



**Cambois Connection – Onshore Scheme
Environmental Statement Volume 3
Technical Appendix 11.2 Flood Risk
Assessment (Onshore Converter
Station)**



**Berwick Bank Converter Station
(Onshore Converter Station Zone)**
Flood Risk Assessment

On behalf of **Berwick Bank Wind Farm Limited**



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Executive Summary

This Flood Risk Assessment (FRA) has been prepared by Stantec UK Ltd to accompany an outline planning application for the proposed Onshore Converter Station Zone which forms part of the Onshore Scheme at Berwick Bank. The development is on land adjacent to the existing NSL (North Sea Link) UK Converter Station, East Sleekburn, Bedlington, Northumbria, near post code NE22 7FG.

This FRA covers the Onshore Converter Station Zone as part of the Onshore Scheme at Berwick Bank. Other FRAs have been prepared that cover the Landfall / HDVC Zone and the HVAC Zone,

In accordance with the fundamental objectives of the National Planning Policy Framework (NPPF), the FRA demonstrates that:

- (i) The development is safe;
- (ii) The development does not increase flood risk; and,
- (iii) The development does not detrimentally affect third parties.

The Environment Agency (EA) data confirms that the Onshore Converter Station Zone is located within Flood Zone 1 'low probability', defined as land having a less than 0.1% annual probability of river or sea flooding.

The River Blyth and Sleek Burn are located to the south of the Onshore Converter Station Zone and the River Wansbeck is located to the north. These watercourses have associated floodplains and areas within Flood Zones 2 and 3 (Medium and High Probability respectively), but these do not extend to the Onshore Converter Station Zone.

The Flood Zone classification ignores the presence of defences and the EA mapping confirms the Onshore Converter Station Zone is not in an area benefitting from such defences. The Level 1 SFRA states that the existing topography adjacent to the Blyth Estuary, is high ground which provides the site protection from fluvial/tidal flooding. A review of the EA's Product 4 data details that the areas of Flood Zone 3 are associated with tidal flooding.

The Onshore Converter Station Zone is generally at low risk of flooding from fluvial, tidal, surface water, reservoir, sewer and other sources of flooding. There are some localised areas of surface water ponding within the Onshore Converter Station Zone and there is the potential for flow exceeding the capacity of the Cow Gut watercourse to flow into this area.

The proposals for the Onshore Converter Station Zone constitute an 'essential infrastructure' land use, which is considered appropriate within Flood Zone 1. The Onshore Converter Station Zone is within the Blyth Estuary Strategic Employment Area identified in the Local Plan as being actively promoted to the renewable and low carbon energy, advanced manufacturing and offshore sectors. Based on the allocation of the land and generally low risk of flooding, the Sequential Test is passed. The Exception Test is not required.

The flood risk mitigation strategy for the Onshore Converter Station Zone consists of the following elements:

- The proposed Onshore Converter Station Zone platform is generally raised above surrounding ground levels. The exact position of the platform will be confirmed at detailed design and reserved matters stage, with a level between 12.0mAOD and 15.2mAOD. The need for a swale or filter drain around the platform will be confirmed at detailed design stage.

- A surface water drainage strategy for the Onshore Converter Station Zone has been prepared by SLR Consulting Limited. Surface water will be discharged to the tidal reach of the Sleek Burn. Approximately 5,800m³ of attenuation storage is provided across two attenuation basins based on the 1 in 100 year design event including an allowance for climate change and further storage to account for periods of tide locking. The base of the attenuation basins will remain wet, with a 600mm retained depth of water.
- Safe access to the Onshore Converter Station Zone can be achieved via Brock Lane and travel via the A189.

In summary, the FRA demonstrates that the proposed Onshore Converter Station Zone is safe and in accordance with the requirements of national and local planning policy and does not increase the risk of flooding elsewhere.

Abbreviations

AP	-	Annual Probability
BBWF	-	Berwick Bank Wind Farm
BBWFL	-	Berwick Bank Wind Farm Limited
BGS	-	British Geological Survey
CDM	-	Construction (Design and Management)
EA	-	Environment Agency
ES	-	Environmental Statement
FRA	-	Flood Risk Assessment
GIS	-	Geographic Information System
LLFA	-	Lead Local Flood Authority
NCC	-	Northumberland County Council
NPPF	-	National Planning Policy Framework
NSL	-	North Sea Link
PPG	-	Planning Practice Guidance
SuDS	-	Sustainable Drainage Systems
SFRA	-	Strategic Flood Risk Assessment

1 Introduction

1.1 Scope of Report

1.1.1 Stantec was commissioned by Berwick Bank Wind Farm Limited to prepare a Flood Risk Assessment (FRA) for the Onshore Converter Station Zone in relation to a proposed development at Cambois, Blyth, Northumberland (NZ 29239 84212) (hereafter referred to as 'the Site'; **Figure 1-1**) to support the Environmental Impact Assessment (EIA) and preparation of the Environmental Statement (ES) for the proposed application to Northumberland County Council (NCC).

Figure 1-1 Site and Onshore Converter Station Zone Location Plan



1.1.2 Berwick Bank Wind Farm Limited (BBWFL) is a wholly owned subsidiary of SSE Renewables (SSER) (hereafter referred to as 'the Applicant'). The Applicant is proposing the development of Offshore Export Cables, Onshore Export Cables, an Onshore Converter Station and associated grid connection at Blyth in Northumberland, known as the 'Cambois Connection' ('the Project'). The onshore components of the Project, landward of Mean Low Water Springs (MLWS) comprise the Onshore Scheme.

1.1.3 The purpose of this infrastructure is to facilitate the export of green energy from the generation assets associated with the Berwick Bank Wind Farm (BBWF), located in the outer Firth of Forth. A separate application for developing a grid connection to Branxton, East Lothian, has been included as part of the Applicant's application for consent for BBWF, currently being determined separately¹. The Project will enable the BBWF to reach full generating capacity by 2030.

¹ BBWF is subject to a separate consenting process. Applications for consent under Section 36 of the Electricity Act 1989 (as amended) and relevant marine licences for the offshore generation and transmission infrastructure was submitted to MS-LOT and accepted in December 2022. The Branxton onshore infrastructure is subject to a separate planning application submitted to East Lothian Council and was validated in March 2023.

- 1.1.4 The Project comprises two distinct proposals, or 'Schemes', which will require three separate consents. For the Onshore Scheme (all activities and infrastructure landward MLWS) consent will be sought via a planning application to NCC as the local planning authority (LPA) under Section 57 of the Town and Country Planning Act 1990.
- 1.1.5 The offshore components of the Project seaward of Mean High Water Springs (MHWS) ('the Marine Scheme') are located within both Scottish and English waters. In Scotland, the Marine Scheme is entirely within offshore waters (i.e., between the 12 nautical miles (nm) limit and the Scottish Exclusive Economic Zone). In England, the Marine Scheme is within offshore waters and inshore waters.
- 1.1.6 The proposed development comprises an application for the construction of onshore cable routes and a converter station connecting to the BBWF, located in the North Sea. A preliminary Site boundary (the Site) has been established which would allow for survey and design evolution of the ongoing scheme. There are three zones in which key infrastructure will be located, as presented within Volume 3, Figure 5.1:
- The Landfall/HVDC Zone where the offshore export cables reach land;
 - The Onshore Converter Station Zone where the Onshore Converter Station will be located; and
 - The HVAC Zone where the grid cables from the Onshore Converter Station connect to the existing Blyth substation.
- 1.1.7 This Flood Risk Assessment (FRA) report corresponds to the Onshore Converter Station proposed as part of the Onshore Scheme. The assessment of flood risk in relation to other infrastructure associated with the Onshore Scheme is provided as part of a separate FRA report prepared by SLR (see Technical Appendix 11.1, Volume 3) this includes:
- A new landfall located along the Cambois coastline;
 - High Voltage Direct Current (HVDC) onshore export cables connecting the offshore export cables at the new landfall and the new proposed converter station; and
 - High Voltage Alternating Current (HVAC) onshore cables connecting the new proposed converter station and the existing National Grid substation to the south.
- 1.1.8 These aspects of the Onshore Scheme are not assessed as part of this report.
- 1.1.9 The aim of the FRA is to support the development of the Onshore Scheme in relation to flood risk and outline the potential for Onshore Converter Station Zone to be impacted by flooding, the impacts of the works associated with establishing the Onshore Converter Station on flooding, and the proposed measures which could be incorporated to mitigate any identified risk.
- 1.1.10 The report is based on the available flood risk information for the Onshore Converter Station Zone as detailed in **Section 1.3** and prepared in accordance with the planning policy requirements set out in **Section 2**.

1.2 Existing site and Proposed Development

- 1.2.1 The Onshore Converter Station Zone is located to the north of the River Blyth and to west of the North Sea coast, between the Port of Blyth and Cambois. The site is located to the south of the River Wansbeck and to the east of the A189 (M) Trunk Road.
- 1.2.2 The Onshore Converter Station Zone is shown to consist predominantly of open vegetated and agricultural land. The sites southern boundary runs adjacent to Brock Lane, the western boundary borders the A189 motorway, along the site's northern boundary is adjacent to an off-

road racetrack. To the east, the Onshore Converter Station Zone borders the existing North Sea Link (NSL) converter station site.

1.2.3 The Site lies within the administrative boundary of Northumberland County Council (NCC).

1.3 Sources of Information

1.3.1 The FRA has been prepared based on the following sources of information:

- Environment Agency (EA) published 'Open Data' datasets (**Appendix A**);
- Topographic survey of the site (Drawing reference 36022 Rev 01) undertaken by Douglas Land Surveys Ltd dated 30/11/22 (**Appendix B**);
- EA Product 4 data, reference 287612, dated 17/11/2022, including tidal flood levels, surface water maps and details of flood defences in the area (**Appendix C**);
- LLFA consultation response, reference EIR 11595, initial response dated 16/11/2022 (**Appendix C**);
- Northumbrian Water consultation response, dated 12/01/23 (**Appendix C**);
- Northumberland Local Plan 2016 – 2036, adopted March 2022;
- Northumberland County Council (NCC) Level 1 Strategic Flood Risk Assessment (SFRA), dated September 2010; and
- Northumberland Level 2 SFRA, dated October 2015.

1.4 Stakeholder Consultation

1.4.1 The EA were consulted on 09/11/22 to request available flood level data for the site and details of any flood defences in the area. The EA provided a consultation response on 17/11/2022 providing Product 4 flood level data for the site based on tidal flood levels (**Appendix C**). They also confirmed that there are no formal flood defences providing protection to the site.

1.4.2 SSE-R consulted with the EA to arrange a pre-application consultation meeting in February 2023 in relation to flood risk at the site. At that stage the EA stated that they did not have capacity within their technical teams to engage with a pre-application request. In May 2023, the EA confirmed that detailed flood modelling was probably not required to support the proposed development, unless ground raising and development was proposed in Flood Zone 2 and 3. On this basis, modelling is not required.

1.4.3 Northumberland County Council (NCC) as the Lead Local Flood Authority (LLFA) were consulted in November and December 2022. They confirmed that they hold no recorded incidents of historic flood in the area and provided some details of highway drainage, watercourses and culverts in the vicinity of the site (**Appendix C**).

1.4.4 NCC provided further details of surface water drainage requirements, approach to setting runoff rates and considering the impacts of climate change, North-East sustainable drainage local standards. They also identified that the site is within the North-East Mining and Groundwater constraints area.

1.4.5 Northumbrian Water provided details of sewers in the vicinity of the site and confirmed there were no recorded incidents of flooding in the vicinity of the site (**Appendix C**).

1.5 Caveats and Exclusions

- 1.5.1 This FRA has been prepared in accordance with the NPPF, the associated PPG and local planning policy. The approach for flood mitigation is based on the requirements of the EA. The conclusions are based on data available at the time of the study and on the subsequent assessment that has been undertaken in relation to the development proposals as outlined in **Section 1.2**.
- 1.5.2 Activities during the construction phase may have an impact on the existing and future flood risk. Thus, an assessment of the risks and appropriate mitigation measures should be identified and managed by the contractor.
- 1.5.3 The Construction (Design and Management) Regulations (CDM Regulations) will apply to any future development of this site which involves “construction” work, as defined by the CDM Regulations. As such it is the responsibility of the proposed developer (ultimate client) to fulfil its duties under the CDM Regulations.

2 Planning Policy Context

2.1 National Policy and Guidance

- 2.1.1 National policy in relation to flood risk is contained within the **National Planning Policy Framework (NPPF)**, updated September 2023, issued by the Department for Levelling Up, Housing and Communities, with reference to Section 14 'Meeting the challenge of climate change, flooding and coastal change'.
- 2.1.2 The latest version of the associated **Planning Practice Guidance (PPG)** 'Flood Risk and Coastal Change' section was updated August 2022.
- 2.1.3 The NPPF and PPG demonstrate a flood risk management approach for the lifespan of the proposed development considering the effects of climate change. The document sets the framework to minimise vulnerability, provide resilience to the impacts of climate change, and to fully consider the potential impacts of climate change for the lifetime of the development within the mitigation measures.
- 2.1.4 The guidance on the application of climate change allowances in FRAs is linked via the PPG and was most recently updated in May 2022. The guidance provides contingency allowances for the potential increases in peak river flow, peak rainfall intensity and sea level rise which are considered accordingly subject to the site conditions – discussed further in **Section 2.3**.
- 2.1.5 The NPPF sets out the requirement for the Sequential Test and Exception Test in paragraphs 162 and 163 respectively – see below.

“162. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding).

163. If it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3”

- 2.1.6 These Tests are to be applied where appropriate, depending on the proposed development flood risk 'vulnerability', the Flood Zone in which it is located and the risk of flooding from other sources. This is detailed further in **Section 5**.
- 2.1.7 The NPPF and PPG place emphasis on the need to fully consider – and design for – the impacts of climate change as set out in the 'Flood risk assessments: climate change allowances' planning guidance accessible at the following link:

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

- 2.1.8 This guidance provides contingency allowances for potential increases due to climate change in peak river flow, sea level rise and rainfall intensity. These allowances are key for designing appropriate mitigation into the development to consider the flood risks over the lifetime of the development (peak river flow and/or sea level rise), and for the management of surface water over the site (peak rainfall intensity). The relevant allowances for consideration and the impacts to the development are discussed further in **Section 2.3**.

2.2 Local Policy and Guidance

Northumberland Local Plan (2016 – 2036) Local Plan

- 2.2.1 Local planning policy is contained within the Northumberland Local Plan 2016 to 2036 (March 2022), with particular reference to Policy **WAT 1 - 'Water Quality'**, Policy **WAT 3 - 'Flooding'** and Policy **WAT 4 - 'Sustainable Drainage Systems'** which state:

Policy WAT 1 - Water Quality

This policy seeks to ensure that the development improves the quality of the water environment and surface water bodies. In particular, it recommends that new developments should seek to achieve a 'good status' in line the Water Framework Directive's 'River Basin Management Plans' and policies regarding the Protection of Water Bodies.

Policy WAT 3 - Flooding

1. Development proposal should take into account the "policy approach" contained with local strategies and guidance documents
2. *"Development proposals will be required to demonstrate how they will minimise flood risk to people, property and infrastructure from all potential sources by*
 - a. *Avoiding inappropriate development in areas at risk of flooding and directing the development away from areas at highest risk..."*
 - d. Details the requirements for the management of surface runoff. It outlines that the drainage hierarchy should be followed and that runoff rates should not exceed existing. As a minimum a 50% betterment should be achieved for previously development sites.
4. *"Any works relating to the above, which impact on natural water systems, should consider the wider ecological implications, applying the ecosystem approach, and link into green infrastructure."*

Policy WAT 4 - Sustainable Drainage Systems

1. *Water sensitive urban design, including Sustainable Drainage Systems (SuDS) will be incorporated into developments whenever necessary, in order to separate, minimise and control surface water run-off, in accordance with national standards and any future local guidance.*
2. *SuDS will be a requirement for any development where it is necessary to manage surface water drainage unless it can be clearly demonstrated:*
 - a. *That SuDS are not technically, operationally or financially deliverable or viable and that any surface water drainage issues resulting from the development can be alternatively mitigated; or*
 - b. *That the SuDS scheme will itself adversely affect the environment or safety, including where ponds could increase the risk of bird strike close to the airport or where existing minewater problems could be exacerbated.*
3. *SuDS or other water sensitive urban design schemes should be devised to take account of predicted future conditions and, where appropriate, efforts should be made to link them into wider initiatives to enhance the green infrastructure, improve water quality, benefit wildlife and/or contribute to the provision of an ecosystem service.*
4. *Arrangements must be put in place for the management and maintenance of SuDS over the lifetime of the development, with such arrangements taking account of the cumulative effectiveness of SuDs in the area concerned."*

Northumberland County Council Level 1 Strategic Flood Risk Assessment

- 2.2.2 The Northumberland County Council Level 1 Strategic Flood Risk Assessment (SFRA) was released in September 2010 and forms part of the Local Plan evidence base, to inform future spatial planning and to assist in developing planning policies to address flood risk. Moreover, the document provides an overall understanding of the flood risk within the Site taking into account all potential sources.
- 2.2.3 It is essential therefore that the Council are in a position to take informed decisions, providing a careful balance between the risk of flooding and other unrelated planning constraints that may place pressure upon 'at risk' areas.
- 2.2.4 The Level 1 SFRA report is a presentation of flood sources and risk, which is based on data collected following consultation with and input from the LPA and relevant stakeholders.
- 2.2.5 The SFRA shows the site and wider study area is located within the Northumbria '**Potential Development Area**'. Following completion of the Level 1 SFRA, NCC has identified a limited number of locations to be further evaluated in the Level 2 SFRA. These locations are named as **Potential Development Areas (PDAs)** and have been identified as particular locations at flood risk in the Level 1 SFRA.

Northumberland County Council Level 2 Strategic Flood Risk Assessment

- 2.2.6 The Northumberland County Council Level 2 Strategic Flood Risk Assessment (SFRA) was released in October 2015 and forms part of the Local Plan evidence base similar to Level 1 SFRA. The Level 2 SFRA primarily focuses on fluvial and coastal Flood Zones. The main purpose of the Level 2 SFRA is to increase the scope undertaken to provide a more detailed assessment of sites than presented in the Level 1 SFRA and provide sufficient information for the application of the Exception Test. The Level 2 SFRA is based on information collected in the Level 1 SFRA and additional works where necessary.
- 2.2.7 The SFRA shows that the site and wider study area is located within the Blyth '**Estuary Strategic Employment Area**'. The Blyth Estuary Strategic Employment Area is classified within the SFRA, as a Potential Development Area which are locations within Core Strategy Delivery Areas (CSDAs) within the NCC administrative boundary in main towns and villages. This area is proposed to deliver employment opportunities in green industries, comprising of both brownfield and greenfield land. The land along the north bank of the River Blyth Estuary predominately comprises the demolished Blyth Power Station, whilst the land along the south bank comprises of various industrial properties.

2.3 Climate Change Guidance

- 2.3.1 It is necessary to fully consider the potential impacts of climate change over the lifetime of new development. The applicable allowances to take into consideration are detailed in the 'Flood risk assessments: climate change allowances' planning guidance (see **Section 2.1**) and discussed in turn below.

Peak River Flow

- 2.3.2 The peak river flow allowances provide a range of scenarios based on percentile (i.e., the degree of certainty of an event occurring, based on the range of climate change scenarios assessed through scientific investigations). The provided allowances are subject to the sub-catchments of river basin district (known as management catchments) and the vulnerability classification of the proposed use of the site.

- 2.3.3 The applicable allowances are subject to the Flood Zone classification of a site, and the vulnerability classification of the proposed use. The Central allowance is identified as the design standard for most forms of proposed development in all Flood Zones, with the exception being 'Essential Infrastructure' which requires consideration of the 'Higher Central' allowance.
- 2.3.4 The Climate Change Peak River Flow Allowances to be considered for new developments in the River Blyth Estuary Northumberland Rivers Management Catchment are included in **Table 2-1**.

Table 2-1: Climate Change – Peak River Flow - Central Allowances

River Management Catchment	Flood Zone	Flood Risk Vulnerability Classification	Applicable Climate Change Allowance (2080s Epoch – 2070-2115)	
			Central	Higher Central
(Northumberland Rivers Management Catchment)	Flood Zone 1	Essential Infrastructure	+35%	+44%

Peak Rainfall

- 2.3.5 The potential increase in peak rainfall intensity needs to be considered in the surface water drainage strategy for new developments.
- 2.3.6 The EA climate change allowances guidance was updated in May 2022 to include a GIS based 'peak rainfall allowances' map showing the anticipated changes in rainfall intensity based on river management catchment. The anticipated changes in peak rainfall intensity in small catchments (less than 5km²), or urbanised drainage catchments are summarised in **Table 2-2**.

Table 2-2: Climate Change – Peak Rainfall Intensity Allowances

(Northumberland Rivers Management Catchment)	Total potential change anticipated (2070s epoch – i.e. 2061 to 2125)	
	Central	Upper End
3.3% (1 in 30-year) rainfall	30%	40%
1% (1 in 100-year) rainfall	30%	45%

- 2.3.7 The guidance specifies that for developments with a lifetime of between 2061 to 2125 (i.e., assuming a 100-year design life) the 2070s epoch is to be applied for design purposes. Therefore a +45% climate change allowance should be assessed within the surface water drainage strategy. This allowance has also been confirmed by the LLFA (**Appendix C**).

Sea Level Rise

- 2.3.8 The guidance sets out per annum impact of climate change on sea level rise in 'Table 1' of the guidance, based on the river basin district of the subject site. Data is provided for both the 'Higher Central' and 'Upper End' scenarios.

2.3.9 The site lies within the **Northumbria River Basin District**, with the respective sea level rise allowances presented in **Table 2-3**.

Table 2-3: Climate Change – Sea Level Rise

Timescale	Epoch in mm for each year (based on a 1981 to 2000 baseline)	
	Higher Central	Upper End
2008* to 2035	4.6 (124)	5.8 (157)
2036 to 2065	7.5 (225)	10 (300)
2066 to 2095	10.1 (303)	14.3 (429)
2096 to 2125	11.2 (336)	16.5 (495)
Cumulative rise 2008 to 2125	0.99 m	1.38 m

* Note: Baseline year set to 2008 to match extreme tidal levels baseline date

2.3.10 Considering a design life of 100 years the cumulative rise is 0.99m and 1.38m for the Higher Central and Upper End allowance, respectively. The impact of sea level rise on tidal flood risk at the site is detailed in **Section 4.2**.

3 Onshore Converter Station Zone Setting

3.1 Onshore Converter Station Zone Description

- 3.1.1 The Onshore Converter Station Zone is located adjacent to the existing NSL UK converter Station, near post code NE22 7FG, with the site centre at National Grid Reference 429,110m E, 583,880m N. The details of the position of the Online Converter Station Zone in relation to the wider 'Site' in relation to the Onshore Scheme is discussed in [Section 1](#).
- 3.1.2 The Onshore Converter Station Zone lies between the Port of Blyth and Cambois as shown in [Figure 3-1](#). The River Blyth is located 0.2km to the south of the Onshore Converter Station Zone, the River Wansbeck is 1.1km north of the Onshore Converter Station Zone and the North Sea coastline is located 1.3km east of the Onshore Converter Station Zone. The A189 (M) Trunk Road inside the western boundary of the Onshore Converter Station Zone.

Figure 3-1 Onshore Converter Station Zone



3.2 Topography

- 3.2.1 EA LIDAR data as shown in [Appendix A](#) shows there to be a fall from west to east across the Onshore Converter Station Zone, with levels ranging from approximately 14.7mAOD to 8.8mAOD. The A189 is within a cutting along the western side of the Onshore Converter Station Zone where the ground levels are approximately 5.0mAOD.
- 3.2.2 The topographic survey in [Appendix B](#), undertaken by Douglas Land Surveys in November 2022, provides further details of the ground levels across the Onshore Converter Station Zone and shows contours at 0.5m intervals. This survey does not cover the wooded areas to the west and north due to dense vegetation restricting the ability to collect accurate survey data. A comparison with the LIDAR data shows the ground levels are comparable between the two datasets.

3.3 Hydrological Setting

3.3.1 The North Sea Tyne and Wear coastline waters are located approximately 1.3km to the east of the Onshore Converter Station Zone. The Blyth Harbour & Port is located approximately 1.1km east of the Onshore Converter Station Zone, where the River Blyth Estuary enters the harbour and port, before discharging into the North Sea.

3.3.2 There are a number of watercourses in the vicinity of the Onshore Converter Station Zone as shown in **Figure 3-2** comprised of Main Rivers and ordinary watercourses, as detailed below:

- The Sleek Burn is a Main River and flows in a south easterly direction past the southern boundary of the Onshore Converter Station Zone. It passes under the A189 to become the River Blyth, and continues to flow in a south-easterly direction into the North Sea.
- The River Wansbeck is a Main River located approximately 1.2km north of the Onshore Converter Station Zone. It flows in an easterly direction into the North Sea.
- The Cow Gut is an ordinary watercourse and flows along the northern boundary of the Onshore Converter Station Zone, before turning to flow in a south-easterly direction into the River Blyth tidal estuary. This watercourse is a mix of open channel and culverted sections and has been partially restored within the 'Re-Charge' (former British Volt) development area.
- The Maw Burn is an ordinary watercourse that originates approximately 600m north of the Onshore Converter Station Zone. The watercourse predominantly flows along an open channel to the north of the Re-Charge development. This watercourse discharges into the Cow Gut watercourse and also via a culvert to the North Sea.

Figure 3-2: Watercourses in the vicinity of the Onshore Converter Station Zone



3.4 Existing Drainage Arrangements

- 3.4.1 The Onshore Converter Station Zone consists primarily of open fields and woodland areas, such that surface water would either drain via natural infiltration into the ground or would drain to the ordinary watercourses within the vicinity via subsurface flow or overland flow. The LLFA further detailed that the watercourses to the north of the site which forms part of the Cow Gut watercourse provides existing drainage to the site (**Appendix C**).
- 3.4.2 The LLFA provided a map outlining the gully locations along the A189 and Brock Lane, see **Figure 3-3**. No further information was provided in regard to the existing highway drainage arrangements and in particular where the drainage outfalls are located.

Figure 3-3: Highway drainage system and gully's locations within Brock Lane



3.5 Geology and Hydrogeology

- 3.5.1 The British Geological Survey (BGS) Geology Viewer mapping indicates that the underlying bedrock geology at the Onshore Converter Station Zone consists of the Pennine Middle Coal Measures Formation. This is sandstone across the majority of the Onshore Converter Station Zone, but there are areas of mudstone, siltstone and sandstone in the north-west and south-east corners of the Onshore Converter Station Zone.
- 3.5.2 There are superficial deposits of Till, Devensian – Diamicton across the entire Onshore Converter Station Zone.
- 3.5.3 The SFRA states that the site area is located on land identified to have a 'High Vulnerability' groundwater vulnerability classification. This information was sourced from the EA's Groundwater Vulnerability (GWV) maps. The EA Source Protection Zone (SPZ) maps indicate that the Onshore Converter Station Zone is not located with a Source Protection Zone (**Appendix A**).

- 3.5.4 The LLFA has provided information that the area is within the C2 category for North East Mining & Groundwater Constraints. This area is part of the coalfield area with shallow minewater. This may increase the groundwater flood risk across the site and may need to be considered within the proposed surface water drainage strategy for the Onshore Converter Station Zone. Further information is found online - <https://www.gov.uk/guidance/mining-and-groundwater-constraints-for-development>. This is discussed further in **Section 4.5**.

3.6 Flood Defences

- 3.6.1 The EA online Flood Map for Planning does not show any flood defence structures located within 1km of the Onshore Converter Station Zone.
- 3.6.2 The Level 2 SFRA states that “*information provided by the Environment Agency and obtained from AIMS does not identify any fluvial defences in the immediate Blyth area. The National Flood and Coastal Defence Database (NFCDD) however indicate a number of private and EA maintained raised defences (man-made) located along the south bank of the River Blyth Estuary.*”
- 3.6.3 The Level 1 SFRA also states that the existing topography adjacent to the Blyth Estuary is high ground which provides protection from fluvial and tidal flooding.

4 Assessment of Flood Risk

4.1 Flood risk overview

4.1.1 The assessment of flood risk has been undertaken based on the sources of information listed in **Section 1.3**. The baseline flood maps are presented in **Appendix A**, using the EA Open Data datasets available online.

4.2 Tidal Flood Risk

4.2.1 Tidal flooding results in the inundation of low-lying areas due to high tides that breach or overtop the flood defence structures. Tidal flooding is generally caused by seasonal high tides and where stormy weather conditions results in strong wave action that increase water levels above the norm.

4.2.2 The EA Flood Map for Planning (**Figure 4-1**) shows that the Onshore Converter Station Zone is located within Flood Zone 1. Flood Zone 1 is an area at 'low probability' of flooding from rivers or the sea, defined as land having a less than 0.1% Annual Probability (AP) of river or sea flooding.

Figure 4-1: EA Flood Map for Planning



4.2.3 There are areas of Flood Zone 2 (medium probability) and Flood Zone 3 (high probability) to the north, east and south of the Onshore Converter Station Zone associated with the North Sea coast and the River Blyth and River Wansbeck estuaries. The closest area of Flood Zones 2 and 3 is approximately 150m south of the Onshore Converter Station Zone and based on the attribute data contained in the Flood Map for Planning; this is associated with the EA tidal model outputs. This data indicated that the River Blyth and Sleek Burn are tidal to approximately 1km west of the A189.

- 4.2.4 There are no formal flood defences shown on the EA Flood Map for Planning and therefore it is assumed that the extent of flooding is controlled by the surrounding areas of high ground.
- 4.2.5 The EA provided peak flood levels for the River Blyth and North Sea Coast based on the Coastal Flood Boundary data for the present day scenario, with their consultation response provided in **Appendix C**.
- 4.2.6 The node locations and their relationship to the Onshore Converter Station Zone are presented in **Figure 4-2**, and the identified flood levels are detailed in **Table 4-1**. The closest model node to the Onshore Converter Station Zone is '3612' which has peak water levels of 3.90m AOD and 4.16m AOD for the present day 1 in 200 AP and 1 in 1,000 AP flood events respectively (based on a present day baseline year of 2008). Based on these flood levels and the lowest ground level within the Onshore Converter Station Zone of approximately 8.8m AOD (excluding the A189 highway), this confirms that the Onshore Converter Station Zone is significantly elevated above the tidal flood level that defines Flood Zone 1 in the present day. This confirms that the Onshore Converter Station Zone is at low risk of tidal flooding in the present day.

Figure 4-2: Coastal flood boundary conditions node locations

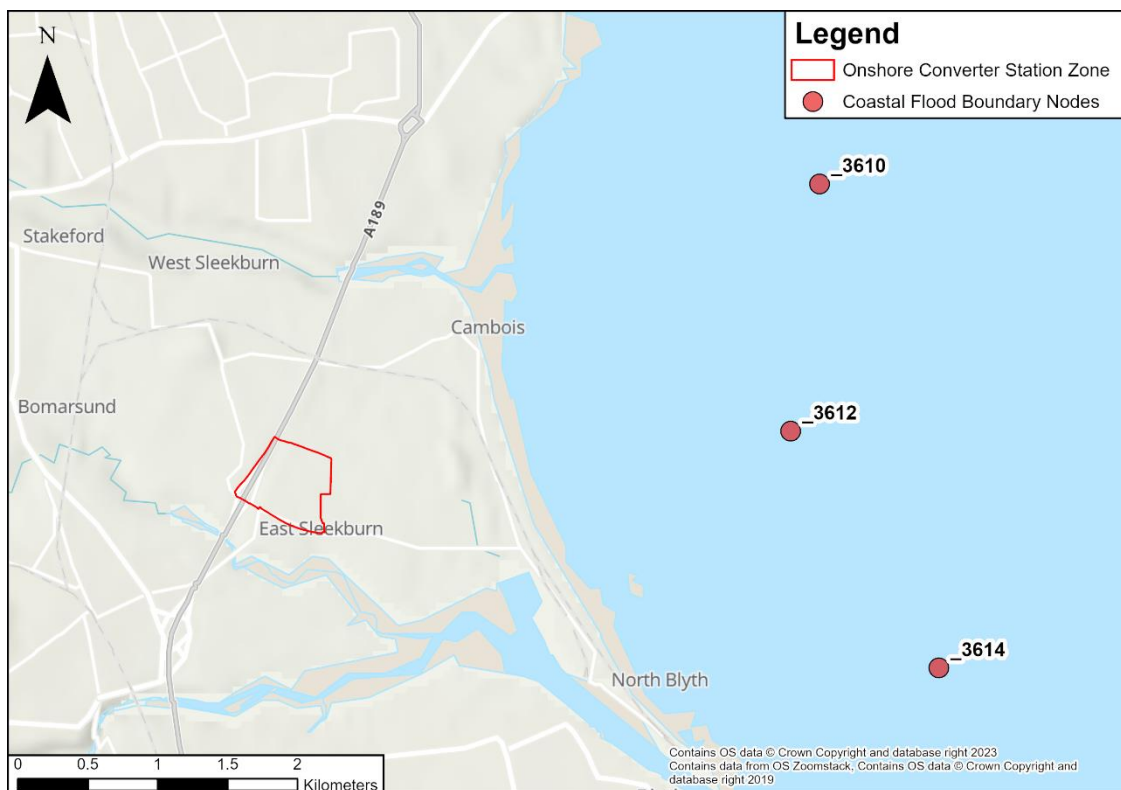


Table 4-1: Tidal Flood Node Levels in mAOD

Node Numbers	Return Periods / Flood Levels			
	1 in 200 AP *	1 in 1000 AP *	1 in 200 AP + CC to 2125 (Higher Central)	1 in 200 AP + CC to 2125 (Upper End)
3610	3.90m AOD	4.16m AOD	4.89m AOD	5.28m AOD
3612	3.90m AOD	4.16m AOD	4.89m AOD	5.28m AOD
3614	3.90m AOD	4.16m AOD	4.89m AOD	5.28m AOD

* Base year of 2008

- 4.2.7 To assess the impacts of climate change, the allowances for sea level rise have been applied based on the planning guidance in **Section 2.3**. The cumulative sea level rise has been considered over the period from 2008, the base year for the tidal flood levels, to 2125, based on a 100 year development life starting from operation in 2025.
- 4.2.8 On this basis the 1 in 200 AP peak sea levels are 4.89mAOD and 5.28mAOD under the higher central and upper end scenarios respectively (**Table 4-1**). Based on these flood levels and the minimum ground level on site of 8.8mAOD, this confirms that the Onshore Converter Station Zone will remain at low risk of tidal flooding, with a significant freeboard of approximately 3.4m when the impacts of climate change are considered.

4.3 Fluvial (River) Flood Risk

- 4.3.1 Fluvial flooding occurs when the capacity of the river channel is exceeded due to the receiving volume of water draining from the surrounding land as a result of sustained or intense rainfall. The increase in water causes the river to rise above its banks and/or retaining structures and flow across land.
- 4.3.2 As identified in **Section 4.2**, the Onshore Converter Station Zone is within Flood Zone 1 and therefore at low risk of fluvial flooding in the present day. The attribute data associated with the Flood Map for Planning data identifies that tidal flood risk is the key source of flooding in this area rather than flooding from the Sleek Burn, River Blyth and River Wansbeck. On this basis, the EA were not able to provide any fluvial modelled flood levels for these watercourses.
- 4.3.3 The risk from fluvial flooding is therefore considered to be low in the present day and in the future when the impacts of climate change are considered.
- 4.3.4 The Flood Map for Planning does not consider flood risk from small watercourses, including the Cow Gut watercourse (**Figure 3-2**) that runs along the northern boundary of the site. The risk associated with this watercourse will be considered using the EA risk of flooding from surface water maps as discussed below.

4.4 Surface Water (Pluvial) Flood Risk

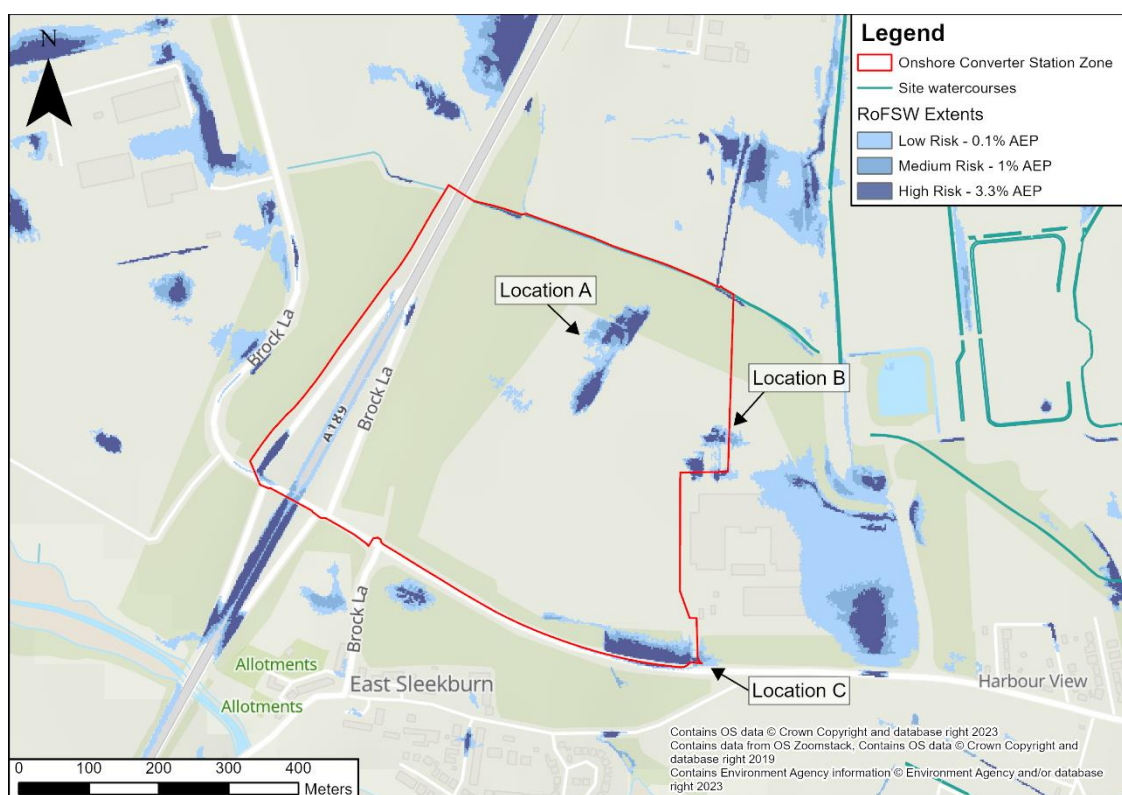
- 4.4.1 The EA 'Risk of Flooding from Surface Water' mapping identifies areas that could be susceptible to surface water flooding in various rainfall events. The latest mapping assesses flooding resulting from severe rainfall events based on the following scenarios:
- 'High' Risk: 1 in 30 (3.3%) or greater AP rainfall event;

- 'Medium' Risk: Between a 1 in 100 (1%) and 1 in 30 (3.3%) AP rainfall event;
- 'Low' Risk: Between 1 in 1000 (0.1%) and 1 in 100 (1%) AP rainfall event;
- 'Very Low' Risk: Lower than 1 in 1000 (0.1%) AP rainfall event.

4.4.2 The EA surface water mapping (**Figure 4-3**) shows that the Onshore Converter Station Zone is generally at a 'Very Low' risk of surface water flooding. There are however minor areas of 'High' to 'Low' surface water flood risk associated with the topographic low points.

4.4.3 In the 'low', 'medium' and 'high' risk scenarios, surface water flooding is shown to occur towards the centre of the Onshore Converter Station Zone (location A), along the eastern boundary of adjacent to the NSL Converter Station (location B), and in the south-east corner (location C). These are areas of surface water ponding rather than flood flow routes.

Figure 4-3: EA Risk of Flooding from Surface Water Map

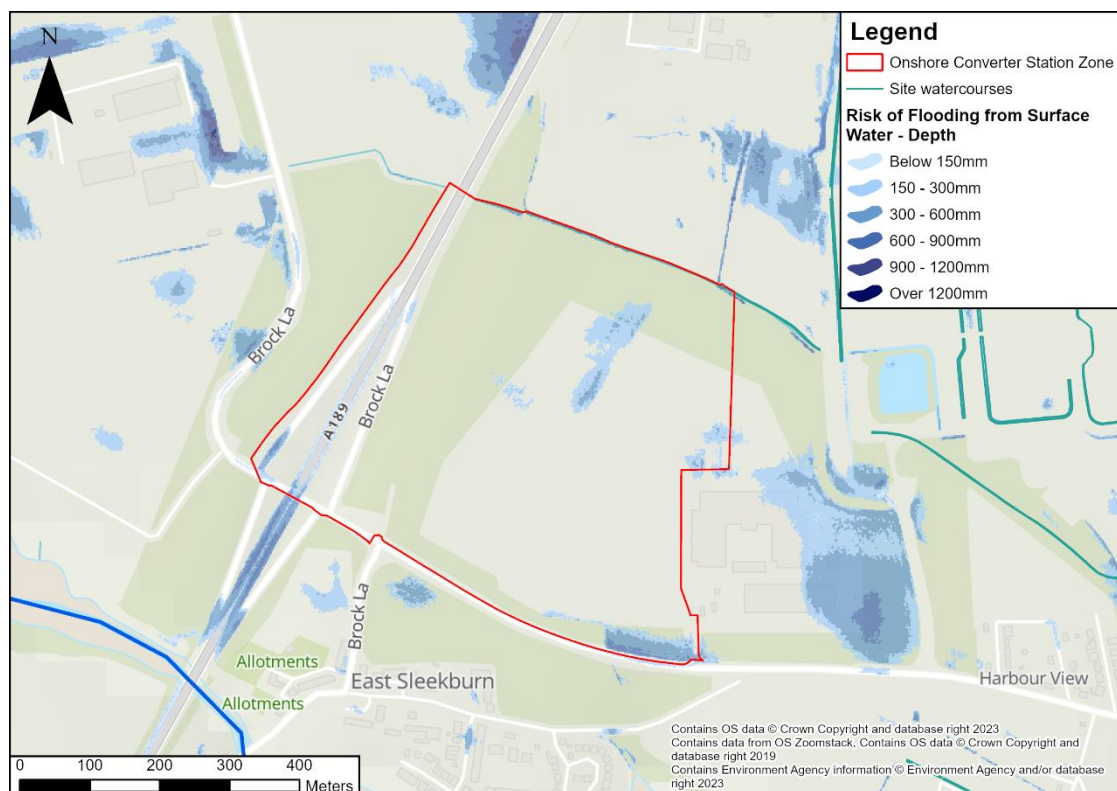


4.4.4 The low risk event, or 1 in 1000 AP event, represents an extreme surface water flood event in the present day and in the absence of more detailed modelling can be considered as a surrogate for the 1 in 100 AP event including the impacts of climate change. For this scenario, the flood depths across the Onshore Converter Station Zone are shown in **Figure 4-4**, and shows the following:

- Location A – The flood depths are generally between 0.15m and 0.30m, with some localised ponding between 0.30m and 0.60m. Based on the LIDAR data for the catchment, the approximate peak water level in this area is 11.1mAOD.
- Location B – The flood depths are generally between 0.15m and 0.30m, with some localised ponding between 0.30m and 0.60m. Based on the LIDAR data for the catchment, the peak water level varies in this area with local variations in topography but is up to approximately 9.5mAOD.

- Location C – The flood depths are generally between 0.30m and 0.60m, with some smaller areas of shallower flooding between 0.15m and 0.30m, and some smaller areas of deeper flooding between 0.60m and 0.90m. Based on the LIDAR data for the catchment, the approximate peak water level in this area is 10.5mAOD.

Figure 4-4: Modelled Flood Depths for the 1 in 1000 AP Surface Water Event



- 4.4.5 There are a number of smaller watercourses in the vicinity of the site, and in particular the Cow Gut which runs along the northern boundary of the Onshore Converter Station Zone (Figure 3-2). Based on OS Mapping this indicates that the watercourse is potentially culverted under the A189, but this has not been confirmed by site observation due to the dense vegetation in this area. If this watercourse is connected, the catchment area to the west of the road is approximately 0.3km² based on an inspection of the LIDAR data. The A189 is in a cutting where it potentially crosses the Cow Gut watercourse and therefore any culvert would need to be relatively deep below the surrounding ground. Along the northern boundary, the Cow Gut is perched above the surrounding floodplain to the south and therefore flow exceeding the watercourse capacity would spill over the south bank of the watercourse and into the Onshore Converter Station Zone.
- 4.4.6 This watercourse is not directly represented on the Flood Map for Planning based on its small catchment area. The risk of flooding from surface water mapping highlights the potential flood mechanism in this area for water overtopping the channel banks of the watercourse. This shows areas of relatively shallow ponding with the centre of the Onshore Converter Station Zone and along the eastern boundary. This potential flood mechanism should be considered within the development proposals and mitigation provided as appropriate. Further detail on proposed mitigation is set out in Section 6.

4.5 Groundwater Flood Risk

- 4.5.1 The Northumberland Level 2 SFRA identified the Site area (Blyth Estuary Strategic Employment Area) to be located on land identified to have a 'Low to medium groundwater flood risk (>= 50%

<75%'. The assessment is based on information from the British Geological Survey (BGS) Areas Susceptible to Groundwater Flooding maps.

- 4.5.2 The SFRA identified the wider Blyth Estuary Strategic Employment Area is over a minor aquifer that has a groundwater vulnerability classification of 'highly vulnerable'. A more detailed review of the mapping within the SFRA shows that while much of the Site has a highly vulnerable classification, the area of the Onshore Converter Station Zone has a low vulnerability.
- 4.5.3 A review of several BGS borehole records located within the Site area, up to 20m deep, did not provide a clear indication of groundwater levels. However, a geo environmental assessment report (2014) prepared for the adjacent UK-Norway Electricity Connector (NSN Link) details that shallow perched groundwater was noted to be consistent across the site and it is considered that shallow perched groundwater within the Glacial Till is broadly in hydraulic continuity locally across the wider area. In an area north-east of the site, groundwater was struck at 9.0mAOD, approximately 0.5m below ground level. Groundwater from within the Pennine Middle Coal Measures is considered to be isolated from shallow perched groundwater with the Glacial Till.
- 4.5.4 The shallow perched groundwater on the site is likely to be related to infiltration of rain / surface water into the ground before discharging to the local watercourses. It is not anticipated that this groundwater would rise above the ground level. On this basis the risk of groundwater flooding is considered to be low.
- 4.5.5 Further ground investigation is being undertaken at the Onshore Converter Station Zone and this assessment of groundwater flood risk will be verified once the results are available.
- 4.5.6 The LLFA has provided information that the area is within the C2 category for North East Mining & Groundwater Constraints. This area is part of the coalfield area with shallow minewater. The potential for shallow minewater may prevent the use of infiltration drainage and have an impact of the design of sustainable drainage features.

4.6 Reservoir Flood Risk

- 4.6.1 The EA provides maps showing the risk of flooding in the event of a reservoir failure. The reservoir breach extents are captured in the baseline flood maps in [Appendix A](#).
- 4.6.2 The EA 'Risk of flooding from Reservoirs' map shows the risk of flooding in the event of a breach from reservoirs in dry day scenarios, and wet day scenarios when there is also flooding from rivers.
- 4.6.3 The mapping indicates that the Onshore Converter Station Zone is not shown to be located within a reservoir breach flood extent. The risk of flooding from a reservoir breach is therefore considered to be low.

4.7 Sewer Flood Risk

- 4.7.1 The LLFA has confirmed that Northumberland does not have any Critical Drainage Areas.
- 4.7.2 The SFRA indicates that the Onshore Converter Station Zone and Blyth area, is located in an area classified as having a '*Medium Incidence*' level for reported incidents of sewer flooding. The LLFA and Northumbrian Water confirmed there to be no reported incidents of flooding at the Onshore Converter Station Zone. As such it can be concluded that the risk of flooding from sewers is low.

4.8 Other Sources of Flood Risk

- 4.8.1 The SFRA states that there are no canals, reservoirs or other artificial water sources that may provide a flood risk in the vicinity of Blyth. As such the risk of flooding from other sources is considered to be low.

4.8.2 It has been considered that there are no other known sources that would pose a flood risk to the Onshore Converter Station Zone.

4.9 Historical Flooding

4.9.1 The EA 'Historic Flood Map' is a dataset showing the maximum extent of all individual recorded flood outlines from river, the sea and groundwater and shows the areas of land that have previously been subject to flooding.

4.9.2 The EA mapping, included in **Appendix A**, shows a recorded historic flood outline along the Sleek Burn and River Blyth. The historic flood outline is also shown to extend across the River Blyth Estuary and Blyth Harbour & Port areas. The historic flooding that has occurred across these areas, is likely the result of previous tidal flooding. The historic flood outline is shown to be contained within the River Blyth estuary and does not reach the Onshore Converter Station Zone.

4.9.3 The NCC Level 2 SFRA states that historically there has been a history of tidal flooding in Blyth. Data provided by the EA shows that in the past 100 years 4 tidal flooding incidents have been recorded across Blyth. This includes high tides, as well as flooding of streets and sewers. However, these previous tidal flooding incidents are shown to occur in the Blyth residential and central town districts that are located to the south of the Onshore Converter Station Zone.

4.9.4 Furthermore, based on records in the SFRA and in the consultation response from the LLFA (**Appendix C**), there are no recorded incidents of historic flooding at the Onshore Converter Station Zone.

4.10 Summary of Flood Risk

4.10.1 This section report has considered the baseline risk of flooding to the Onshore Converter Station Zone for the present day and taking account of the impacts of climate change.

4.10.2 The Onshore Converter Station Zone is located close to the North Sea coast and there are a number of major watercourses in the vicinity, including the Sleek Burn, River Blyth and River Wansbeck. The Onshore Converter Station Zone is located within Flood Zone 1 and will remain at low risk of flooding when the impacts of sea level rise and increased river flows, as a result of climate change, are considered.

4.10.3 Within the Onshore Converter Station Zone the risk of surface water flooding is generally very low, but there are three key areas of surface water ponding at low to high risk of surface water flooding. These areas are near the centre of the Onshore Converter Station Zone, along the eastern boundary and in the south-east extent. These areas of surface water flooding are due to localised depressions in topography with maximum flood depths generally between 0.15m and 0.30m, with some localised ponding between 0.30m and 0.60m. In the south-east corner there is some slightly deeper areas of ponding between 0.60m and 0.90m.

4.10.4 The Cow Gut ordinary watercourse runs along the northern boundary and is perched above the Onshore Converter Station Zone. Flows exceeding the capacity of this watercourse have the potential to flow overland into the Onshore Converter Station Zone. This is not directly represented on the Flood Map for Planning, but the risk of flooding from surface water mapping gives an indication of the potential impacts of these exceedance flows. This should be considered within the proposed development layout and mitigation provided as appropriate. Further detail on proposed mitigation is set out in **Section 6**.

4.10.5 The risk of flooding from groundwater, reservoir breach, sewer flooding and from other sources is considered to be low. There are no records of historic flooding at the Onshore Converter Station Zone. The closest recorded flood events are associated with tidal flooding within the Blyth Estuary, but these extents are contained within the channel in the vicinity of the Onshore Converter Station Zone.

5 Proposed Development and Sequential Test

5.1 Proposed Development

- 5.1.1 This FRA accompanies an outline planning application for the construction, operation, maintenance, and decommissioning of Onshore Export Cables, an Onshore Converter Station and associated onshore grid connection at Cambois, Northumberland.
- 5.1.2 To allow for flexibility in the design at this stage, the outline planning permission applies a Project Design Envelope (PDE) when considering design parameters for the Onshore Converter Station Zone. This will enable the detailed design of the converter station to be refined based on design performance requirements as the detailed design progresses. The maximum worst-case is established and the PDE sets out expected maximum parameters, so that adverse effects consider the worst-case scenario.
- 5.1.3 To enable this assessment to be completed a boundary has been defined to enable the impacts of the development to be considered and this is referred to as the 'Limits of Deviation'. The Limits of Deviation for the proposed converter station platform area is shown in **Figure 5-1**.

Figure 5-1: Extract of Proposed Development Layout



- 5.1.4 The converter station platform measures 300m by 300m and will be located within the identified limits of deviation within **Figure 5-1**. The platform for the converter station houses electrical equipment to transform between direct and alternating currents and this will be based on either a symmetrical monopole or bipole configuration. In addition, there are two alternatives for housing the equipment on the platform, as follows:
- Option 1 – Converter station considering all equipment to be housed inside buildings, except for cooling fans.

- Option 2 – Converter station considering AC and DC switchyard equipment to be located outdoors.
- 5.1.5 For the outline planning application it is proposed that the final development platform will be set at between 12.0mAOD and 15.2mAOD. This is based on an assessment completed to determine the worst case earthworks scenario.
- 5.1.6 Two options to provide a permanent access route to the converter station have been identified either, using the existing access road to the NSL converter station or a new access from Brock Lane.
- 5.1.7 The proposed mitigation is based on a design life for the development of 100 years, and the climate change allowances discussed in **Section 2.3** are also based on this assumption. Further detail on proposed mitigation is set out in **Section 6**.

5.2 Flood Risk Vulnerability and Sequential Test

- 5.2.1 The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas.
- 5.2.2 The NPPF Annex 3 confirms the '*Flood risk vulnerability classification*' of a site, depending upon the proposed usage.
- The proposed Converter Station development is classed as 'essential infrastructure' development.
- 5.2.3 This classification is subsequently applied to PPG 'Flood Risk and Coastal Change' Table 2 'Flood risk vulnerability and flood zone incompatibility' to determine whether:
- The proposed development is permitted or not for the Flood Zone in which it is located, and;
 - Whether an Exception Test is required for the proposed development.
- 5.2.4 The proposed converter station is located within Flood Zone 1, and essential infrastructure is considered appropriate in these areas of low flood risk. The risk of flooding from all sources is generally low, with some localised areas at higher risk of surface water flooding.
- 5.2.5 The flood risk Sequential Test is required where it is not possible to locate development in low risk areas (i.e. Flood Zone 1, or land at low risk of flooding from other sources). The Onshore Converter Station Zone is located within the Blyth Estuary Strategic Employment Area within the Northumberland Local Plan 2016 - 2036 adopted in March 2022.
- 5.2.6 The assessment undertaken by NCC in preparing their Local Plan, which includes the allocation of the subject Site as part of a wider Blyth Estuary Strategic Employment Area, has been captured in the Level 2 SFRA.
- 5.2.7 NCC has undertaken an extensive assessment of the employment opportunities in the borough in order to demonstrate that the wider Site is a sequentially preferable location suitable for development when considering employment development. The Blyth Estuary Strategic Employment Area is identified in the Local Plan as being actively promoted to the renewable and low carbon energy, advanced manufacturing and offshore sectors.
- 5.2.8 On the basis of the flood risk assessment undertaken in **Section 4** and the allocation within the Local Plan, it is considered that the Sequential Test is passed. The Exception Test is not required for development in Flood Zone 1.

6 Flood Mitigation Strategy

6.1 Platform Levels & Mitigation

- 6.1.1 The proposed Onshore Converter Station Zone is located within an area of Flood Zone 1 based on the risk of tidal flooding and fluvial flooding from Main Rivers as identified in **Section 4**. This is a low risk of flooding. The main source of flood risk at the Onshore Converter Station Zone is from surface water flooding and from the Cow Gut watercourse which is perched above the Onshore Converter Station Zone as shown in **Section 4.4**.
- 6.1.2 Depending upon the position of the converter station platform within the limits of deviation the proposed development could interact with an area of surface water ponding or from water overtopping the banks of the Cow Gut watercourse. For most locations within the limits of deviation, the risk of flooding is very low, but there are some localised areas at risk of flooding. The indicative depths of surface water where the converter station platform could potentially be located (location A on **Figure 4-4**) are generally between 0.15m and 0.30m, with some localised ponding between 0.30m and 0.60m. Based on the LIDAR data for the catchment, the approximate peak water level in this area is 11.1m AOD.
- 6.1.3 The platform level for the converter station could vary between 12.0m AOD and 15.8m AOD. To consider how overtopping from the Cow Gut watercourse and surface water runoff might impact the platform, a series of indicative cross-sections through the site topography and platform have been developed. The locations of the cross-sections are shown in **Figure 6-1** and the cross-sections in **Figure 6-2**. These cross-sections assume that the platform starts at the boundary of the limits of deviation although an alternative position may be selected during detailed design.

Figure 6-1 Location of cross-sections



- 6.1.4 At cross-section A, the existing ground level is approximately 11.8m AOD. At this location, the platform would be between approximately 0.2m to 3.4m above the existing ground level. At cross-section B, the existing ground level is approximately 11.00m AOD. At this location, the platform would be between approximately 2.0m to 4.2m above the existing ground level.

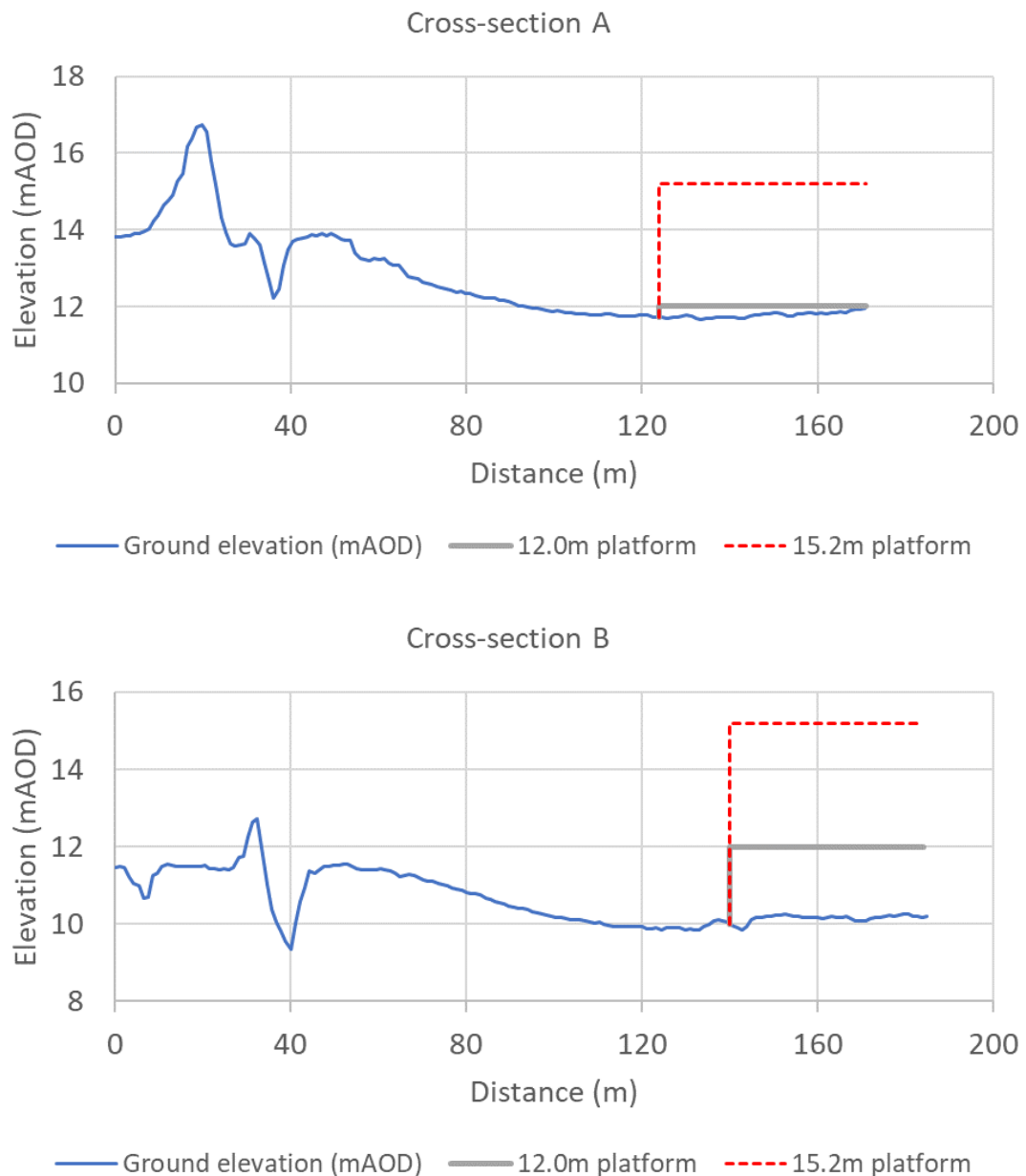


Figure 6-2 Cross-sections through indicative platform as identified in Figure 6-1

- 6.1.5 If the lower platform level is selected, there is the potential that surface water runoff or flows from the Cow Gut could impact the platform in the vicinity of cross-section A. At cross-section B, the ground levels have reduced and therefore any flow would be diverted around the platform. If the higher platform level is selected at detailed design stage, the platform is not anticipated to be at risk from surface water runoff or overtopping from the Cow Gut.
- 6.1.6 To mitigate this potential risk, a swale or filter drain could be introduced along the boundary of the platform to manage this risk of flooding by intercepting and managing the runoff from higher land and directing it around the platform. The need for mitigation will depend upon the position of the platform within the limits of deviation and the level of the platform. Therefore, the need for this potential mitigation will be confirmed at reserved matters stage once the position of the platform is confirmed.

6.2 Surface Water Drainage Strategy

6.2.1 As the Onshore Converter Station Zone is currently greenfield, the proposed development would increase the rate and volume of surface water runoff without mitigation. SLR Consulting Limited has prepared a surface water drainage strategy for the proposed onshore converter station (reference 404.000041.00001, dated 04/07/2023). The hierarchy of options has been applied to determine a suitable approach for discharge of surface water from the Onshore Converter Station Zone.

- Based on the underlying geology and infiltration testing done on adjacent sites, infiltration to the ground is not considered to be feasible.
- The preferred option identified is for discharge of surface water to the tidal reach of the Sleek Burn.

6.2.2 As the Sleek Burn is tidal within this reach, SLR propose that an unrestricted discharge from is allowed. However, to manage the impacts of tide locking at the outfall, attenuation storage is proposed for the 1 in 100 year event with an allowance for climate change as well as a 4-hour 1 in 100 year event with an allowance for climate change. A 4-hour event has been selected to coincide with the typical duration of high tide and the period of tide locking. Free discharge would be possible following the recession of the tide.

6.2.3 Attenuation is provided by two attenuation basins within the Onshore Converter Station Zone that have been designed by SLR to provide 300mm freeboard during the critical event and satisfy the simple index method with regards to pollution mitigation. It is proposed that the bases of the attenuation basins will be permanently wet with a 600mm retained depth of water below the outlet and attenuation storage volume.

6.2.4 An impermeable area of approximately 13.1-hectares has been assumed to be consistent with the area within the limits of deviation. Based on this impermeable area, an attenuation storage volume of approximately 5,800m³ is proposed across the two attenuation basins.

6.3 Safe Access

6.3.1 It is necessary to consider and incorporate safe access arrangements as part of the mitigation, to ensure the users/occupants of the development are safe in times of flooding.

6.3.2 The PPG Flood Risk and Coastal Change section (para 005) states that, as well as other aspects, is necessary to consider the ability of users of the development to safely access and egress from the development in times of flood.

6.3.3 The proposed Onshore Converter Station Zone is located within Flood Zone 1 and is at low risk of flooding. Safe access and egress from the Onshore Converter Station Zone can be achieved via Brock Lane and travel via the A189 to North Seaton to the north and Blyth to the south. The A189 crosses the River Wansbeck and River Blyth in a number of locations, but these road crossings are elevated significantly above the watercourse levels.

6.4 Construction Phase Mitigation

6.4.1 For the construction phase, a Construction Environmental Management Plan (CEMP) will be produced so that the potential impacts of construction are managed efficiently, including measures to mitigate the adverse impacts of construction and reduce the risk of detrimental impact on flood risk and surface water. The CEMP will be a live document that will be reviewed and updated at regular intervals throughout the construction phase.

6.4.2 Measures will be adopted through the CEMP to mitigate against the risk to local watercourses from contaminated surface water runoff arising from general construction activities and the

operation of construction vehicles present during the construction phase. These procedures may include:

- Bunding and raising the ground where pollutant material is stored;
- Creating a temporary surface water drainage network, separate from the existing drainage routes to the Cow Gut and other local watercourses, to manage surface water run-off during the construction phase; and
- Pollution clean-up measures in the event of accidental spillages.

7 Conclusions

- 7.1.1 This FRA has been prepared by Stantec to accompany an outline planning application for the proposed Berwick Bank Onshore Converter Station Zone near East Sleekburn in Northumbria.

Vulnerability and Sequential Test

- 7.1.2 The FRA considers the development of the Onshore Converter Station Zone as part of the Onshore Scheme for the Berwick Bank windfarm. The platform for the converter station houses electrical equipment to transform between direct and alternating currents. The proposed development is classified as 'essential infrastructure' as defined in as defined in the National Planning Practice Framework (NPPF) Annex 3.
- 7.1.3 The Onshore Converter Station Zone lies in Flood Zone 1 in the present day and is outside the 1 in 1000 annual probability flood extent when the impacts of climate change have been taken into account.
- 7.1.4 The Onshore Converter Station Zone is located within the Blyth Estuary Strategic Employment Area identified in the Local Plan as being actively promoted to the renewable and low carbon energy, advanced manufacturing and offshore sectors. On the basis of the generally low risk of flooding from all sources and the allocation within the Local Plan, it is considered that the Sequential Test is passed. The Exception Test is not required for development in Flood Zone 1.

Flood Risk

- 7.1.5 The Onshore Converter Station Zone is within Flood Zone 1 and at a low risk of flooding from larger rivers and the sea. This will remain the case when the impacts of climate change are taken into account.
- 7.1.6 Within the Onshore Converter Station Zone the risk of surface water flooding is generally very low, but there are some localised areas of surface water ponding within at low to high risk of surface water flooding.
- 7.1.7 The Cow Gut watercourse runs along the northern boundary and is perched above the Onshore Converter Station Zone. Flows exceeding the capacity of this watercourse have the potential to flow overland into areas of the Onshore Converter Station Zone. This is not directly represented on the Flood Map for Planning, but the risk of flooding from surface water mapping gives an indication of the potential impacts of these exceedance flows. This should be considered within the proposed development layout and mitigation provided as appropriate.
- 7.1.8 The risk of flooding from groundwater, reservoir breach, sewer flooding and from other sources is considered to be low. There are no records of historic flooding at the site. The closest recorded flood events are associated with tidal flooding within the Blyth Estuary, but these extents are contained within the channel.

Mitigation Strategy

- 7.1.9 The converter station will be located on a platform with a level between 12.0mAOD and 15.2mAOD. The exact location of the platform within the limits of deviation and the platform level will be determined at detailed design stage. The platform is generally well above surrounding ground levels, but once its position is confirmed there might be a requirement to include a swale or filter drain along the boundary of the platform to manage this risk of flooding by intercepting and managing the runoff from higher land or flow from the Cow Gut watercourse, and directing it around the platform. This can be accommodated within the Onshore Converter

Station Zone and the need for this will be confirmed at reserved matters stage once the position of the platform is confirmed.

- 7.1.10 The existing Onshore Converter Station Zone is greenfield and therefore a surface water drainage strategy has been prepared by SLR Consulting to mitigate additional rates and volumes of surface water runoff. It is proposed that surface water runoff will be discharged to the tidal reach of the Sleek Burn. Approximately 5,800m³ of attenuation storage is provided across two attenuation basins based on the 1 in 100 year design event including an allowance for climate change and further storage to account for periods of tide locking. The base of the attenuation basins will remain wet, with a 600mm retained depth of water.
- 7.1.11 Safe access and egress from the Onshore Converter Station Zone can be achieved via Brock Lane and travel via the A189 to North Seaton to the north and Blyth to the south.
- 7.1.12 For the construction phase, a Construction Environmental Management Plan (CEMP) will be produced so that the potential impacts of construction are managed efficiently, including measures to mitigate the adverse impacts of construction and ensure that there is no detrimental impact on flood risk and surface water.

Summary

- 7.1.13 In conclusion, the future users of the proposed development will be at a low risk of flooding and the development will not increase flood risk elsewhere. It is demonstrated that the proposal complies with the NPPF, Planning Practice Guidance (PPG) and the local planning policy with respect to flood risk and is an appropriate development at this location.

Appendix A OpenData Flood Maps

- Site Location Plan
- Site Location (Aerial Photography)
- Area Topography (LiDAR)
- EA Flood Zone Map
- EA Surface Water Flood Risk
- Reservoir Flood Map
- EA Historic Flood Map



Onshore Converter Station Zone



Client
Berwick Bank Wind Farm Limited

BERWICK BANK
Site Location



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Drawn: HL	Checked: DB
Figure: 001	Rev: B



Onshore Converter Station Zone



Client
Berwick Bank Wind Farm Limited

BERWICK BANK
Site Location - Aerial

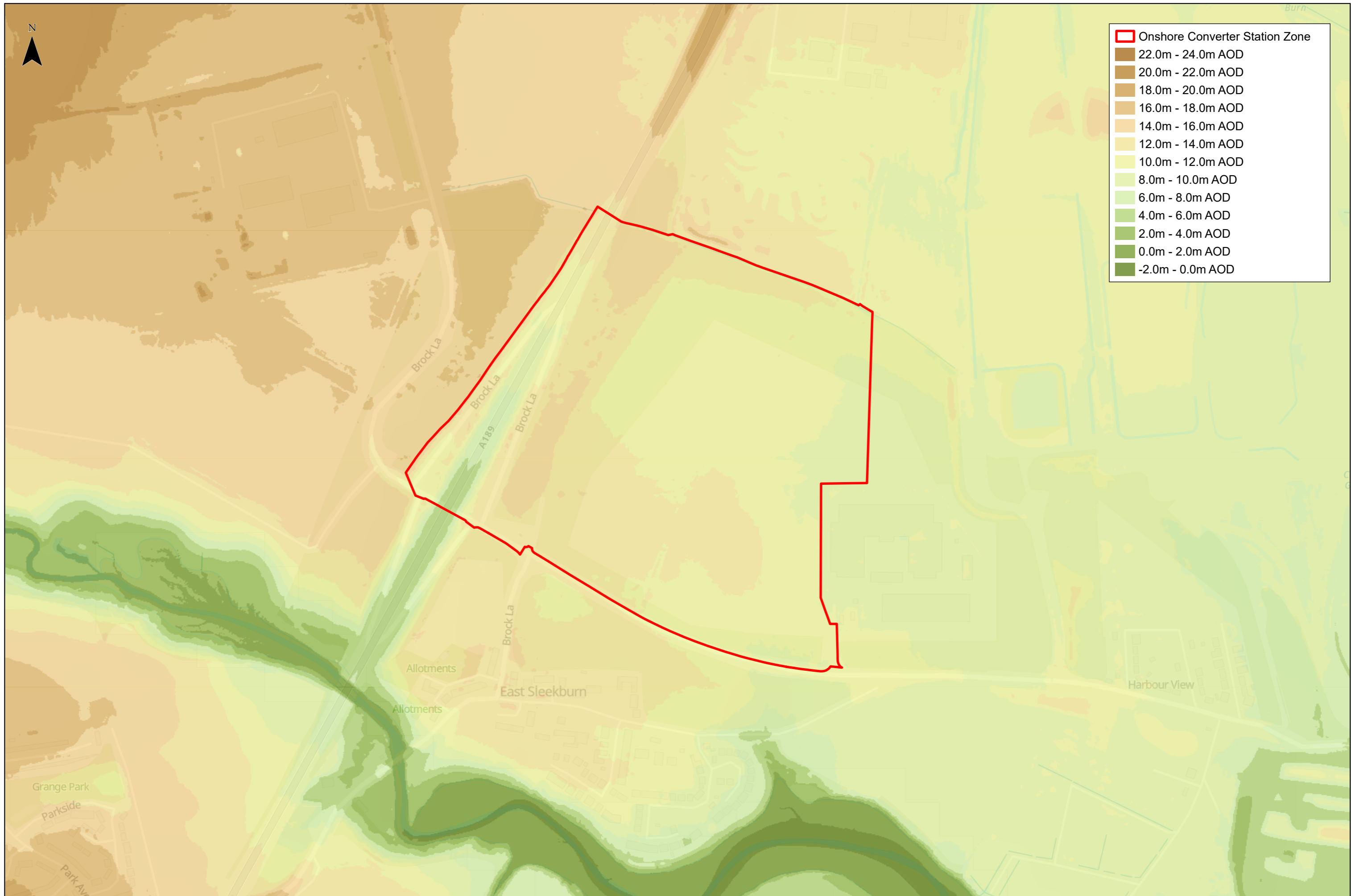


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1:5,000 @ A3 Date: 19/10/2023

Drawn: HL Checked: DB

Figure: 002 Rev: B



	Onshore Converter Station Zone
	22.0m - 24.0m AOD
	20.0m - 22.0m AOD
	18.0m - 20.0m AOD
	16.0m - 18.0m AOD
	14.0m - 16.0m AOD
	12.0m - 14.0m AOD
	10.0m - 12.0m AOD
	8.0m - 10.0m AOD
	6.0m - 8.0m AOD
	4.0m - 6.0m AOD
	2.0m - 4.0m AOD
	0.0m - 2.0m AOD
	-2.0m - 0.0m AOD



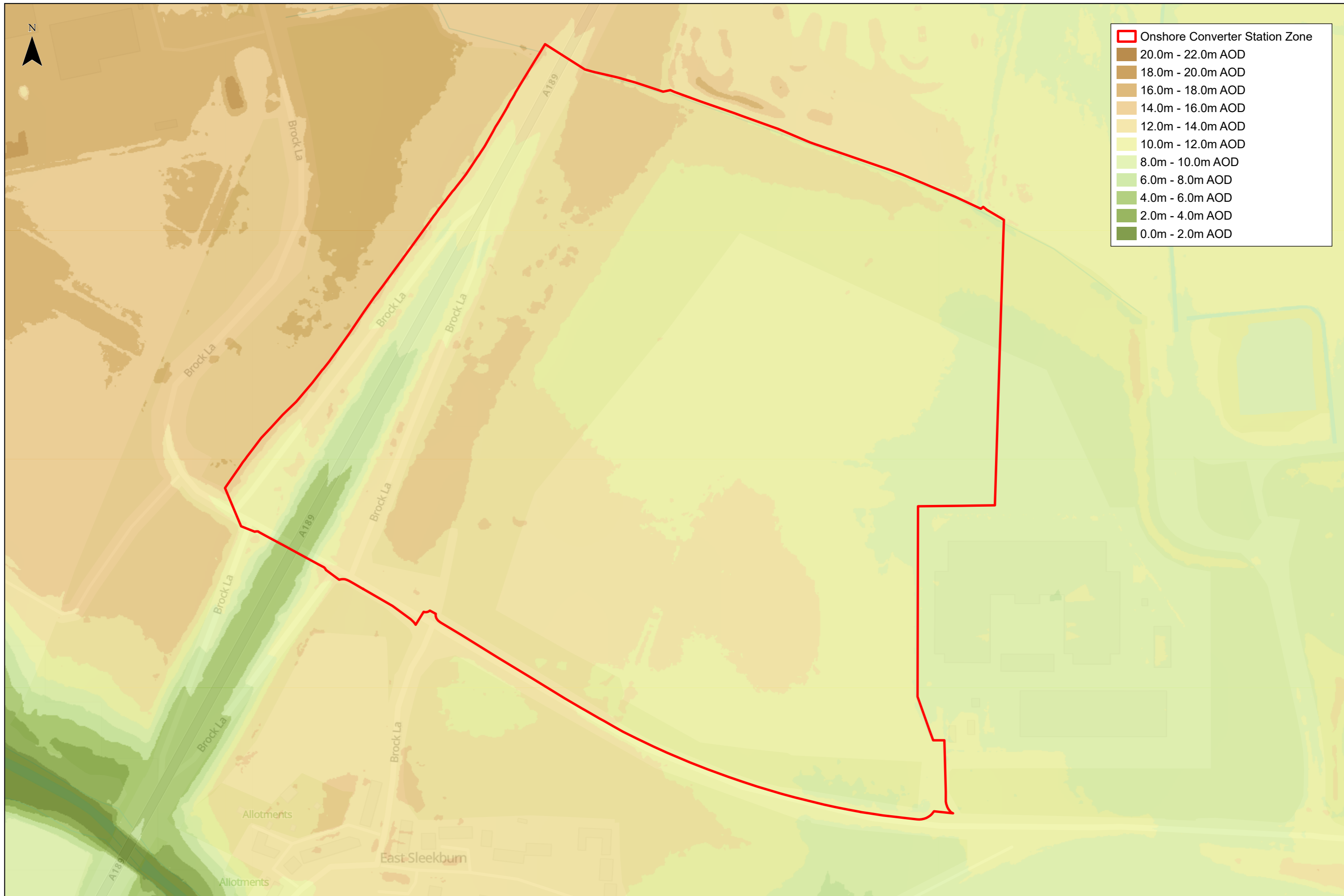
Client
Berwick Bank Wind Farm Limited

BERWICK BANK
Topography

0 250 500 m

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Drawn: HL	Checked: DB
Figure: 003	Rev: B

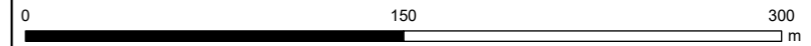


	Onshore Converter Station Zone
	20.0m - 22.0m AOD
	18.0m - 20.0m AOD
	16.0m - 18.0m AOD
	14.0m - 16.0m AOD
	12.0m - 14.0m AOD
	10.0m - 12.0m AOD
	8.0m - 10.0m AOD
	6.0m - 8.0m AOD
	4.0m - 6.0m AOD
	2.0m - 4.0m AOD
	0.0m - 2.0m AOD



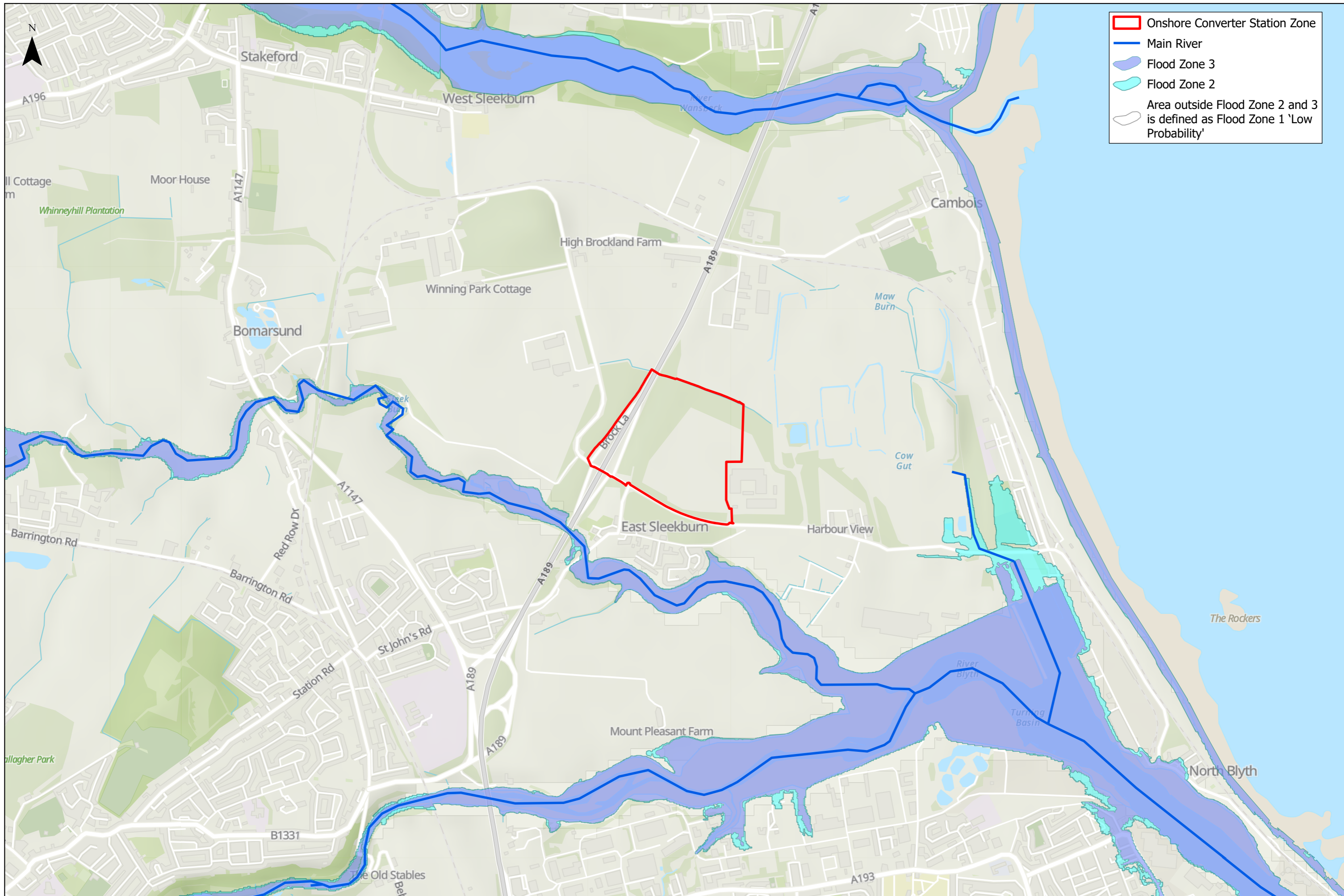
Client
Berwick Bank Wind Farm Limited

BERWICK BANK
Topography - Detailed



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1:3,000 @ A3	Date: 19/10/2023
Drawn: HL	Checked: DB
Figure: 003a	Rev: B



- Onshore Converter Station Zone
- Main River
- Flood Zone 3
- Flood Zone 2
- Area outside Flood Zone 2 and 3 is defined as Flood Zone 1 'Low Probability'



Client
Berwick Bank Wind Farm Limited

BERWICK BANK
EA Flood Zone



0 500 1,000 m
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 Flood Zones refer to the probability of river and/or sea flooding, ignoring the presence of defences.

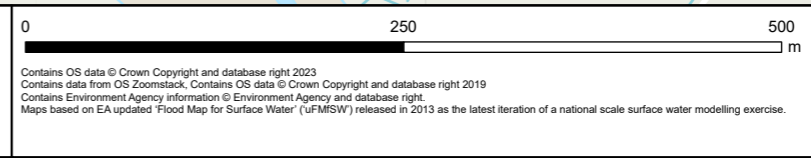
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Drawn: HL	Checked: DB
Figure: 004	Rev: B



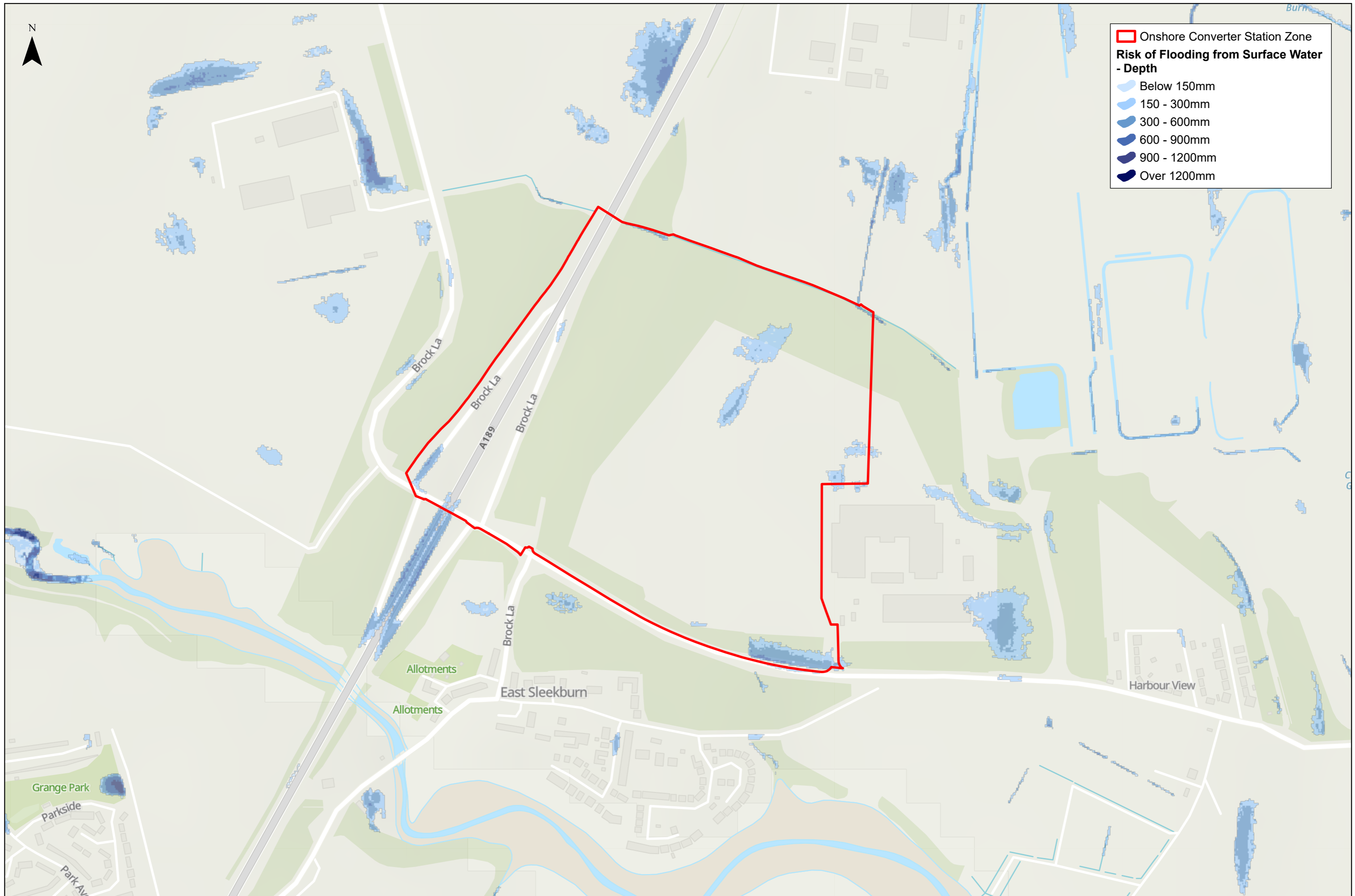


Client
Berwick Bank Wind Farm Limited

BERWICK BANK
EA Surface Water Flood Risk - Depth
3.3 Percent Chance



1:5,000 @ A3	Date: 19/10/2023
Drawn: HL	Checked: DB
Figure: 005a	Rev: B



Onshore Converter Station Zone

Risk of Flooding from Surface Water - Depth

- Below 150mm
- 150 - 300mm
- 300 - 600mm
- 600 - 900mm
- 900 - 1200mm
- Over 1200mm



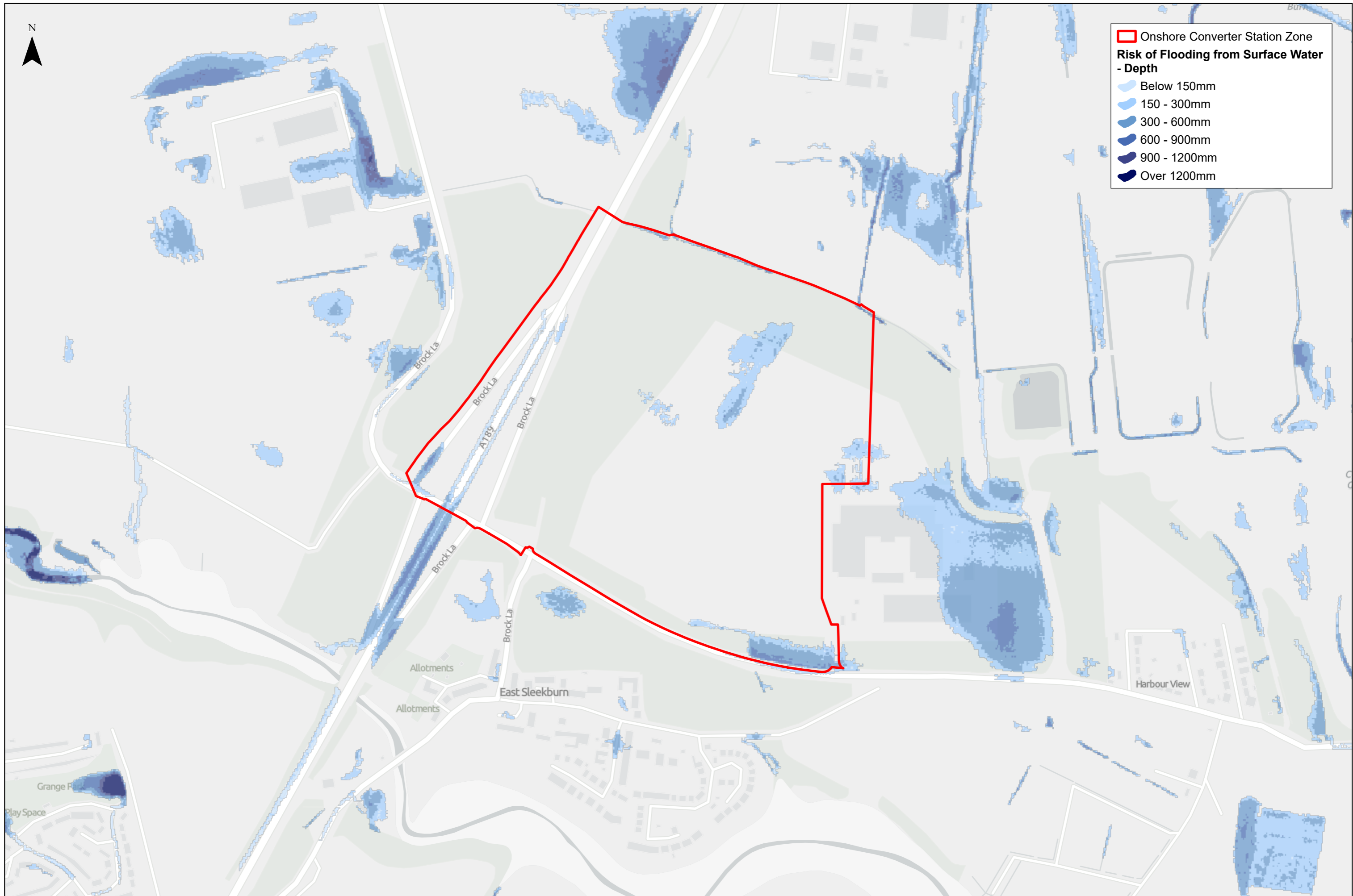
Client
Berwick Bank Wind Farm Limited

BERWICK BANK
EA Surface Water Flood Risk - Depth
1.0 Percent Chance

0 250 500 m

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Maple based on EA updated 'Flood Map for Surface Water' (uFMSW) released in 2013 as the latest iteration of a national scale surface water modelling exercise.

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Drawn: HL	Checked: DB
Figure: 005b	Rev: B



Onshore Converter Station Zone

Risk of Flooding from Surface Water - Depth

- Below 150mm
- 150 - 300mm
- 300 - 600mm
- 600 - 900mm
- 900 - 1200mm
- Over 1200mm



Client
Berwick Bank Wind Farm Limited

BERWICK BANK
EA Surface Water Flood Risk - Depth
0.1 Percent Chance

0 250 500 m

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Map based on EA updated 'Flood Map for Surface Water' (uFMSW) released in 2013 as the latest iteration of a national scale surface water modelling exercise.

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Drawn: HL	Checked: DB
Figure: 005c	Rev: B



Client
Berwick Bank Wind Farm Limited

BERWICK BANK
Risk of Flooding from Reservoirs - Maximum Flood Extent

0 250 500 m

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Figure: 006	Rev: B





	Onshore Converter Station Zone
	Historic Flood Map
	Recorded Flood Outlines



Client
Berwick Bank Wind Farm Limited

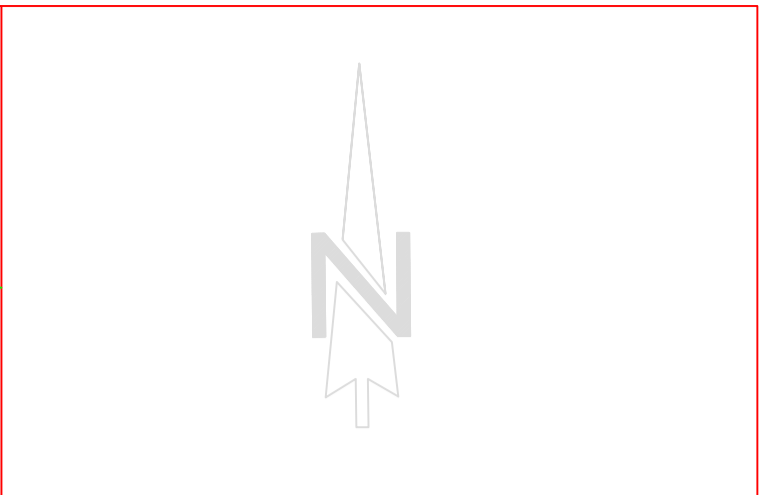
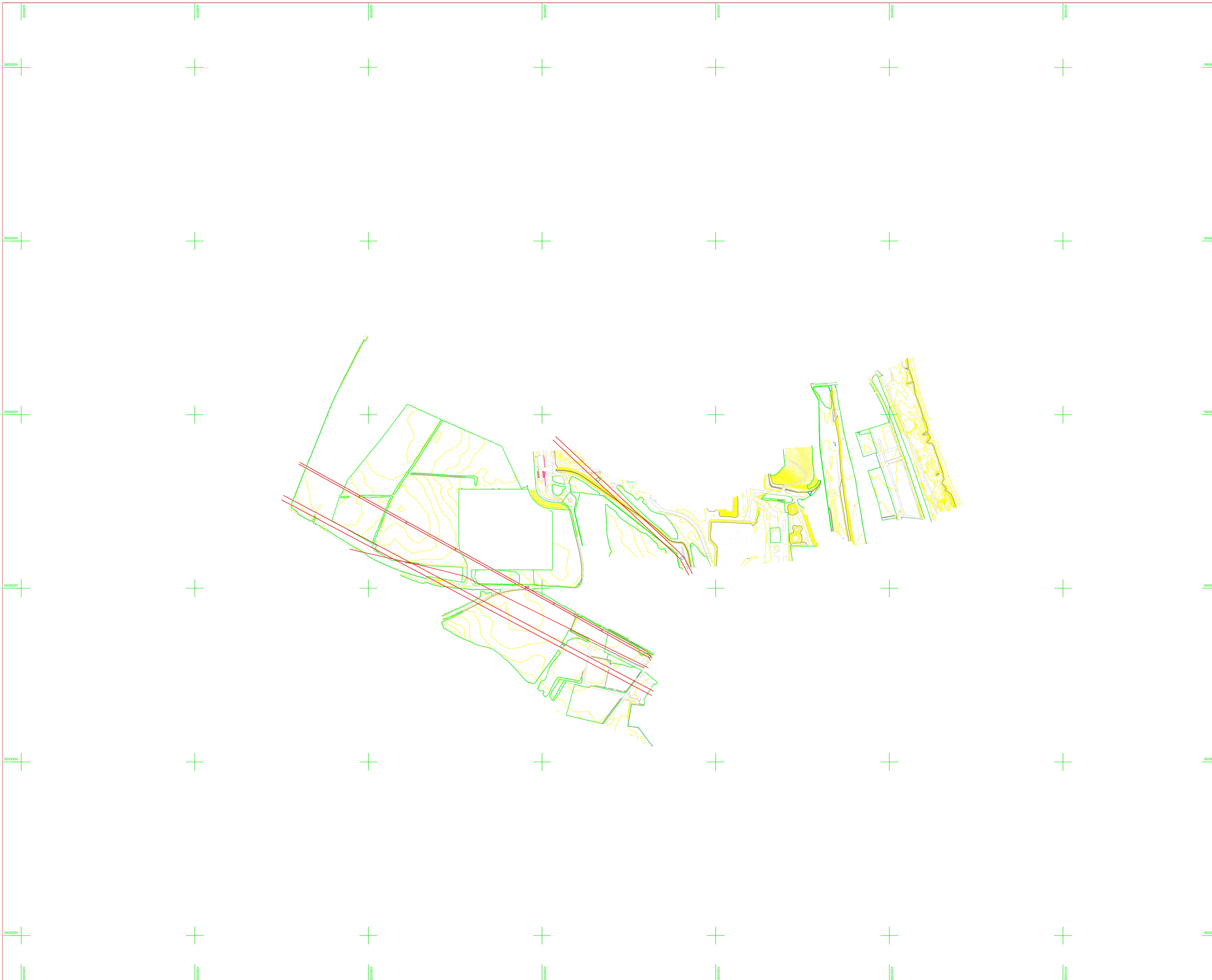
BERWICK BANK
EA Recorded Historic Flood Extents

0 250 500 m

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Historic Flood Map shows the maximum extent of all individual Recorded Flood Outlines from river, the sea and groundwater springs and shows areas of land that have previously been subject to flooding in England.
Recorded Flood Outlines shows all EA records of historic flooding from rivers, the sea, groundwater and surface water

1:5,000 @ A3	Date: 19/10/2023
Drawn: HL	Checked: DB
Figure: 008	Rev: B

Appendix B Topographic survey



LEGEND

SYMBOLS

BOREHOLE		STUMP	
CONTROL STATION		TRIAL PIT	
GATE		TREE	
SERVICE COVER			

LINE STYLES

BOTTOM OF BANK	
BUILDING FOOTPRINT	
BUSH CANOPY	
CHANGE OF SURFACE	
CHANNEL LINE	
FENCE	
HEDGE	
OVERHEAD WIRES	
ELECTRIC	
TELECOM	
PATH EDGE	
ROAD CENTRE LINE	
STRIP GULLY	
TOP OF BANK	
TOP OF KERB	
TREE CANOPY	
WALL	

ABBREVIATIONS

AV = AIR VALVE	LP = LAMPOST
BH = BOREHOLE	MH = MANHOLE
BOL = BOLLARD	MKR = MARKER
BOX = ELEC / BT BOX	PIT = TRIAL PIT
BT = BRITISH TELECOM	PEG = MARKER PEG
EA = EAVES LEVEL	RD = RIDGE LEVEL
EC = ELECTRICITY COVER	RS = ROAD SIGN
EP = ELECTRICITY POLE	SB = SIGN BOARD
FFL = FINISHED FLOOR LEVEL	SC = STOP COCK
FP = FLAG POLE	SV = STOP VALVE
G = GULLY	TCB = TELEPHONE CALL BOX
GAS = BRITISH GAS	TL = TRAFFIC LIGHT
HY = FIRE HYDRANT	TOW = TOP OF WALL
IC = INSPECTION COVER	TP = TELEGRAPH POLE
IL = INVERT LEVEL	TV = TELEVISION
SG = STRIP GULLY	WM = WATER METER

NOTES

- GRID IS RELATED TO O.S. GRID
- ALL LEVELS RELATE TO O.S.B.M. ASCERTAINED BY LOGGING G.P.S. DATA
- CONTOURS ARE AT 0.50 (m) INTERVALS
- CONTOURS AT VERTICAL FEATURES ARE INDICATIVE
- LEVELS FOR ROAD ARE TAKEN ALONG CHANNEL LINE
- WHILE EVERY EFFORT HAS BEEN MADE TO LOCATE THE POSITION OF ALL SERVICE COVERS (eg. manholes) IT SHOULD BE NOTED THAT THIS MAY NOT HAVE BEEN POSSIBLE AT THE TIME OF SURVEY DUE TO GROUND COVER OR LOCAL OBSTRUCTIONS.
- ISOLATED MATURE TREES ARE DENOTED BY TRUNK AND ESTIMATED AVERAGE OUTER CANOPY.
- ALL CONTROL STATION COORDINATES SHOULD BE CHECKED AND VERIFIED ON SITE PRIOR TO USE. DOUGLAS LAND SURVEYS SHOULD BE INFORMED OF ANY DISCREPANCIES FOUND.
- OWNERSHIP OF SURVEY DATA REMAINS WITH DOUGLAS LAND SURVEYS. UNTIL INVOICE RELATING TO SUCH DATA HAS BEEN PAID IN FULL

CONTROL STATIONS

CONTROL STATIONS				
Station No.	Description	Easting	Northing	Level
STN03	HILT1	429785.436	583256.246	8.556
STN04	HILT1	429751.012	583199.168	8.743
STM1000	NAIL	429908.991	583660.925	7.776

20/11/2022

DouglasLAND SURVEYS Ltd.

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FIFE. DD6 8BN.
SCOTLAND

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□ LAND SURVEYS
□ HYDROGRAPHIC SURVEYS
□ PHOTOGRAMETRIC SURVEYS
□ AS BUILT SURVEYS
□ BOUNDARY RESOLUTION

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**NSL CONVERTER STATION,
BLYTH.**

Drawn By:	L.Burns	Scale:	1/5000	Date:	30/11/2022
Drawing Number:	36022	Revision:	01		

Appendix C Stakeholder Correspondence

[REDACTED]

From: [REDACTED]
Sent: [REDACTED]
To: [REDACTED]
Subject: FW: Our ref: 287612 FW: 221116/MKB03 - Berwick Bank Product 4 Data Request

From: Northeast Newcastle, Customer Contact [REDACTED] [@environment-agency.gov.uk](mailto:[REDACTED]@environment-agency.gov.uk)>
Sent: 17 November 2022 09:59
To: [REDACTED] [@stantec.com](mailto:[REDACTED]@stantec.com)>
Subject: Our ref: 287612 FW: 221116/MKB03 - Berwick Bank Product 4 Data Request

Our Ref: 287612

[REDACTED],

Enquiry regarding product 4 for Berwick Bank.

Thank you for your enquiry which was received on 09 November 2022.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004. The information is attached.

The Environment Agency is the relevant risk management authority for flood risk on 'main rivers'. Local Authorities now take the lead for local flood risk, including 'ordinary watercourses', surface water and ground water flooding. We recommend that you contact the Lead Local Flood Authority for further information. Regarding flood risk from sewers please contact Northumbrian Water Group.

There are no Environment Agency owned or maintained flood defences protecting the property/ site. Ultimately the responsibility for maintenance of the river bed, banks, structures and vegetation or obstructions lies with the relevant land owners. For further information, we suggest contacting either the Local Authority or the site's owner.

For general advice about assessing flood risk when completing planning applications, and in particular how to complete a flood risk assessment (FRA) as part of a planning application go to <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>

Our Sustainable Places Team can give more detailed advice although there is a charge for this. Here is the link to the standard terms and conditions that apply to our charged planning advice service <https://www.gov.uk/government/publications/planning-advice-environment-agency-standard-terms-and-conditions>. The standard charge is £100 per hour.

Any works near a main river may require approval from the Environment Agency or MMO. You may need to apply for a Flood Risk Activity Permit if:

- the works are within 8 metres(m) from a non-tidal Main river and from any flood defence structure or culvert.
- the works are within 16m from the a tidal Main river and from any flood defence structure or culvert.
- the works are within 16m from a sea defence structure.

To determine whether you actually need a permit please visit <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits> Or you can send a brief explanation of what works you plan to do (and where) so we can confirm.

Abstract

Please see below regarding the reuse of this information.

Name	Product 4
Description	Detailed Flood Risk Assessment Map for Berwick Bank
Licence	Open Government Licence
Information Warnings	None
Information Warning - OS background mapping	<i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.</i>
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Data Available Online

Many of our flood datasets are available online:

- Flood Map For Planning ([Flood Zone 2](#), [Flood Zone 3](#), [Flood Storage Areas](#), [Flood Defences](#), [Areas Benefiting from Defences](#))
- [Risk of Flooding from Rivers and Sea](#)
- [Historic Flood Map](#)
- [Current Flood Warnings](#)

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Kind Regards,

[Redacted]

Customers and Engagement Officer

Environment Agency | Tyneside House, Skinnerburn Road, Newcastle Business Park, Newcastle upon Tyne, NE4 7AR

[Redacted] [@environment-agency.gov.uk](mailto:[Redacted]@environment-agency.gov.uk)

Working days: Monday to Friday

Please consider this a "thanks in advance". Every e-mail has a carbon footprint, so if you don't hear back from me it's because of the planet. #WhatWeCanDo



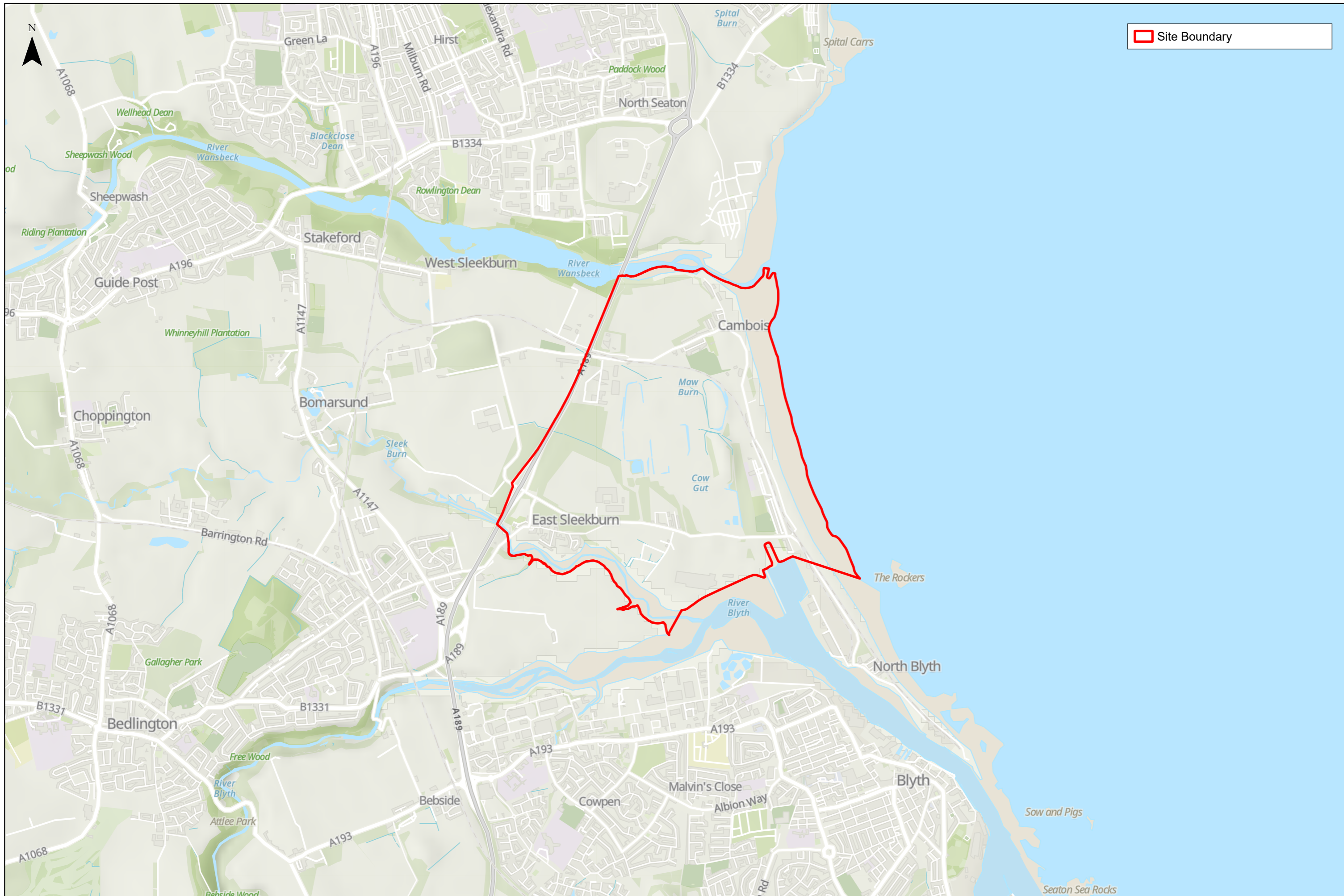
Creating a better place for people and wildlife

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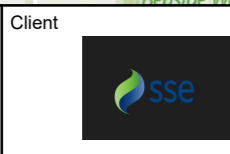
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Attention: Ce courriel provient de l'extérieur de Stantec. Veuillez prendre des précautions supplémentaires.

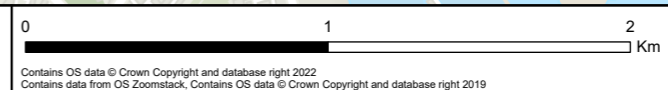
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Site Boundary



SSE BERWICK BANK
Site Location



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1:25,000 @ A3	Date: 17/11/2022
Drawn: ZW	Checked: HL
Figure: 001	Rev: A

Flood Map for Planning

Legend

- Statutory Main Rivers
- - - Defences
- ▭ Flood Storage Areas
- ▨ Areas benefiting from flood defence
- Flood Zone 3
- Flood Zone 2



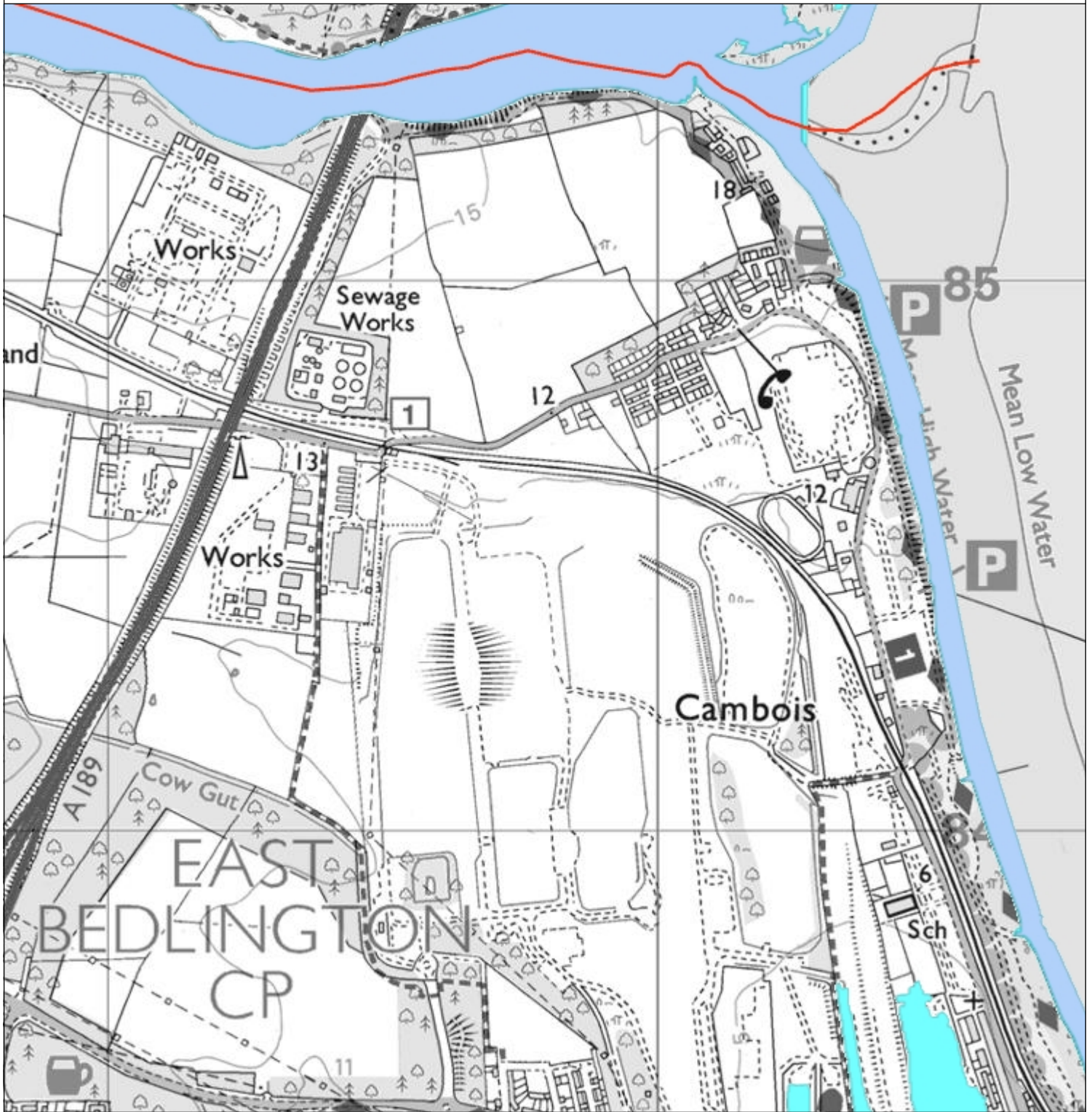
1: 10,000

0 250

Metres









Flood Map for Planning



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Legend

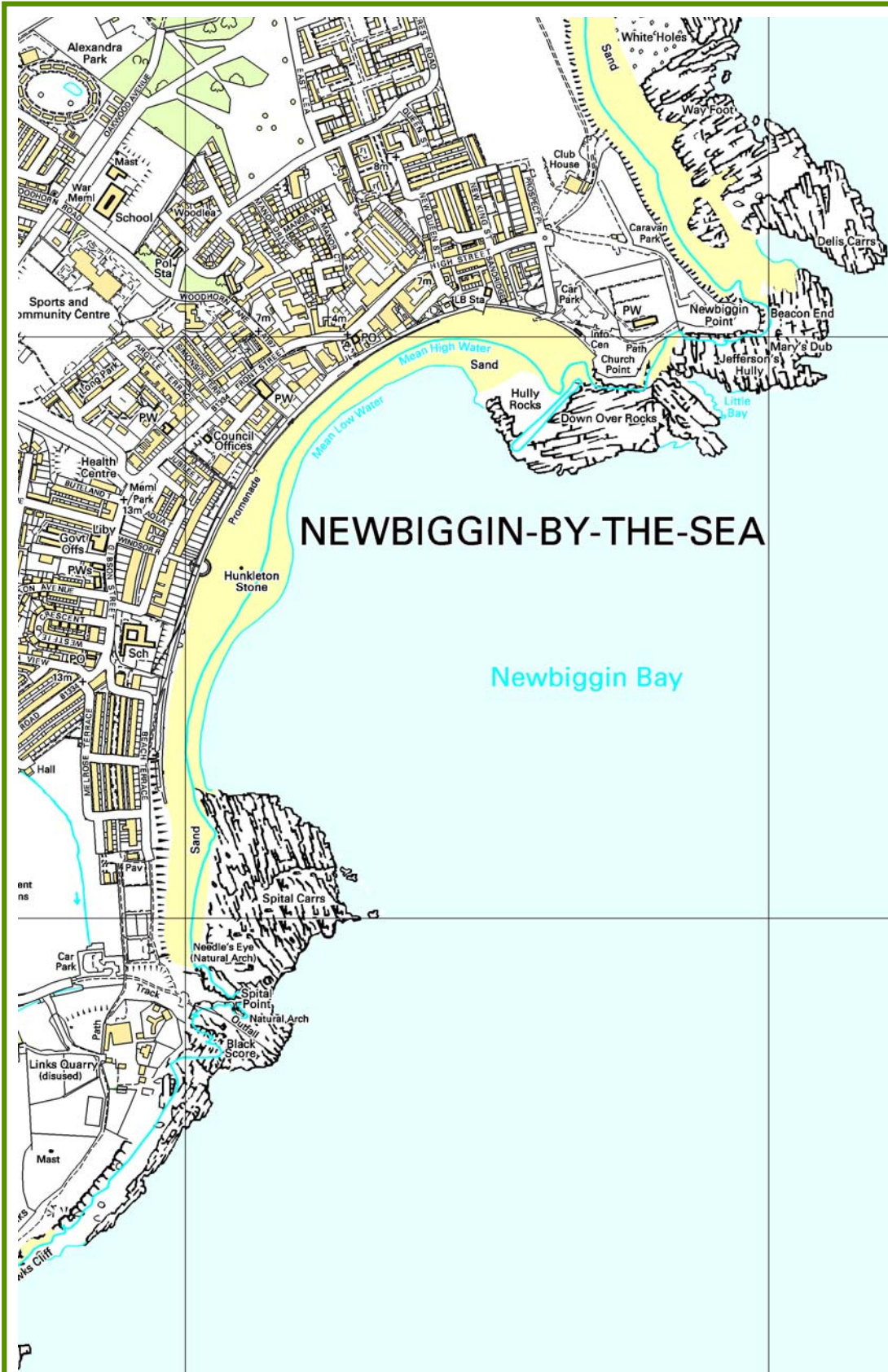
-  Statutory Main Rivers
-  Defences
-  Flood Storage Areas
-  Areas benefiting from flood defences
-  Flood Zone 3
-  Flood Zone 2



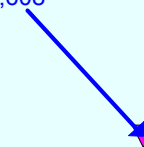
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0 250

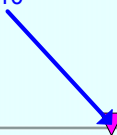
Metres



3,608



3,610



Legend

Node Points with Modelled Flood Levels



**Node Locations
Newbiggin by the Sea**

Date: Nov 2022 Scale: 1:10,000 Status: Final

MapEdit data quality flag: Adequate

Data Source: MapEdit 24-11-2022

Approved by: James Carradice 24-11-2022

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Tidal Node Point Table

Newbiggin by the Sea

Chainage	3608	3610
Easting	433,902.00	432,834.00
Northing	587,622.00	586,005.00
1	3.22	3.22
2	3.29	3.29
5	3.4	3.4
10	3.48	3.48
20	3.57	3.58
25	3.6	3.61
Level at		
Return		
Period		
(1:x)*		
75	3.75	3.76
100	3.78	3.79
150	3.85	3.86
200	3.89	3.9
250	3.93	3.94
300	3.95	3.96
500	4.04	4.05
1,000	4.15	4.16
10,000	4.56	4.57

*Levels are in mAOD

Base year = 2008

Tidal Node Point Table

Blyth

Chainage	3612	3614	3616	3618
Easting	432,630.05	433,690.89	434,367.90	434,378.05
Northing	584,237.77	582,543.25	580,683.91	578,813.10
Level at				
Return				
Period (1:x)*				
1	3.22	3.22	3.23	3.22
2	3.29	3.3	3.3	3.29
5	3.4	3.4	3.41	3.4
10	3.48	3.49	3.49	3.48
20	3.58	3.58	3.58	3.58
25	3.61	3.61	3.61	3.61
50	3.7	3.7	3.7	3.7
75	3.76	3.76	3.76	3.76
100	3.79	3.79	3.8	3.79
150	3.86	3.86	3.86	3.86
200	3.9	3.9	3.9	3.9
250	3.94	3.94	3.94	3.93
300	3.96	3.96	3.96	3.96
500	4.05	4.05	4.05	4.04
1000	4.16	4.16	4.16	4.15

*Levels are in mAOD



Legend

Node Points with Modelled Tidal Flood Levels 

Node Point Location Plan Blyth

Date: Nov 2022 Scale: N.T.S. Status: Final

MapEdit data quality flag: Adequate

Data Source: MapEdit 16-11-2022

Approved by: James Carradice 16-11-2022

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Surface Water Flood Risk



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Legend

-  Statutory Main Rivers
-  Flood Extent 1 in 30
-  Flood Extent 1 in 100
-  Flood Extent 1 in 1000



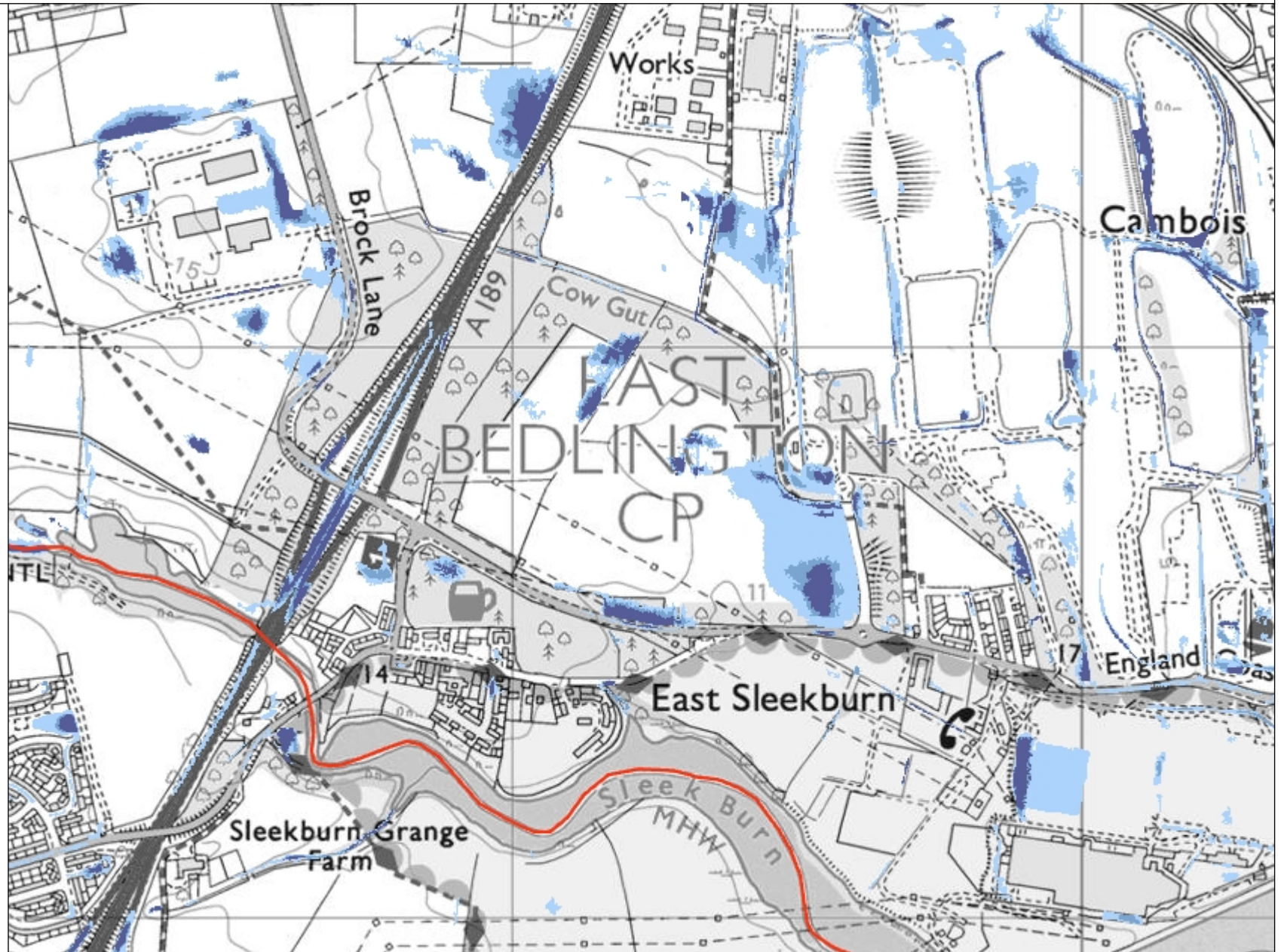
1: 10,000



Surface Water Flood Risk

Legend

- Statutory Main Rivers
- Flood Extent 1 in 30
- Flood Extent 1 in 100
- Flood Extent 1 in 1000



1: 10,000



Subject:

FW: 11595 - maps for Q.4 & Q.5 Berwick Banks LLFA Drainage Mapping

From: FOI Mailbox <FOI@ig.northumberland.gov.uk>

Sent: Wednesday, December 14, 2022 3:30 PM

To: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>

Subject: 11595 - maps for Q.4 & Q.5

Dear [REDACTED],

Please find below the maps for Q.4 and Q.5.

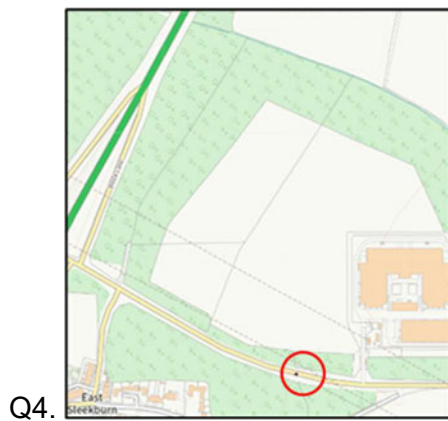
kind regards

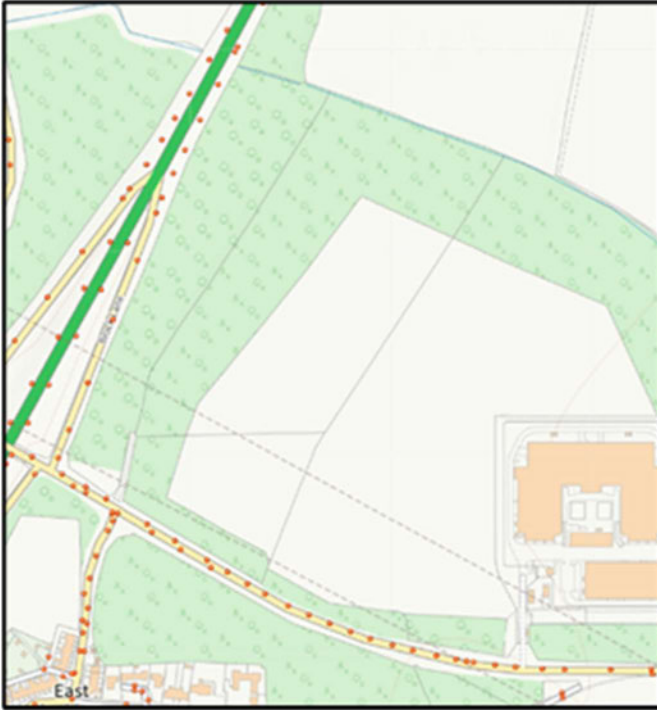
[REDACTED]

Information Governance Office

(t) [REDACTED]

(e) foi@northumberland.gov.uk





Q5.

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Hello,

Thank you for sending the email.

As per my previous email, I would greatly appreciate it if you could please send the maps referenced in your reply and highlighted in yellow below?

Please see highlighted text below. ^

Many thanks,

██████████
Assistant Flood Risk Engineer

The Stills, 1st Floor, 80 Turnmill Street, London EC1M 5QU

Direct: ██████████

Mobile: ██████████
██████████@stantec.com

From: FOI Mailbox <FOI@ig.northumberland.gov.uk>

Sent: 12 December 2022 16:40

To: ██████████@stantec.com>

Subject: Re: EIR Full Response Ref: 11595

Dear ██████████,

Please see the following and attached in response to EIR 11595.

Q.1 Any records of flooding in the vicinity of the site.

We do not hold any records of flooding in the vicinity of the site.

Q.2 Any maps or information on surface water flood risk other than those held by the Environment Agency.

We don't hold any additional flood risk maps for this area.

Q.3 As above for groundwater flood risk.

The area is within the C2 category for NE Mining & Groundwater Constraints. This area is part of the coalfield area with shallow minewater. You may need to consider the proposed drainage and infiltration SuDS may not work.

Further information is found online - <https://www.gov.uk/guidance/mining-and-groundwater-constraints-for-development>

Q.4 Maps or information regarding local land drainage systems.

There is an unnamed watercourse to the north of the site this is part of the Cow Gut watercourse. This information is on standard OS mapping.

Additionally, there is a recorded culvert structure which is beneath the highway, located on the map below. We are unaware of a watercourse for this feature, this will need to be investigated onsite.

Q.5 Details of any structure located on any of the watercourse and their condition.

We are unaware of any structures located on the watercourse

As above for highway drainage systems.

Highway drainage system including gullies are located within Brock Lane. Below is a map of known gully locations.

Q.6 Information on the local strategy for dealing with surface water.

Please see attached document for Northumberland Local Flood Risk Management Strategy.

Q.7 Types of SuDS likely to be acceptable for adoption by the council.

SuDS must provide multifunctional benefits. They must manage the quantity and quality of water whilst providing amenity and biodiversity benefits. The LLFA at Northumberland do not consider attenuation tanks or oversized pipes as sustainable drainage. These systems are only considered if other SuDS cannot be achieved.

The council may adopt features located in greens open spaces such as basins and swales. A Section 106 agreement would need to be in place and an agreed commuted sum.

Q.8 Any runoff restrictions that may apply at this location (over and above requirements set out in NPPF) e.g. Critical Drainage Areas.

No runoff restrictions other than Greenfield runoff rate. Northumberland does not have any CDA's.

Q.9 Your current policy with regards to the updated EA climate change guidance.

Northumberland's climate change allowance is 45%.

Q.10 Anything else you feel is relevant that an FRA would need to consider.

I have attached the North East LLFA Local Standards.

kind regards



Information Governance Office

(t) 0345 600 6400

(e) foi@northumberland.gov.uk

From: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>

Sent: 12 December 2022 16:32

To: FOI Mailbox <foi@ig.northumberland.gov.uk>

Cc: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>; [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>

Subject: RE: EIR Full Response Ref: 11595

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Good Afternoon,

My colleague requested the below flood data from you on the 16.11.2022, **Ref: 11595**. Within your reply to questions **Q.4 Maps or information regarding local land drainage systems.** and **Q.5 Details of any structure located on any of the watercourse and their condition.** A culvert structure map for beneath the highway and a Highway drainage gullies location map within Brock Lane was provided in your responses. However, the links / attachments of the maps provided in your email are not accessible to me and are not working. These maps would be very helpful within our FRA assessment that we are undertaking. Would it be possible for the maps to be re-sent to myself, in PDF format too if that is possible?

Please let me know if you have any questions about this request.

Many thanks,

[REDACTED]
Assistant Flood Risk Engineer

The Stills, 1st Floor, 80 Turnmill Street, London EC1M 5QU

Direct: [REDACTED]

Mobile: [REDACTED]

[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)

From: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>

Sent: 16 November 2022 16:41

To: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>

Cc: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>

Subject: FW: EIR Full Response

Hi [REDACTED]

Please see the LLFA Berwick Bank SSE data request response.

Many thanks,

[REDACTED]
Graduate Engineer, Flood and Water Management

The Stills, 1st Floor, 80 Turnmill Street, London, EC1M 5QU

██████████@stantec.com



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From: foi@ig.northumberland.gov.uk <foi@ig.northumberland.gov.uk>

Sent: 16 November 2022 16:32

To: ██████████@stantec.com>

Subject: EIR Full Response

Our Ref: 11595

Dear Enquirer,

Request for Information

I refer to your request for information in relation to flood risk assessments.

The Council have considered your request for information under the terms of the Environmental Information Regulations 2004. In our view the request falls within the scope of the broad definition of environmental information contained within Regulation 2(1) of the Regulations.

Right of Access

The Environmental Information Regulations 2004 provide that a public authority that holds environmental information shall make it available on request. The Regulations create a general right of access to environmental information held by public authorities subject to various exceptions. A public authority may refuse to disclose environmental information if an exception to disclosure applies and the public authority decides that in all the circumstances the public interest in maintaining the exception outweighs the public interest in disclosing the information.

The Council has carefully considered whether the information requested can be disclosed under the Regulations.

Q.1 Any records of flooding in the vicinity of the site.

We do not hold any records of flooding in the vicinity of the site.

Q.2 Any maps or information on surface water flood risk other than those held by the Environment Agency.

We don't hold any additional flood risk maps for this area.

Q.3 As above for groundwater flood risk.

The area is within the C2 category for NE Mining & Groundwater Constraints. This area is part of the coalfield area with shallow minewater. You may need to consider the proposed drainage and infiltration SuDS may not work.

Further information is found online - <https://www.gov.uk/guidance/mining-and-groundwater-constraints-for-development>

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There is an unnamed watercourse to the north of the site this is part of the Cow Gut watercourse. This information is on standard OS mapping.

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Highway drainage system including gullies are located within Brock Lane. Below is a map of known gully locations.



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Please see attached document for Northumberland Local Flood Risk Management Strategy.

Q.7 Types of SuDS likely to be acceptable for adoption by the council.

SuDS must provide multifunctional benefits. They must manage the quantity and quality of water whilst providing amenity and biodiversity benefits. The LLFA at Northumberland do not consider attenuation tanks or oversized pipes as sustainable drainage. These systems are only considered if other SuDS cannot be achieved.

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Q.8 Any runoff restrictions that may apply at this location (over and above requirements set out in NPPF) e.g. Critical Drainage Areas.

No runoff restrictions other than Greenfield runoff rate. Northumberland does not have any CDA's.

Q.9 Your current policy with regards to the updated EA climate change guidance.

Northumberland's climate change allowance is 45%.

Q.10 Anything else you feel is relevant that an FRA would need to consider.

I have attached the North East LLFA Local Standards.

Advice and Assistance

The Council recognises its statutory duty to provide advice and assistance under Regulation 9 of the Regulations. Subject to the provision of the Regulations, the Council is seeking to be transparent and open in its response.

Representations and Reconsideration

If you consider that the Council has failed to comply with a requirement of the Regulations in relation to your request, you have a right to make representations under Regulation 11. Representations must be made in writing to the Council no later than 40 working days after the date on which you believe that the Council failed to comply with a requirement of the Regulations.

Any representation should be addressed to:

Information Governance Office, Northumberland County Council, County Hall, Morpeth, NE61 2EF
Email: FOI@northumberland.gov.uk

Enforcement and Appeal Provisions

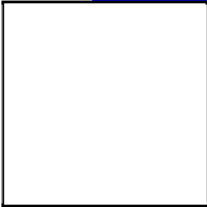
Should you remain dissatisfied following the above process, you have a right under the Regulations to apply to the Information Commissioner for a decision as to whether your request has been dealt with in accordance with the requirements of the Regulations. The Information Commissioners address is:

The Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF
Tel: 0303 123 1113, Email: casework@ico.org.uk

Yours faithfully,

EIR Coordinator - Information Governance Office
Northumberland County Council
County Hall
Morpeth
NE61 2EF

Email: FOI@northumberland.gov.uk



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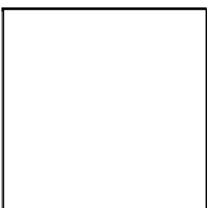
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Save Time Do It Online!

We have made a few key improvements to our site to make our services easy to access. Now you can do everything from paying your council tax, to reporting a faulty street light online. Go to: www.northumberland.gov.uk and click 'pay, apply or report' to access the relevant forms.

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From: Development Enquiries <DevelopmentEnquiries@nwl.co.uk>
Sent: 12 January 2023 16:45
To: [REDACTED]
Cc: [REDACTED]
Subject: FW: Berwick Bank (Blyth) Sewer Drainage & Water Enquiries
Attachments: siteloc.pdf; Berwick Bank (Blyth) flood plan..pdf; Berwick Bank (Blyth) gis A0.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Good afternoon [REDACTED],

Thanks for your enquiry. Please find attached our flood plan and GIS plan of the site. There are no recorded incidents of flooding within the red line boundary that you provided.

Kind regards
[REDACTED]

[REDACTED]

[REDACTED]

Email: developmentenquiries@nwl.co.uk
Address: Leat House, Pattinson Road, Washington NE38 8LB



Customer focused · Results driven · Ethical · Creative · One team

Our new charges for Developer Services customers are now available on our website. Details of the charges that apply from 1 April 2022 can be found here: <https://www.nwl.co.uk/services/developers/our-charges/202223-charges/>

From: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>
Sent: 11 January 2023 16:44
To: Property Solutions <PropertySolutions@nwl.co.uk>
Cc: [REDACTED] <[\[REDACTED\]@stantec.com](mailto:[REDACTED]@stantec.com)>
Subject: Berwick Bank (Blyth) Sewer Drainage & Water Enquiries

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Good afternoon,

Stantec have been commissioned to undertake a flood risk assessment for the site shown in the attached red line plan. The site is approximately centred at OS grid reference NZ 29104 83843 (nearest postcode NE22 7FG). The Environment Agency have directed us to contact the Northumbrian Water Group, for information on any potential flood risk from sewers and drainage mapping, at the above site. The Northumbrian Water Group have directed us to contact you, for this sewer drainage and water enquiry.

Please could you provide any relevant information you have on sewer flood risk and any drainage mapping for the above site.

We look forward to your reply at your earliest convenience. Meanwhile, if you have any queries, please do not hesitate to get in touch using the contact details below.

[REDACTED]
Assistant Flood Risk Engineer

The Stills, 1st Floor, 80 Turnmill Street, London EC1M 5QU

Direct: [REDACTED]

Mobile: [REDACTED] [@stantec.com](mailto:[REDACTED]@stantec.com)

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Northumbrian Water Limited, registered in England and Wales number 2366703.
Registered office: Northumbria House, Abbey Road, Pity Me, Durham DH1 5FJ.

www.nwl.co.uk

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Site Boundary



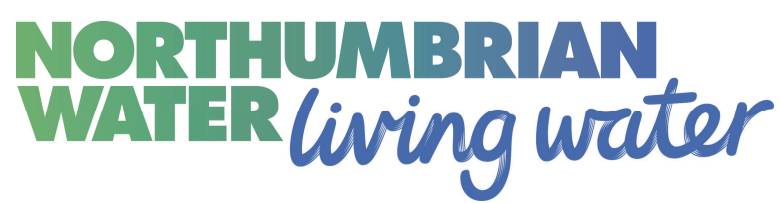


Waste Water -		Private/Non NWL		Proposed		Water Network -		Network Types	
Combined	— (Red)	Combined	— (Green)	Combined	— (Purple)	Distribution	— (Blue)	AB Asbestos	— (Orange X)
Foul	— (Yellow)	Foul	— (Dotted Green)	Foul	— (Dotted Purple)	Treated	— (Purple)	Abandoned	— (Orange /)
Surface	— (Blue Dashed)	Surface	— (Dotted Green)	Surface	— (Dotted Purple)	Raw	— (Orange)	Out of Comm	— (Blue Dashed)
Treated Eff	— (Blue)	Treated Eff	— (Green)			Fire	— (Red)	Proposed	— (Red Dashed)
Untreated Eff	— (Red)	Trade Eff	— (Yellow)			Supply	— (Green)		
Overflow	— (Red Dashed)	Watercourse	— (Blue Dashed)			Private	— (Green Dotted)		

User : BOWMS
Title :

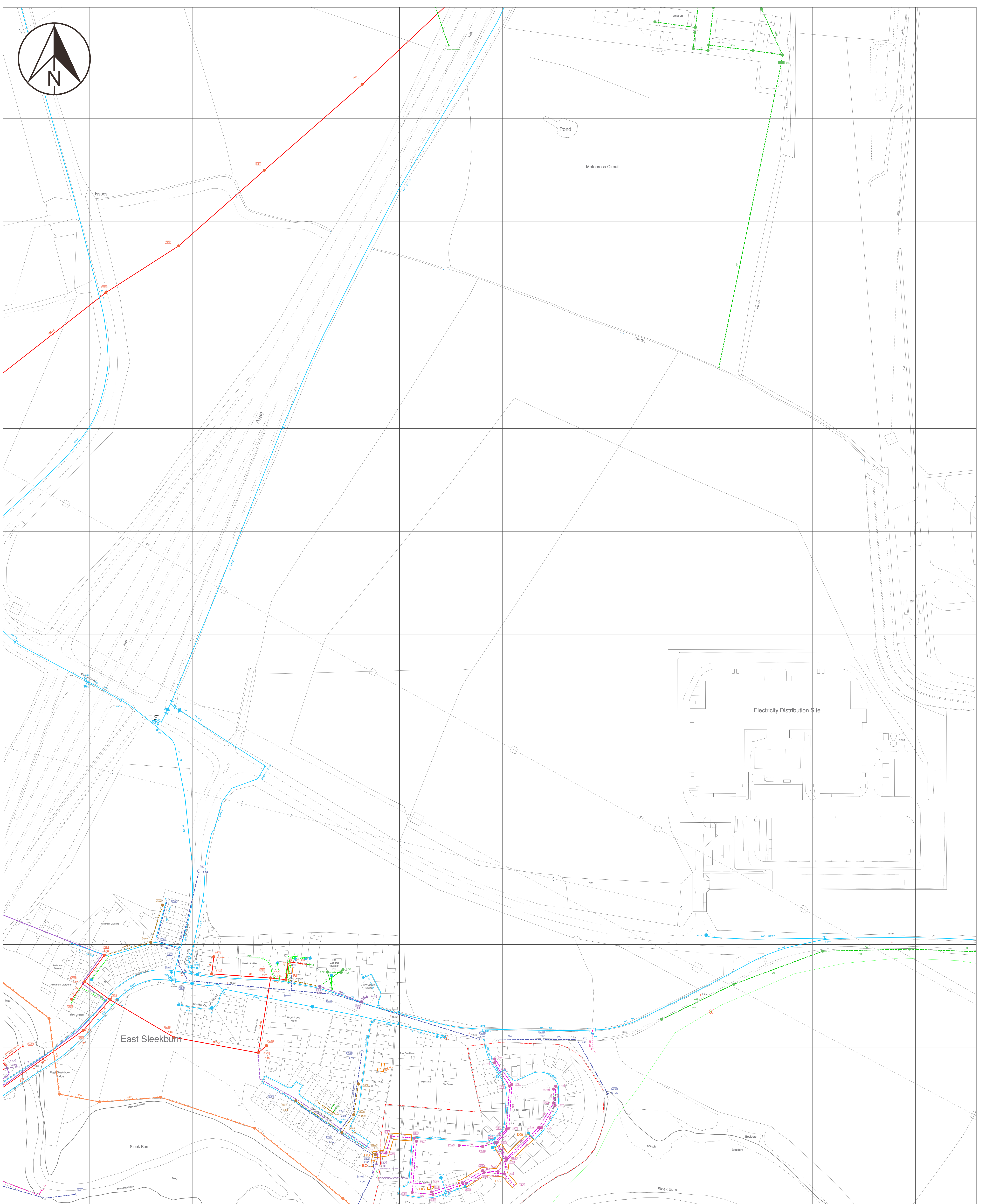
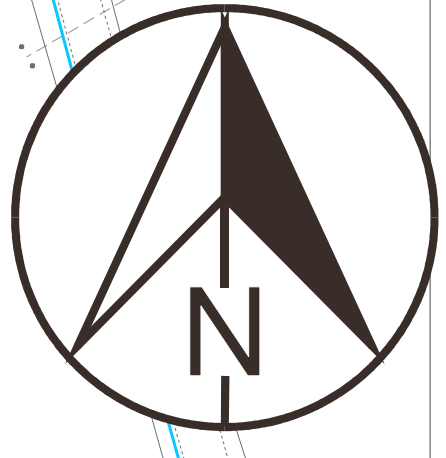
Date : 12/01/2023 16:40:13
Centre Point : 429087,583827

Map Sheet : NZ2983
Paper / Scale : A2@1:5014



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Waste Water -	NWL Responsibility	Private/Non NWL	Proposed	Water Network -	Network Types	AB Asbestos
Combined		Combined		Distribution		
Foul		Foul		Treated		
Surface		Surface		Raw		
Treated Eff		Treated Eff		Fire		
Untreated Eff		Trade Eff		Supply		
Overflow		Watercourse		Private		

User : BOWMS

Date : 12/01/2023 16:42:29

Map Sheet : NZ2983NW

Title :

Centre Point : 429087,583827

Paper / Scale : A0@1:1250



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