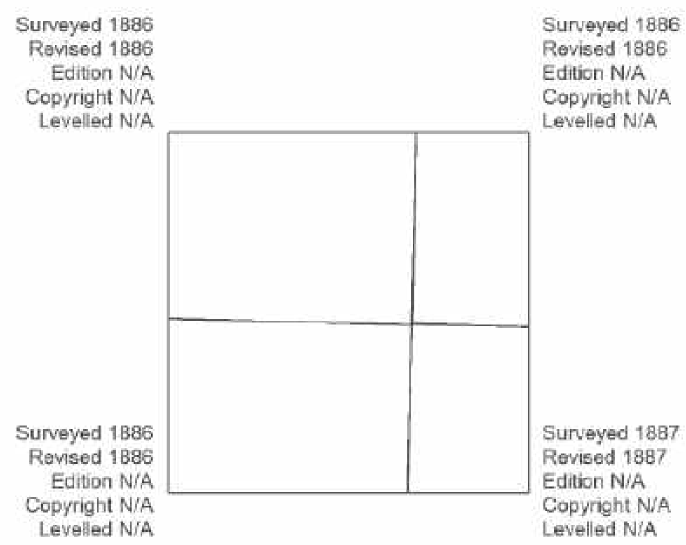
Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: County Series

Map date: **1886-1887**

Scale: 1:10,560

Printed at: 1:10,560



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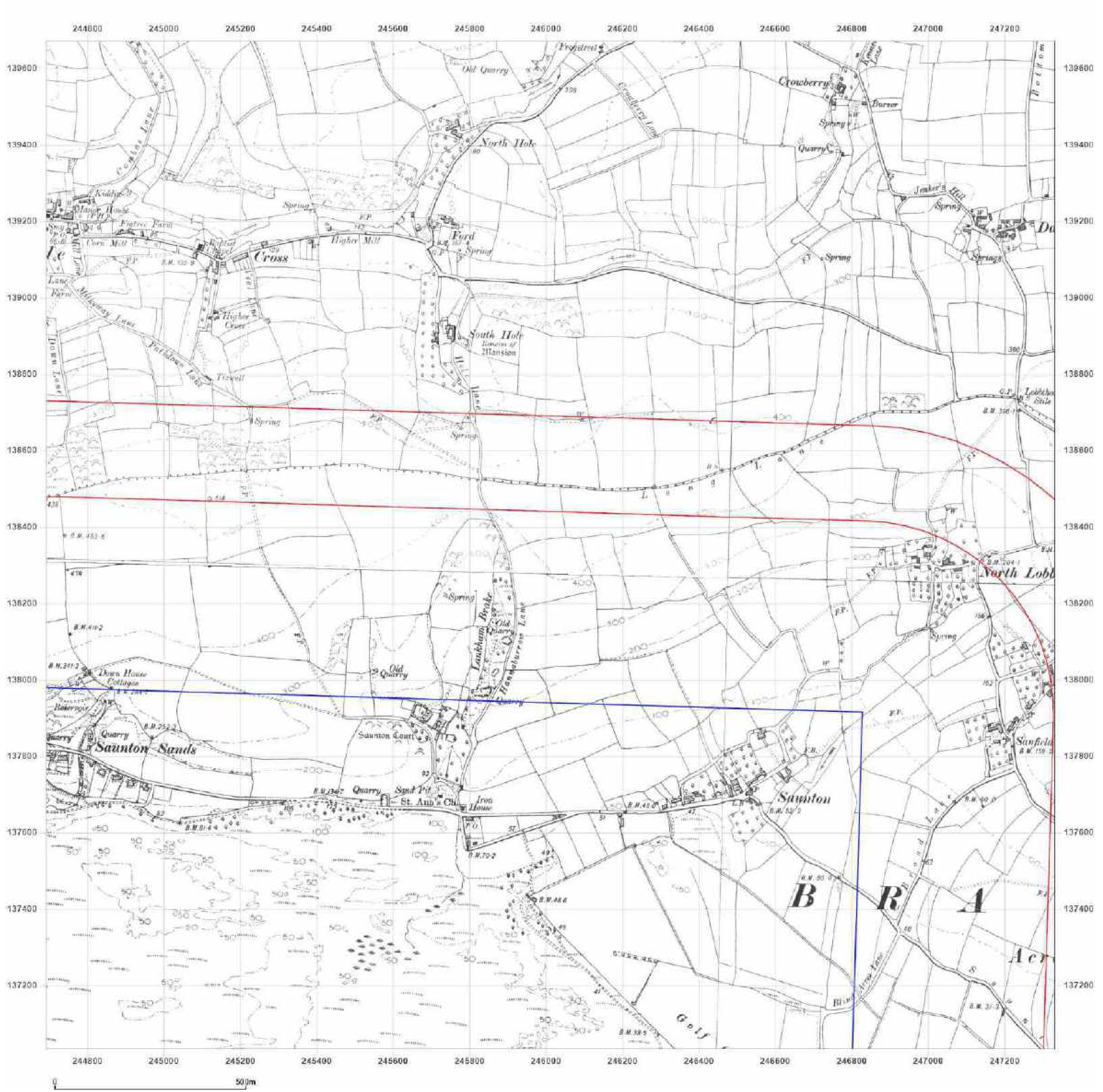
Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

Braunton Burrows Cable

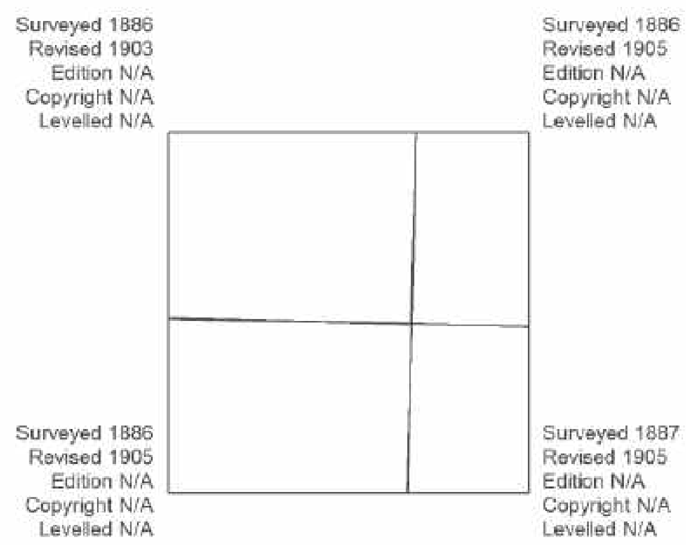
Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: County Series

Map date: **1903-1905**

Scale: 1:10,560

Printed at: 1:10,560



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Production date: 05 May 2022

Map legend available at:
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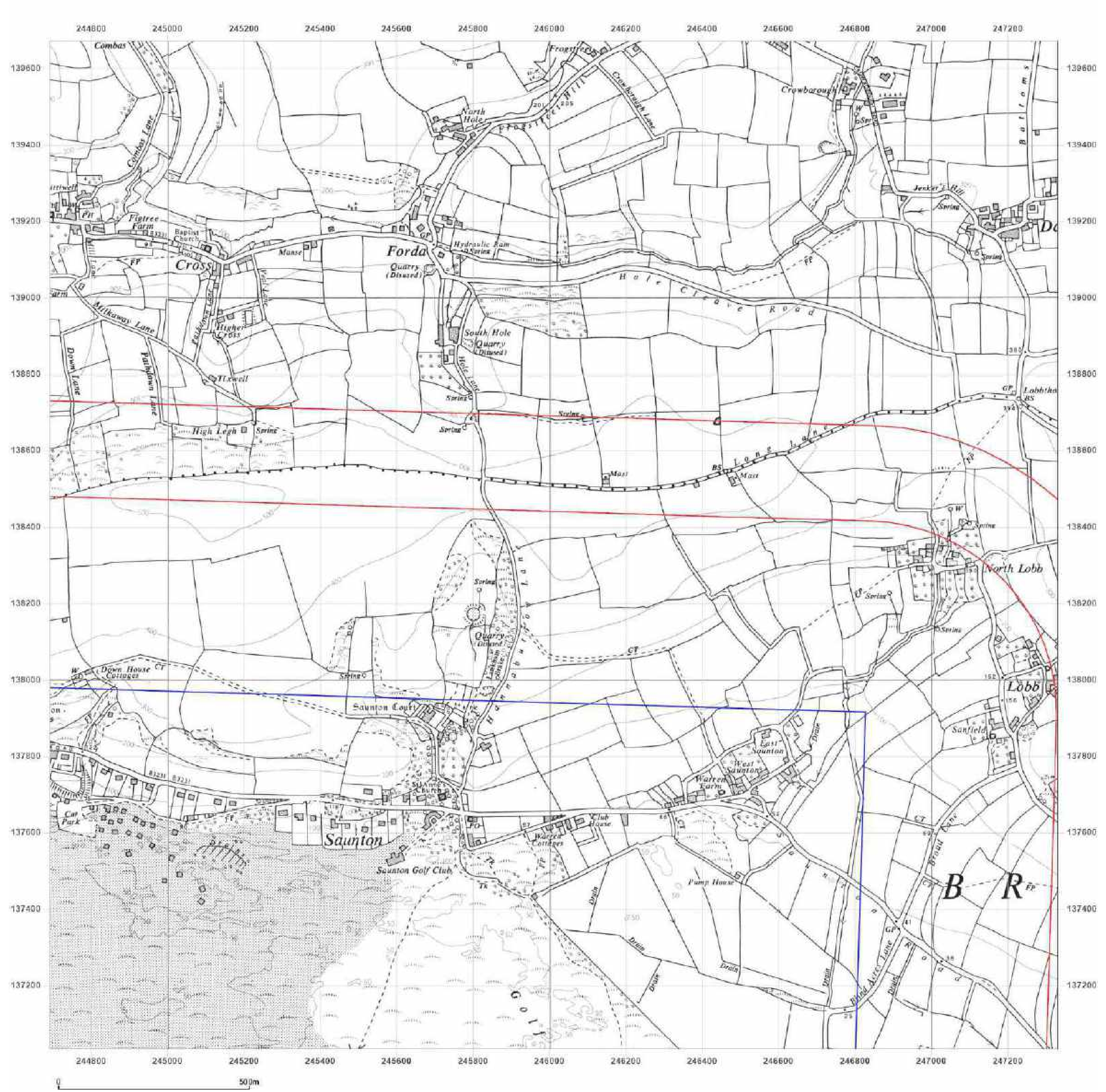

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

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Map legend available at:
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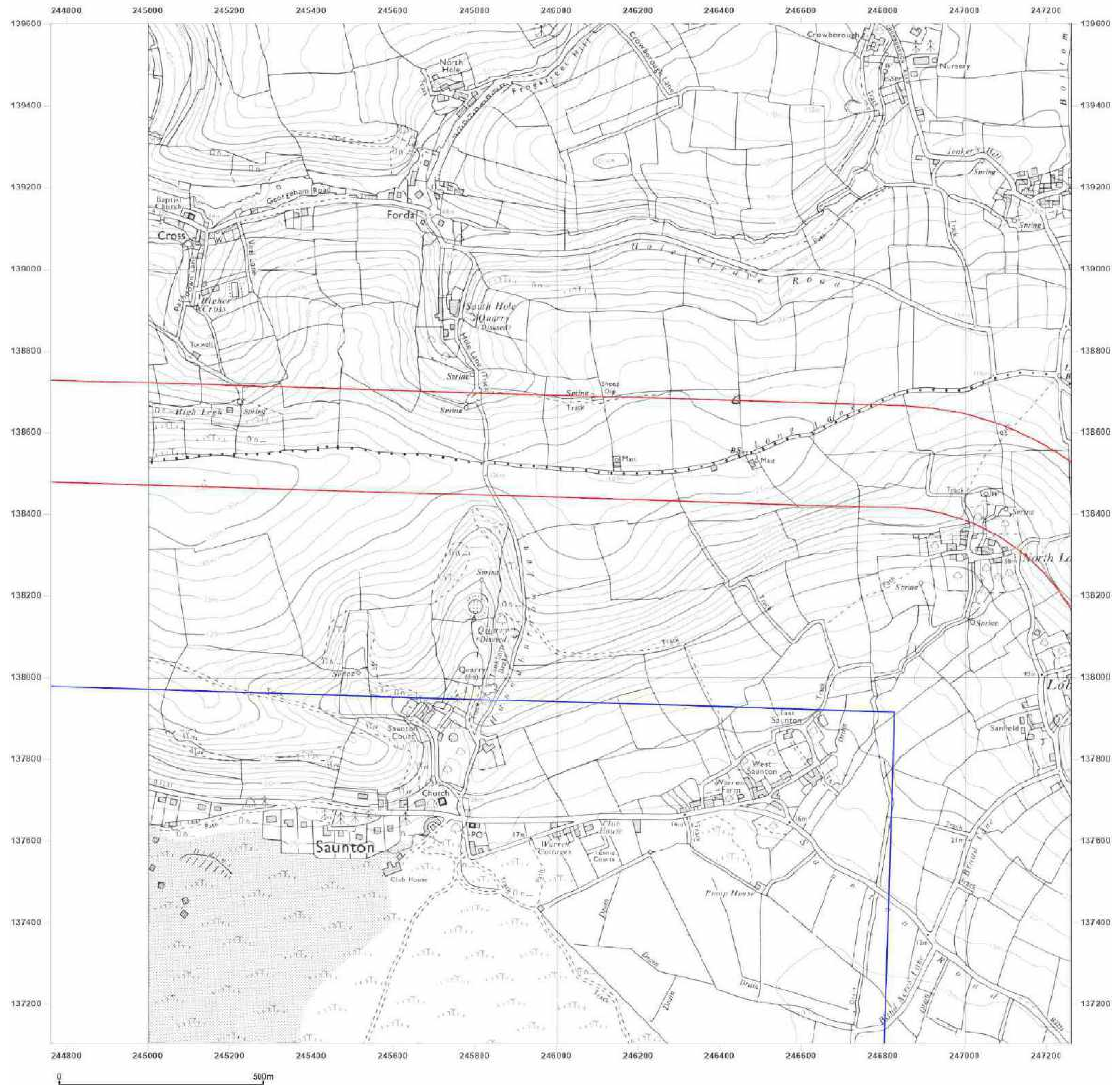

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: National Grid

Map date: 1982

Scale: 1:10,000

Printed at: 1:10,000

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Production date: 05 May 2022

Map legend available at:
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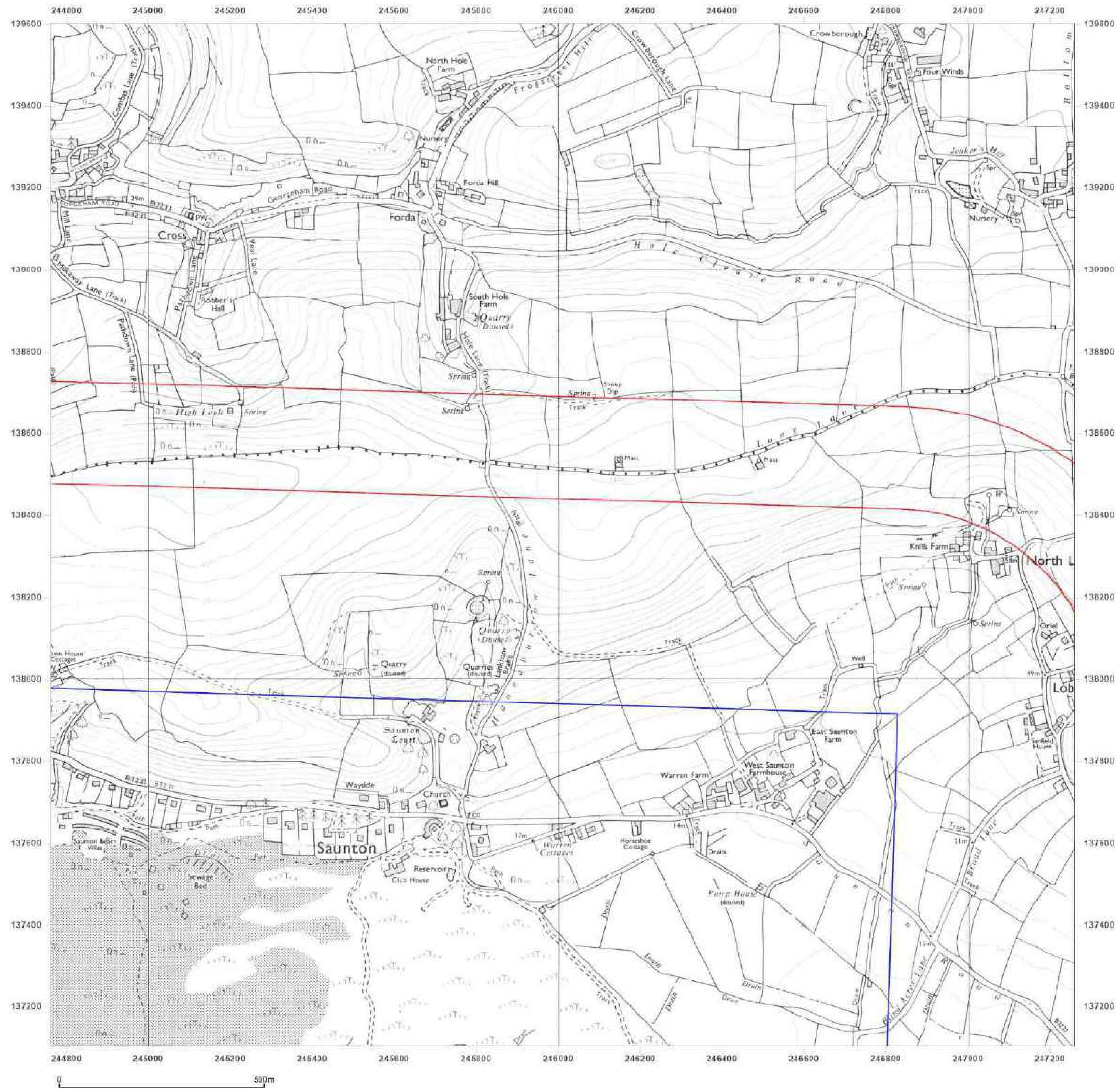

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: National Grid

Map date: **1991-1992**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1991
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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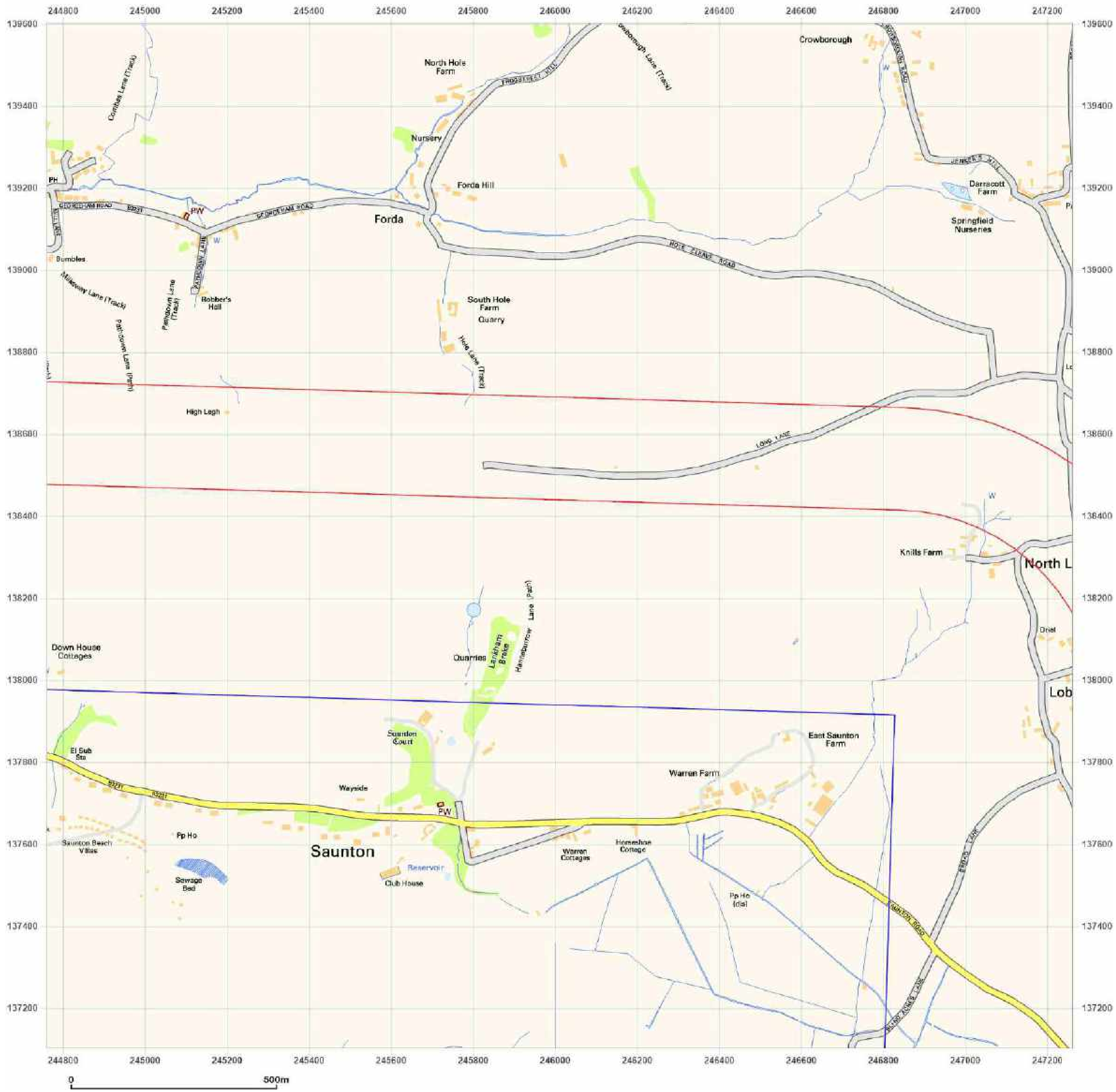
Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2001

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Production date: 05 May 2022

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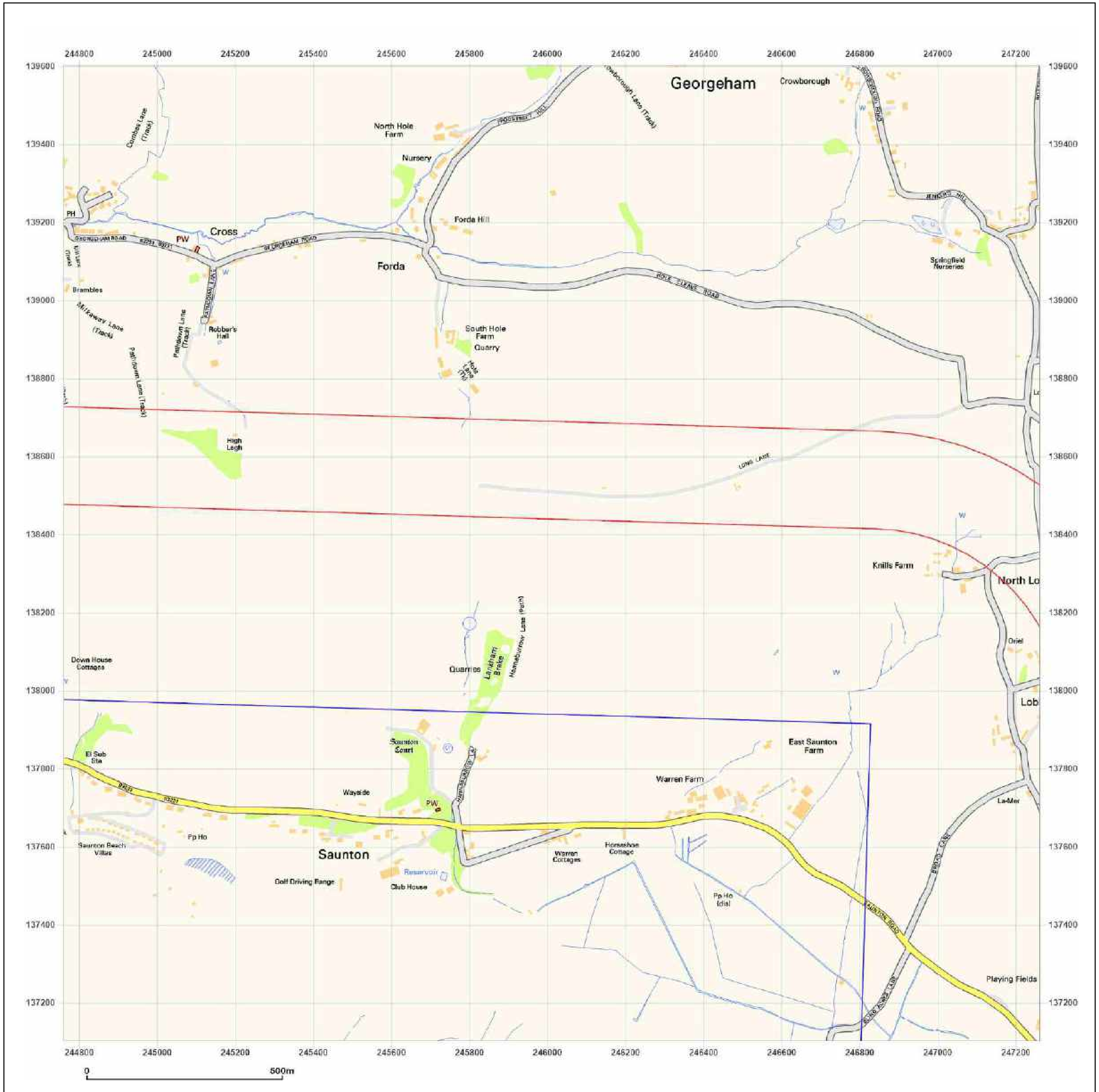

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

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Production date: 05 May 2022

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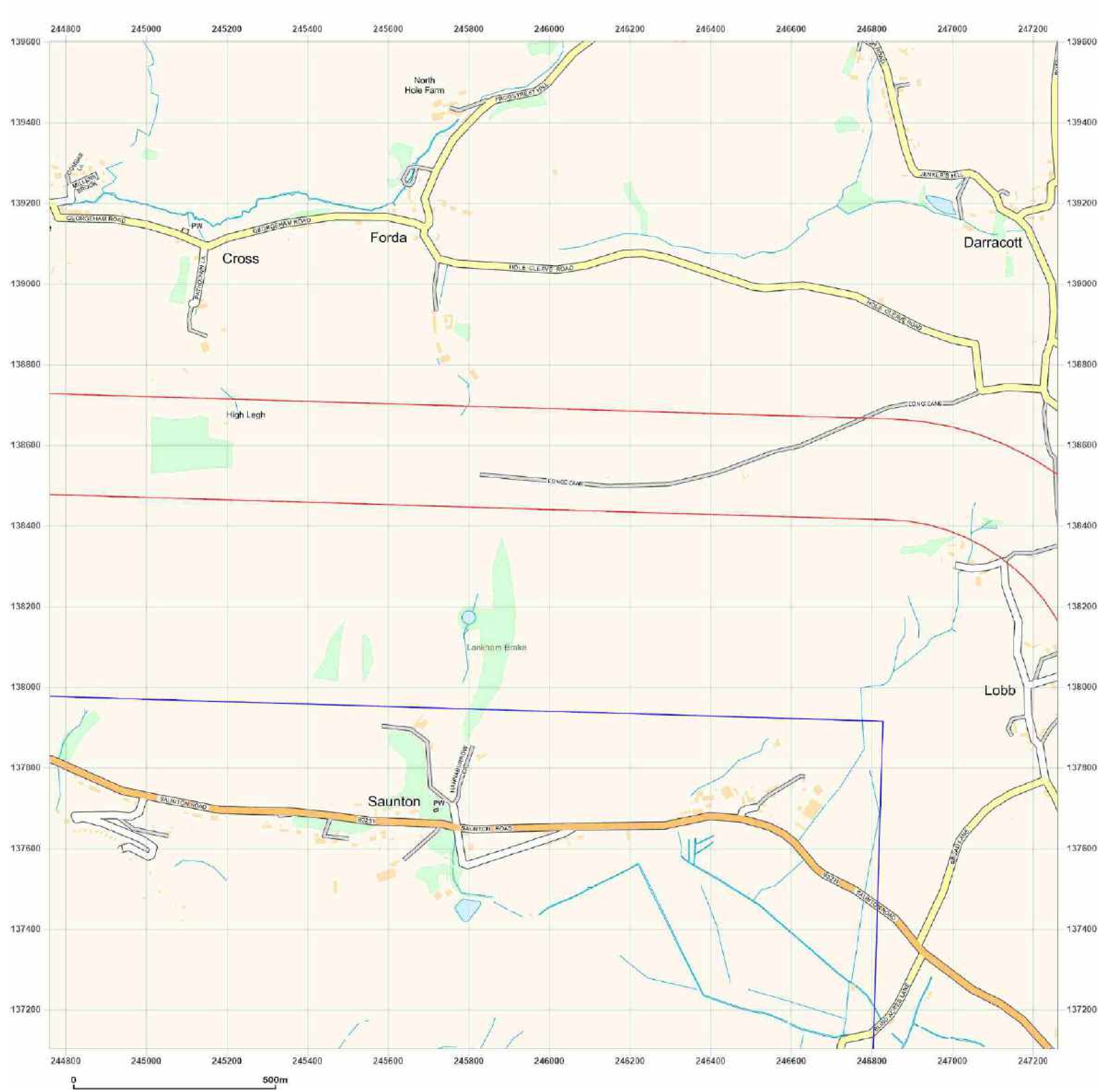

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_2_4
Grid Ref: 246011, 138352

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000

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2022

Powered by

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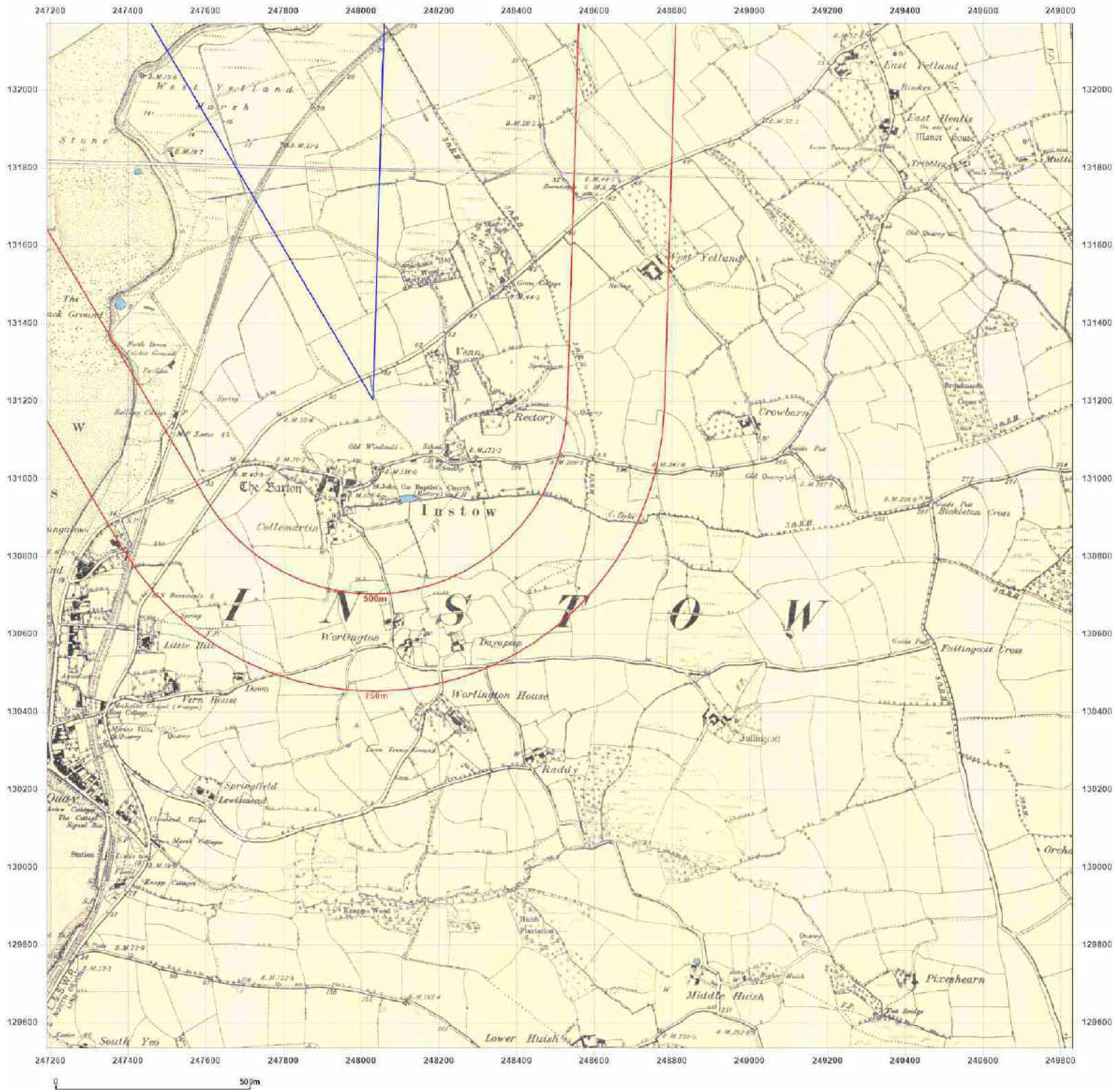
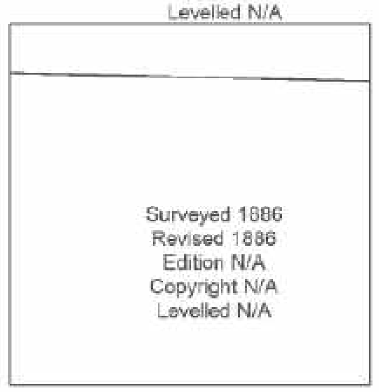
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: County Series

Map date: **1886-1887**

Scale: 1:10,560

Printed at: 1:10,560

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Production date: 05 May 2022

Map legend available at:
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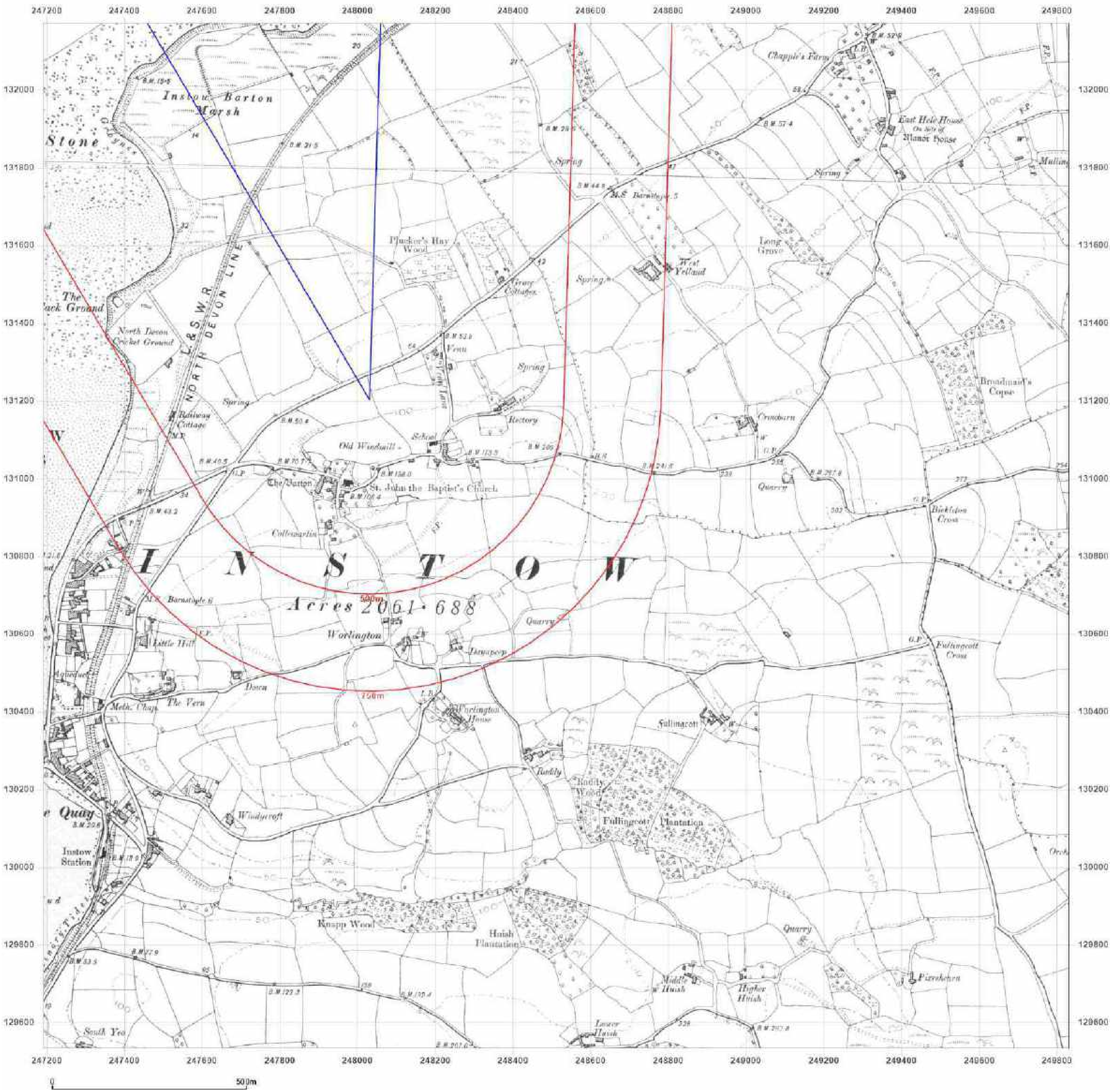

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1885
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

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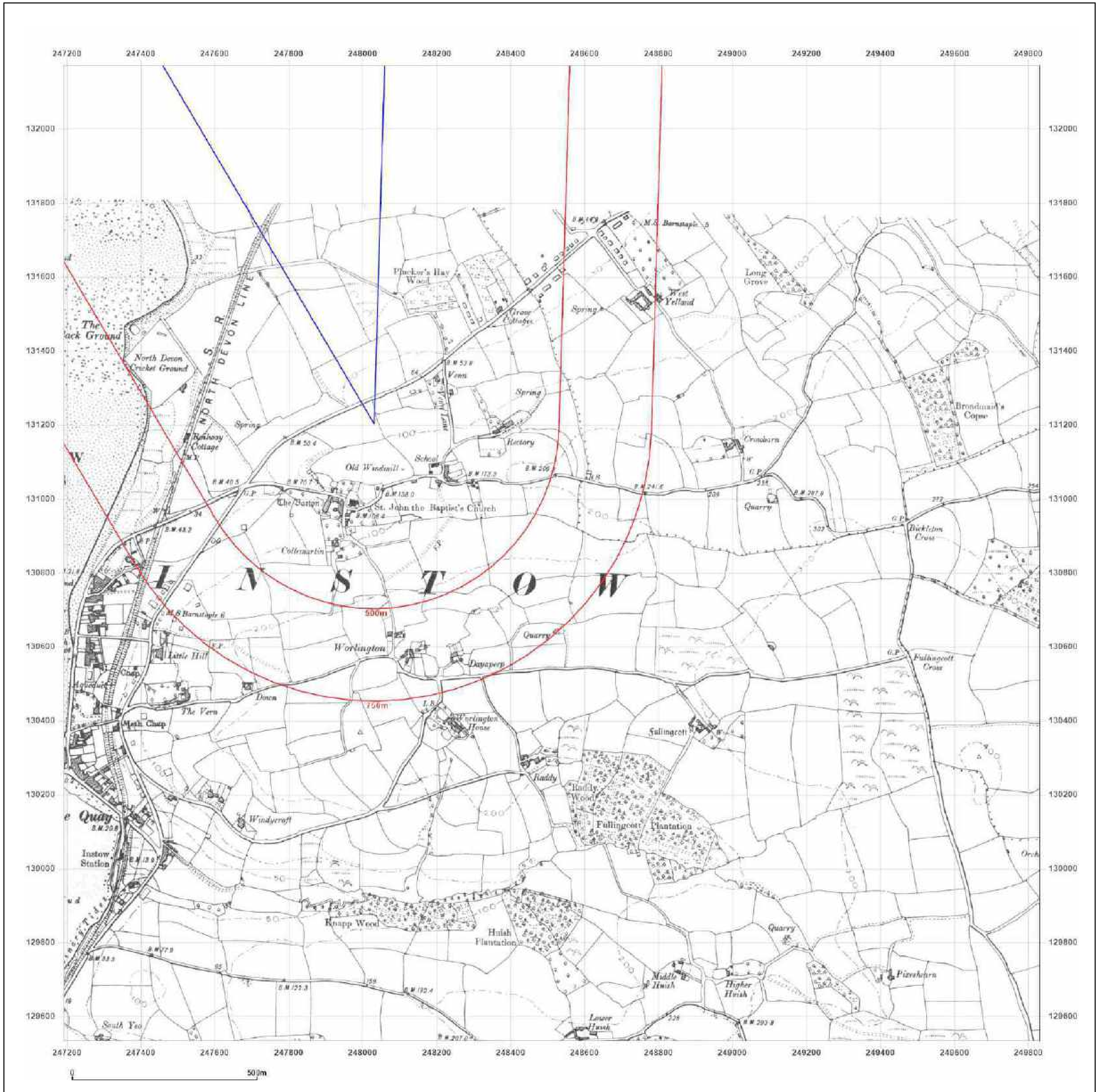

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref:	Braunton Burrows Cable
Report Ref:	GSIP-2022-12715-10376_SS_3_1
Grid Ref:	248511, 130852
Map Name:	County Series
Map date:	**1938**
Scale:	1:10,560
Printed at:	1:10,560

N W E S

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Production date: 05 May 2022

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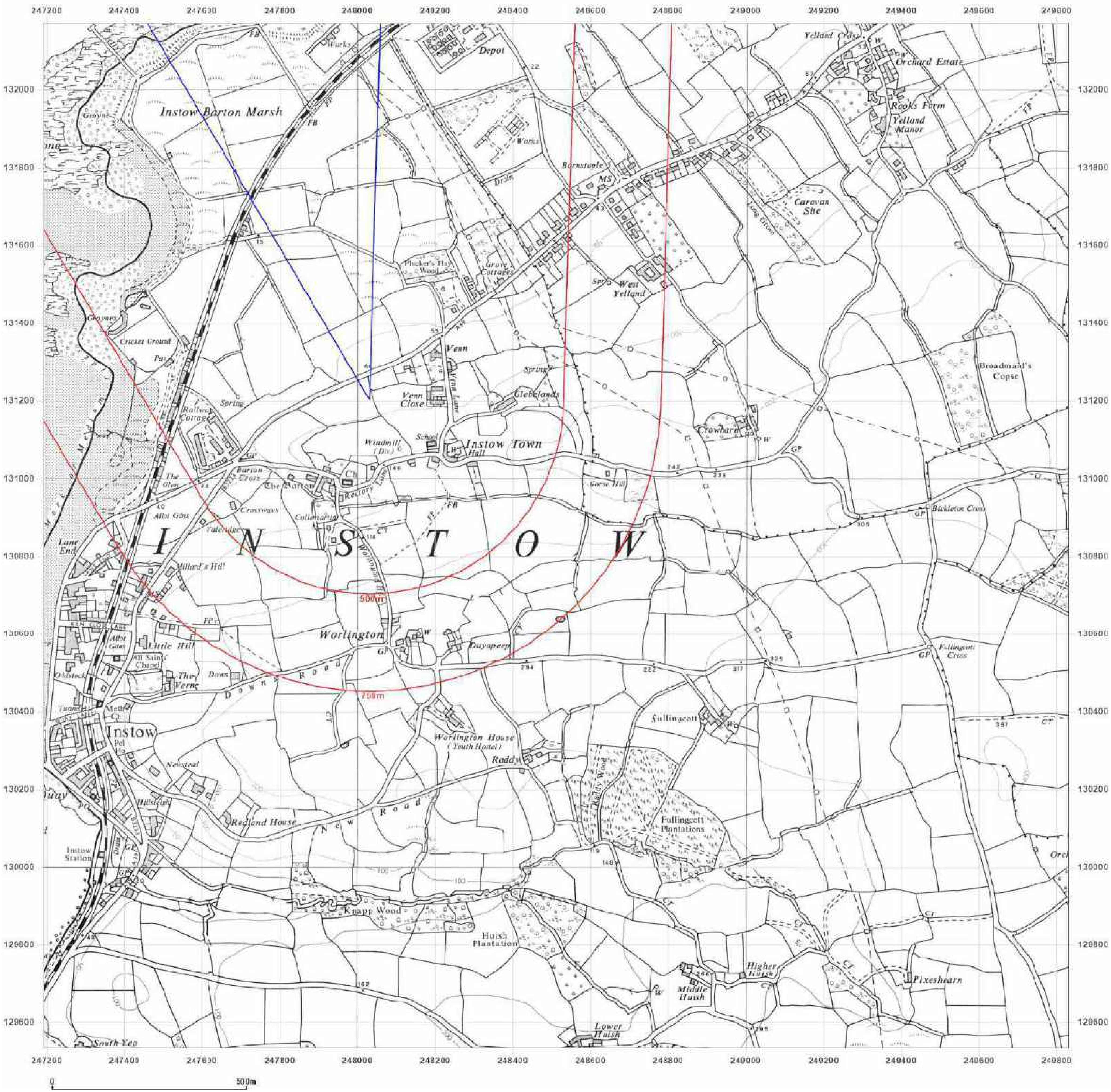

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: Provisional

Map date: **1963**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

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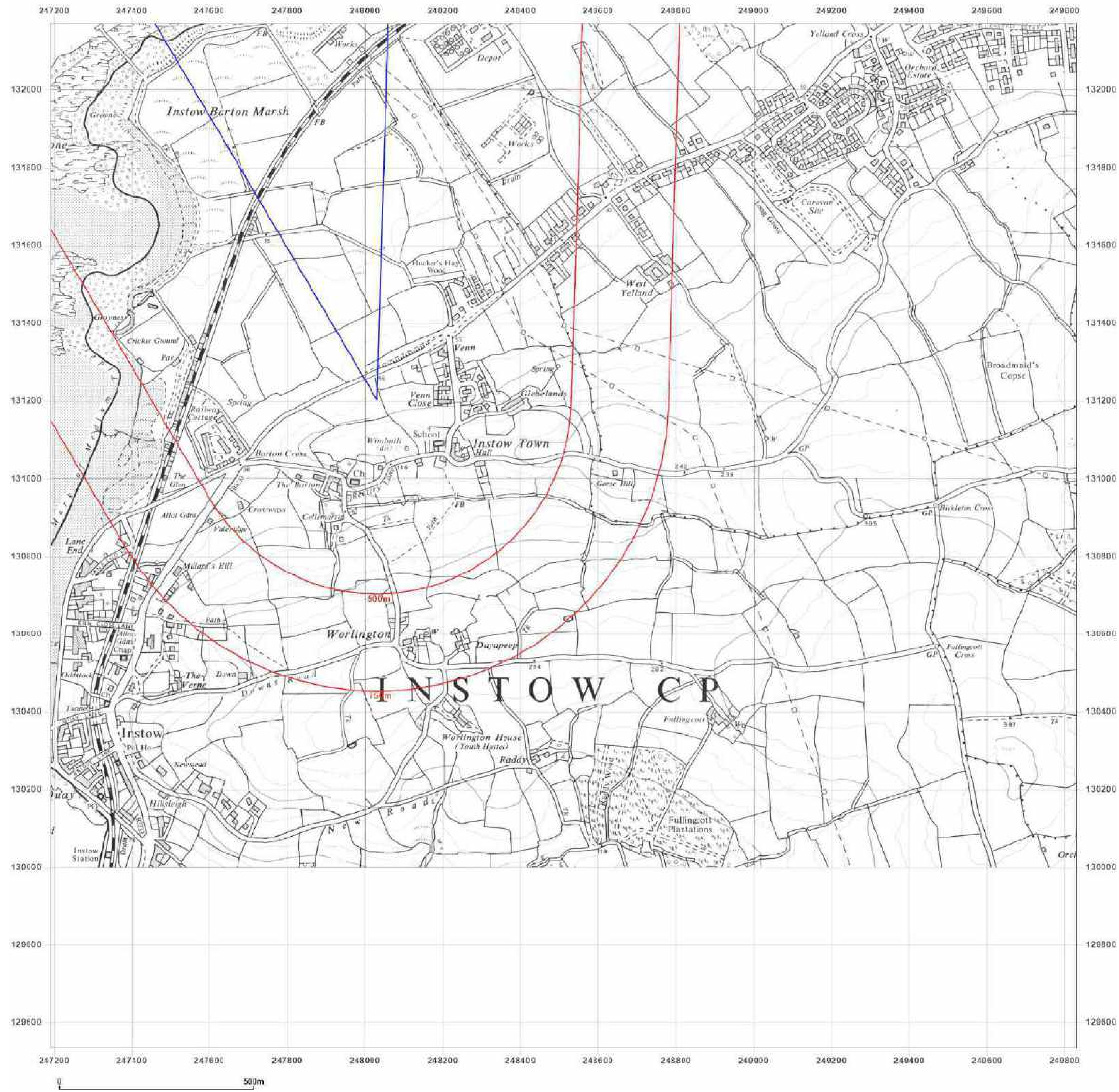

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: Provisional

Map date: 1969

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1969
Revised 1969
Edition N/A
Copyright N/A
Levelled N/A

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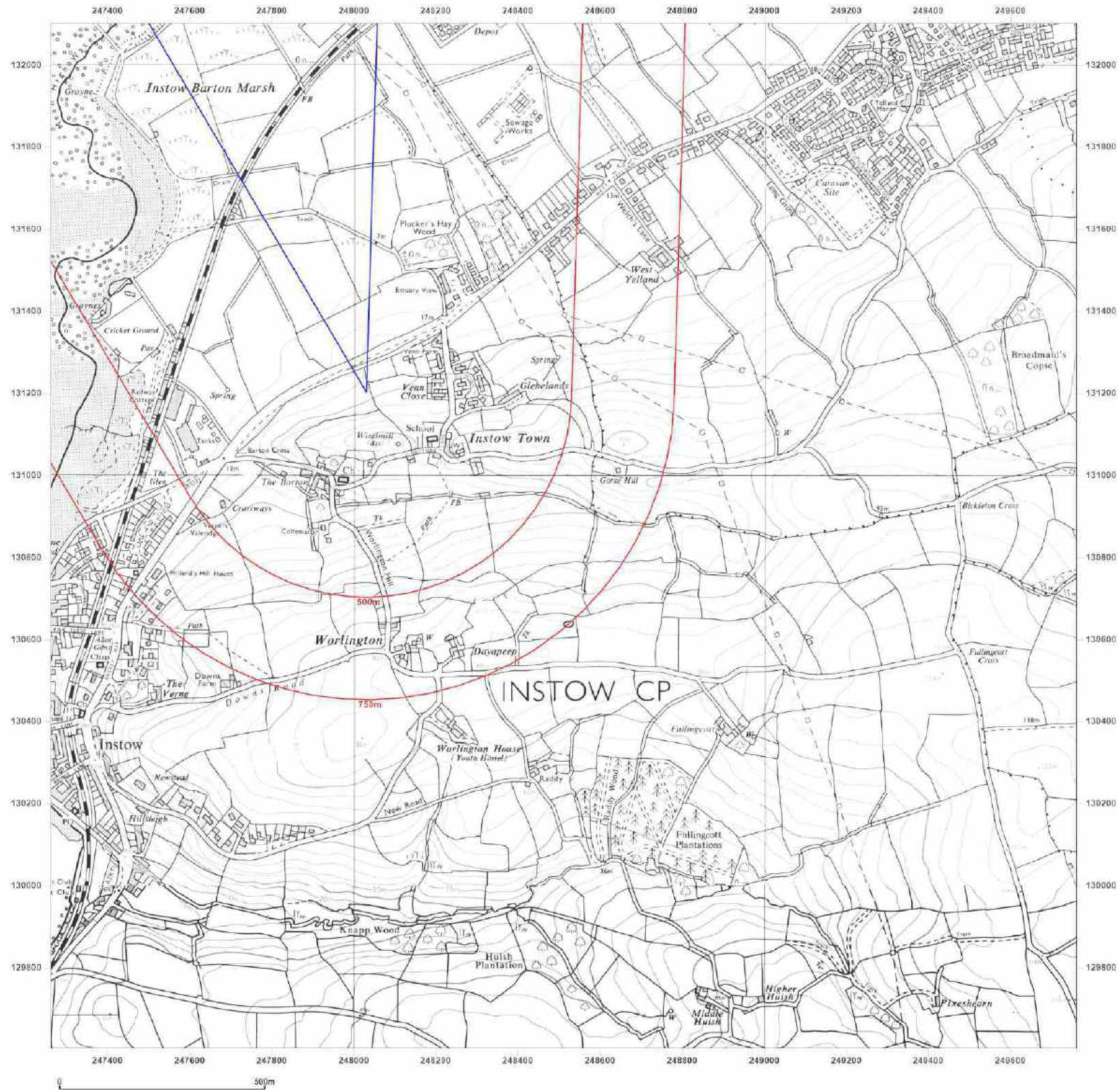

![Groundsure Insights logo]

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: National Grid

Map date: **1976-1981**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1973
Revised 1976
Edition N/A
Copyright 1976
Levelled 1973

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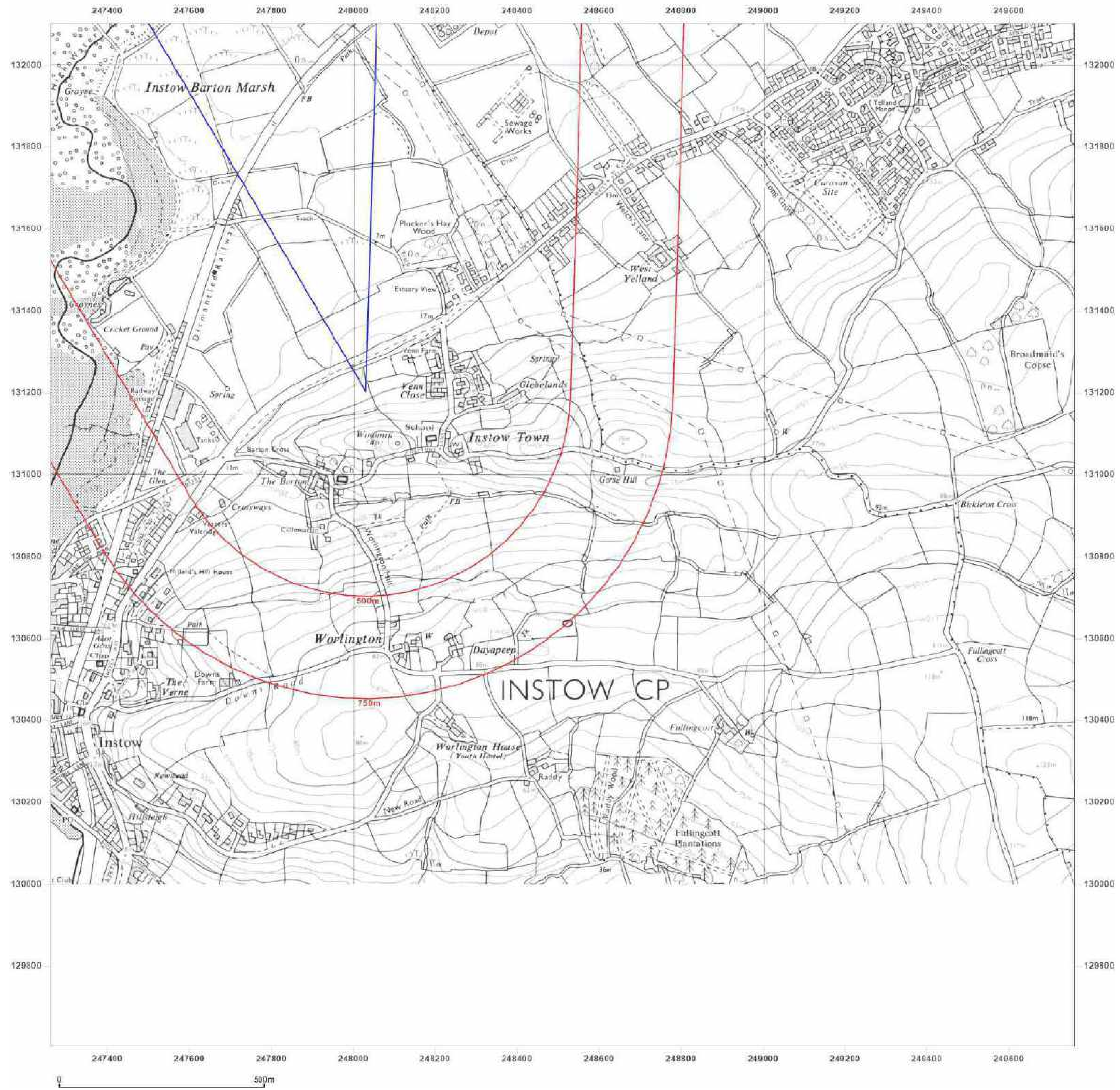

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: National Grid

Map date: 1985

Scale: 1:10,000

Printed at: 1:10,000

Surveyed 1977
Revised 1985
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 05 May 2022

Map legend available at:
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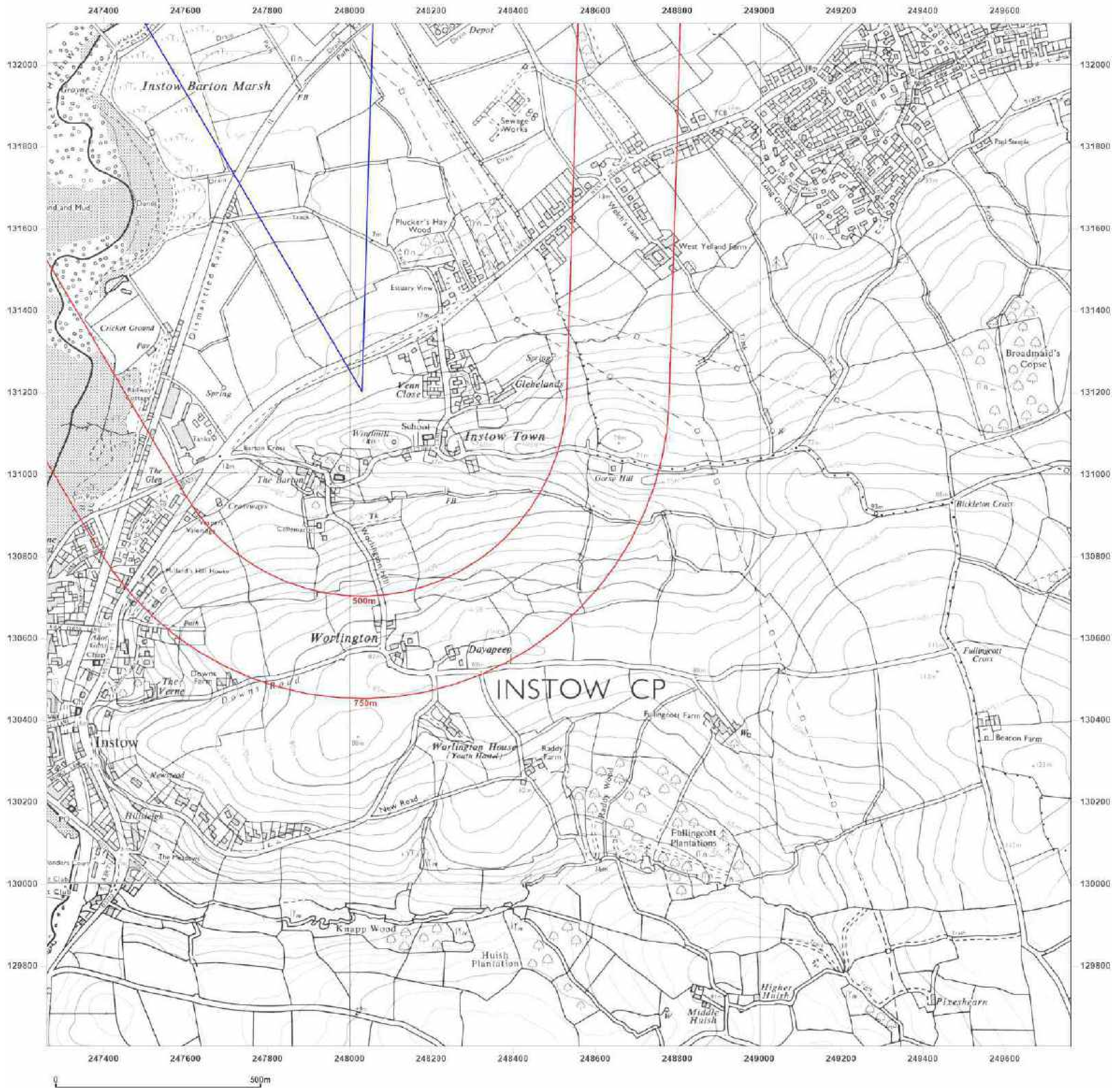

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000

Surveyed 1977
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1973
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 05 May 2022

Map legend available at:
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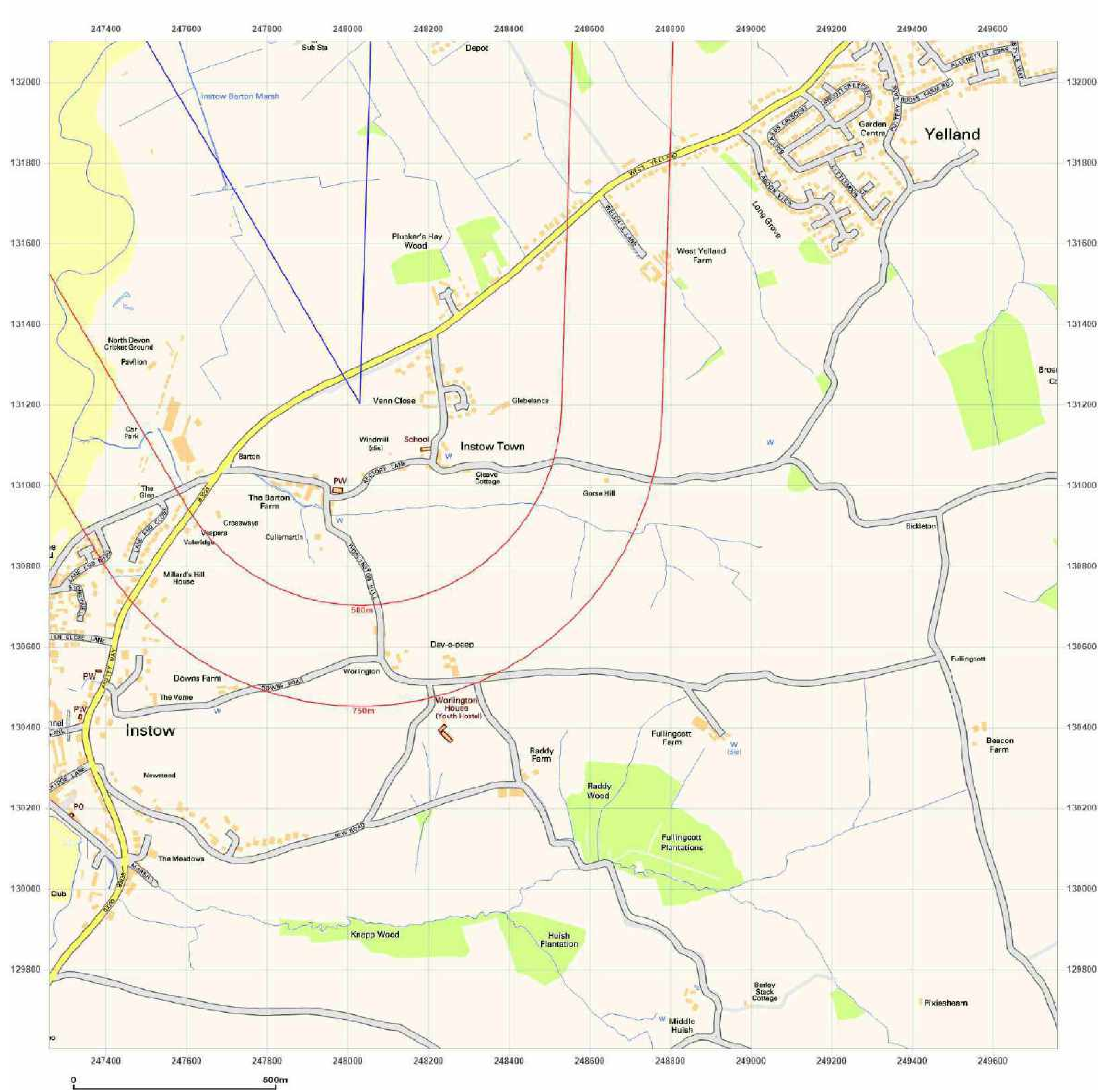

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2001

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Production date: 05 May 2022

Map legend available at:
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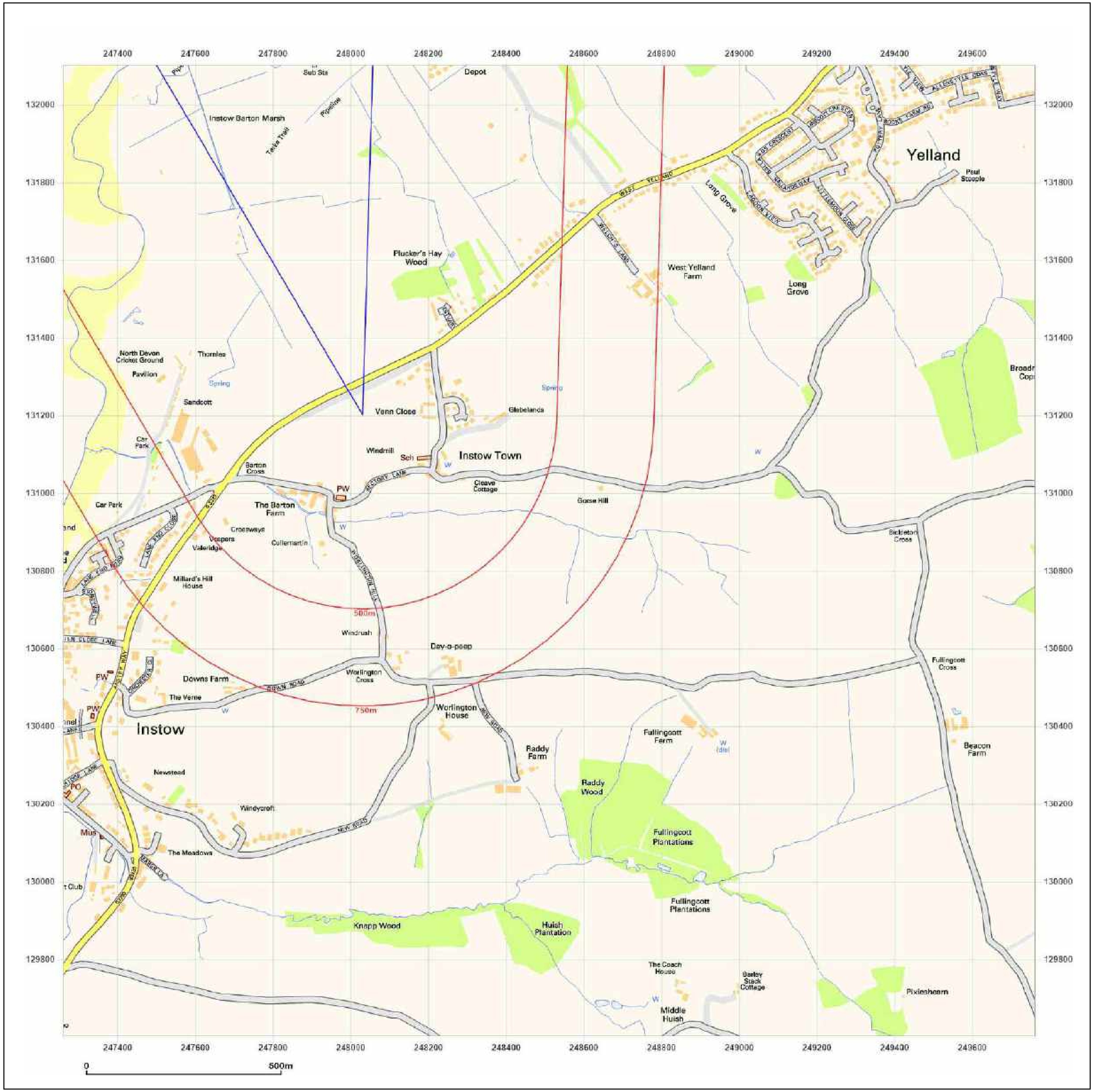

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

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Production date: 05 May 2022

Map legend available at:
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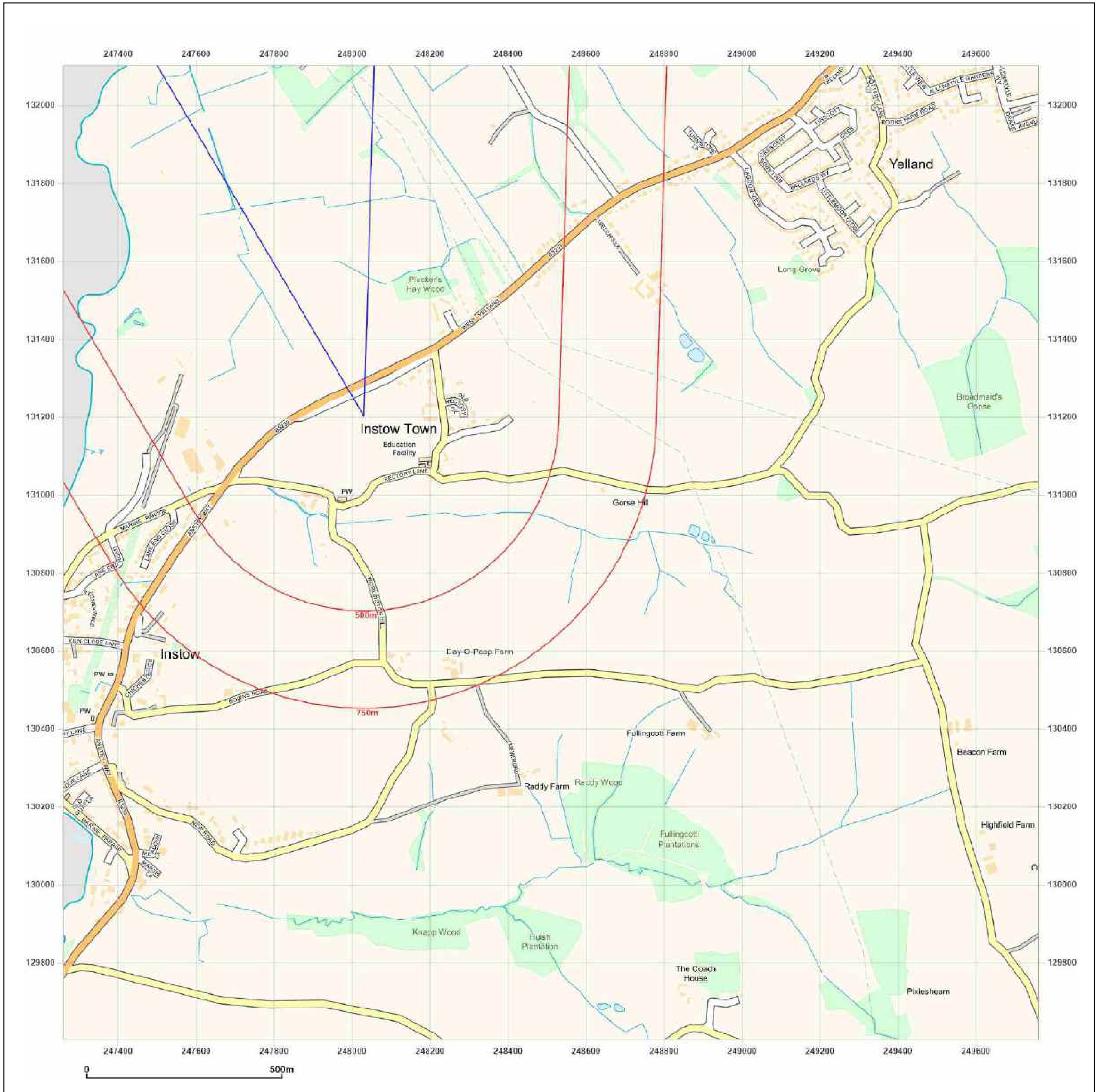

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_1
Grid Ref: 248511, 130852

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2022

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W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
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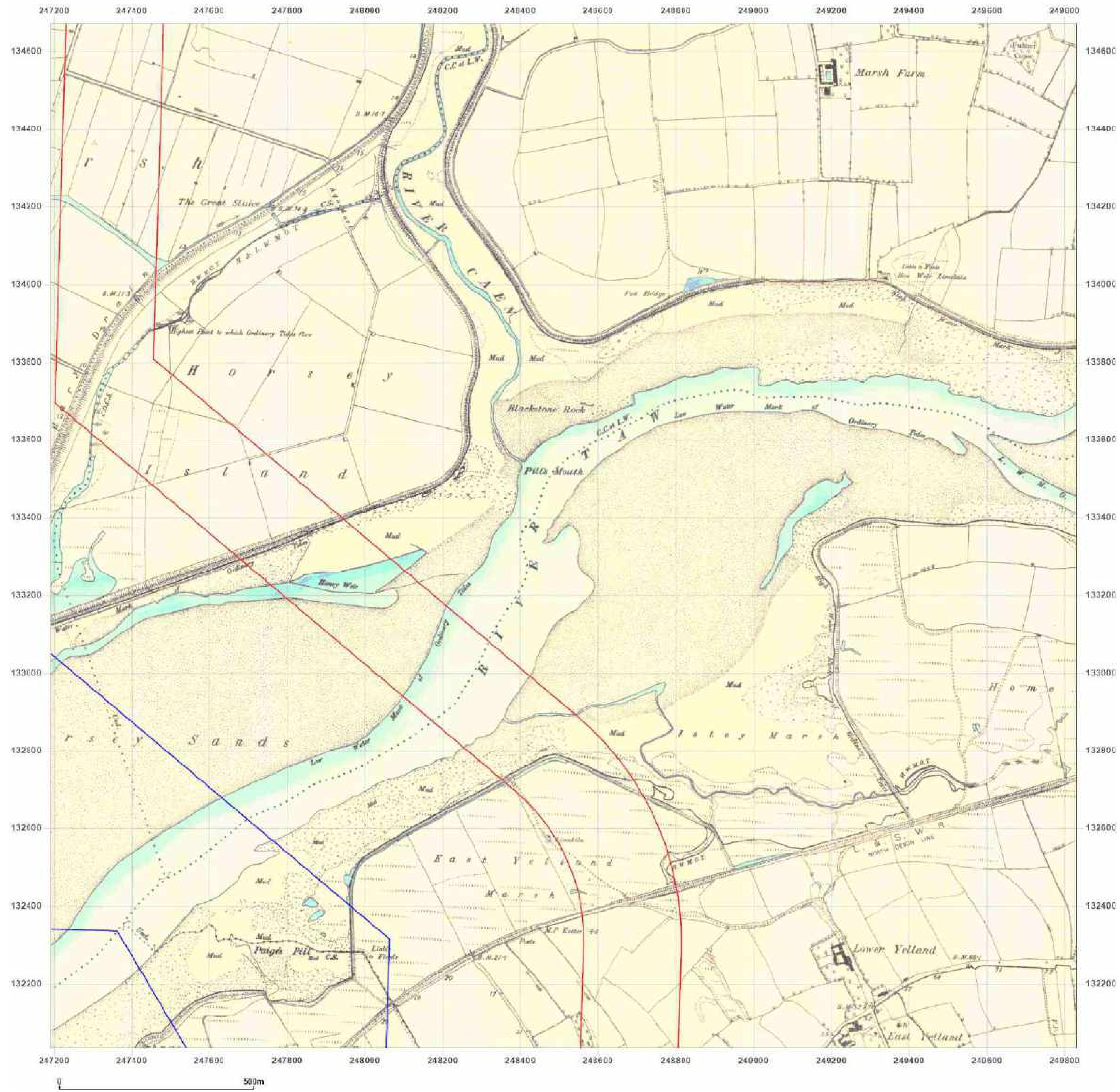


Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: County Series

Map date: **1887**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

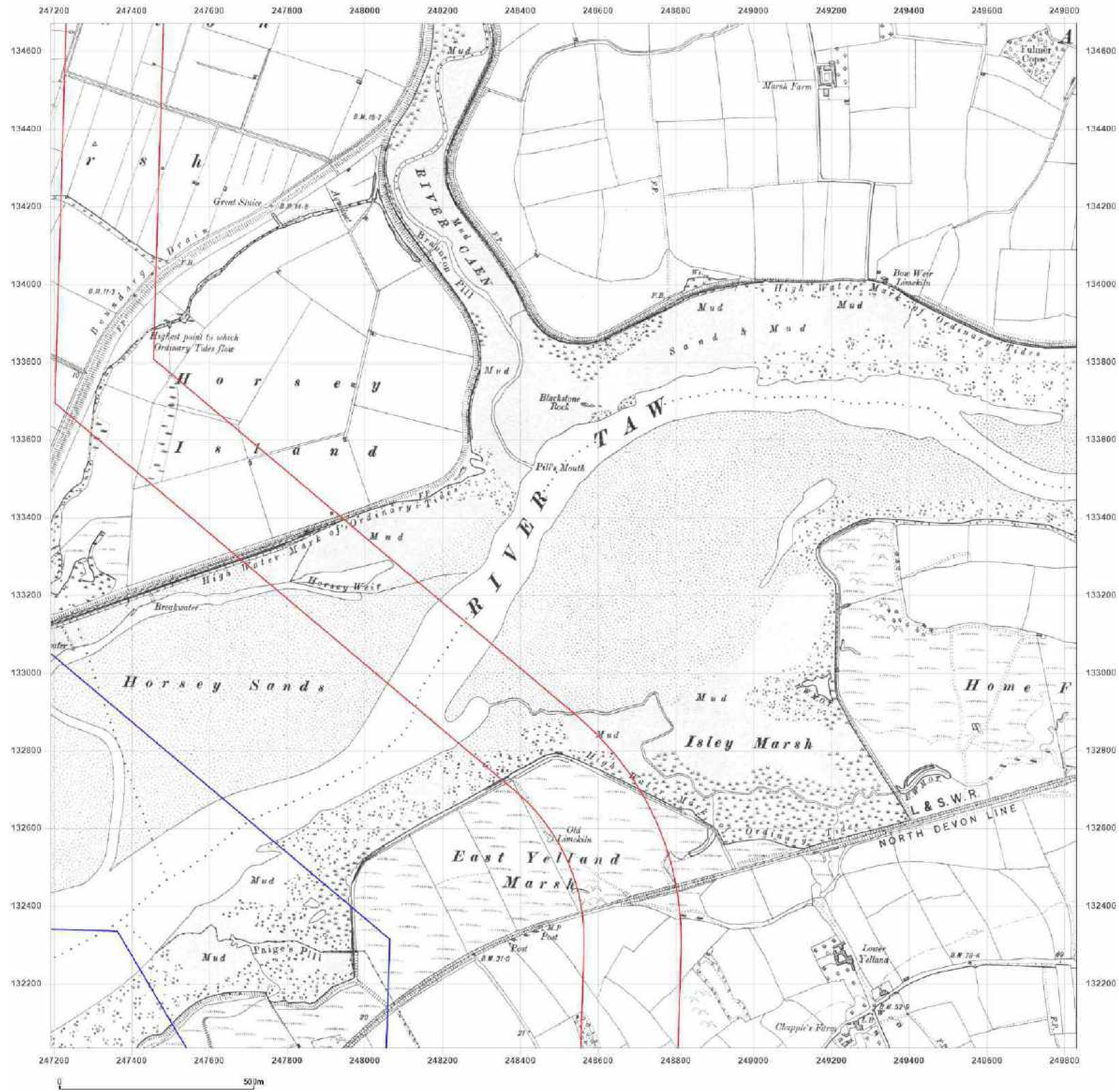
Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1885
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
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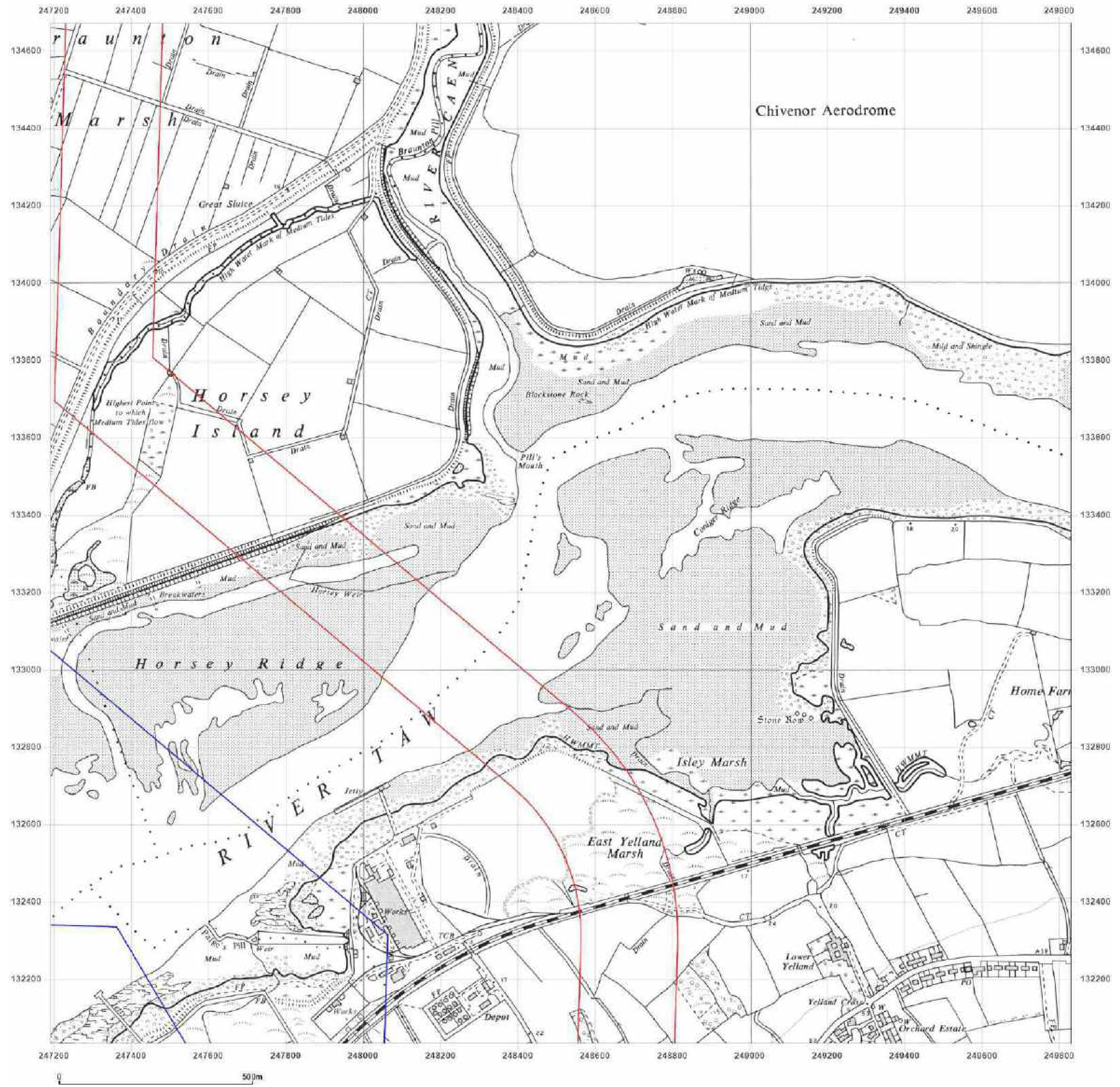
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560

Powered by OS

Produced by
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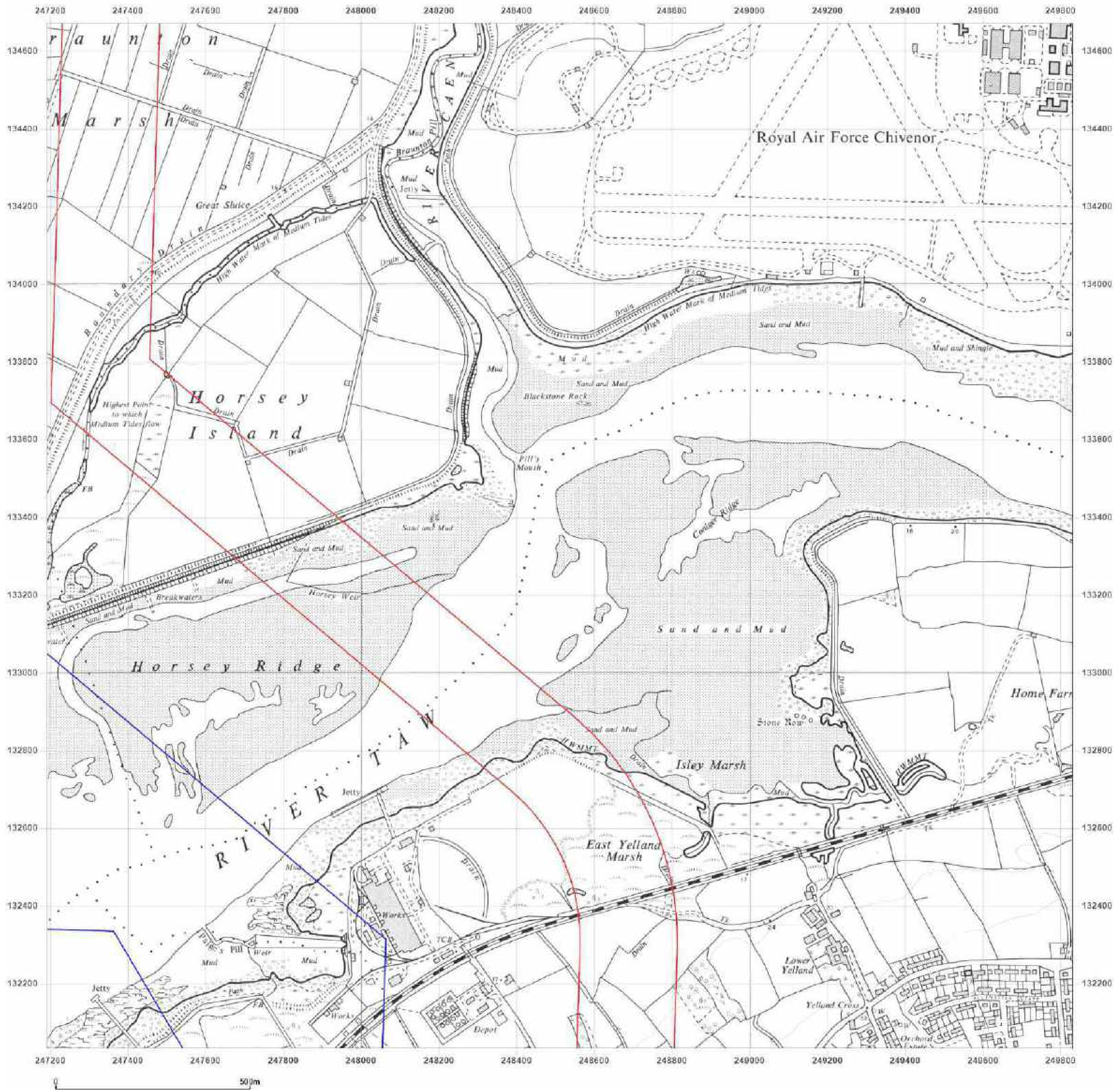
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: Provisional

Map date: 1969

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Powered by OS

Produced by
Groundsure Insights
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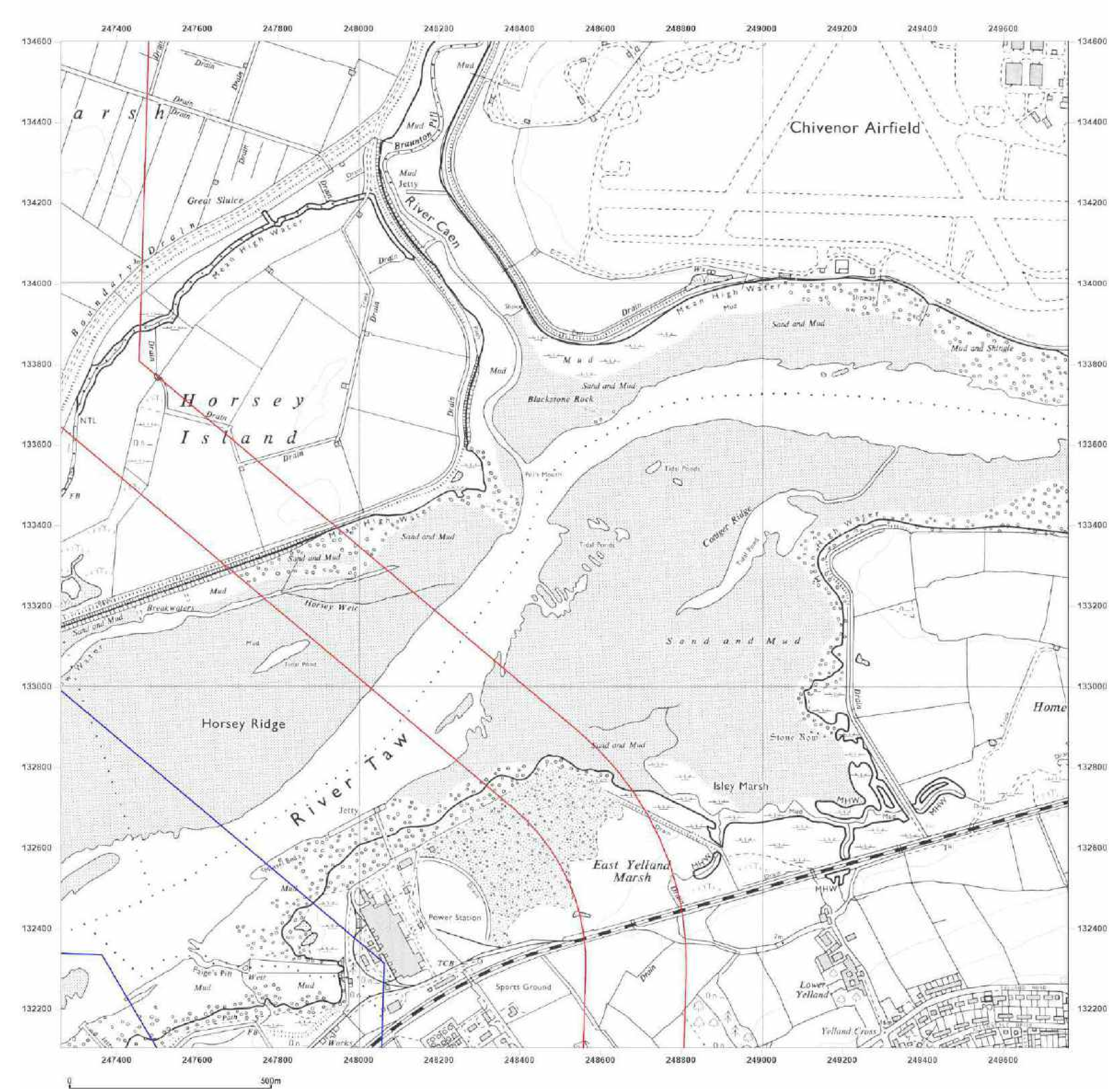
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: National Grid

Map date: 1981

Scale: 1:10,000

Printed at: 1:10,000

N
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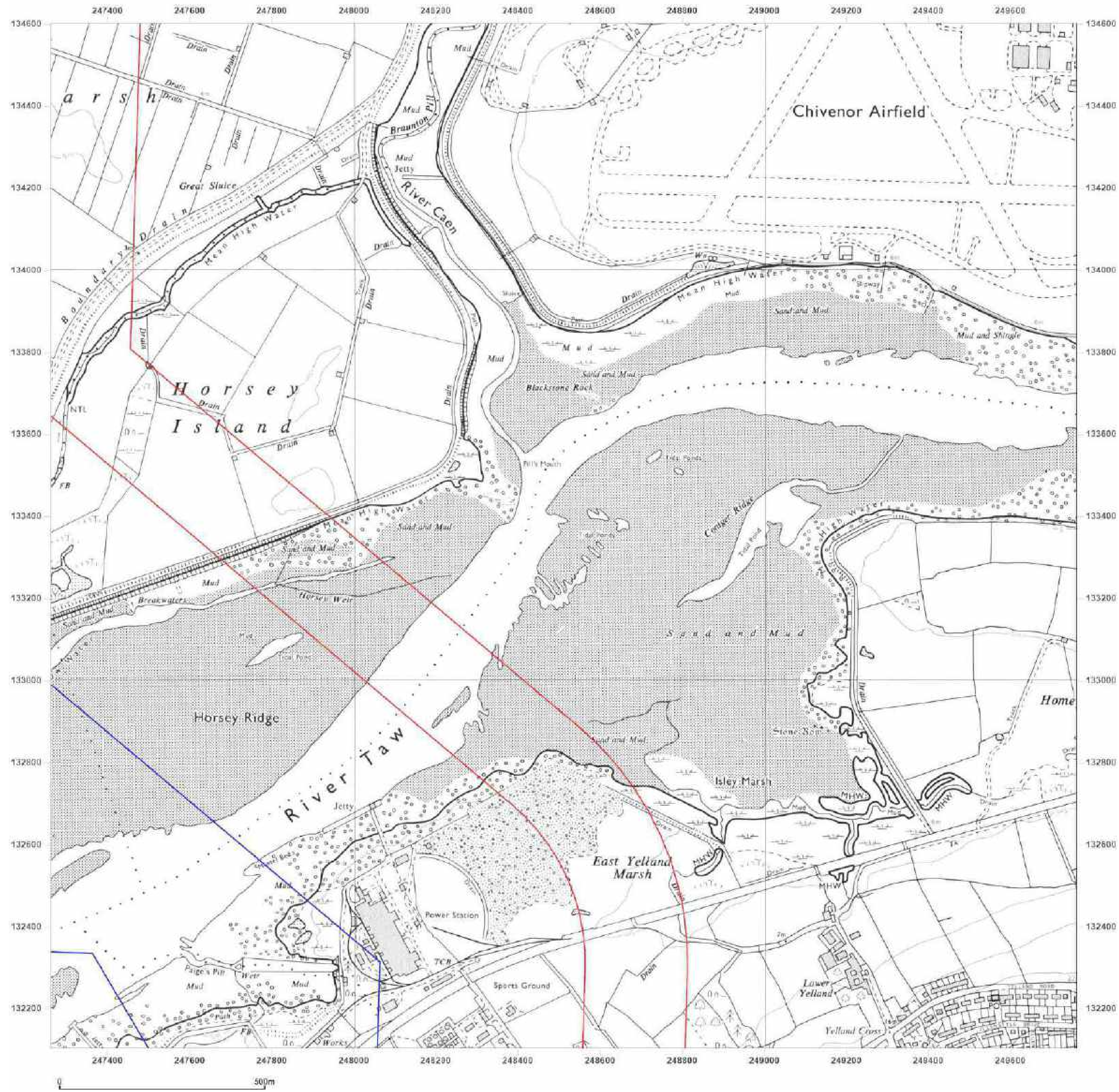
Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

Powered by OS

Produced by
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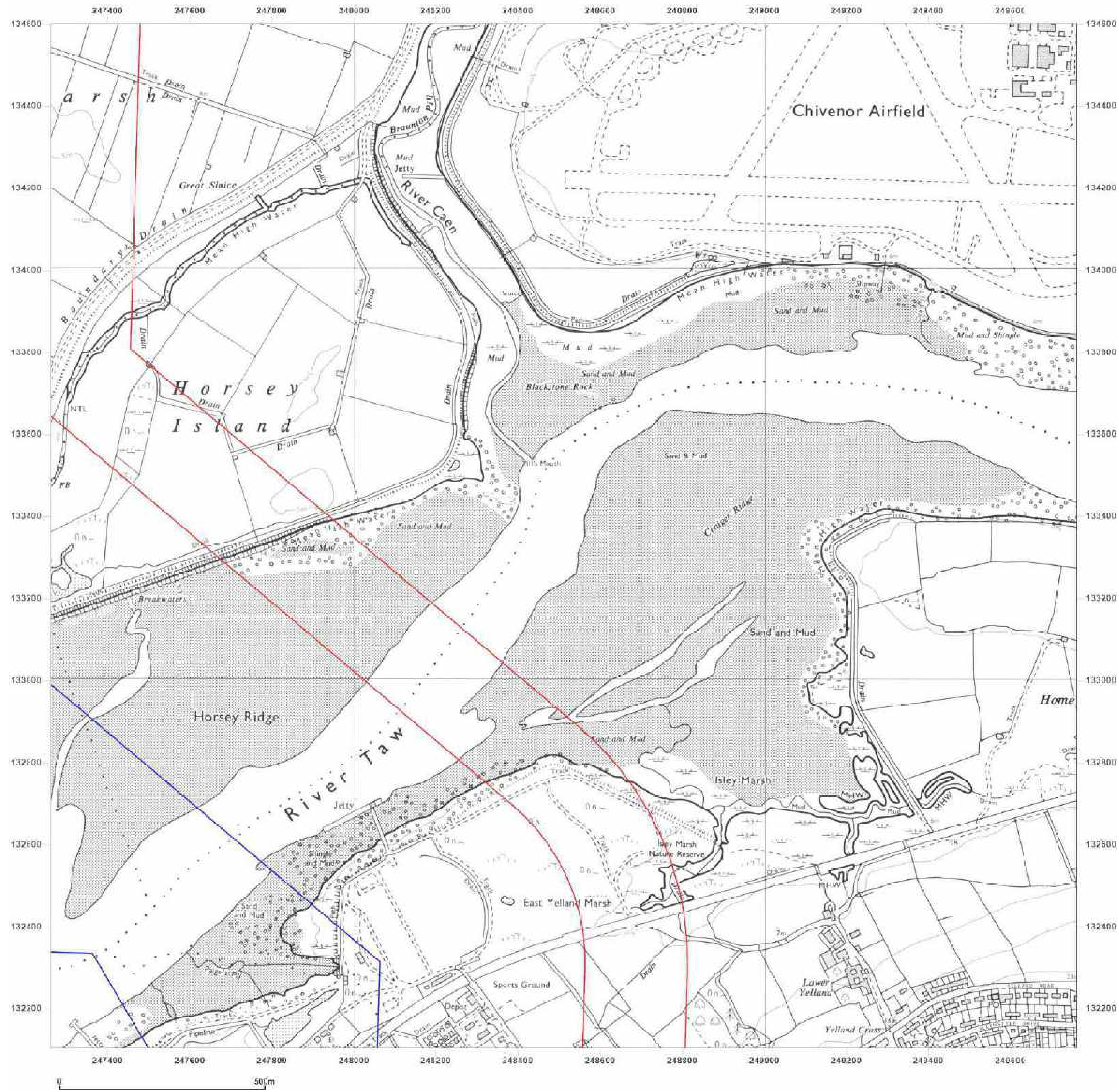
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000

N W E S

Powered by OS

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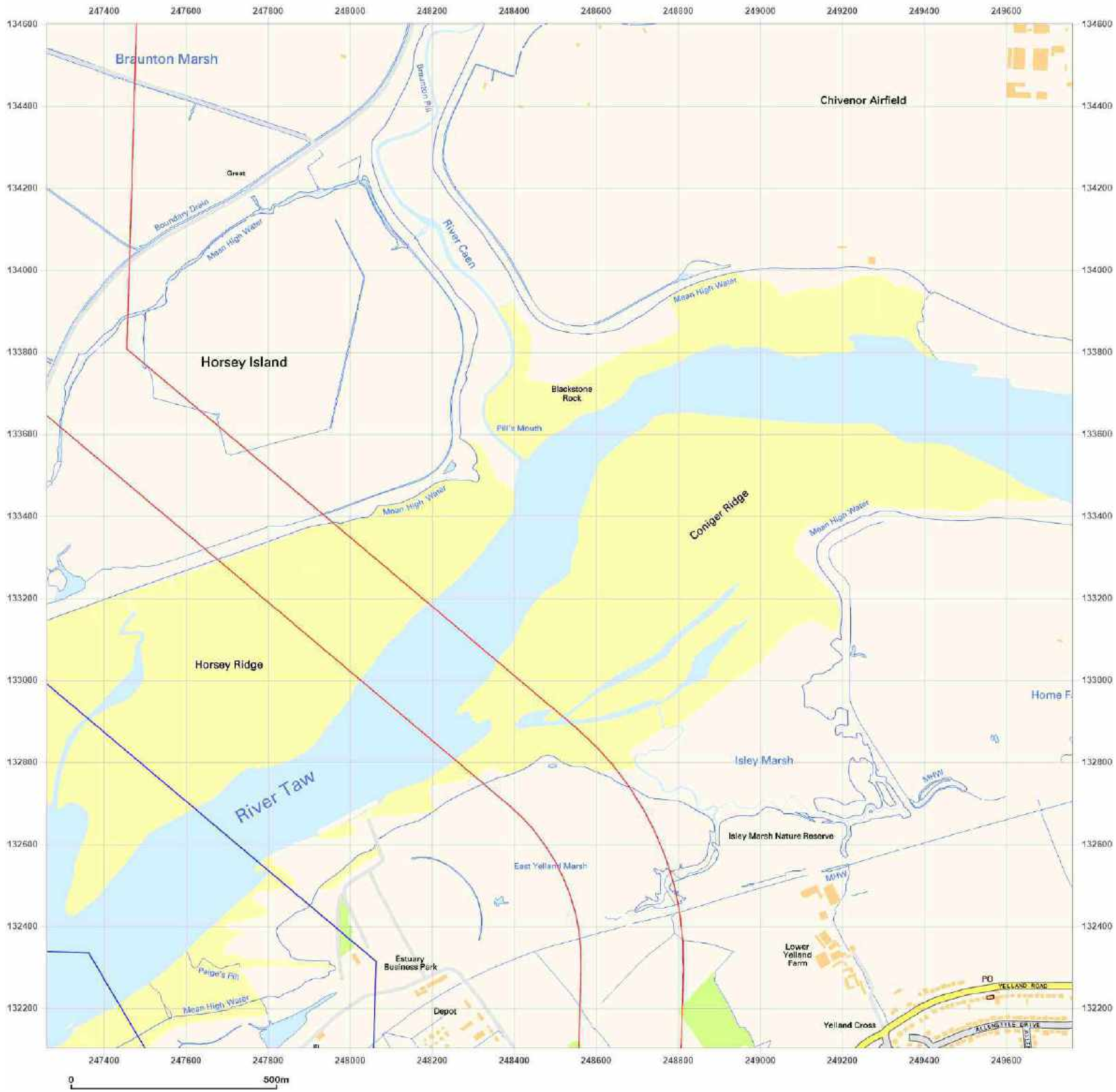
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2001

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
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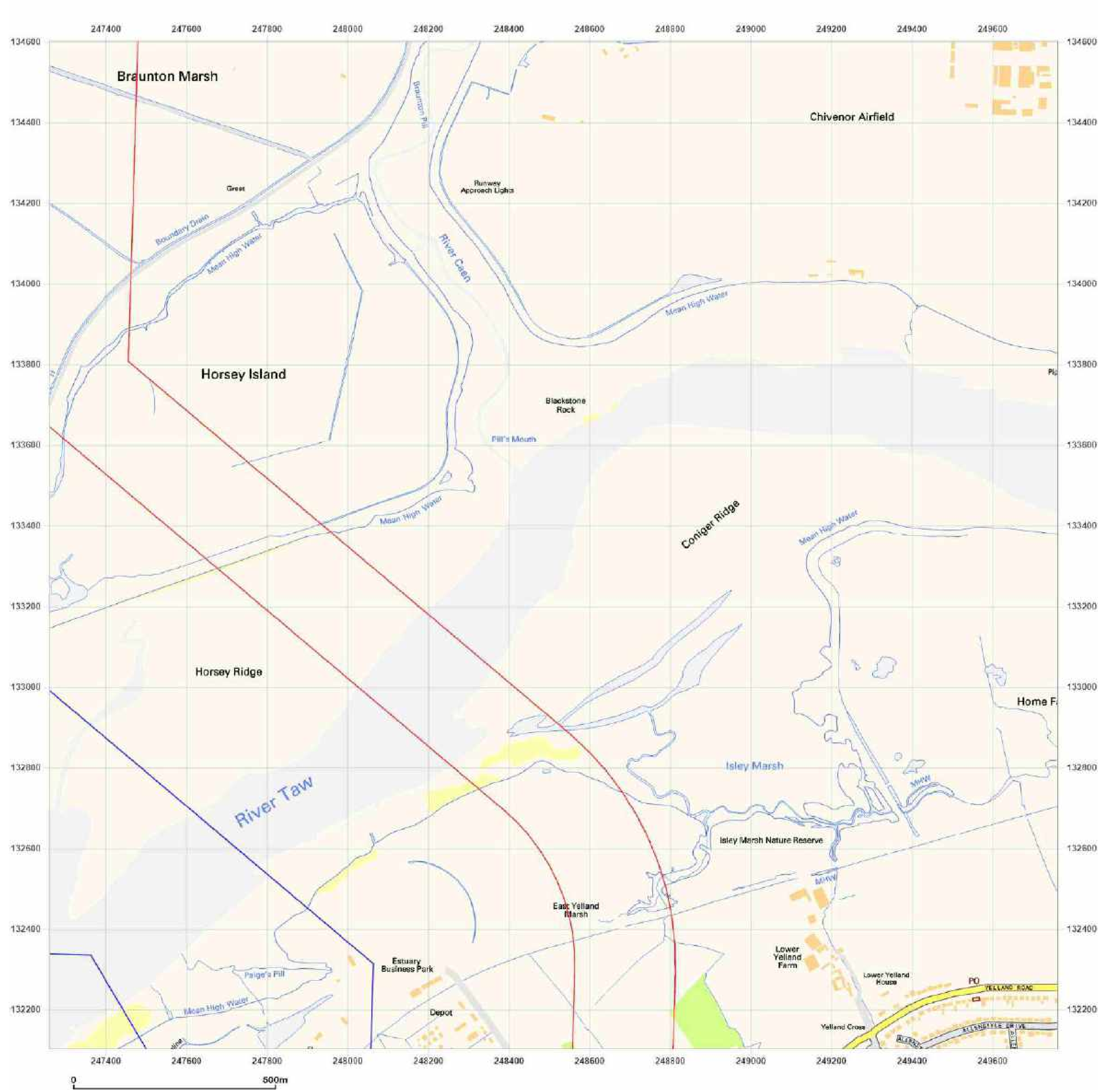
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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2010

Powered by

Produced by
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T: 08444 159000
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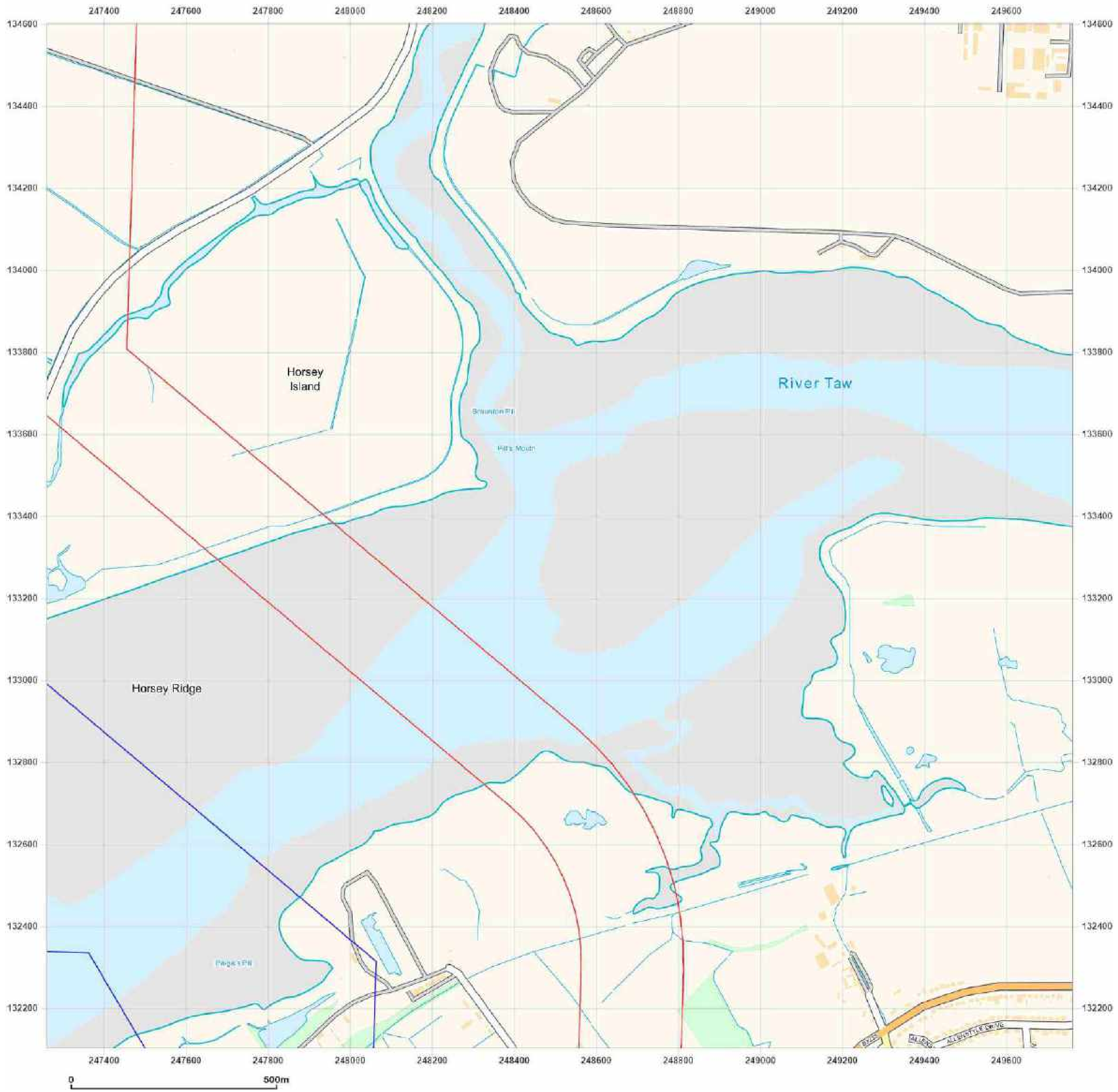
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_2
Grid Ref: 248511, 133352

Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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2022

Powered by

Produced by
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T: 08444 159000
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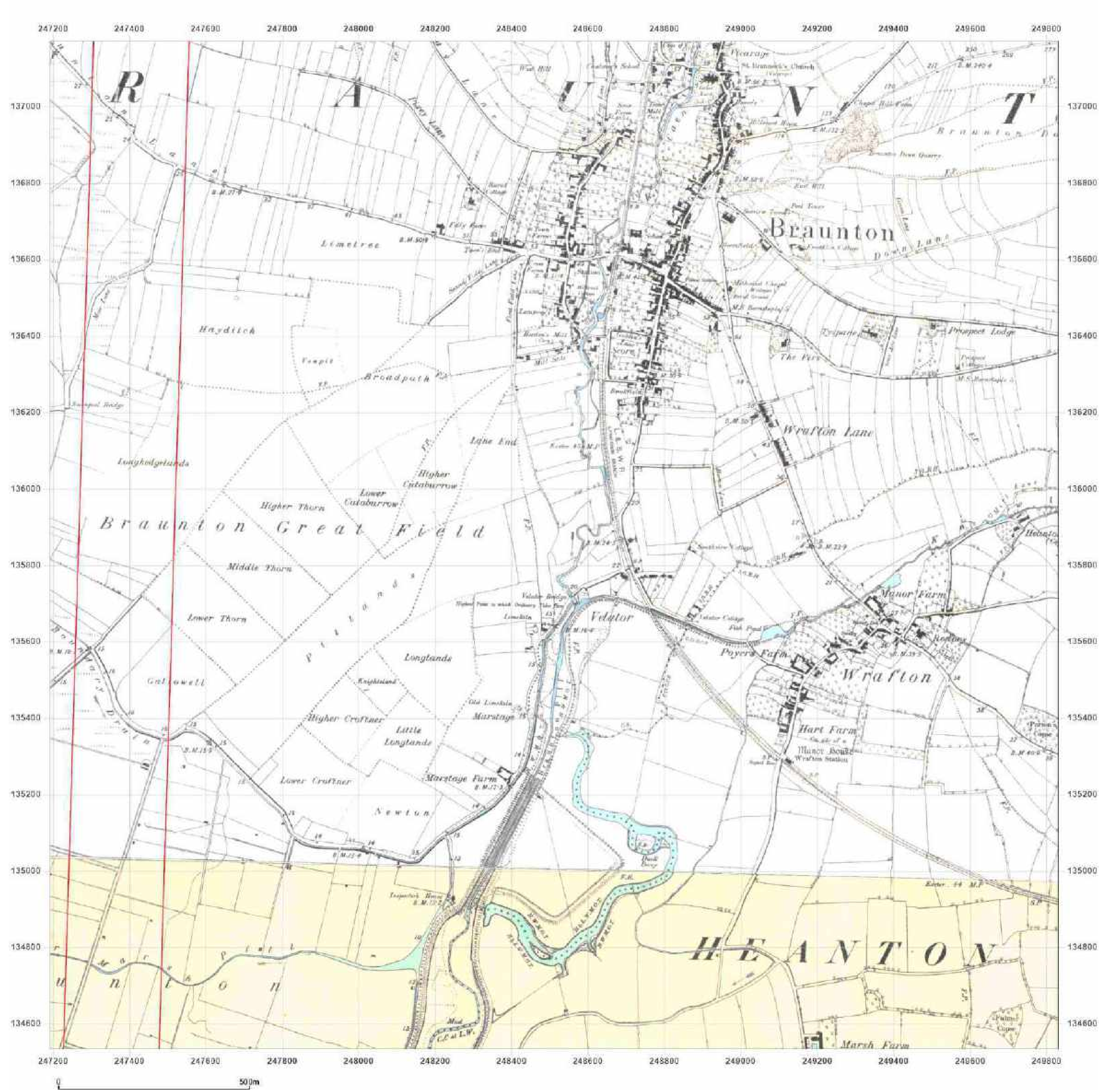
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

Map Name: County Series

Map date: 1887

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

Map Name: County Series

Map date: 1905

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1887
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
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E: info@groundsure.com
W: www.groundsure.com

Production date: 05 May 2022

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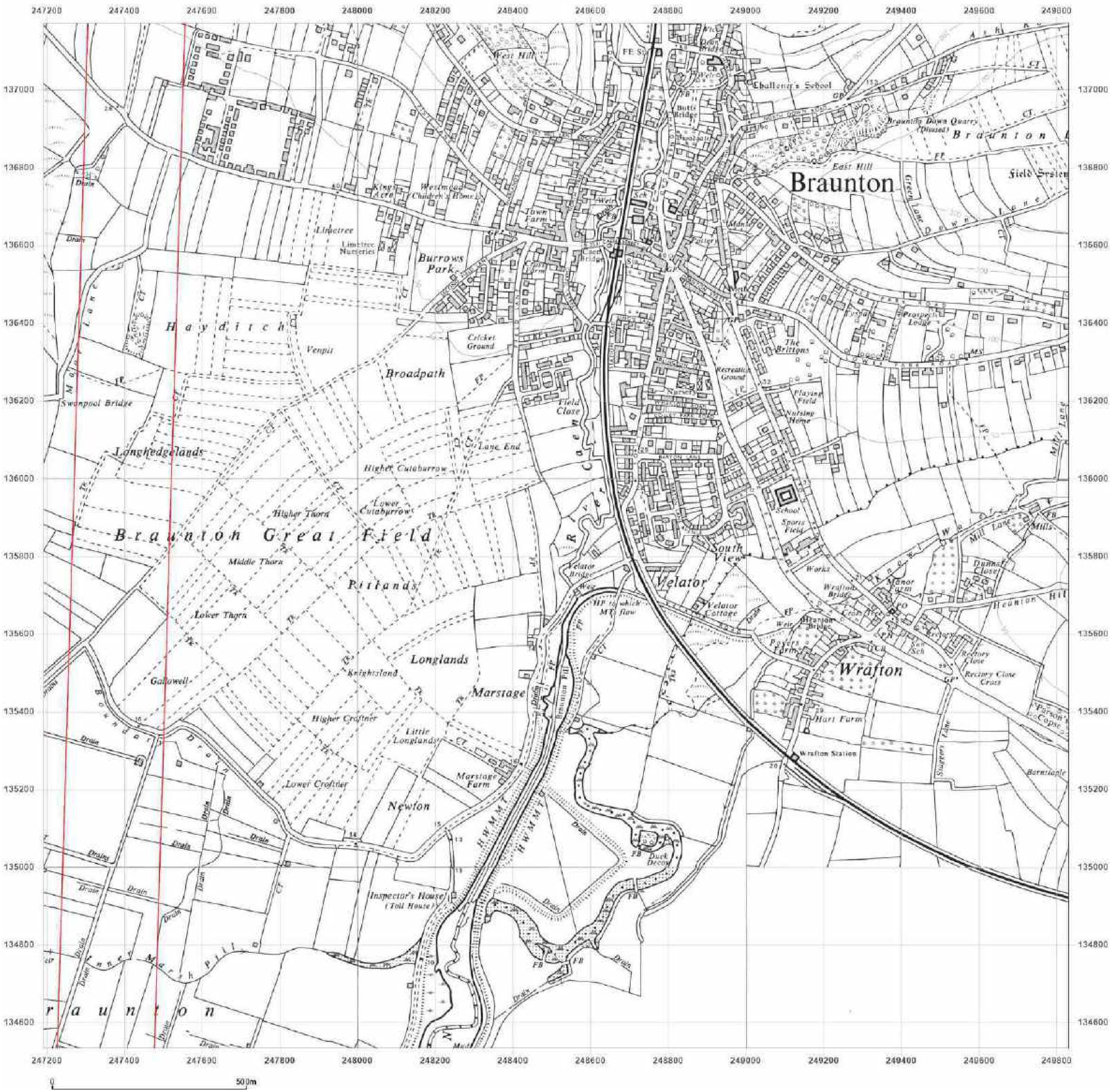


Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

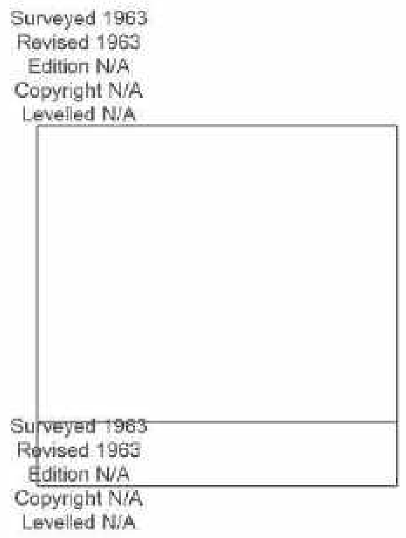
Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
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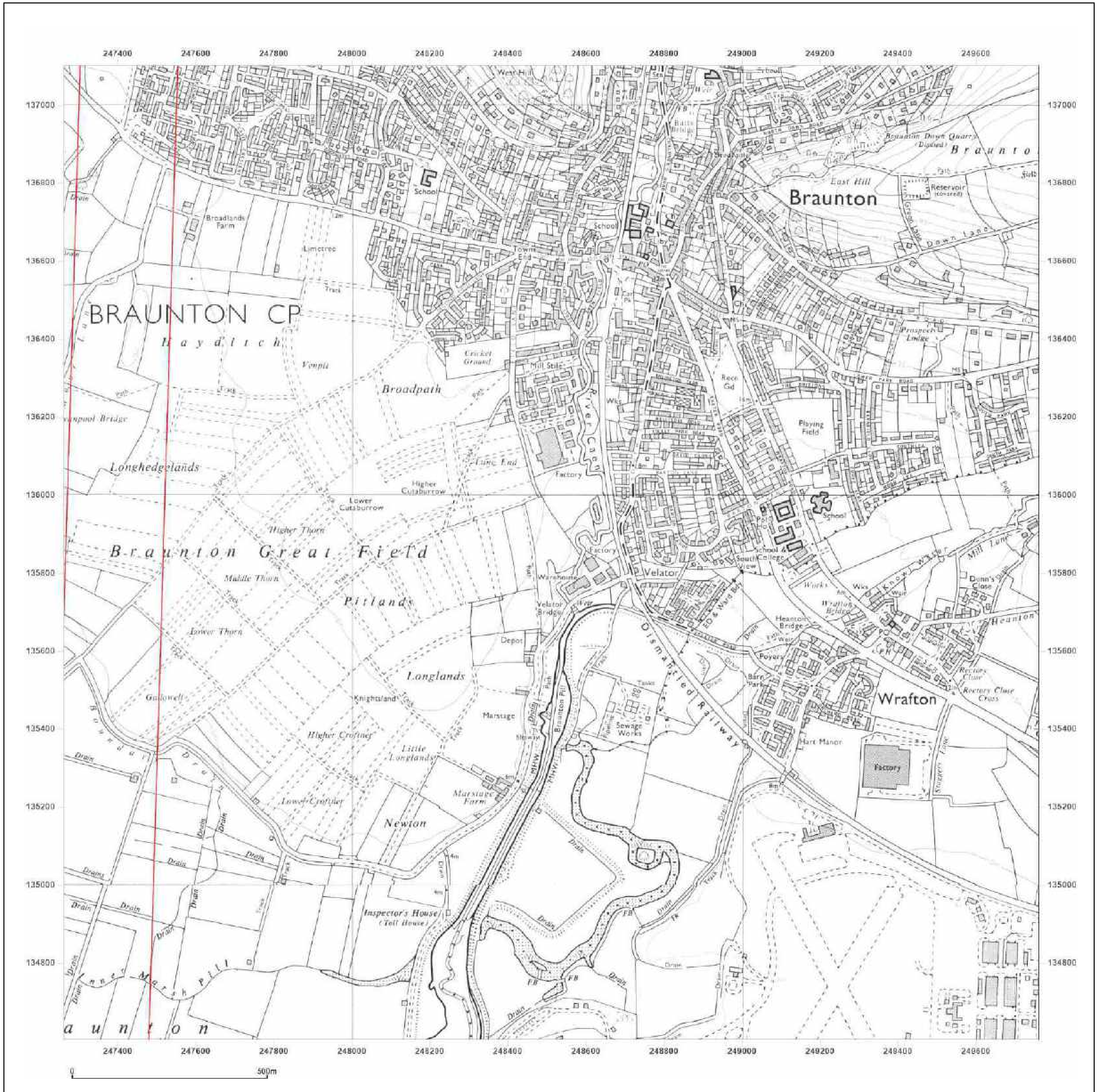
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

Map Name: National Grid

Map date: **1981-1982**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

Powered by OS

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Production date: 05 May 2022

Map legend available at:
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Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1977
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
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W: www.groundsure.com

Production date: 05 May 2022

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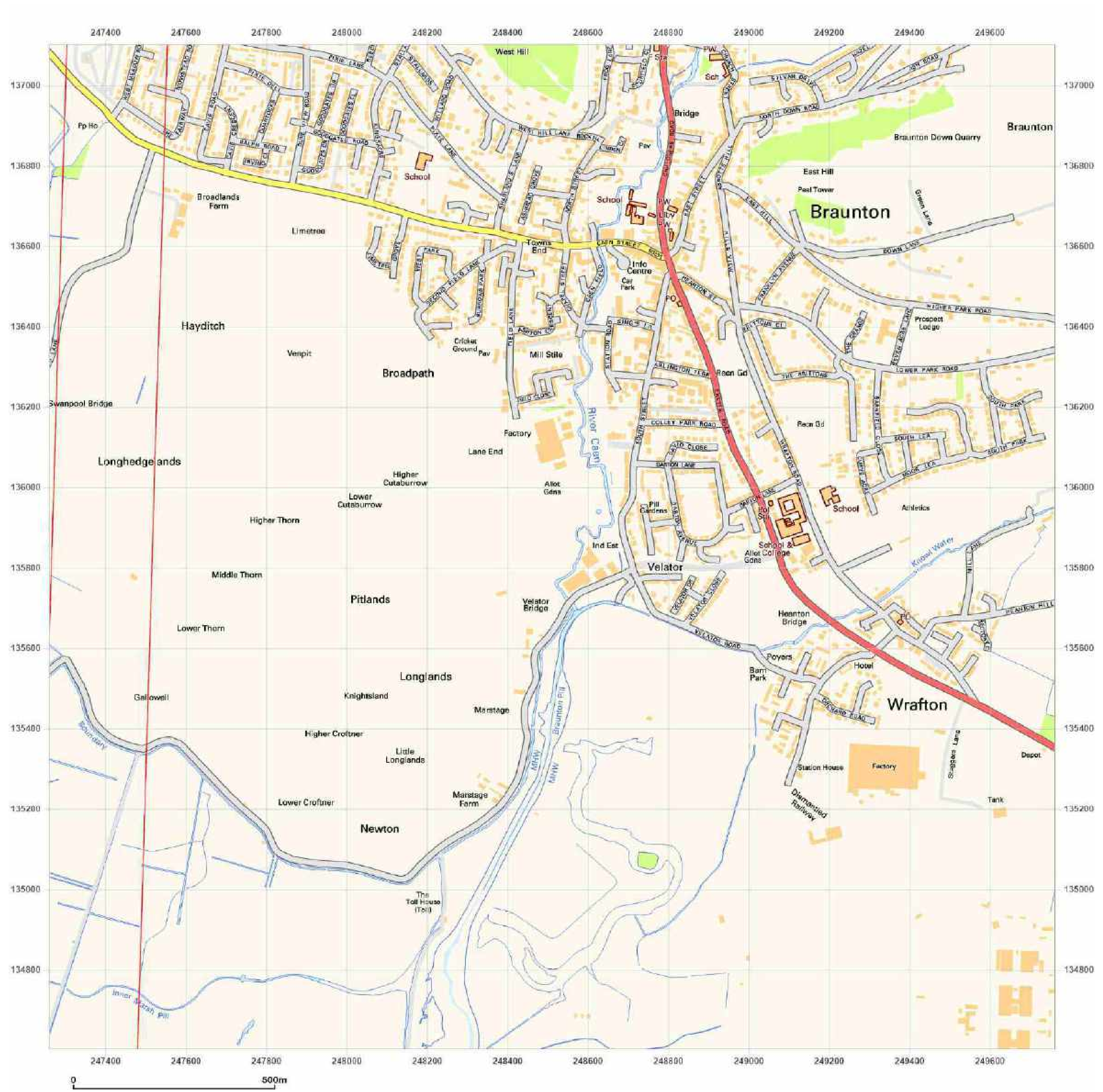

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
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2001

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
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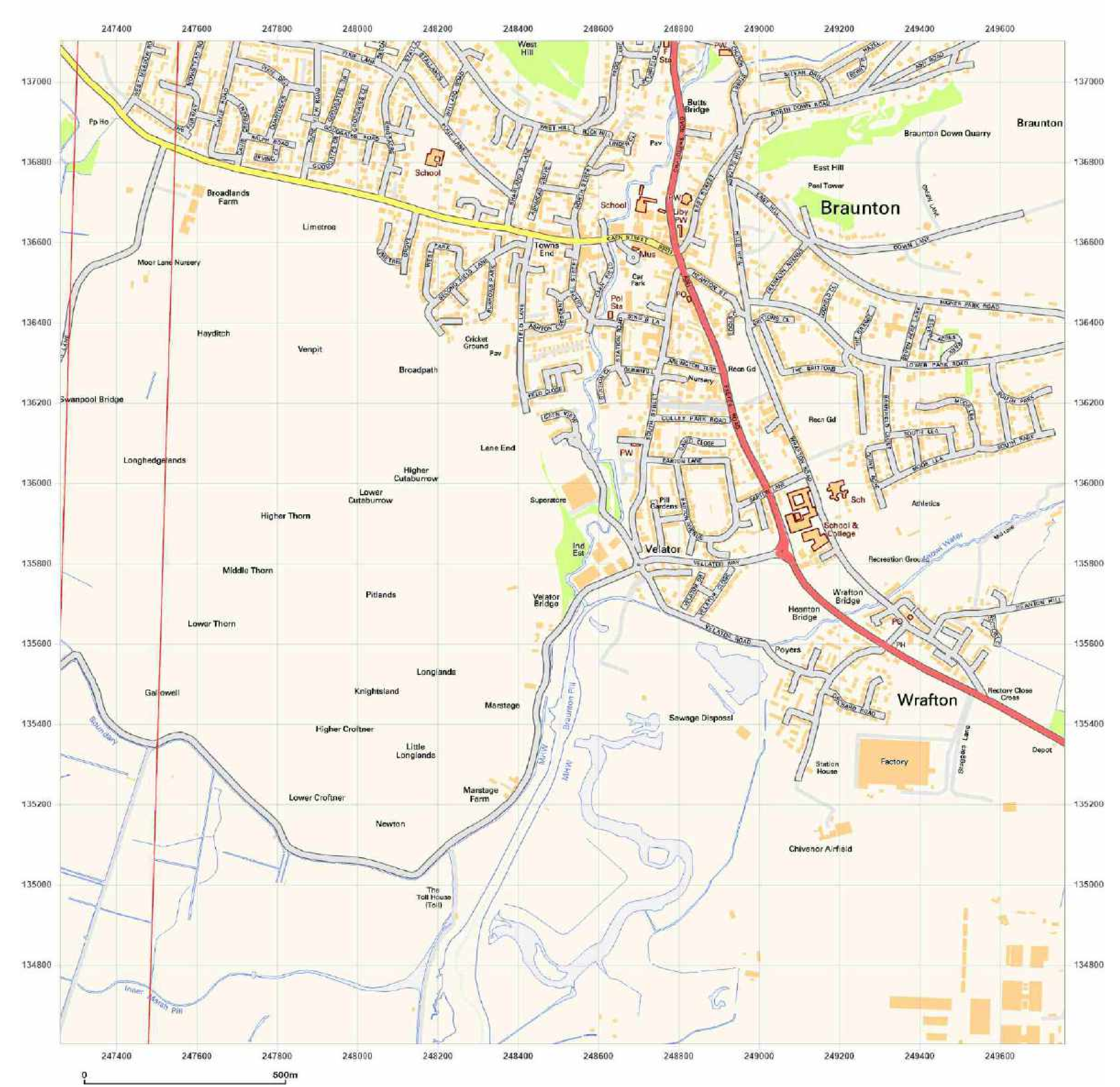

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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2010

Powered by OS

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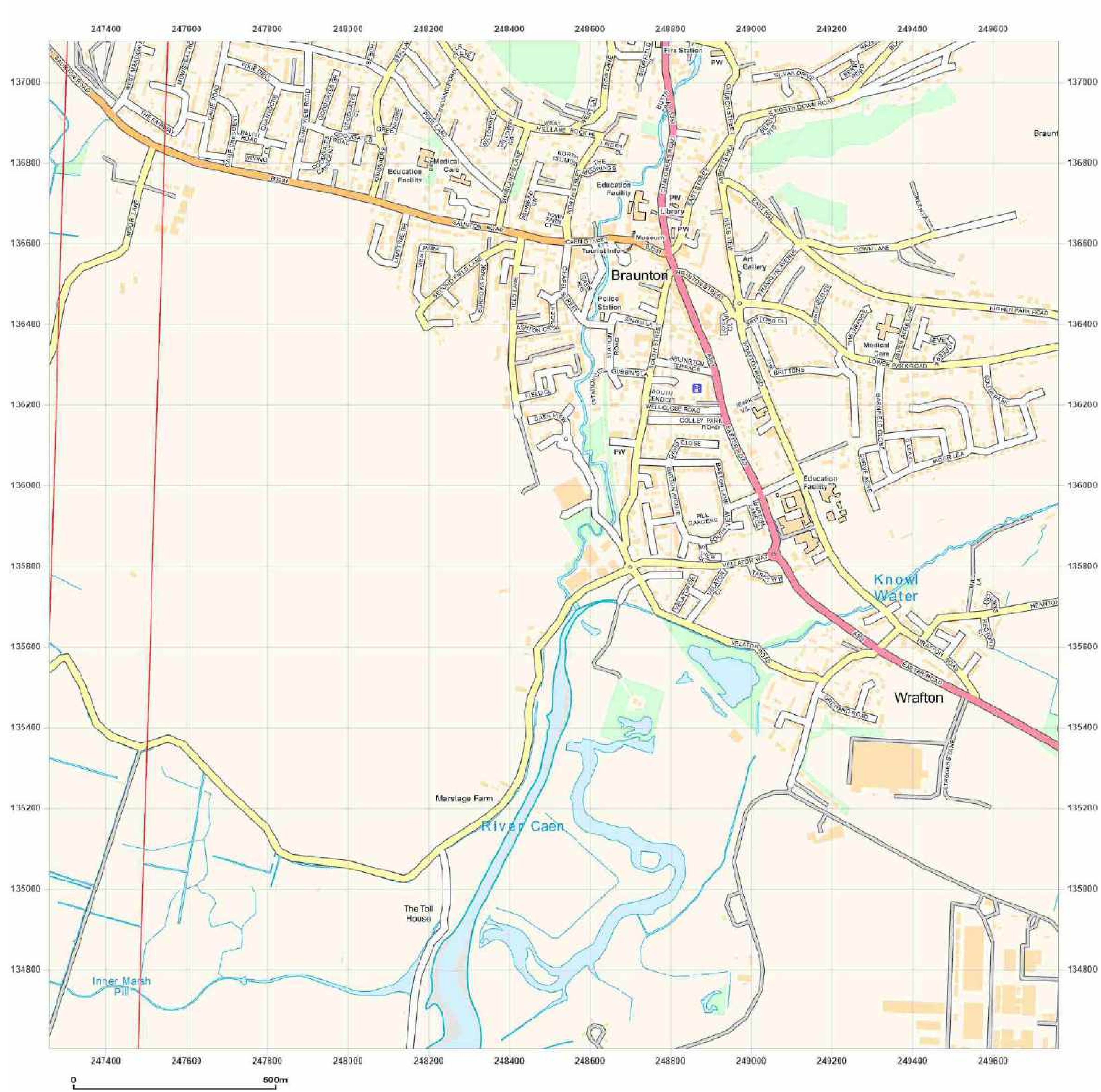
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



GROUNDSURE INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_3
Grid Ref: 248511, 135852

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000

N
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2022

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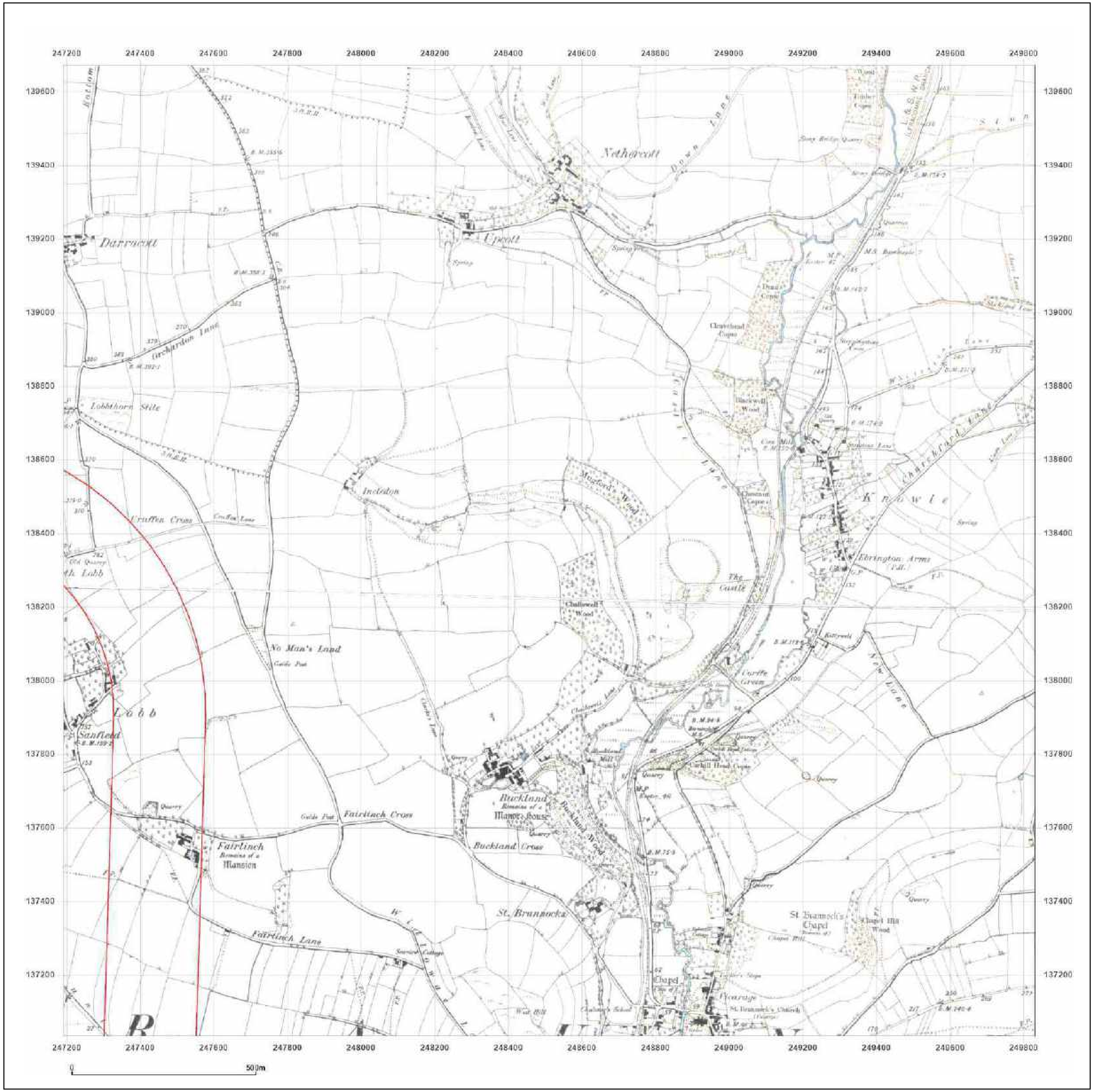
Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: County Series

Map date: **1886-1887**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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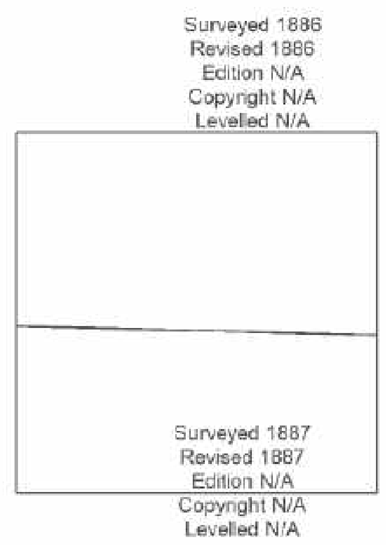

Powered by OS

Produced by
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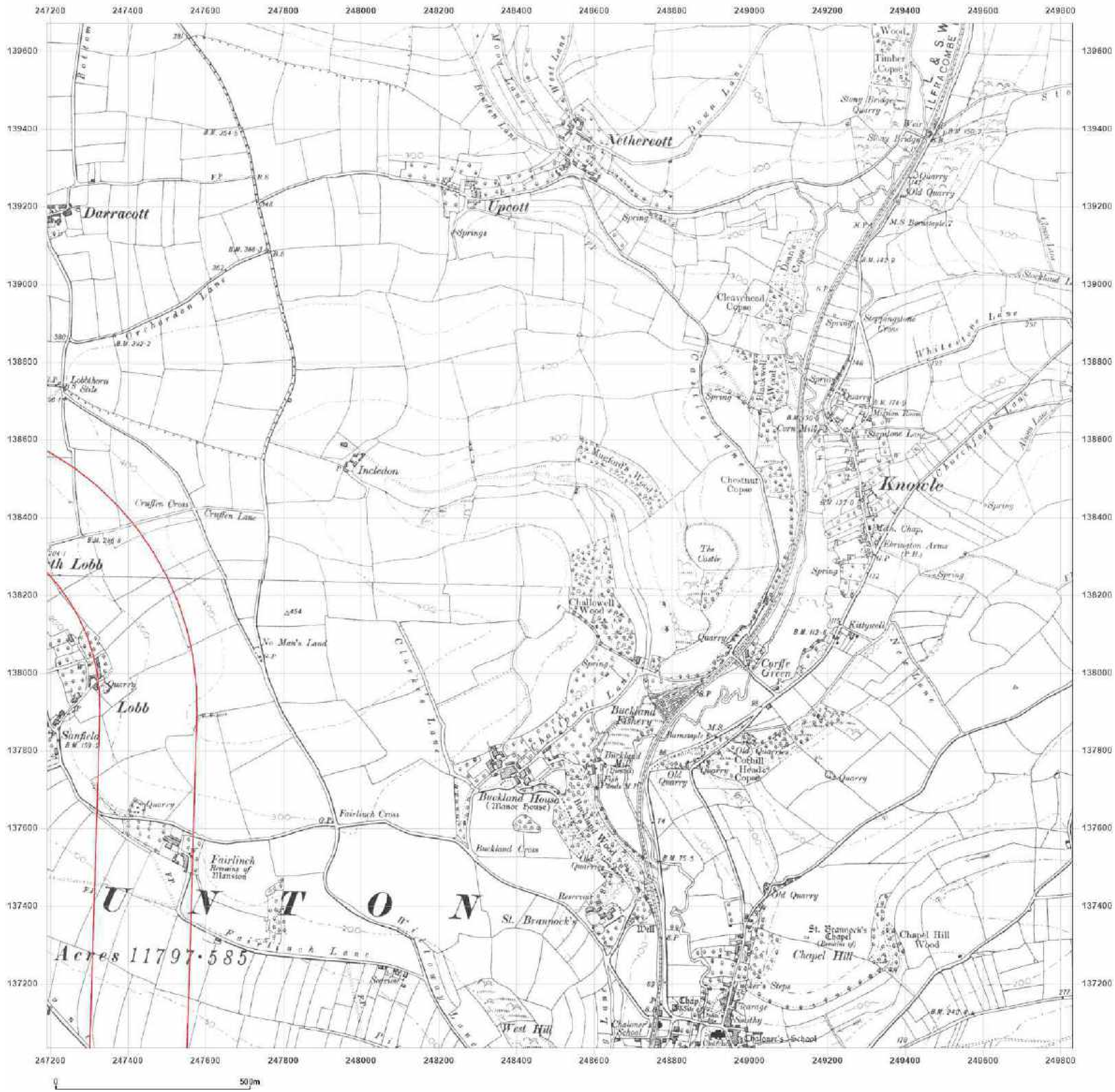
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: County Series

Map date: 1905

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1886
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

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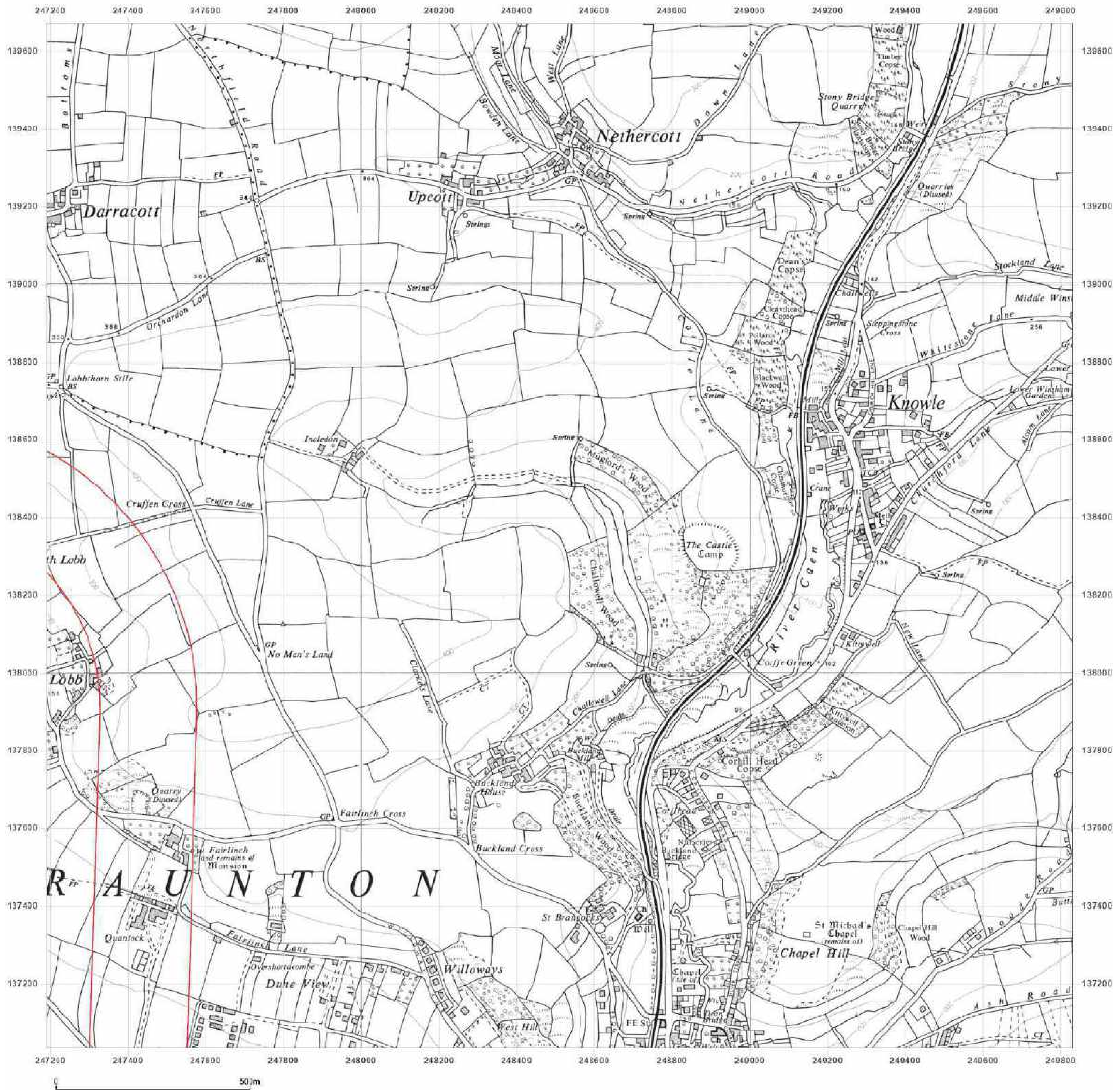
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: Provisional

Map date: **1963**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
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E: info@groundsure.com
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: National Grid

Map date: **1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1982
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

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W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
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Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000

Powered by OS

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W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
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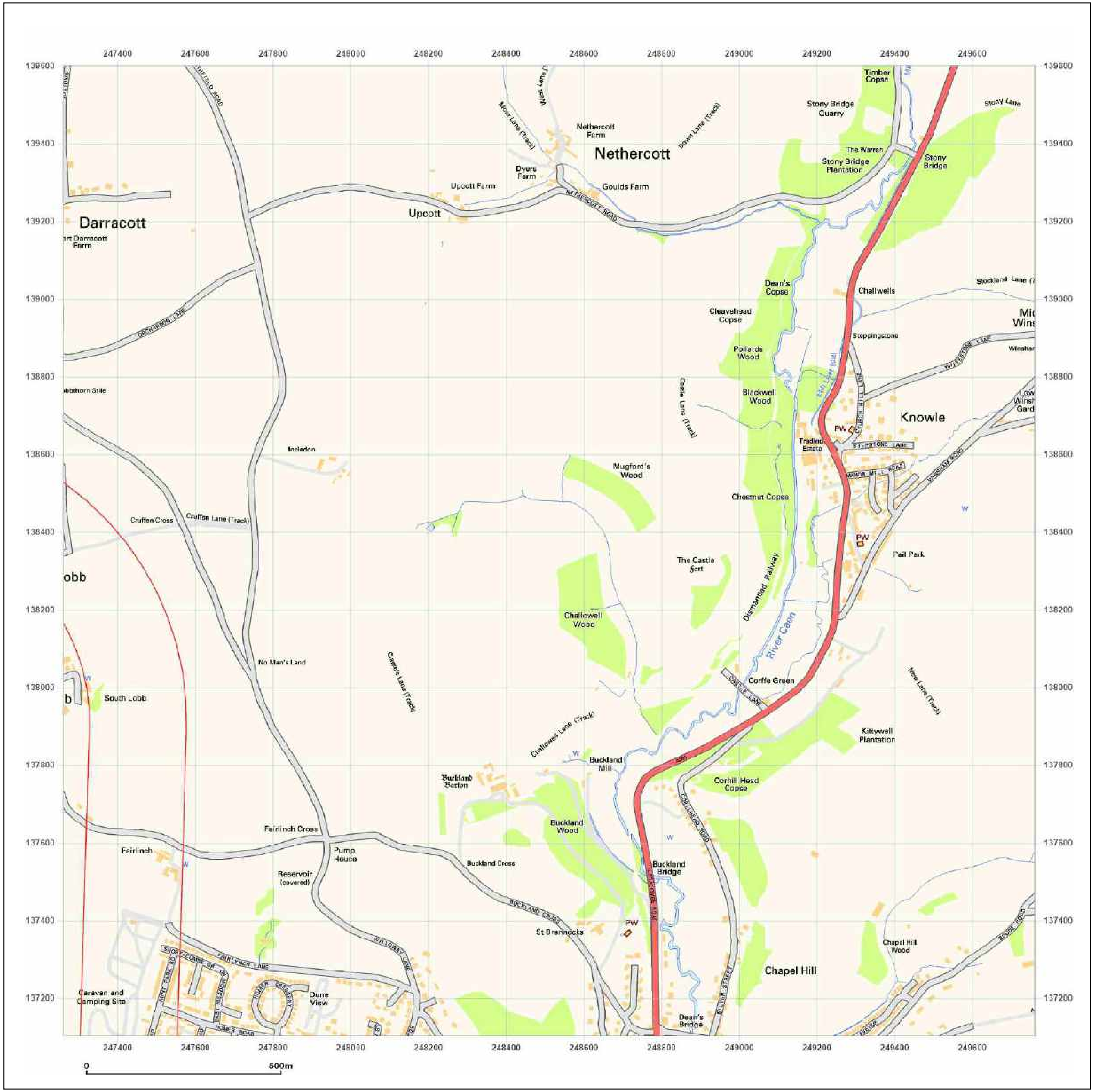

Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

N
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2001

Powered by OS

Produced by
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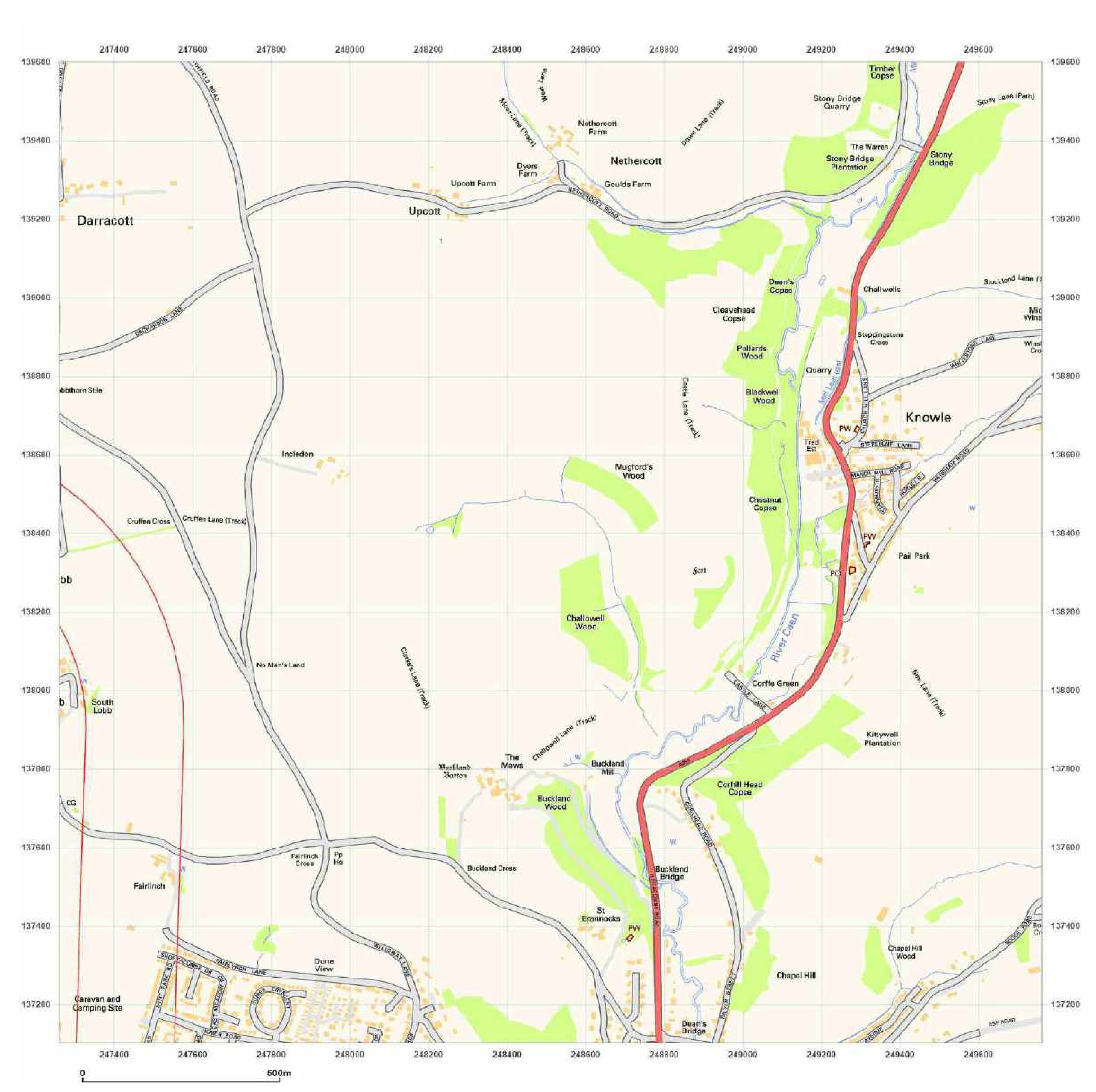
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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2010

Powered by OS

Produced by
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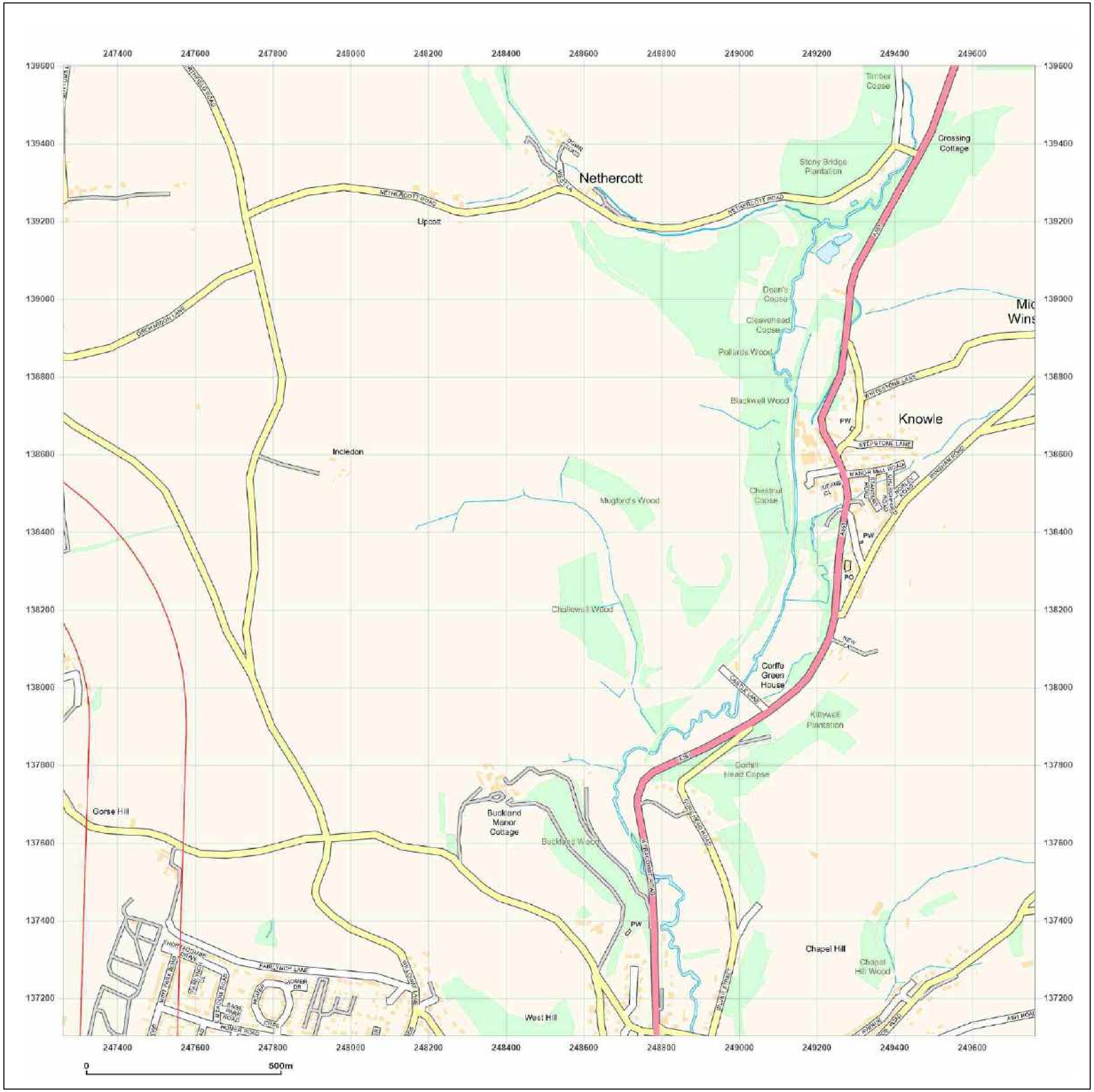
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Braunton Burrows Cable

Client Ref: Braunton Burrows Cable
Report Ref: GSIP-2022-12715-10376_SS_3_4
Grid Ref: 248511, 138352

Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

Printed at: 1:10,000

2022

Powered by OS

Produced by
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W: www.groundsure.com

Production date: 05 May 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

E. Generic Assessment Criteria

Waterman's Generic Assessment Criteria (GACs)

Waterman have used the following hierarchy for the generic assessment of soils to evaluate Human Health.

- Suitable 4 Use Screening Levels (S4USLs) derived by LQM/CIEH; or in their absence;
- Published Soil Guideline Values (SGVs);
- GAC prepared in accordance with the CLEA v1.04 / v1.06 model by authoritative bodies (e.g. Contaminated Land Applications in Real Environments (CL:AIRE) 2009; and
- Waterman in-house GAC prepared in accordance with the CLEA V1.06 model and associated documents.

Tabulated values of the GACs used are presented overleaf. The references of the sources quoted in the table are:-

Environment Agency, 2009. CLEA Software, version 1.06;

DEFRA, Environment Agency, 2004. Model Procedures for the Management of Land Contamination, Contaminated Land Report 11;

LQM / CIEH, 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment;

Environment Agency, 2009. Human health toxicological assessment of contaminants in soil. Report SC050021/SR2;

Environment Agency, 2009. Updated technical background to the CLEA model. Report SC050021/SR3;

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Detailed Quantitative Risk Assessment (DQRA)

Detailed Quantitative Risk Assessments are undertaken on a site specific basis and full details of the alterations to the CLEA model and generic land use scenarios will be described within the specific reports.

Generic Quantitative Risk Assessment Criteria

Proposed End Use		Residential with plant uptake			
Soil Organic Matter Content		**1**	**2.5**	**6**	
Arsenic	mg/kg	32	32	32	CLEA SGV 2009
Antimony	mg/kg	550	550	550	CL:AIRE 2009
Barium	mg/kg	1300	1300	1300	CL:AIRE 2009
Beryllium	mg/kg	1.7	1.7	1.7	LQM S4ULs 2015
Boron (Water Soluble)	mg/kg	290	290	290	LQM S4ULs 2015
Cadmium	mg/kg	10	10	10	CLEA SGV 2009
Chromium (Total)	mg/kg	910	910	910	LQM S4ULs 2015
Chromium (VI)	mg/kg	4.3	4.3	4.3	LQM / CIEH
Copper	mg/kg	2400	2400	2400	LQM S4ULs 2015
Lead	mg/kg	450	450	450	V 2002 (withdrawn in 2008)
Mercury	mg/kg	1.2	1.2	1.2	LQM S4ULs 2015
Nickel	mg/kg	130	130	130	LQM S4ULs 2015
Selenium	mg/kg	250	250	250	LQM S4ULs 2015
Vanadium*	mg/kg	410	410	410	LQM S4ULs 2015
Zinc	mg/kg	3700	3700	3700	LQM S4ULs 2015
Cyanide (Free)	mg/kg	26	26	26	Waterman GAC - CLEA v1.06

Complex Cyanide	mg/kg	63000	63000	63000	ın GAC - CLEA v1.06
Thiocyanate	mg/kg	230	230	230	ın GAC - CLEA v1.06
Aliphatic EC5 - EC6	mg/kg	42	78	160	LQM S4ULs 2015
Aliphatic EC6 - EC8	mg/kg	100	230	530	LQM S4ULs 2015
Aliphatic EC8-EC10	mg/kg	27	65	150	LQM S4ULs 2015
Aliphatic EC10-EC12	mg/kg	130	330	760	LQM S4ULs 2015
Aliphatic EC12-EC16	mg/kg	1100	2400	4300	LQM S4ULs 2015
Aliphatic EC16-EC35	mg/kg	65000	92000	110000	LQM S4ULs 2015
Aliphatic EC35-EC44	mg/kg	65000	92000	110000	LQM S4ULs 2015
Aromatic C5-C7	mg/kg	70	140	300	LQM S4ULs 2015
Aromatic C7-C8	mg/kg	130	290	660	LQM S4ULs 2015
Aromatic C8-C10	mg/kg	34	83	190	LQM S4ULs 2015
Aromatic C10-C12	mg/kg	74	180	380	LQM S4ULs 2015
Aromatic C12-C16	mg/kg	140	330	660	LQM S4ULs 2015
Aromatic C16-C21	mg/kg	260	540	930	LQM S4ULs 2015
Aromatic C21-C35	mg/kg	1100	1500	1700	LQM S4ULs 2015
Aromatic C35-C44	mg/kg	1100	1500	1700	LQM S4ULs 2015
Benzene	mg/kg	0.087	0.17	0.37	LQM S4ULs 2015
Toluene	mg/kg	130	290	660	LQM S4ULs 2015
Ethyl Benzene	mg/kg	47	110	260	LQM S4ULs 2015

Xylene - o	mg/kg	59	140	320	LQM S4ULs 2015
Xylene - m	mg/kg	60	140	330	LQM S4ULs 2015
Xylene - p	mg/kg	56	130	310	LQM S4ULs 2015
MTBE (Methyl tert-butyl ether)	mg/kg	49	84	160	CL:AIRE 2009
Naphthalene	mg/kg	2.3	5.6	13	LQM S4ULs 2015
Acenaphthylene	mg/kg	170	420	920	LQM S4ULs 2015
Acenaphthene	mg/kg	210	510	1100	LQM S4ULs 2015
Fluorene	mg/kg	170	400	860	LQM S4ULs 2015
Phenanthrene	mg/kg	95	220	440	LQM S4ULs 2015
Anthracene	mg/kg	2400	5400	11000	LQM S4ULs 2015
Fluoranthene	mg/kg	280	560	890	LQM S4ULs 2015
Pyrene	mg/kg	620	1200	2000	LQM S4ULs 2015
Benzo(a)anthracene	mg/kg	7.2	11	13	LQM S4ULs 2015
Chrysene	mg/kg	15	22	27	LQM S4ULs 2015
Benzo(b)fluoranthene	mg/kg	2.6	3.3	3.7	LQM S4ULs 2015
Benzo(k)fluoranthene	mg/kg	77	93	100	LQM S4ULs 2015
Benzo(a)pyrene	mg/kg	2.2	2.7	3	LQM S4ULs 2015
Indeno(1,2,3-cd)pyrene	mg/kg	27	36	41	LQM S4ULs 2015
Di-benzo(a.h.)anthracene	mg/kg	0.24	0.28	0.3	LQM S4ULs 2015
Benzo(g.h.i.) Perylene	mg/kg	320	340	350	LQM S4ULs 2015

Phenol	mg/kg	280	550	1100	LQM S4ULs 2015
Pentachlorophenol (PCP)	mg/kg	0.22	0.52	1.2	LQM S4ULs 2015
1,1,2,2 Tetrachloroethane	mg/kg	1.6	3.4	7.5	LQM S4ULs 2015
1,1,1,2 Tetrachloroethane	mg/kg	1.2	2.8	6.4	LQM S4ULs 2015
1,1,1 Trichloroethane	mg/kg	8.8	18	39	LQM S4ULs 2015
Trichloroethene	mg/kg	0.016	0.034	0.075	LQM S4ULs 2015
Tetrachloromethane (Carbon Tetrachloride)	mg/kg	0.026	0.056	0.13	LQM S4ULs 2015
1,2- Dichloroethane	mg/kg	0.0071	0.011	0.019	LQM S4ULs 2015
Chloroethene (Vinyl chloride)	mg/kg	0.00064	0.00087	0.0014	LQM S4ULs 2015
Trichloroethene	mg/kg	0.016	0.034	0.075	LQM S4ULs 2015
Tetrachloroethene	mg/kg	0.18	0.39	0.9	LQM S4ULs 2015
Trichloromethane (Chloroform)	mg/kg	0.91	1.7	3.4	LQM S4ULs 2015
Sum of PCDDs, PCDFs and dioxins like PCBs	mg/kg			8	CLEA SGVs 2009
Isopropylbenzene	mg/kg	11	27	64	CL:AIRE 2009
Propylbenzene	mg/kg	34	82	190	CL:AIRE 2009
Styrene	mg/kg	8.1	19	43	CL:AIRE 2009
Bromobenzene	mg/kg	0.87	2	4.7	CL:AIRE 2009
1,1,2 Trichloroethane	mg/kg	0.6	1.2	2.7	CL:AIRE 2009

1,1-Dichloroethane	mg/kg	2.4	3.9	7.4	CL:AIRE 2009
1,1-Dichloroethene	mg/kg	0.23	0.4	0.82	CL:AIRE 2009
1,2,4-Trimethylbenzene	mg/kg	0.35	0.85	2	CL:AIRE 2009
1,2-Dichloropropane	mg/kg	0.024	0.042	0.084	CL:AIRE 2009
2-Chloronaphthalene	mg/kg	3.7	9.2	22	CL:AIRE 2009
Bromodichloromethane	mg/kg	0.016	0.03	0.061	CL:AIRE 2009
Bromoform	mg/kg	2.8	5.9	13	CL:AIRE 2009
Chloroethane	mg/kg	8.3	11	18	CL:AIRE 2009
Chloromethane	mg/kg	0.0083	0.0098	0.013	CL:AIRE 2009
Cis 1,2 Dichloroethene	mg/kg	0.11	0.19	0.37	CL:AIRE 2009
Dichloromethane	mg/kg	0.58	0.98	1.7	CL:AIRE 2009
Hexachloroethane	mg/kg	0.2	0.48	1.1	CL:AIRE 2009
Trans 1,2 Dichloroethene	mg/kg	0.19	0.34	0.7	CL:AIRE 2009
Bis (2-ethylhexyl) phthalate	mg/kg	280	610	1100	CL:AIRE 2009
Butyl benzyl phthalate	mg/kg	1400	3300	7200	CL:AIRE 2009
Diethyl Phthalate	mg/kg	120	260	570	CL:AIRE 2009
Di-n-butyl phthalate	mg/kg	13	31	67	CL:AIRE 2009
Di-n-octyl phthalate	mg/kg	2300	2800	3100	CL:AIRE 2009
Biphenyl	mg/kg	66	160	360	CL:AIRE 2009
2,4-Dinitrotoluene	mg/kg	1.5	3.2	7.2	CL:AIRE 2009

2,6-Dinitrotoluene	mg/kg	0.78	1.7	3.9	CL:AIRE 2009
Tributyl tin oxide	mg/kg	0.25	0.59	1.3	CL:AIRE 2009

Our vision

"Engineering a better environment for people and the planet"

Our mission

"To solve complex problems for the benefit of clients, communities and the climate"

Our values

People orientated

Individually and collectively, people are our business.
We strive to create environments for everyone to flourish and thrive.

Flexible

Pragmatic by nature and dedicated to getting the job done to the highest possible standard.

Professional

Operating at pace with integrity to deliver technical and robust solutions.

Environmentally aware

We understand our responsibility to the environment, it shapes our decision making and informs our practice.

Innovative

Our forensic questioning provides the ability to deliver appropriate innovations at every stage on every project.

Relationship focused

We value individuality and the benefits of working collaboratively to achieve positive outcomes for all.