

# TECHNICAL NOTE

**Job Name:** Dogger Bank C/Sofia Offshore Wind Farms  
**Job No:** 46941  
**Note No:** 4004/TN001  
**Date:** September 2020  
**Prepared By:** L Rogers  
**Subject:** Flood Risk Statement - Proposed Onshore Converter Stations Temporary Access Road

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## 1. Introduction

- 1.1. This Flood Risk Statement (FRS) has been prepared by Stantec to support a detailed planning application for the construction of a Temporary Access Road to the proposed Onshore Converter Stations (OCS), associated with Dogger Bank Wind Farm C (DB-C) and Sofia Offshore Wind Farm (Sofia).
- 1.2. As the site is less than 1 hectare in size and located entirely in Flood Zone 1, a Flood Risk Assessment (FRA) is not a formal requirement as set out in the Environment Agency (EA) Standing Advice. However, this FRS includes an assessment of flood risk from all sources and demonstrates that the proposed Temporary Access Road complies with local, regional and national policy in respect of flood risk.

## 2. Relevant Background

- 2.1. A Development Consent Order (DCO) was granted in 2015 for both DB-C and Sofia, including the onshore transmission works required to export electricity to the national electricity transmission system, in August 2015.
- 2.2. The DCO awarded consent for all infrastructure required for delivering two independent offshore wind farms, including the two turbine arrays and all offshore and onshore transmission infrastructure necessary to export the electricity generated to the existing Lackenby Substation. Both DB-C and Sofia are progressing towards construction following successful award of a Contract for Difference (CfD) in the UK Government's 2019 auction.
- 2.3. The High Voltage Direct Current (HVDC) cables, associated with both wind farms, would run through agricultural land between Redcar and Marske-by-the-Sea to the OCS site located on arable land to the south of the Wilton Industrial complex, and north-east of the village of Lazenby. The converter stations (one for DB-C and another for Sofia) would convert the power from HVDC to High Voltage Alternating Current (HVAC). The HVAC cables would continue for 2km west to connect into the existing National Grid Substation at Lackenby.

### DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
48109/4004/TN001	-	08/09/20	LR	EJT	EJT	RG (for DH)

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### 3. Site Details

- 3.1. The proposed Temporary Access Road will provide vehicular access to the OCS site from the east (see Drawing 60617518-ACM-XX-00-DR-CE-3001c).
- 3.2. The site (approximately 0.29 hectares) of the Temporary Access Road is located on arable land to the south of the Wilton Industrial Complex, and north-east of the village of Lazenby (approximate site centre OS Grid Reference 457911 E, 520311 N) - see Figure 001 in **Appendix A**.
- 3.3. The site lies within the administrative boundary of Redcar and Cleveland Borough Council (RCBC).

#### *Topography*

- 3.4. Ground levels across the site fall from approximately 28.5m AOD (meters Above Ordnance Datum) in the east of the site, to approximately 26.0m AOD in the west - (see Drawing 60617518-ACM-XX-00-DR-CE-3002c).

#### *Geology and Hydrogeology*

- 3.5. A review of the British Geological Survey (BGS) online viewer provides an outline of the ground conditions on site:
  - **Bedrock:** 'Redcar Mustdone Formation' – Mudstone
  - **Superficial Deposits:** 'Diamicton' – Clay, Sand and Gravel
- 3.6. The UK Soil Observatory (UKSO) online 'Soilscapes' viewer indicates that the site is underlain by '*Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils*'.
- 3.7. The site is not located within an EA Groundwater 'Source Protection Zone' (SPZ) – see Figure 006 in **Appendix A**.

#### *Hydrological Setting*

- 3.8. There are no EA designated 'Main Rivers' on site or within the immediate surrounding area. The closest main river watercourse to the site is the River Tees, approximately 4km to the north-west.
- 3.9. There are no flood defences located within the immediate vicinity of the site - see Figure 004 in **Appendix A**.

### 4. Flood Risk

#### *Risk of Flooding from Fluvial Sources*

- 4.1. A review of the EA online Flood Map for Planning shows that the entire site lies within **Flood Zone 1** 'Low Probability' (Land at less than a 1 in 1000 (0.1%) annual probability of river or sea flooding) - see Figure 004 in **Appendix A**.
- 4.2. The RCBC Strategic Flood Risk Assessment (SFRA) (2016) confirms that the site lies within Flood Zone 1 'Low Probability'.

#### *Risk of Flooding from Surface Water*

- 4.3. The EA 'Flood Map for Surface Water' (FMfSW) shows that the entire site is at '**Very Low Risk**' of surface water flooding. This is defined as land having less than a 1 in 1000 (0.1%) annual probability of flooding – see Figure 005 in **Appendix A**.

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### *Risk of Flooding from Groundwater*

- 4.4. The RCBC SFRA (2016) and data sources used to inform the SFRA indicate there is little evidence of groundwater flooding occurring at or in the vicinity of the site.

### *Risk of Flooding from Reservoirs*

- 4.5. The EA online 'Flood Risk from Reservoirs' map shows that the site is not at risk of flooding from potential breach of local reservoirs.

### *Historical Flooding*

- 4.6. The EA online 'Historic Flood Map' shows that the site does not lie in an area of recorded historic flooding – see Figure 007 in **Appendix A**.
- 4.7. The RCBC SFRA (2016) and Preliminary Flood Risk Assessment (PFRA) (2011) hold no record of flooding at or near to the site.

### *Impact of Climate Change*

- 4.8. Given the significant distance of the site from a 'Main River' (see **Section 3**) and its location within **Flood Zone 1**, it is considered reasonable to assume that the site would not be impacted by fluvial flooding when climate change is taken into consideration.

## **5. NPPF Sequential and Exception Test**

- 5.1. The National Planning Policy Framework (NPPF) follows a risk based approach in determining the suitability of land for development in areas at risk of flooding, with the intention of steering all new development to the area of lowest flood risk.
- 5.2. A NPPF Sequential Test is not required as the proposed development is located within Flood Zone 1 and is therefore sequentially preferable. According to NPPF Planning Practice Guidance (PPG) Table 3, all uses are considered appropriate for Flood Zone 1, without the need to apply the Exception Test.

## **6. Surface Water Drainage Strategy**

- 6.1. As of April 2015, the Lead Local Flood Authority (LLFA) has become a statutory consultee on planning applications for surface water management. As the LLFA, RCBC is therefore responsible for the approval of surface water drainage systems.
- 6.2. The proposed Temporary Access Road will increase the extent of impermeable surfacing at the site, giving rise to a corresponding increase in the rate and volume of surface water runoff.
- 6.3. The NPPF recommends that priority is given to the use of Sustainable Drainage Systems (SuDS) in new development, this being complimentary to the control of development within the floodplain. The LLFA also advocates the use of appropriate SuDS in new development.
- 6.4. The proposals show that two filter drains, located either side (adjacent north and south) of the Temporary Access Road, will intercept and collect surface water runoff from the site (see Drawing 60617518-ACM-XX-00-DR-CE-3007c). Based on the topography of the site (see **Section 3**), the filter drain will drain water west and connect into the proposed OCS platform drainage system.
- 6.5. The rate of runoff increase will be limited by the relatively small area of impermeable surface and flows will further be attenuated within the filter drain without the need for additional storage or flow control devices. The filter drain will also act to manage potential contamination or surface water runoff from the road through the retention of silts and particulate matter within the filter material.

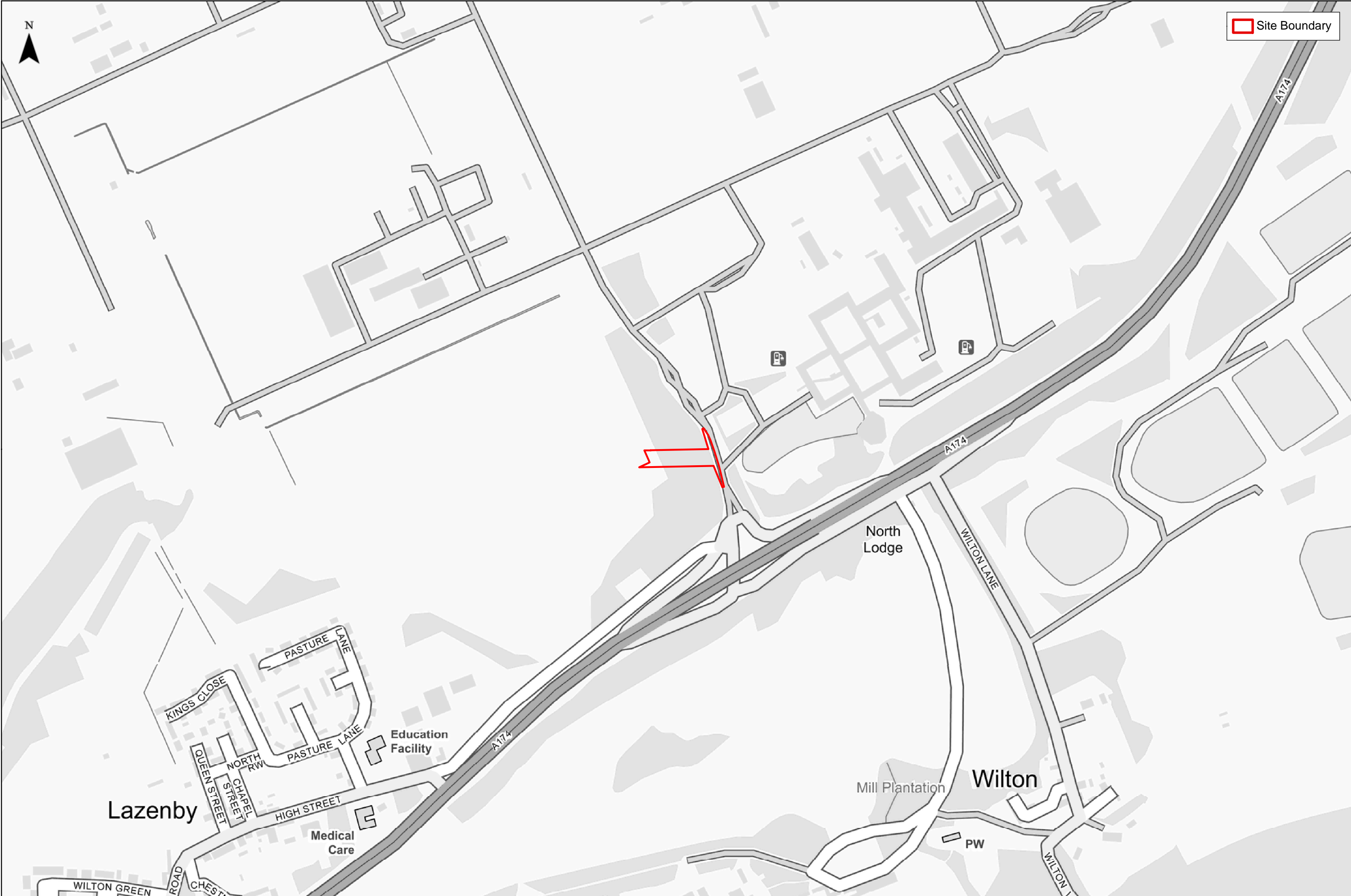
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### 7. Conclusions

- 7.1. This FRS concludes that the site lies within **Flood Zone 1** 'Low Probability' (land at less than a 1 in 1000 (0.1%) annual probability of river or sea flooding).
- 7.2. The risk of flooding from other sources is considered to be 'Low' or 'Very Low'.
- 7.3. The Temporary Access Road will increase the extent of impermeable surface cover at the site. The Surface Water Drainage Strategy (see **Section 6**) will ensure that there will be no increase in flood risk to external receptors as part of the development proposals.
- 7.4. In conclusion, the future users of the proposed Temporary Access Road will be safe from flooding and there will be no detrimental impact on third parties. The proposals comply with the NPPF and local planning policy with respect to flood risk and is therefore an appropriate development at this location.

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### Appendix A EA Open Data Flood Maps



	Client:	<b>Dogger Bank C/Sofia Onshore Converter Stations Temporary Access Road</b> Site Location			1:5,000 @ A3	Date: 09/09/2020
	Sofia and Dogger Bank C		Contains Ordnance Survey data © Crown copyright and database right 2019.		Drawn: IB	Checked: LR
					Figure 001	Rev A






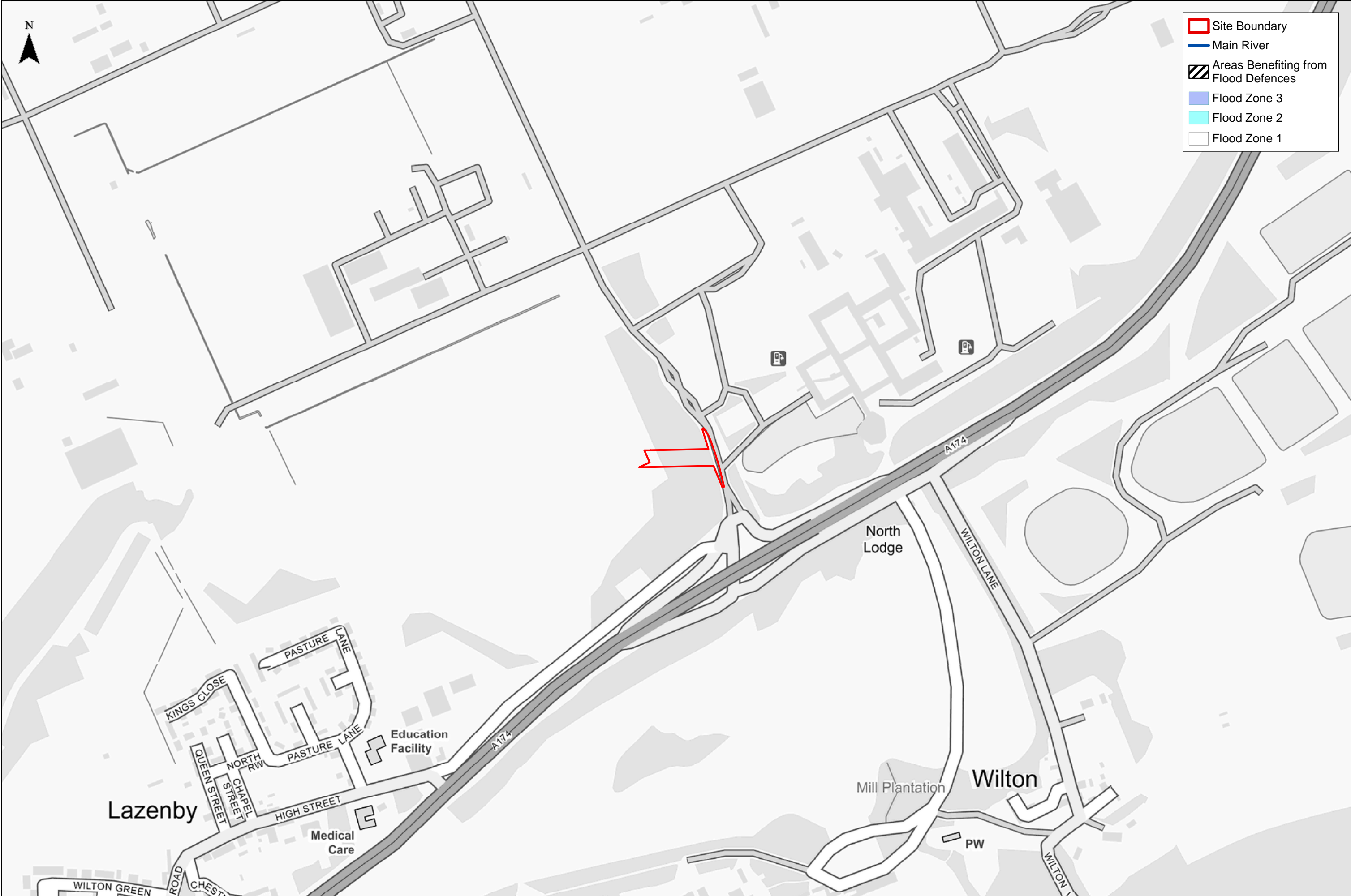
	Client:  Sofia and Dogger Bank C	<b>Dogger Bank C/Sofia Onshore Converter Stations Temporary Access Road</b> <b>Site Location (Aerial)</b>	<div data-bbox="1819 1906 2585 1953"><div>0250500</div><div>m</div></div> <div data-bbox="1819 1953 2585 1995"><small>Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Contains Ordnance Survey data (c) Crown copyright and database right 2019.</small></div>	1:5,000 @ A3  Drawn: IB  Figure 002	Date: 09/09/2020  Checked: LR  Rev A
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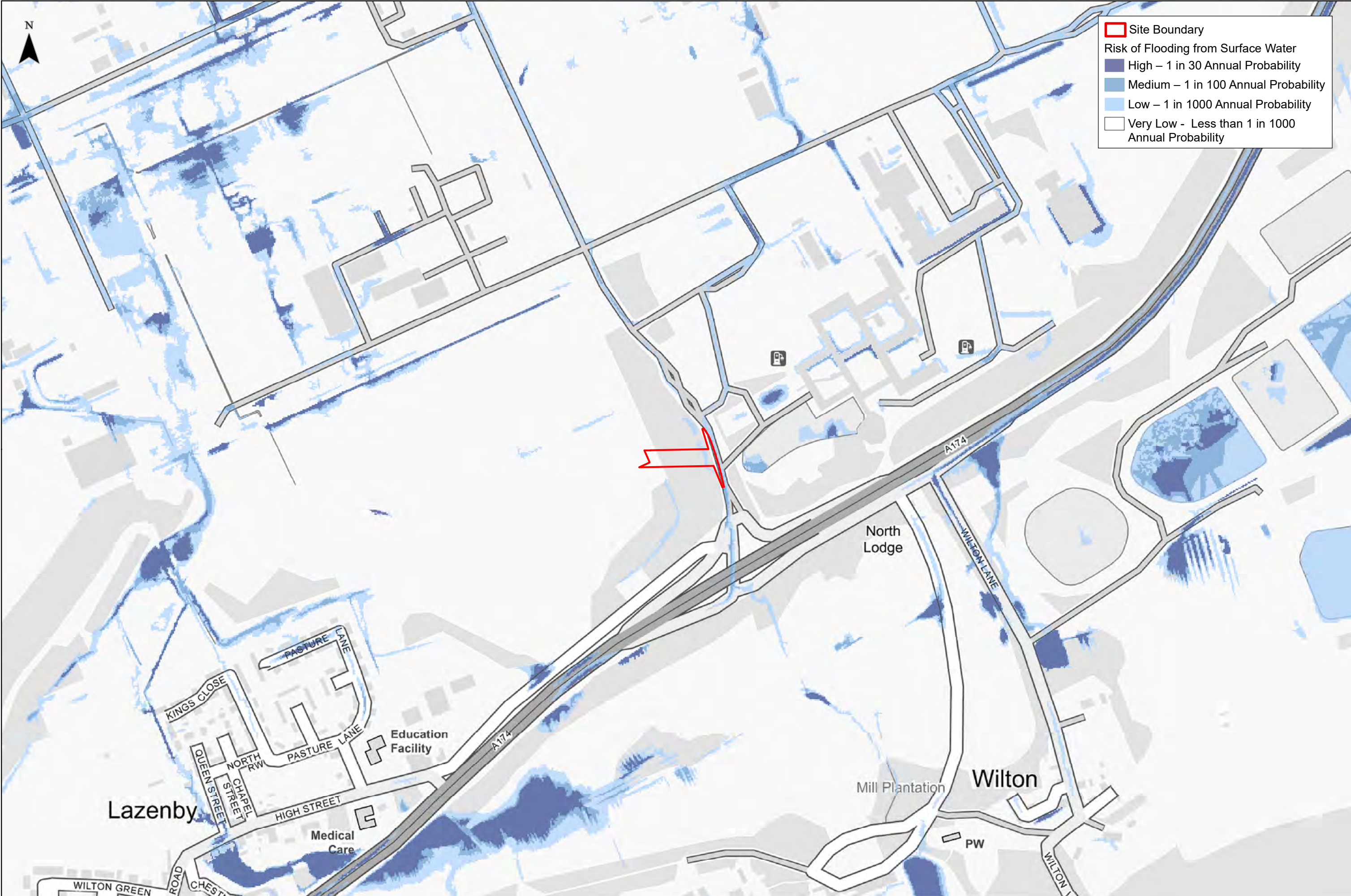
	Client:  Sofia and Dogger Bank C	<b>Dogger Bank C/Sofia Onshore Converter Stations Temporary Access Road</b>  Topography	<div data-bbox="1819 1904 2585 1953"><div>0250500</div><div>m</div></div> <div data-bbox="1819 1953 2585 1995"><div>Contains Environment Agency information Environment Agency and/or database right</div><div>Contains Ordnance Survey data © Crown copyright and database right 2019.</div></div>	1:5,000 @ A3  Drawn: IB  Figure 003	Date: 09/09/2020  Checked: LR  Rev A
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	Client:  Sofia and Dogger Bank C	<b>Dogger Bank C/Sofia Onshore Converter Stations Temporary Access</b> EA Flood Zone	<div><div><div></div><div>0250500</div><div>m</div></div><div>Contains Environment Agency information © Environment Agency and/or database right Contains Ordnance Survey data © Crown copyright and database right 2019. Flood Zones refer to the probability of river and/or sea flooding, ignoring the presence of defences</div></div>	1:5,000 @ A3	Date: 09/09/2020
				Drawn: IB	Checked: LR
				Figure 004	Rev A





Site Boundary

Risk of Flooding from Surface Water

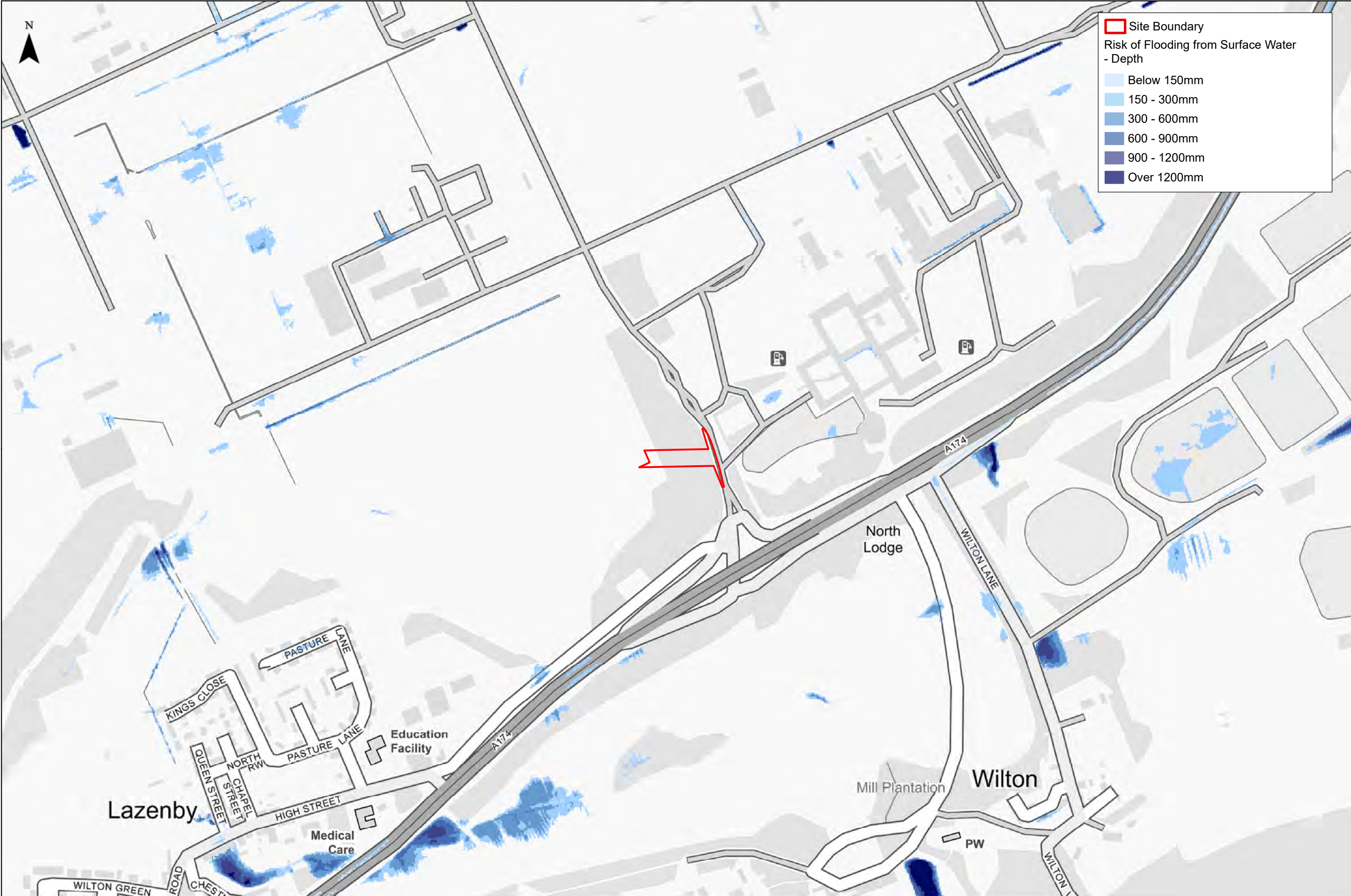
High – 1 in 30 Annual Probability

Medium – 1 in 100 Annual Probability

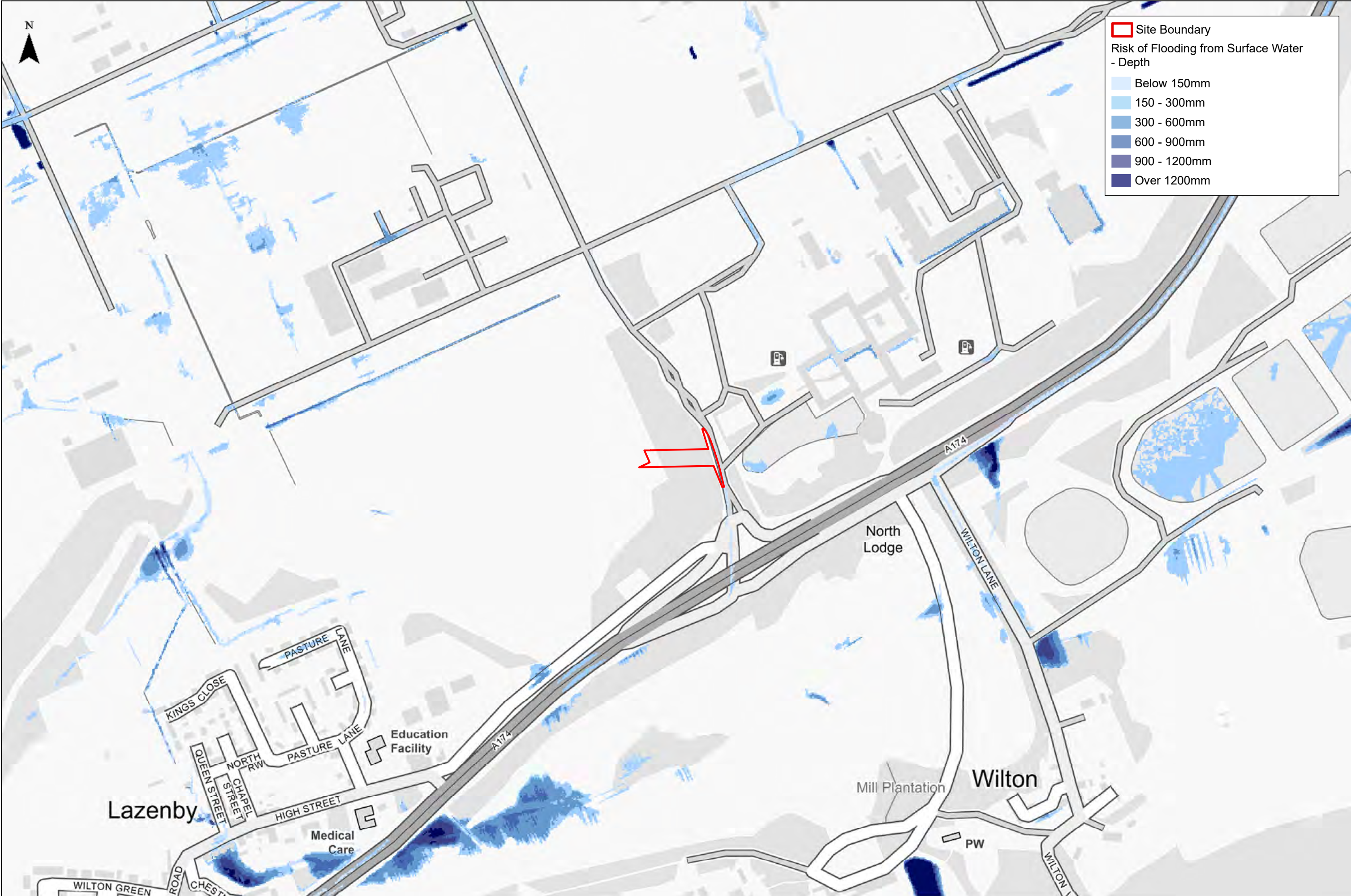
Low – 1 in 1000 Annual Probability

Very Low - Less than 1 in 1000 Annual Probability









Site Boundary

Risk of Flooding from Surface Water - Depth

Below 150mm

150 - 300mm

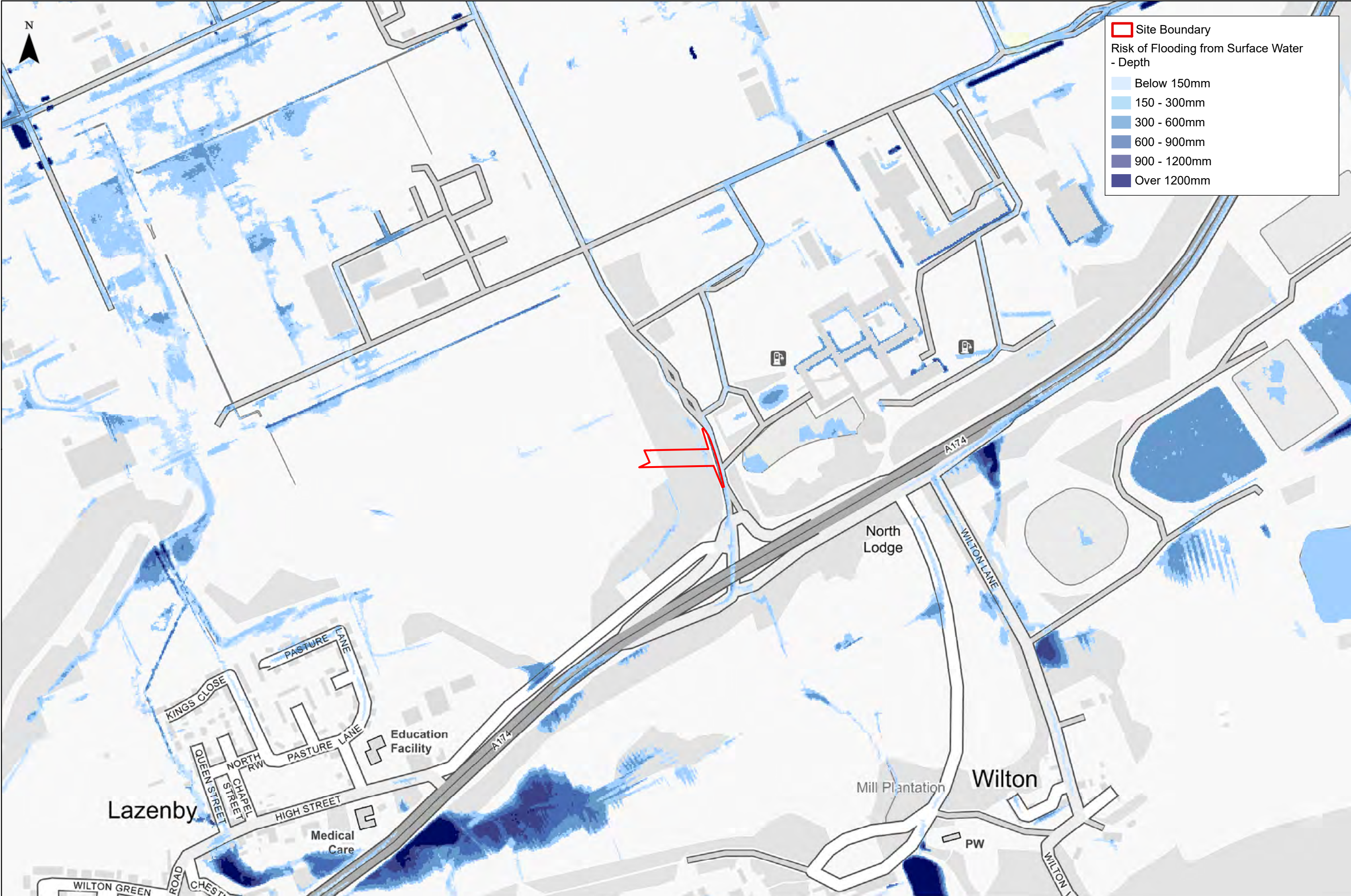
300 - 600mm

600 - 900mm

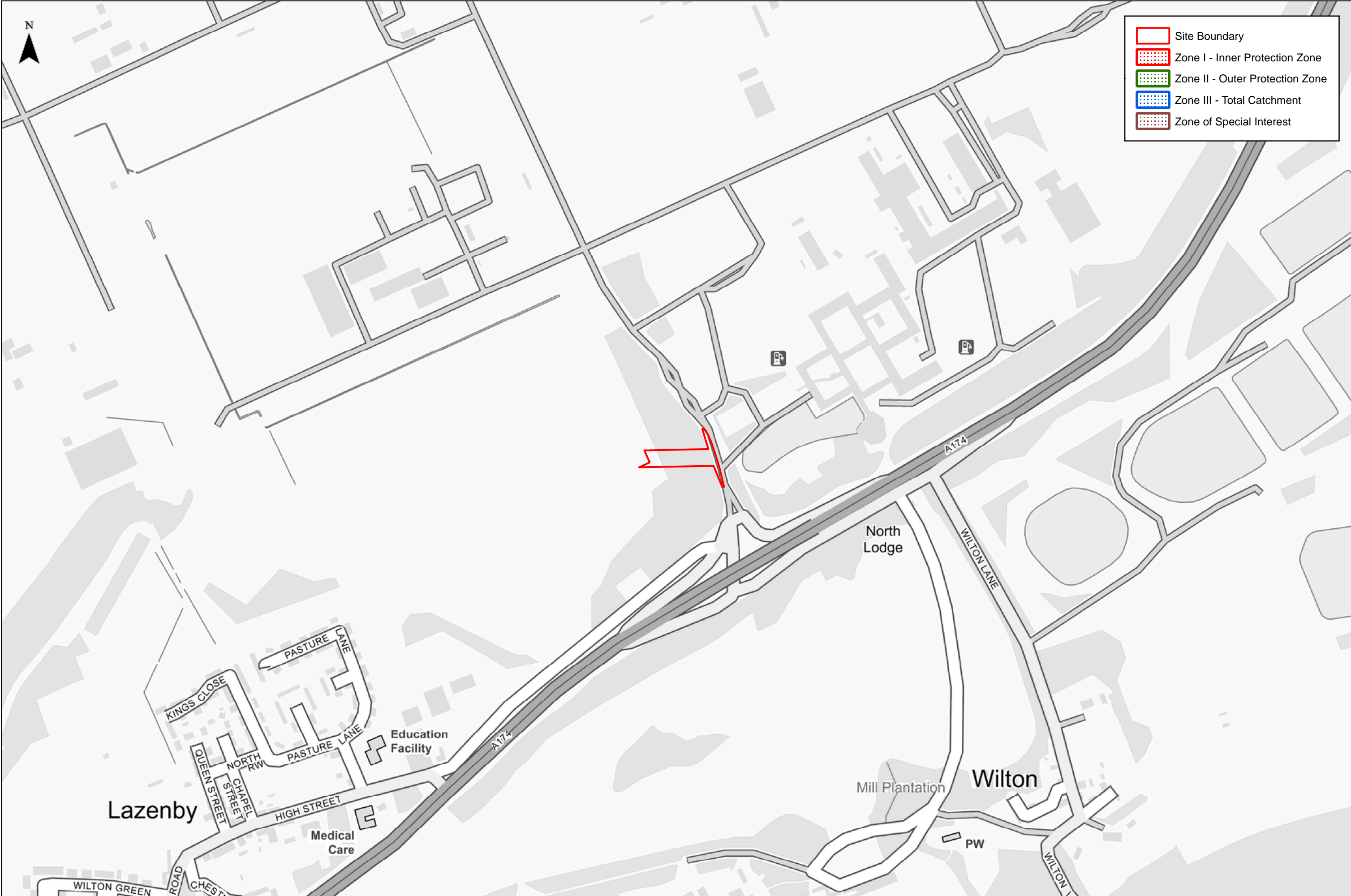
900 - 1200mm

Over 1200mm

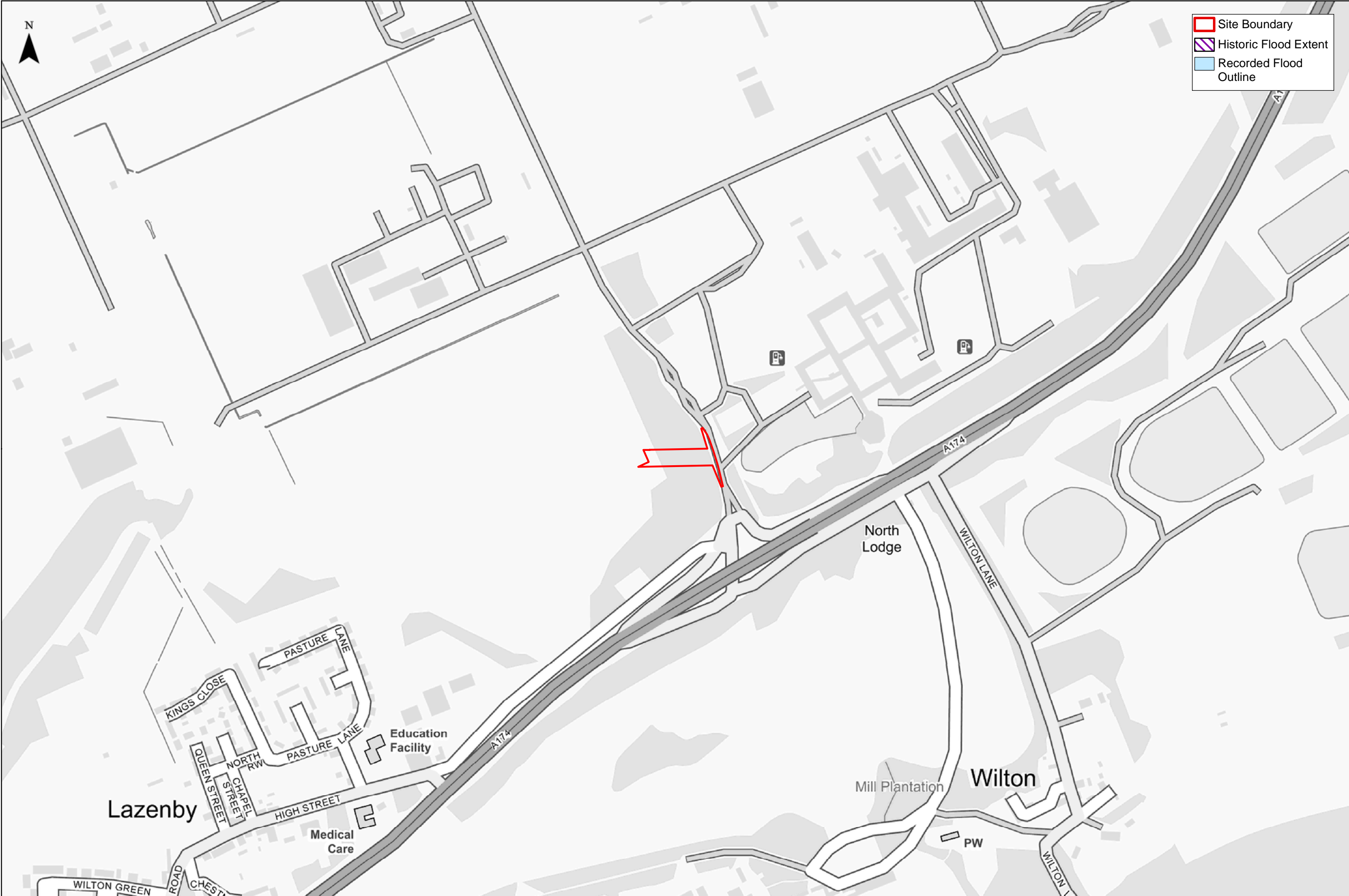













	Client:  Sofia and Dogger Bank C	<b>Dogger Bank C/Sofia Onshore Converter Stations Temporary Access Road</b> <b>EA Recorded Historic Flood Extents</b>	<div><div>0250500</div><div>m</div></div> <div><div>Contains Environment Agency information © Environment Agency and database right</div><div>Contains Ordnance Survey data © Crown copyright and database right 2019.</div><div>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.</div><div>Recorded Flood Outlines shows all EA records of historic flooding from rivers, the sea, groundwater and surface water</div></div>	1:5,000 @ A3  Drawn: IB  Figure 007	Date: 09/09/2020  Checked: LR  Rev A
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