

# H2Teesside Project

## Environmental Statement

Volume III – Appendices

Appendix 12F: Water Vole and Otter Survey Report

Document Reference: 6.4.23

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a) and 5(2)(l)



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## 12F.0 WATER VOLE AND OTTER SURVEY REPORT

### 12F.1 Introduction

#### Background

- 12F.1.1 This report details the approach and findings of the water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) surveys undertaken within the Proposed Development Site (Annex 1, Figure 12-F-1) and has been prepared by AECOM on behalf of H2 Teesside Ltd (hereafter referred to as The Applicant), a bp company. H2 Teesside Limited will be the lead developer of the Proposed Development and bp will be appointed as the operator of the Proposed Development. Baseline data presented in this Appendix has been used to inform the assessment within Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2).
- 12F.1.2 The aim of the Proposed Development is to deliver up to 30% of the UK's 2030 target for hydrogen production as a part of the current clean energy goals. The survey areas considered in this report as a part of the Proposed Development Site are hereafter referred to as the locally known area name, watercourse name or waterbody/course ID number from the AECOM GIS water layer.
- 12F.1.3 This technical appendix is supported by the following figures (Annex 1):
- Figure 12-F-1: The Proposed Development Site;
  - Figure 12-F-2: Watercourses and waterbodies (highlight those with evidence);
  - Figure 12-F-3: Water vole and otter evidence;
  - Figure 12-F-4: Artificial latrine Locations; and
  - Figure 12-F-5: Desk Study Results.
- 12F.1.4 This report makes reference to the relevant wildlife legislation and planning policy, summarised in Annex 2 and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development*.
- #### The Proposed Development
- 12F.1.5 The Proposed Development comprises the construction, operation (including maintenance where relevant) and decommissioning of an approximately 1.2-Gigawatt Thermal (GWth) Lower Heating Value (LHV) Carbon, Capture and Storage (CCS) enabled Hydrogen Production Facility (the 'Hydrogen Production Facility') located in Teesside, along with the pipeline infrastructure required to supply hydrogen (H<sub>2</sub>) to offtakers (customers) and the necessary utility connections. Carbon captured by the Proposed Development will be transported by pipeline to the separately consented Northern Endurance Partnership infrastructure on the adjacent Net Zero Teesside site for high-pressure compression and offshore transport and underground storage. A description of the Proposed Development and Terms of Reference are provided in Chapter 4: Proposed Development (ES Volume I, EN070009/APP/6.2).

12F.1.6 The Proposed Development’s purpose is the conversion of methane, from the North Sea storage sites, into hydrogen (with carbon dioxide byproduct captured and stored), for the increased provision of hydrogen supplies as the UK aims to expand its hydrogen energy targets and decarbonise heavy industry and transport.

Scope of the Report

12F.1.7 The aims of the survey work undertaken, and the subsequent report presented are to:

- outline the legislation, planning policy and guidance relevant to water vole and otter;
- determine suitability of habitats within the Proposed Development Site to support water vole and otter; and
- report on the presence / likely absence of water vole and otter within the Proposed Development Site.

12F.2 Method

Desk Study

12F.2.1 A desk study was carried out as part of the Extended Phase 1 Habitat Survey (refer to Appendix 12A: Phase 1 Habitat and Botanical Survey Report) prior to the undertaking of the water vole and otter surveys. Information from the sources in Table 12F-1 were used to inform the scoping for further survey requirements.

Table 12F-1: Desk Study Sources

INFORMATION SOURCE	DATE ACCESSED	RECORDS PROVIDED
Environmental Records and Information Centre (ERIC) North-East	August 2022	Notable species, resting and breeding sites for several species, including water vole and otter
Industry Nature Conservation Association (INCA)	July 2022	Notable species including water vole and otter within 2 km of the Proposed Development
Multi-Agency Geographic Information for the Countryside (MAGIC)	November 2022	European Protected Species Licences within 2 km of the Proposed Development
Net Zero Teesside (NZN) Riparian Mammal Survey Report (bp, 2022)	October 2023	Water vole and otter survey findings (2020) within the NZT RLB
Environmental Agency (EcoNorth) (2022a and 2022b)	October 2023	Water vole and otter survey findings at Greatham Marsh (2021/2022)

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Extended Phase 1 Survey (Identification of Potential Suitable Watercourses and Waterbodies)

- 12F.2.2 Habitats within the Proposed Development Site were assessed for their suitability to support otter and / or water vole during the Extended Phase 1 Habitat Survey (Appendix 12A: Phase 1 Habitat and Botanical Survey Report). Habitats were assessed with reference to the guidance provided in the Water Vole Conservation Handbook (Strachan and Moorhouse, 2011), The Water Vole Mitigation Handbook (Dean *et al*, 2016), and the Ecology of the European Otter (Chanin, 2003a).
- 12F.2.3 The study area comprised of all watercourses and waterbodies within the Proposed Development Site and extended 250 m upstream and/or downstream of any watercourse intersected by the Proposed Development Site.

Field Surveys

- 12F.2.4 Where possible two survey visits were completed for each waterbody as recommended by Dean *et al* (2016). The first survey visit was completed between mid-April and the end of June 2023, and the second visit between July and September 2023 in accordance with guidance. The survey dates, times and weather conditions are summarised in Annex 3, 12-F-8. Limitations are summarised below. The surveys were carried out where possible, under weather conditions conducive to otter and water vole surveys, specifically in dry and mild conditions with no recent heavy rainfall.
- 12F.2.5 Inclusive in the surveys were all wet watercourses, while any watercourse deemed unsuitable at the time of the survey, such as those lacking appropriate vegetation, sufficient water depths, or suitable vegetation structure, was excluded from further assessment.
- 12F.2.6 The unusually dry summer in 2023, would not significantly affect otter and water vole survey results in the same manner as it might with other surveys. This is because evidence of otters and water voles, such as footprints, droppings, or burrows, can still persist even during drier conditions, allowing surveyors to identify their presence.
- 12F.2.7 The survey methodology encompassed a thorough examination of both banks of the watercourses for signs of water vole or otter activity. Searches extended 2 m from the water's edge, and in-channel surveys were conducted where deemed safe for the surveyors to do so.
- 12F.2.8 The watercourses and waterbodies assessed are shown in Annex 1, Figure 12-F-2 and incorporate all waterbodies/watercourses crossed by the Proposed Development.

Otter

- 12F.2.9 Otter surveys were completed along the entire length of each watercourse within the Proposed Development Site. Otter field signs were recorded during the survey including:

- 
- spraints – These are usually black in colour and smell of fresh cut hay. The otter uses spraints to define its home range, and are located at prominent points such as on boulders and ledges;
  - anal jelly;
  - footprints – The otter has five toes that are webbed. The footprints are very characteristic and easy to recognise. Each print is around 50-60 mm wide;
  - paths found along riverbanks;
  - flattened vegetation;
  - holts and 'couches' - Holes in the riverbank, hollow trees, cavities amongst tree roots, piles of rocks, wood or debris may all be used as holts or couches; and
  - feeding remains.

#### Water vole

12F.2.10 Watercourses within the Proposed Development Site were searched for the following field signs:

- faeces – these are 8-12 mm long and 4-5 mm wide, varying in colour from green to black, and odourless with a putty-like texture;
- latrines – found throughout the territory, often comprising a pile of flattened droppings, with fresh droppings on top;
- feeding stations – comprise of a neat pile of chewed feeding remains;
- burrows – these are typically wider than they are high, with a diameter of 4–8cm, and are usually located along the water's edge;
- lawns – around burrows there is often an area of grazed vegetation, surrounded by taller vegetation, these are most often produced when the female is nursing young;
- nests – these comprise a large ball of shredded material, often woven into the bases of rushes and reeds, and are normally found in areas where the water table is high, such as wetlands;
- footprints – as with other rodents, the footprints of the fore foot, show four toes in a star arrangement, with the hind foot showing five toes. The size of footprints for the hind foot is 26-34 mm;
- runways – these are low tunnels within the vegetation; and
- the presence of water vole can also be confirmed by sightings and from the characteristic 'plop' of the water vole entering the water, which acts as a warning to other voles.

#### Artificial floating latrines

12F.2.11 Artificial floating latrines, commonly known as rafts, were also used to determine the presence or likely absence of water voles. These polystyrene rafts were

strategically placed on the waters' surface, serving as latrines utilised by water voles.

- 12F.2.12 This method has been acknowledged in various ecological studies and surveys as a reliable means of detecting water vole activity. For instance, research such as that conducted by Dean *et al.* (2016) emphasises the efficacy of using rafts for monitoring water vole populations in riparian environments. Additionally, the Water Vole Mitigation Handbook (2016) outlines the practical implementation of raft surveys in assessing water vole presence within different water bodies.
- 12F.2.13 The rafts were strategically deployed along sections of The Fleet (18 rafts), saline lagoons at Greenabella Marsh LWS (28 rafts), watercourses throughout the floodplain grazing marsh at the Brinefields (60 rafts), Holme Fleet (23 rafts) and Belasis beck (28 rafts) where safe to access and conducive to water vole habitation. The raft locations are shown in Annex 1, Figure 12-F-4.
- 12F.2.14 To secure the rafts in place, they were anchored to a toe bank using string and a tent peg, and a bamboo pole was inserted through each raft, reaching into the bed of the watercourse to prevent overturning. The rafts were deployed 30 m apart where access allowed, to allow for optimum observation potential, whilst maintaining survey efficiency. To entice water voles, the rafts were baited with apple pieces.
- 12F.2.15 The rafts remained undisturbed for a week following deployment before the initial visit. Subsequently, a second visit occurred a week later after the first visit, after which the rafts were carefully removed from the watercourses.

### 12F.3 Survey Limitations

#### Desk Study Limitations

- 12F.3.1 Information obtained from a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for habitats or species does not necessarily mean that those habitats species do not occur with the Proposed Development boundary/buffer. Likewise, the presence of desk study records for habitats and species does not automatically mean that these still occur within the or are relevant in the context of the Proposed Development.

#### Field Survey Limitations

- 12F.3.2 Access to watercourses and water bodies, specifically at Cowpen Marsh, Greenabella Marsh Local Wildlife Site, and the northern areas of the Brine fields, was restricted during the June surveys due to the presence of Schedule 1 breeding birds. These areas were surveyed for the first time in September, following the conclusion of the breeding bird season.
- 12F.3.3 The Fleet, Ash Gill, Knitting Wife Beck and Mains Dike were characterised by steep slopes and/or dense vegetation, limiting access. The steep slopes and thick vegetation, in some cases scrub, limited visibility and some otter or water vole signs may have been missed. To overcome these limitations, artificial latrines were

deployed to highlight potential evidence of water vole presence. The water vole rafts were set out in October 2023 which is late in the survey season. Weather conditions remained suitable for water vole in early October, however storms Babet and Ciarán on 18 to 21 October and 2 November 2023, characterised by strong winds and heavy rainfall, posed a significant limitation to the effectiveness of the surveys. The adverse weather conditions resulted in increased water turbulence, which displaced some rafts and may have washed away water vole evidence. Moreover, the heightened water levels and increased flow in watercourses during and after the storms could have influenced the natural behaviour of water voles, affected their latrine usage patterns and made the interpretation of field signs more challenging. As a result, the survey period and data collection were inevitably influenced by the unpredictable and disruptive nature of these storms.

#### 12F.4 Results

##### Desk Study

12F.4.1 Otter and water vole desk study results are provided in Annex 1, Fig 12-F-5.

##### Water Vole

12F.4.2 Water voles' records within 2 km of the Proposed Development Site are located at Greenabella Marsh LWS, at the RSPB Reserve and at Cowbridge Beck which flows outside of the Proposed Development Site.

12F.4.3 Artificial raft surveys undertaken by INCA in 2018 at Cowpen Bewley Woodland Park had negative results.

12F.4.4 Water vole records to the south of the River Tees are limited to two LWS's: Berwick Hill and Ormensby Beck Complex, and Middlebeck. Both sites are located >2 km away from the Proposed Development, suggesting that the Proposed Development is unlikely to have any adverse impacts on these two specific areas of water vole habitat.

##### Otter

12F.4.5 Records of otter within or within 250 m of the Proposed Development Site are located at Greenabella Marsh LWS and Dabholm Beck within the last 10 years.

12F.4.6 INCA provided evidence that otter have been consistently reported within the Teesside area for over a decade, predominantly along the most suitable watercourses and waterbodies. Notably, observations have included the presence of female otter with their cubs, suggesting that the species has established itself as a resident in the Teesside region.

12F.4.7 The areas with water vole and otter records within the last 10 years boast diverse habitats, encompassing wetlands, streams, rivers and ditches, with a particular emphasis on priority habitats such as reedbeds, open mosaic habitats on previously developed land, and the floodplain grazing marsh.

##### Field Survey

##### Habitat Suitability Assessment



12F.4.8 Detailed descriptions of the watercourses and waterbodies and their suitability for each species are provided in Annex 4, Table 12F-6.

**Presence/ Likely Absence Surveys**

12F.4.9 Evidence of water vole was found on watercourses located at Cowpen Marsh, the floodplain grazing marsh on the Brinefields, Belasis Beck, Holme Fleet and a saline lagoon waterbody on Greenabella Marsh LWS. The evidence and their locations are shown in Annex 1, Figure 12-F-3.

Table 12F-2: Otter Presence/ Likely Absence Evidence

WATERCOURSE/BODY NAME/AREA	OTTER FIELD SIGN (WATERBODY ID)
Dabholm Gut	Spraint (Waterbody ID 31 and 294)
Mill Race	Footprints and tail slide (Waterbody ID 30 and 296)

Table 12F-3: Water Vole Presence/ Likely Absence and Artificial Latrine Surveys Evidence

WATERCOURSE NAME/AREA (WATERBODY ID)	WATER VOLE FIELD SIGN
Cowpen Marsh (Waterbody ID 317)	Feeding remains
Cowpen marsh (dry ditch north of Waterbody 317)	Feeding remains and droppings
Holme Fleet	Feeding remains
Belasis Beck	Feeding remains
Greenabella Marsh LWS (Waterbody ID 200)	Latrine, droppings and feeding remains
Floodplain grazing marsh on the Brinefields (Waterbody ID 192)	Feeding remains
Floodplain grazing marsh on the Brinefields (Waterbody ID 264)	Feeding remains, droppings, latrines and footprints
Floodplain grazing marsh on the Brinefields (Waterbody 97)	Burrow
Floodplain grazing marsh Brinefields	Feeding remains (Waterbody ID 563), burrow (Waterbody ID 90), latrine, feeding remains, droppings, footprints (Waterbody ID 264) and a burrow (Waterbody ID 97)

### Artificial Latrine Survey Results

Table 12F-4: Water Vole Artificial Latrine Evidence

WATERCOURSE NAME/AREA (WATERBODY ID)	WATER VOLE FIELD SIGNS
Greenabella Marsh LWS (Waterbody ID 200)	Droppings and latrines
Floodplain grazing marsh on the Brinefields (Waterbody ID 90)	Burrow
Belasis Beck	Sighting

12F.4.10 Water vole feeding remains were identified during an additional Extended Phase 1 Habitat Survey on Cowpen Marsh (Waterbody ID 317).

#### 12F.5 Conclusions

12F.5.1 The desk study and field surveys confirm water vole presence at the following locations:

- Cowpen Marsh;
- Holme Fleet;
- Belasis Beck;
- The saline lagoons on Greenabella Marsh LWS; and
- Watercourses on the floodplain grazing marsh at the Brinefields.

12F.5.2 Otter evidence was present at Dabholm Gut and The Mill Race, evidenced by spraints, footprints, and tail slides. No otter resting places (couches or holts) were recorded during the surveys.

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## 12F.7 ANNEX 1: Figures

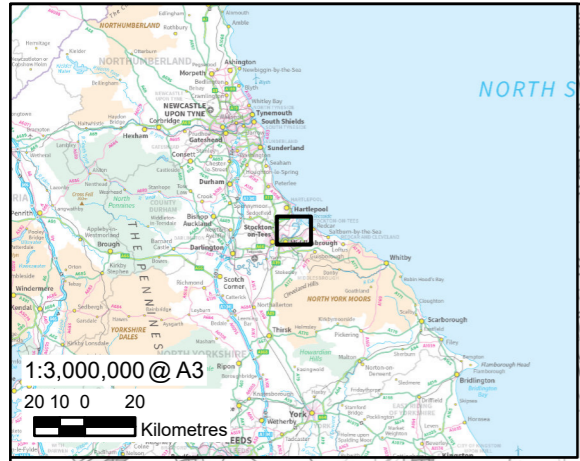
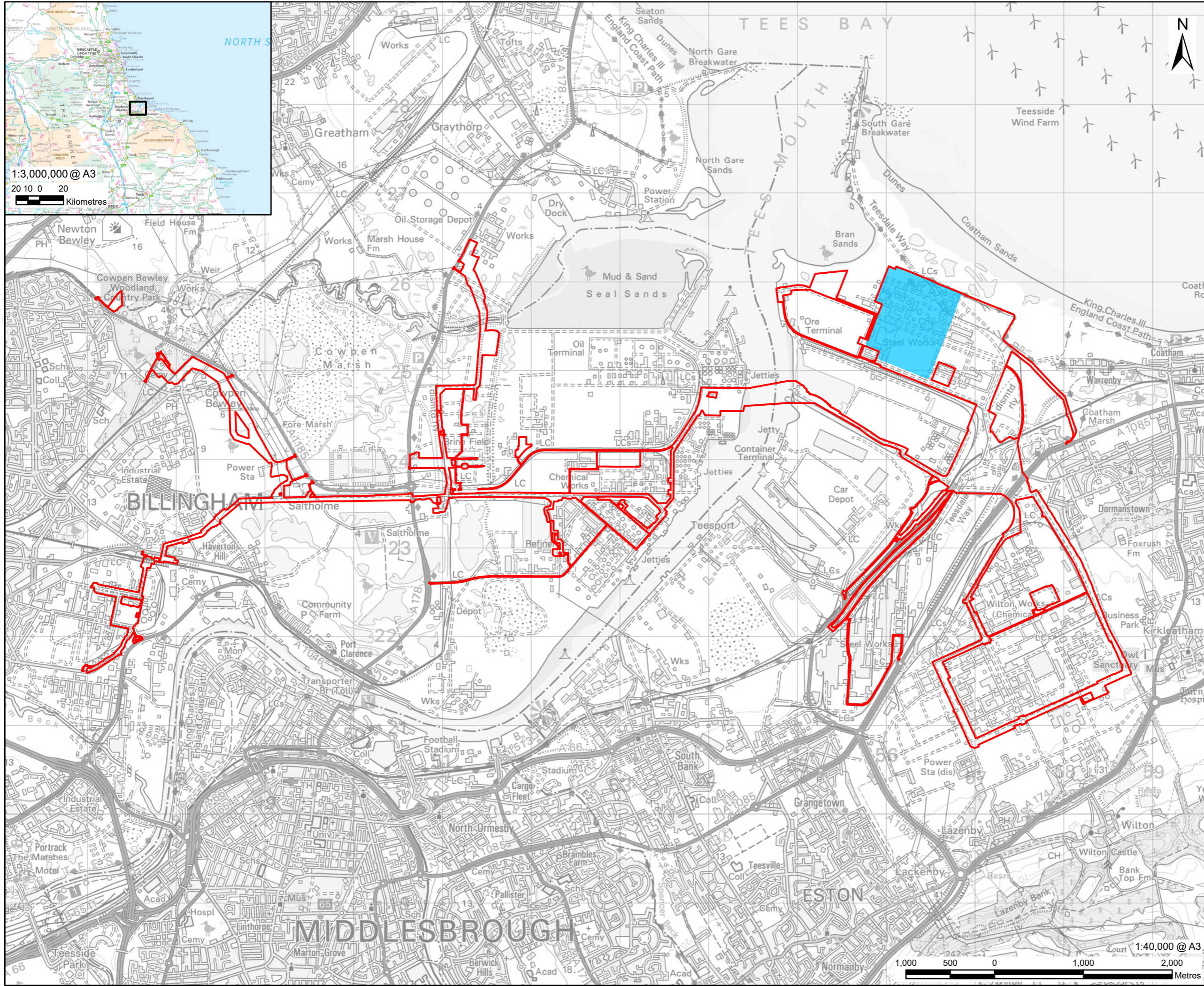
Figure 12-F-1: The Proposed Development Site

Figure 12-F-2: Watercourses and Waterbodies Within 250m of The Proposed Development Site

Figure 12-F-3: Water Vole and Otter Survey Results

Figure 12-F-4: Artificial Latrine Locations

Figure 12-F-5: Desk Study Results



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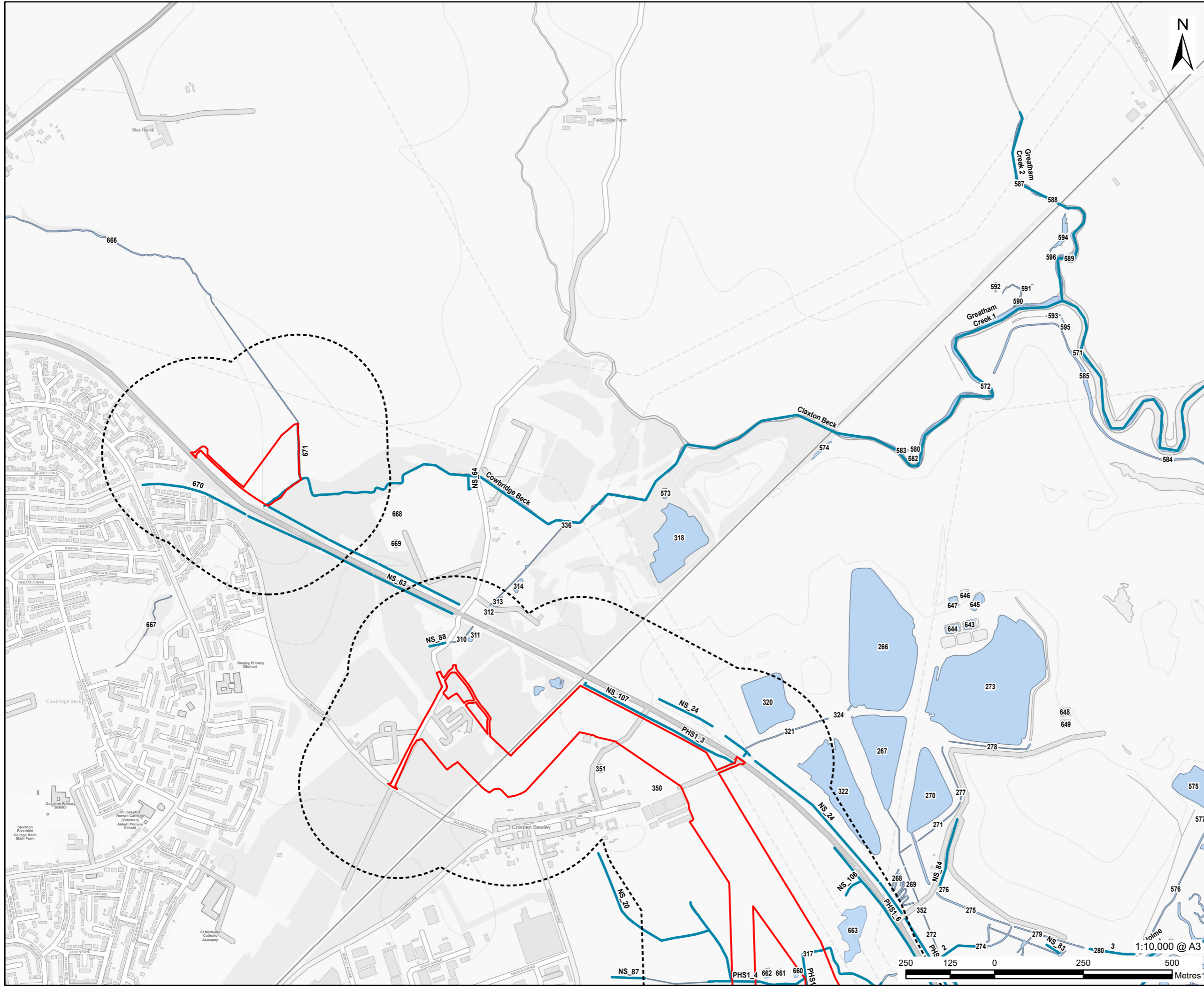
The Proposed Development Site

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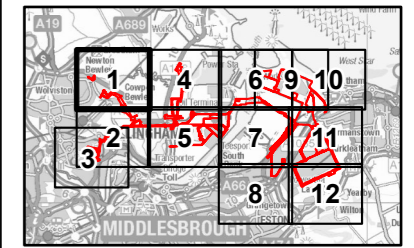
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- LEGEND**
- Proposed Development Site
  - Proposed Development Site - 250 m Buffer
  - Waterbody
  - Waterbody Area



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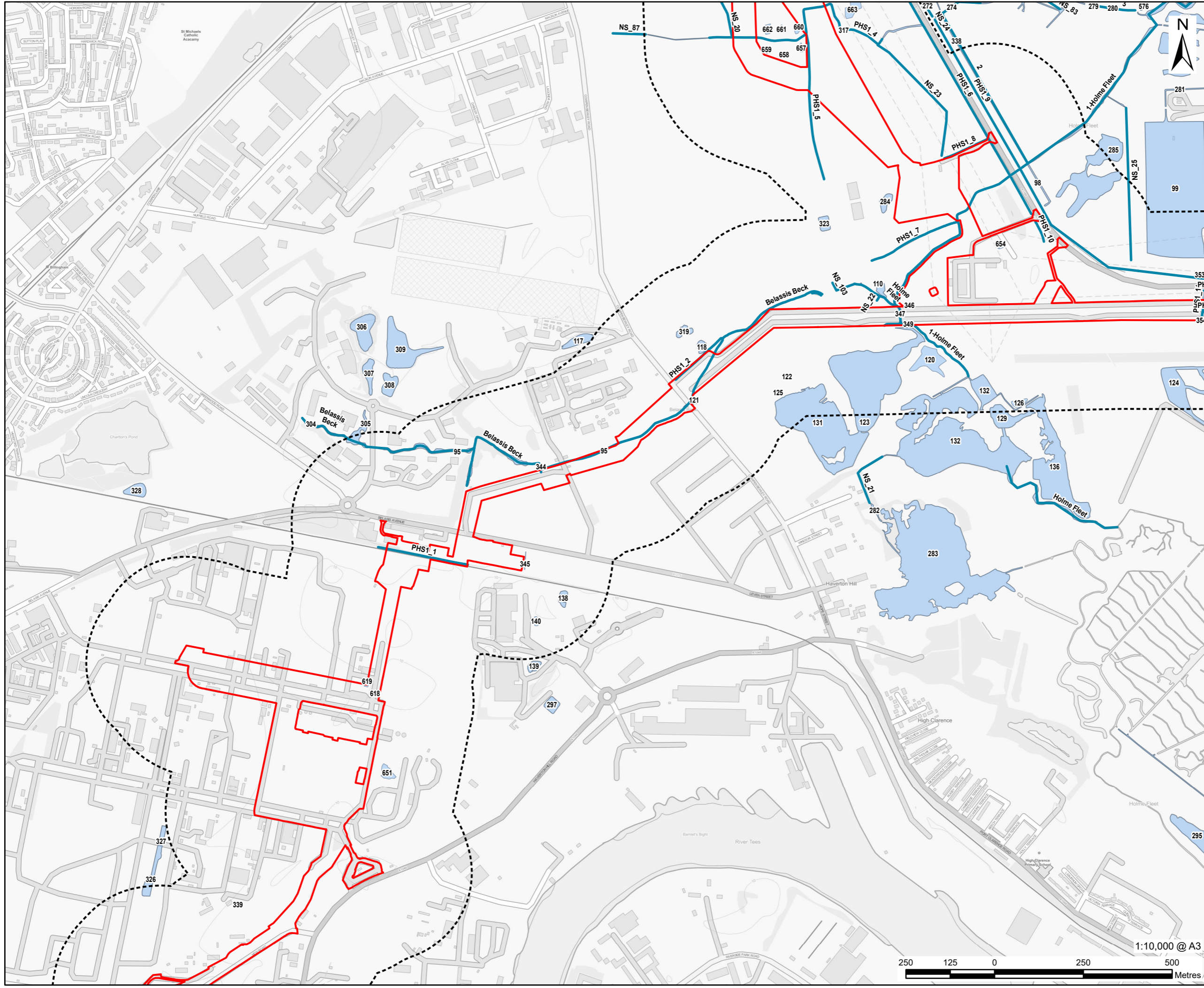
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Watercourses and Waterbodies Within 250m of The Proposed Development Site

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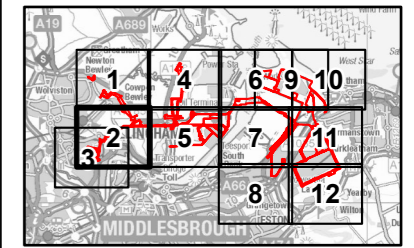


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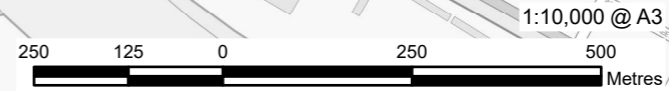
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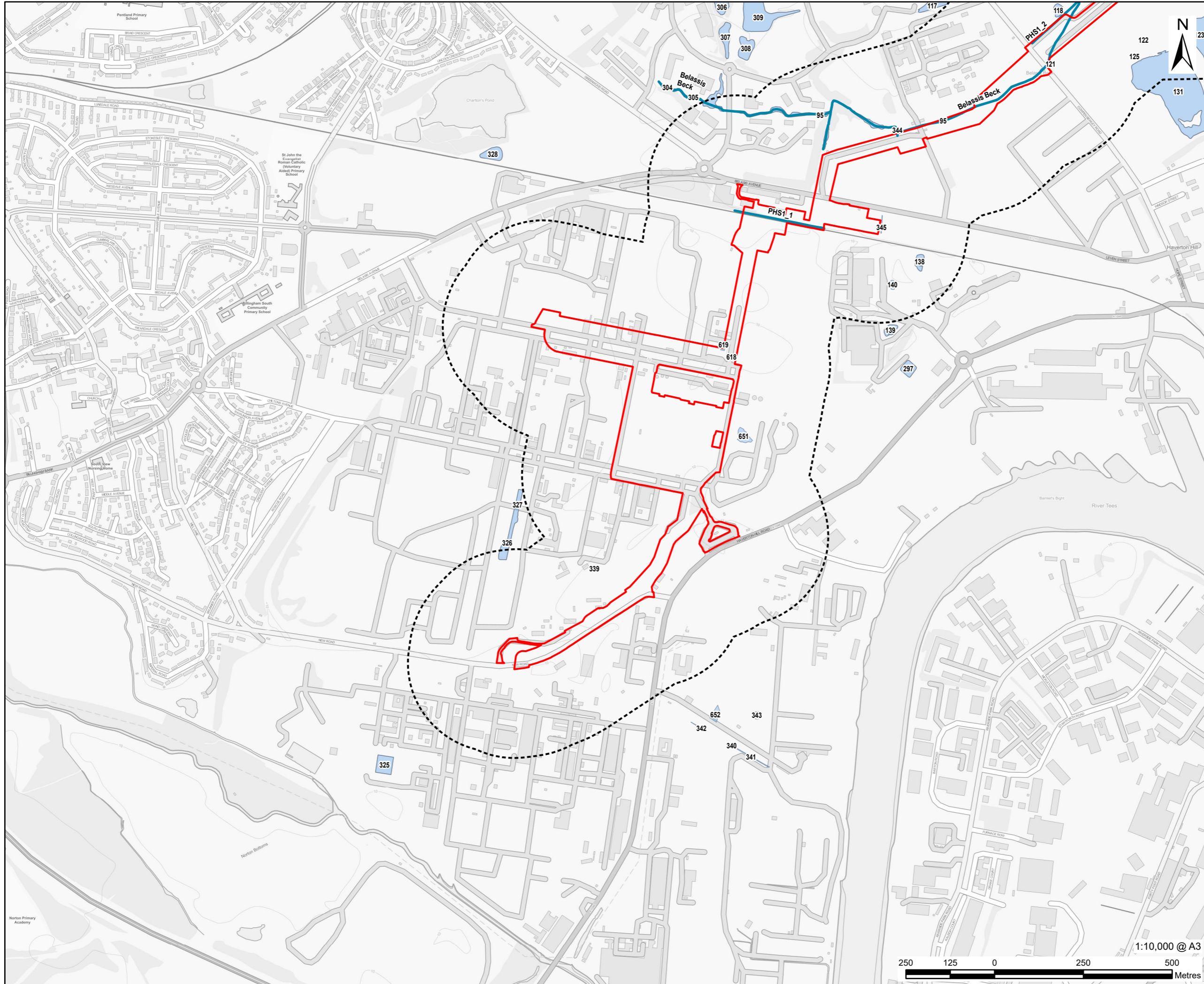
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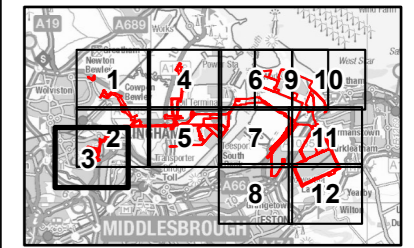


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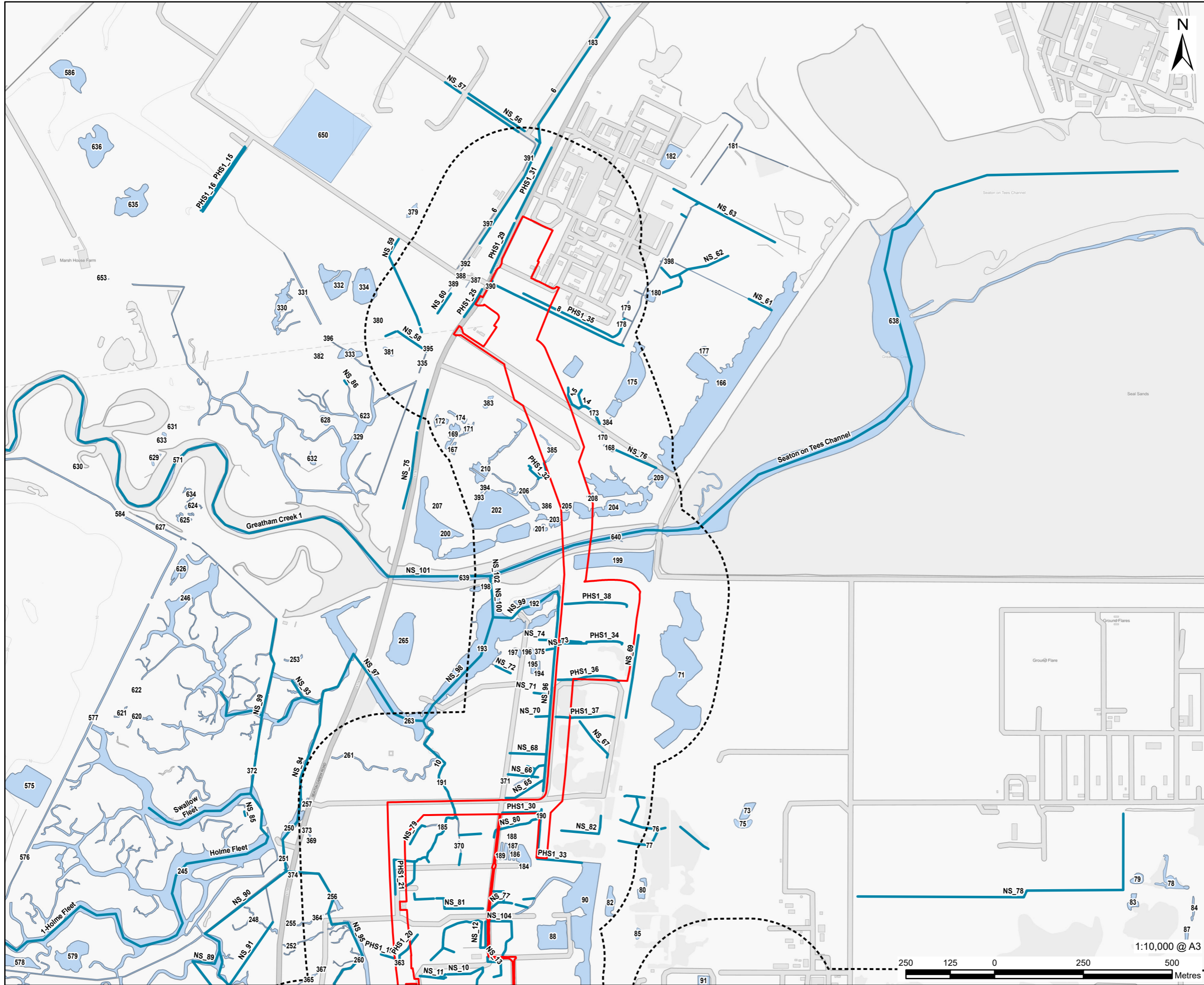
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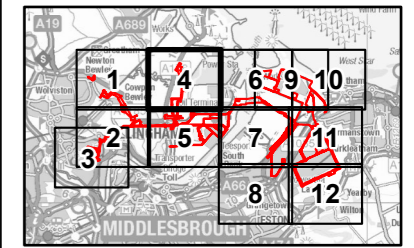


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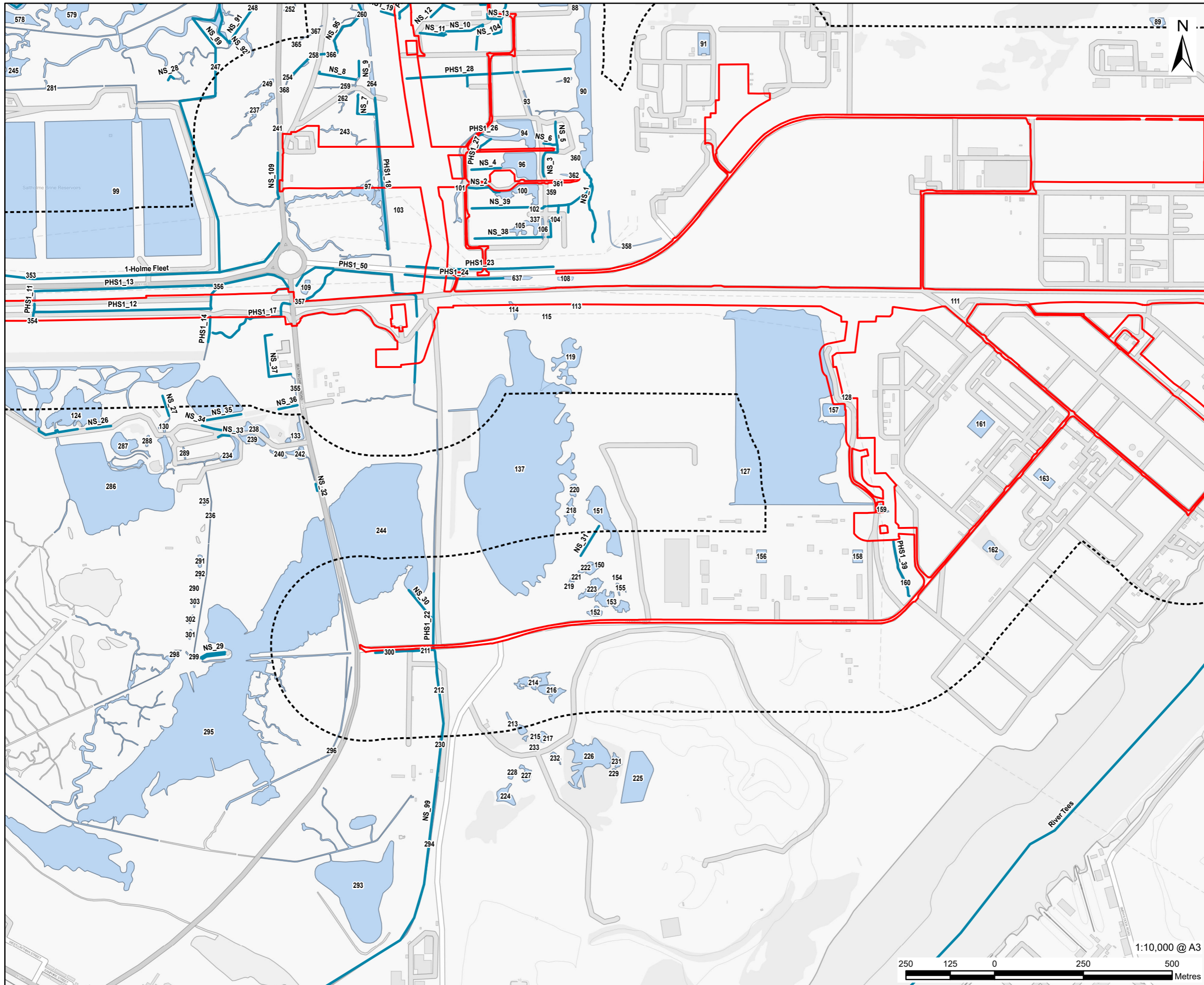
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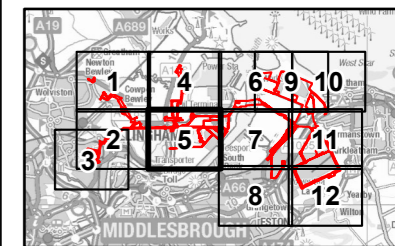
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**LEGEND**

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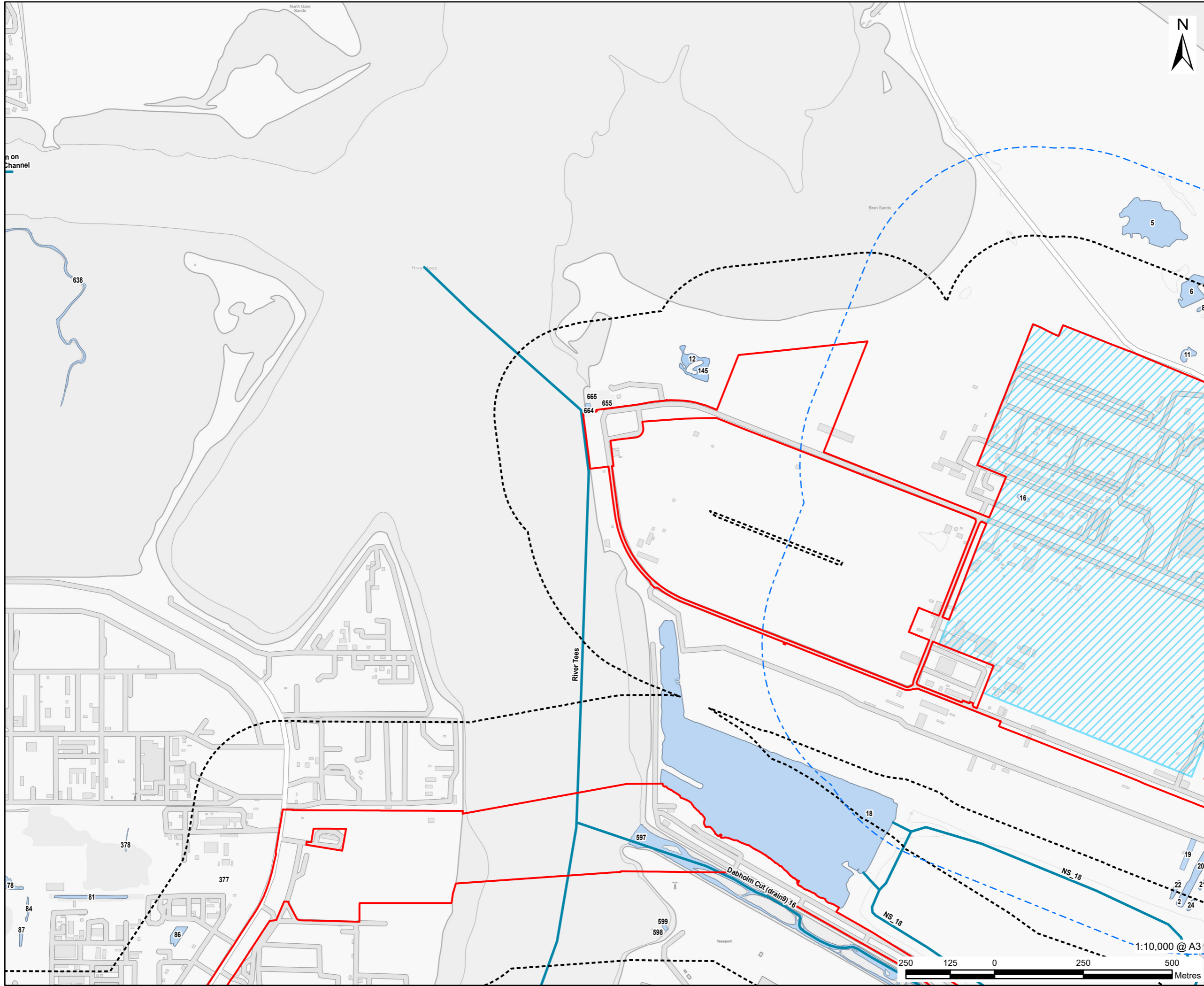
**PROJECT NUMBER**  
60689030

**FIGURE TITLE**  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

**FIGURE NUMBER**  
Figure 12-F-2 (Page 5 of 12)



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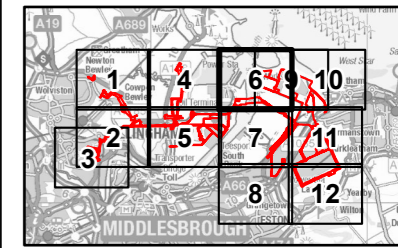
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PROJECT  
H2 Teesside DCO

APPLICANT  
H2 Teesside Limited

CONSULTANT  
AECOM Limited  
100 Embankment,  
Cathedral Approach,  
Manchester, M3 7FB  
www.aecom.com

- LEGEND
- Proposed Development Site
  - Proposed Development Site - 250 m Buffer
  - Main Site
  - Main Site - 500 m Buffer
  - Waterbody
  - Waterbody Area



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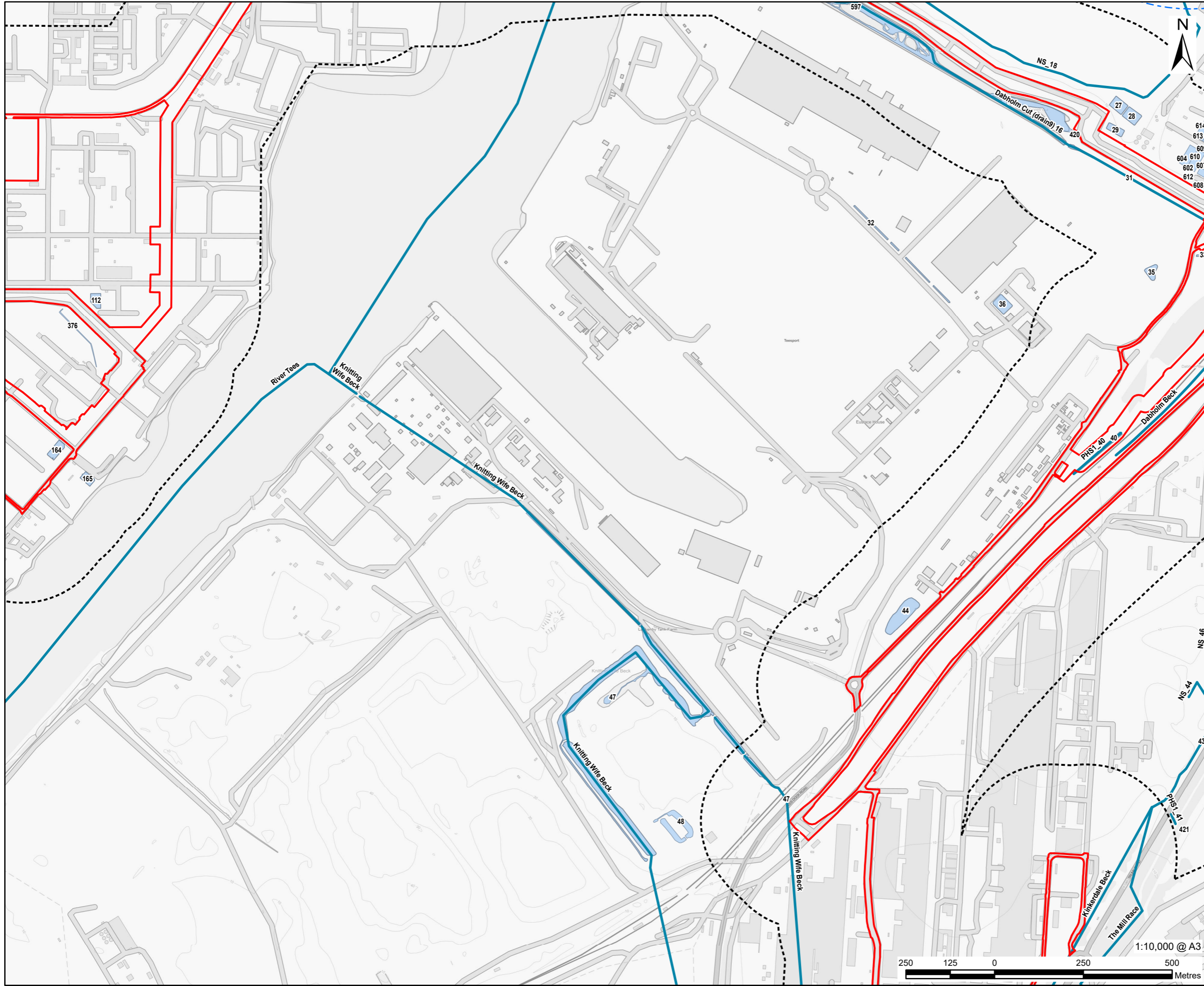
PROJECT NUMBER  
60689030

FIGURE TITLE  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

FIGURE NUMBER  
Figure 12-F-2 (Page 6 of 12)

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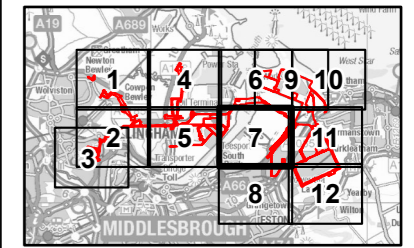


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- LEGEND**
- Proposed Development Site
  - Proposed Development Site - 250 m Buffer
  - Main Site - 500 m Buffer
  - Waterbody
  - Waterbody Area



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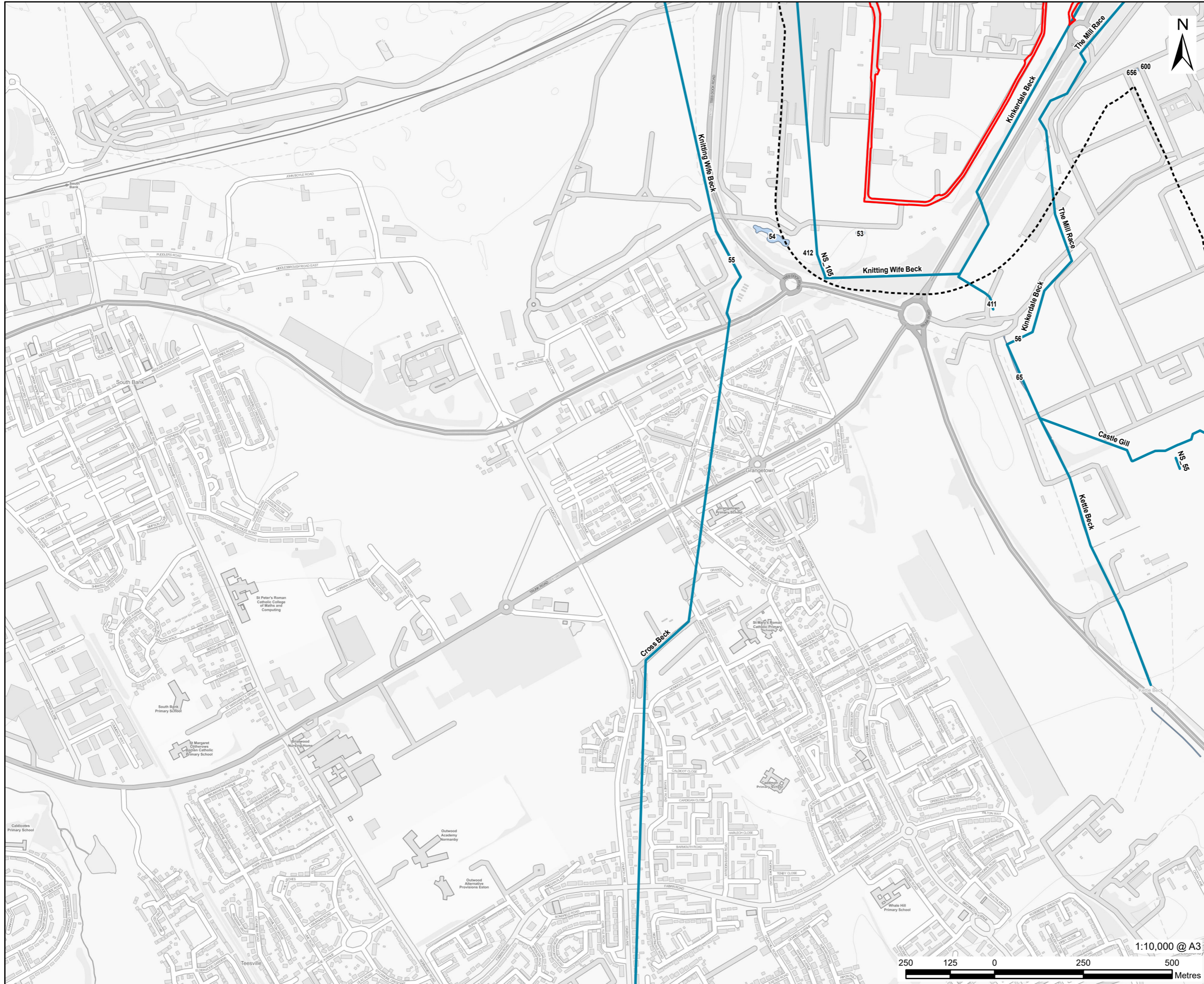
**PROJECT NUMBER**  
60689030

**FIGURE TITLE**  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

**FIGURE NUMBER**  
Figure 12-F-2 (Page 7 of 12)



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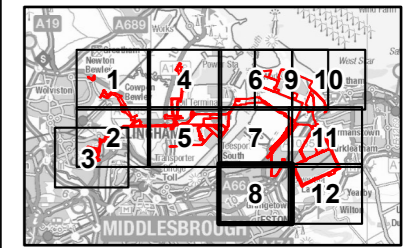
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- LEGEND**
- Proposed Development Site
  - Proposed Development Site - 250 m Buffer
  - Waterbody
  - Waterbody Area



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Environmental Statement

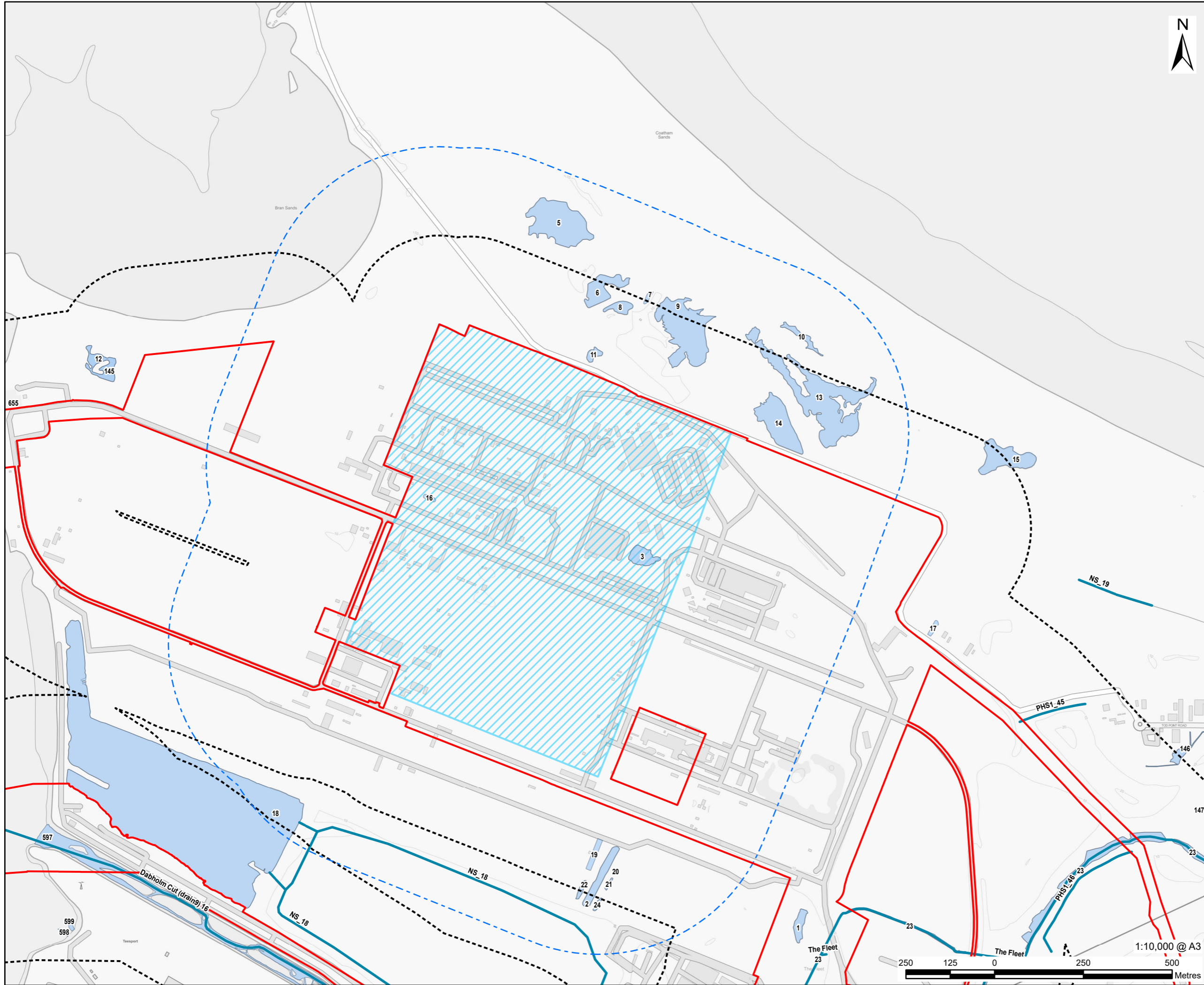
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60689030

**FIGURE TITLE**  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

**FIGURE NUMBER**  
Figure 12-F-2 (Page 8 of 12)

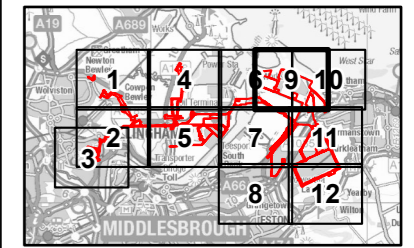


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**LEGEND**

- Proposed Development Site
- Proposed Development Site - 250 m Buffer
- Main Site
- Main Site - 500 m Buffer
- Waterbody
- Waterbody Area



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Environmental Statement

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60689030

**FIGURE TITLE**  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

**FIGURE NUMBER**  
Figure 12-F-2 (Page 9 of 12)

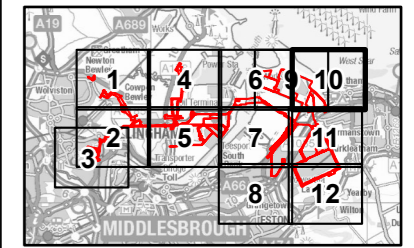
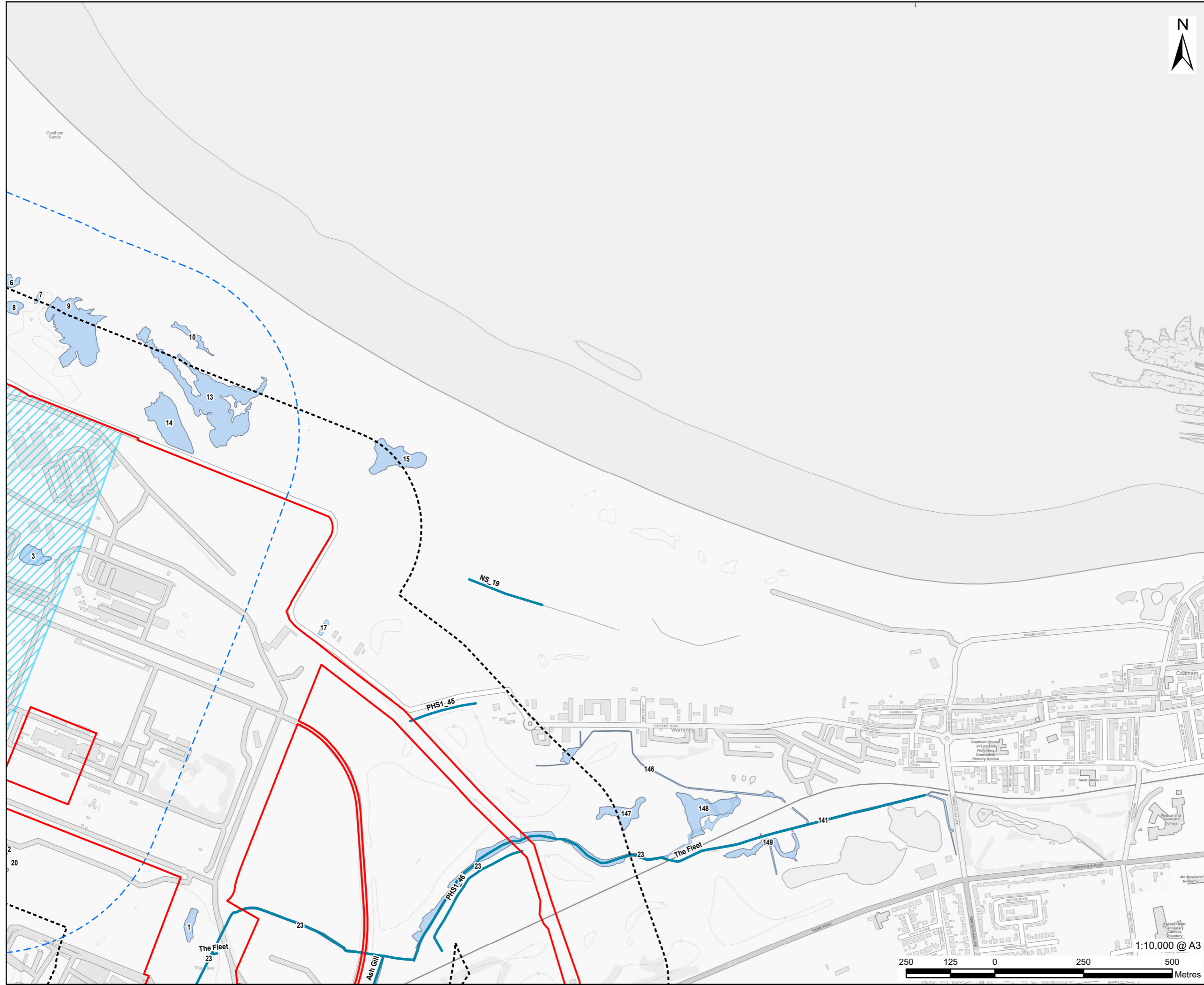


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**LEGEND**

	Proposed Development Site
	Proposed Development Site - 250 m Buffer
	Main Site
	Main Site - 500 m Buffer
	Waterbody
	Waterbody Area



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Environmental Statement

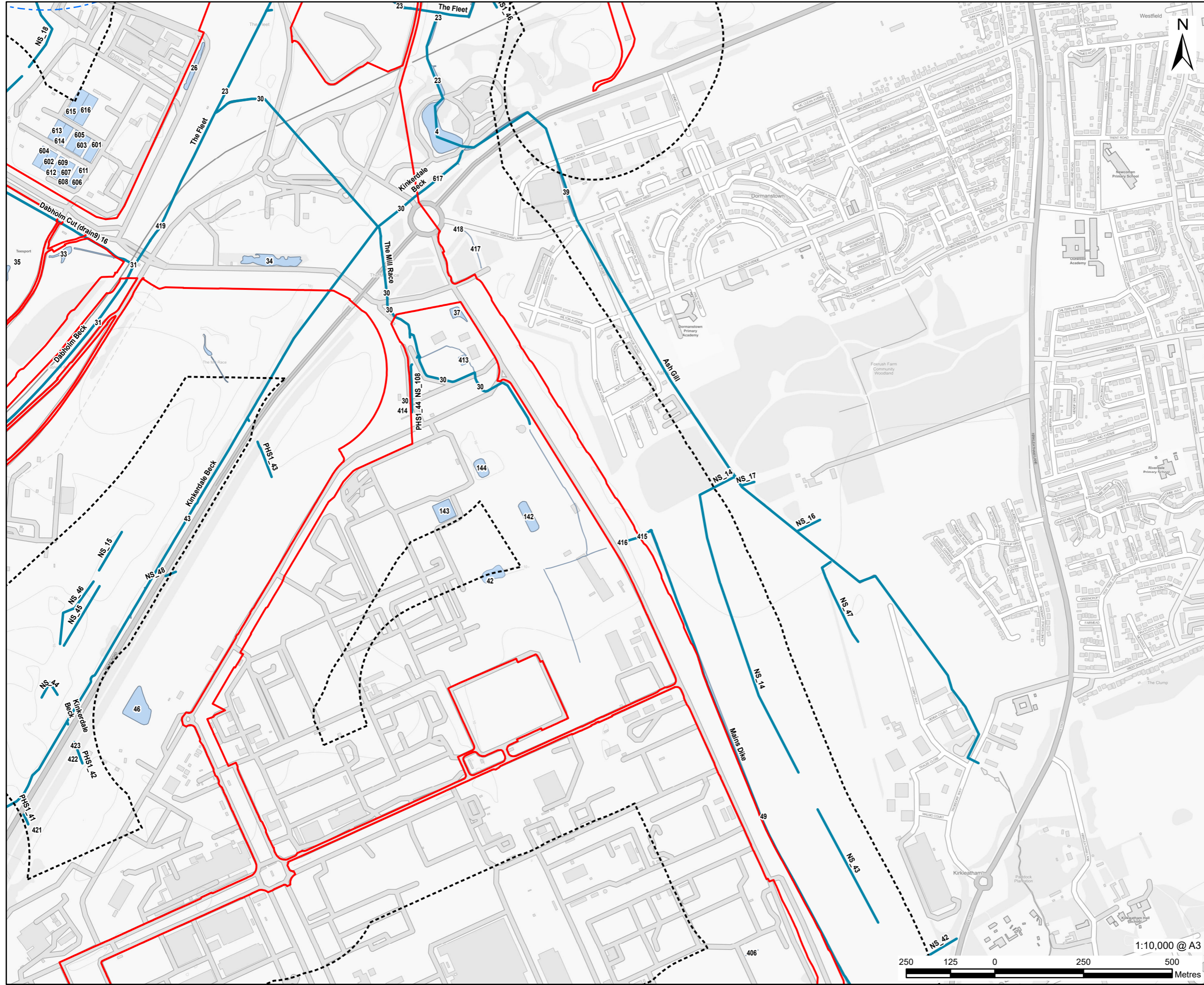
**PROJECT NUMBER**  
60689030

**FIGURE TITLE**  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

**FIGURE NUMBER**  
Figure 12-F-2 (Page 10 of 12)

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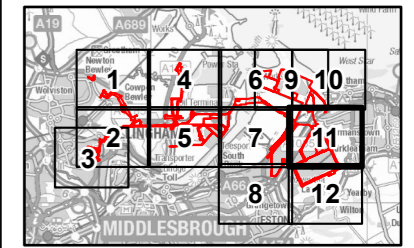


PROJECT  
H2Teesside DCO

APPLICANT  
H2 Teesside Limited

CONSULTANT  
AECOM Limited  
100 Embankment,  
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- LEGEND**
- Proposed Development Site
  - Proposed Development Site - 250 m Buffer
  - Main Site - 500 m Buffer
  - Waterbody
  - Waterbody Area



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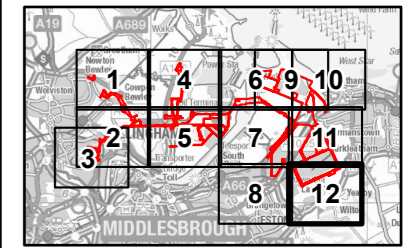
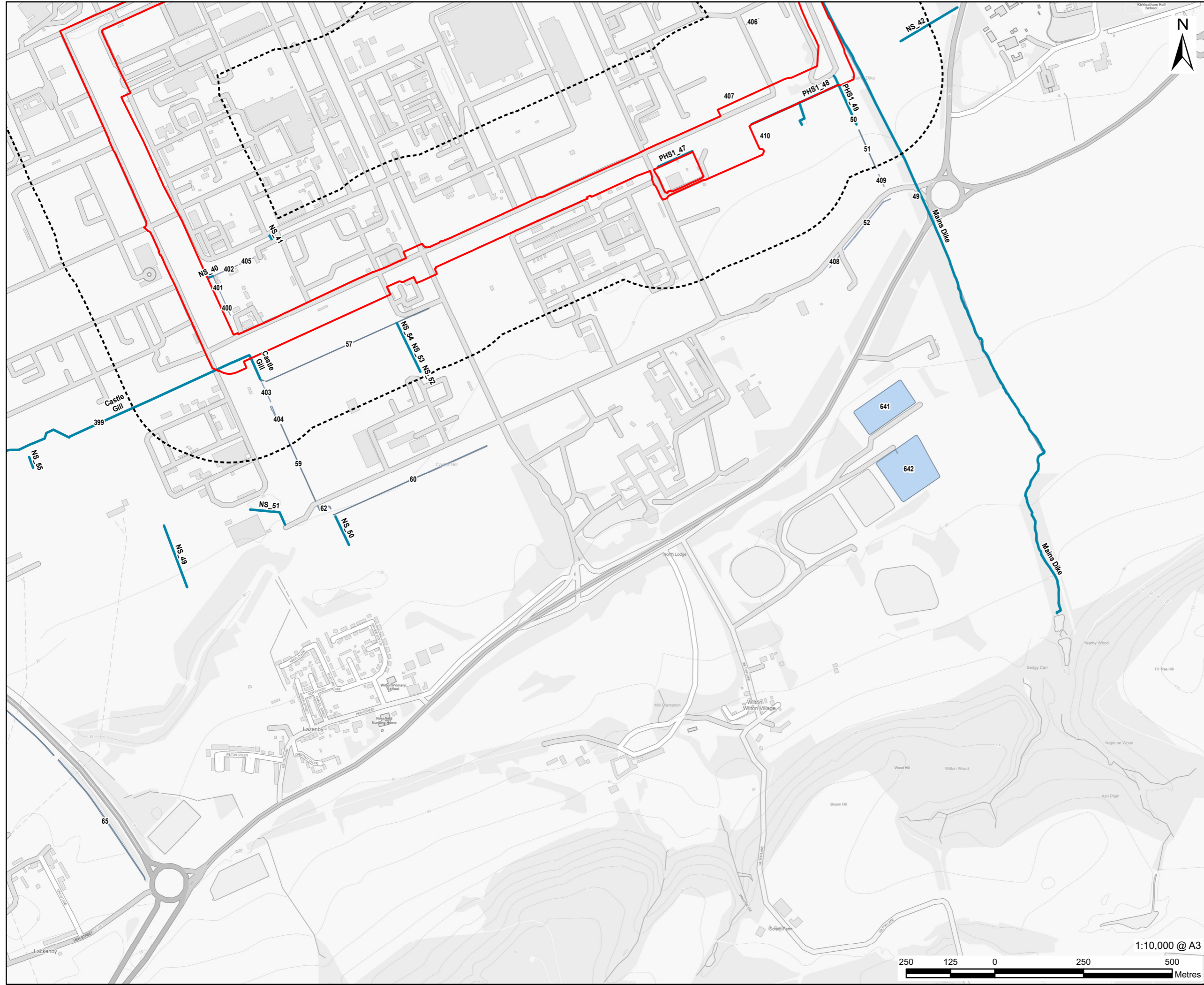
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60689030

**FIGURE TITLE**  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

**FIGURE NUMBER**  
Figure 12-F-2 (Page 11 of 12)



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**ISSUE PURPOSE**  
Environmental Statement

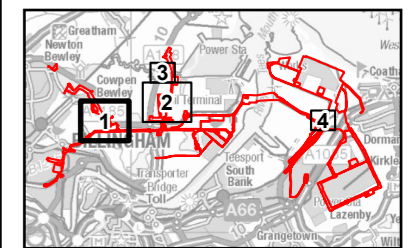
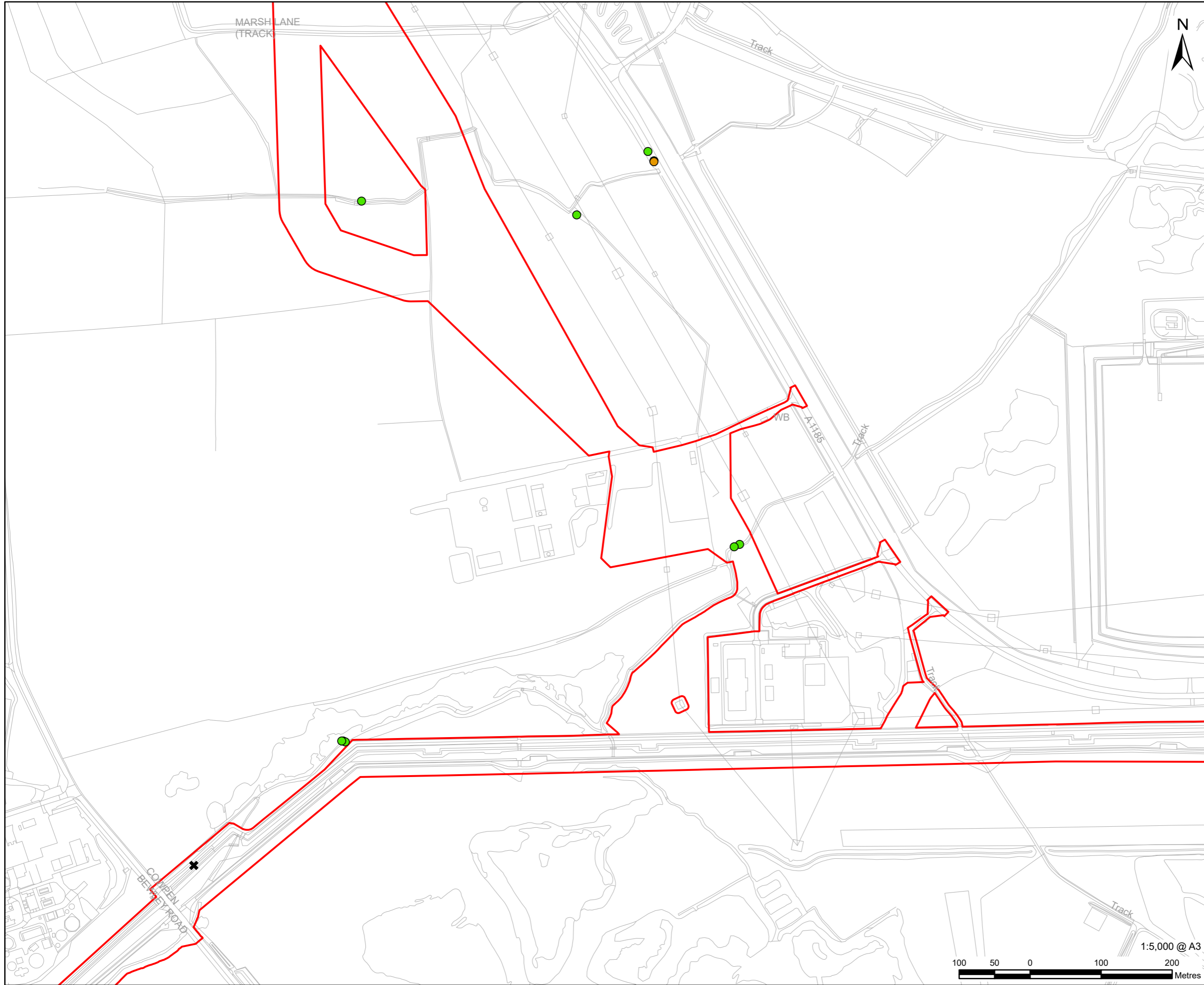
**PROJECT NUMBER**  
60689030

**FIGURE TITLE**  
Watercourses and Waterbodies Within 250m of The Proposed Development Site

**FIGURE NUMBER**  
Figure 12-F-2 (Page 12 of 12)



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**ISSUE PURPOSE**  
Environmental Statement

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**FIGURE TITLE**  
Water Vole and Otter Survey Results

**FIGURE NUMBER**  
Figure 12-F-3 (Sheet 1 of 4)



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**PROJECT**

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**APPLICANT**

H2 Teesside Limited

**CONSULTANT**

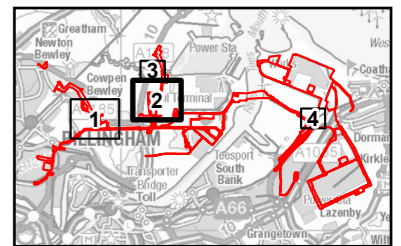
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Cathedral Approach,  
Manchester, M3 7FB  
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**LEGEND**

 Proposed Development Site

**Evidence of Water Vole Presence**

-  Burrow
-  Dropping
-  Feeding remains
-  Footprints
-  Latrine



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**ISSUE PURPOSE**

Environmental Statement

**PROJECT NUMBER**

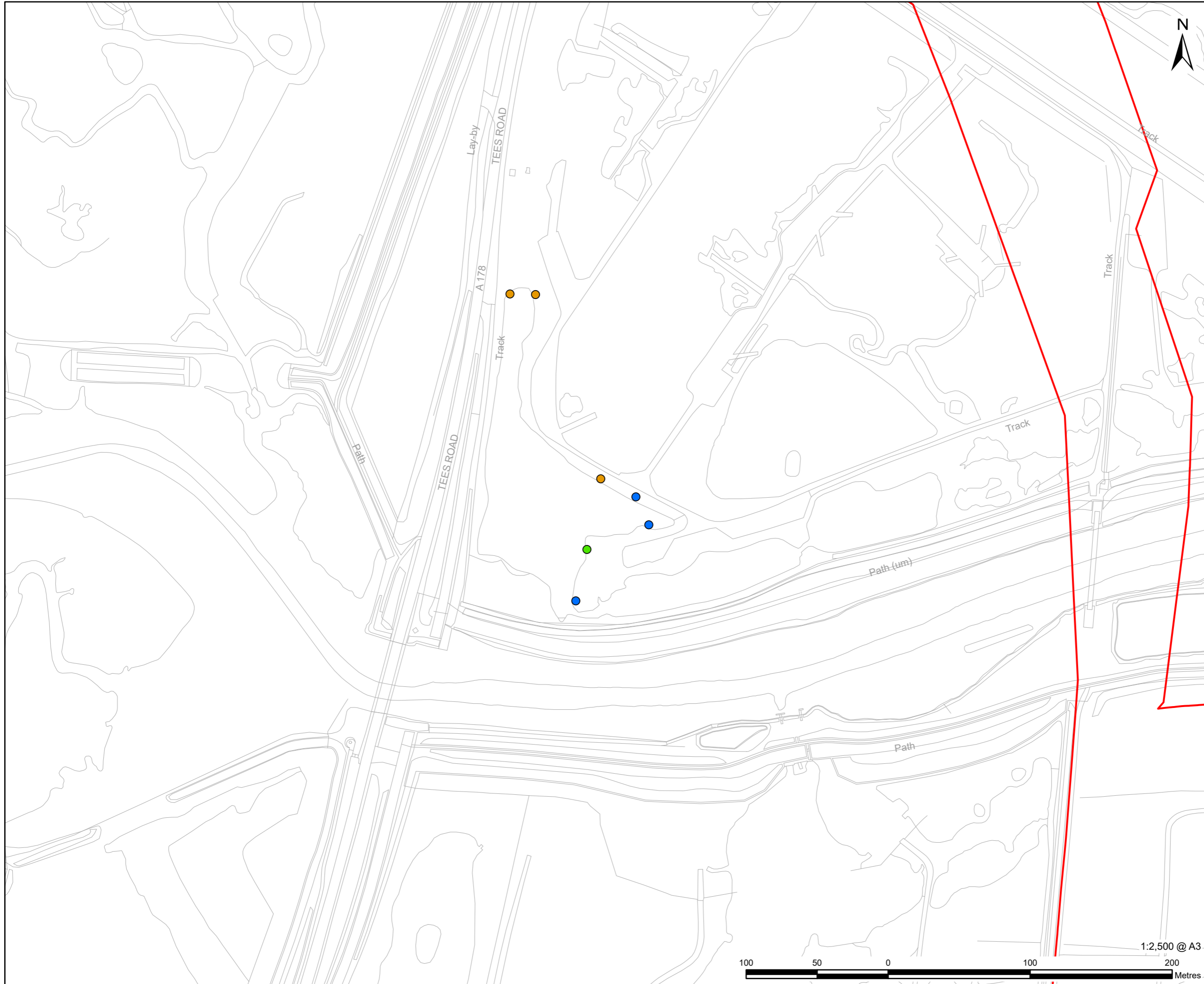
60689030

**FIGURE TITLE**

Water Vole and Otter Survey Results

**FIGURE NUMBER**

Figure 12-F-3 (Sheet 2 of 4)



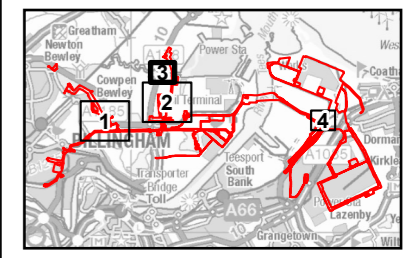
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**APPLICANT**  
H2 Teesside Limited

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Cathedral Approach,  
Manchester, M3 7FB  
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- LEGEND**
- Proposed Development Site
  - Dropping
  - Feeding remains
  - Latrine



**NOTES**

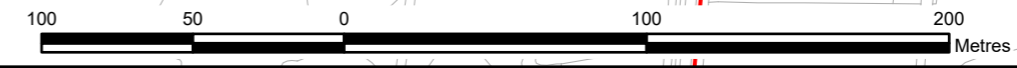
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**ISSUE PURPOSE**  
Environmental Statement

**PROJECT NUMBER**  
60689030

**FIGURE TITLE**  
Water Vole and Otter Survey Results

**FIGURE NUMBER**  
Figure 12-F-3 (Sheet 3 of 4)



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## PROJECT

H2Teesside DCO

## APPLICANT

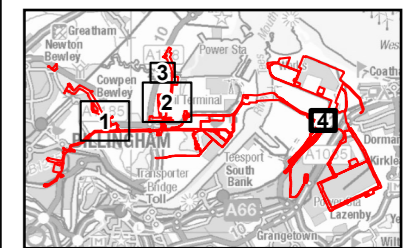
H2 Teesside Limited

## CONSULTANT

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Cathedral Approach,  
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## LEGEND

- Proposed Development Site
- Evidence of Otter Presence**
  - ▲ Footprints
  - ▲ Spraint
- Evidence of Water Vole Presence**
  - Feeding remains
  - Latrine



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Environmental Statement

## PROJECT NUMBER

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## FIGURE TITLE

Water Vole and Otter Survey Results

## FIGURE NUMBER

Figure 12-F-3 (Sheet 4 of 4)

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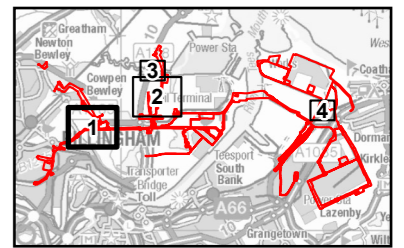
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## LEGEND

- Proposed Development Site
- Artificial Latrine Location



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Environmental Statement

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## FIGURE TITLE

Artificial Latrine Locations

## FIGURE NUMBER

Figure 12-F-4 (Sheet 1 of 4)

# AECOM

## PROJECT

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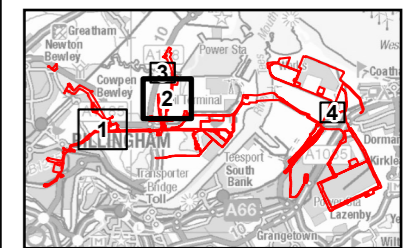
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## LEGEND

- Proposed Development Site
- Artificial Latrine Location



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## FIGURE TITLE

Artificial Latrine Locations

## FIGURE NUMBER

Figure 12-F-4 (Sheet 2 of 4)

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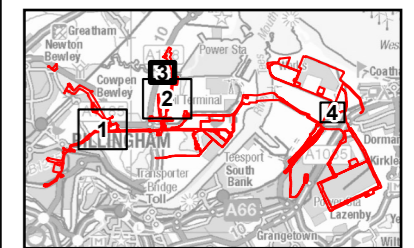
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## LEGEND

- Proposed Development Site
- Artificial Latrine Location



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Environmental Statement

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## FIGURE TITLE

Artificial Latrine Locations

## FIGURE NUMBER

Figure 12-F-4 (Sheet 3 of 4)

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## PROJECT

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## APPLICANT

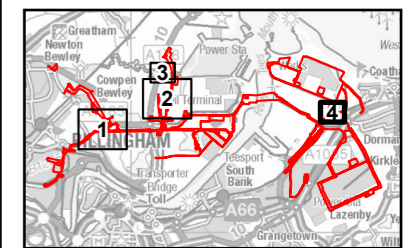
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## LEGEND

- Proposed Development Site
- Artificial Latrine Location



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## ISSUE PURPOSE

Environmental Statement

## PROJECT NUMBER

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## FIGURE TITLE

Artificial Latrine Locations

## FIGURE NUMBER

Figure 12-F-4 (Sheet 4 of 4)

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**PROJECT**

H2Teesside DCO

**APPLICANT**

H2 Teesside Limited



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

**LEGEND**

-  Proposed Development Site
-  Main Site



**Environmental Records Information  
Centre North East (From 2012 to 2021)**

-  Evidence of Otter Presence
-  Evidence of Water Vole Presence

**Environment Agency Reports (2021 - 2022)**

-  Potential Otter Feeding Remains
-  Potential Unused Water Vole Burrows
-  Potential Otter Feeding Remains and Water Vole Latrine, Feeding Remains and Runs Recorded
-  Water Vole Latrine
-  Water Vole Incidental Sighting

**Net Zero Teesside (Doc 9.6) Report**

-  Otter Spraint
-  Water Vole Latrine

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**ISSUE PURPOSE**

Environmental Statement

**PROJECT NUMBER**

60689030

**FIGURE TITLE**

Desk Study Results

**FIGURE NUMBER**

Figure 12-F-5

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## 12F.8 ANNEX 2: Relevant Legislation, Planning Policy, and Guidance

12F.8.1 A summary of the relevant international, national, and local legislation, planning policy, and guidance is set out below.

### Legislation

12F.8.2 The following legislation is relevant to this report:

- Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Conservation of Habitats and Species Regulations 2017 (as amended); and
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

### Water Vole

12F.8.3 The water vole is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- intentionally capture, kill, or injure water voles;
- intentionally or recklessly damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care);
- intentionally or recklessly disturb them in a place of shelter or protection (on purpose or by not taking enough care); and
- possess, sell, control or transport live or dead water voles or parts of them (excluding water voles bred in captivity).

12F.8.4 The Act provides a defence against the offences outlined above; however, the defence is only sustained if it can be argued that the potential offence was 'the incidental result of a lawful operation' and 'could not reasonably have been avoided' as set out in the Act. In order to demonstrate these two elements of the defence, as far as is reasonable, appropriate action would need to be taken to safeguard water vole and their shelters to ensure there is as little risk as possible of interfering with them. Short-term low-level disturbance which 'allows water vole to flee and then later return' is not considered likely to trigger an offence under the Act. Where development cannot avoid potential offences then a licence may be required.

### Otter

12F.8.5 Otter and their resting places receive protection under both British and European legislation. Under European legislation the otter is protected under EC Directive (92/43/EEC), being listed under Annexes IIa and IVa. This is implemented in Britain under the Conservation of Habitats and Species Regulations, 2017 (as amended). Under the Conservation of Habitats and Species Regulations 2017 it is an offence to:

- deliberately kill, injure, disturb or capture an otter;

- 
- damage or destroy their breeding sites and resting places - even if otters are not present; and
  - possess, control or transport them (alive or dead).
- 12F.8.6 The otter is listed under Annexe II of the Bern Convention and is also protected under Schedule 5 and 6 of the Wildlife and Countryside Act, 1981 (as amended). Under the Wildlife and Countryside Act, 1981 (as amended), it is also an offence to intentionally or recklessly:
- disturb otters while they occupy a structure or place used for shelter or protection; and
  - obstruct access to a place of shelter or protection.
- 12F.8.7 The Government has published standing advice (Natural England, 2022) to guide decision makers on the determination of proposals with potential to affect protected species such as otter. The guidance sets out responsibilities and minimum requirements for mitigation.
- 12F.8.8 Where development cannot avoid potential offences, then it is possible to apply for a European Protected Species Mitigation Licence (EPSML). A licence is only likely to be granted for developments that can demonstrate compliance with the relevant standing advice.
- 12F.8.9 The disturbance offence within the Habitats Regulations 2017 (as amended) is not concerned with levels of disturbance which would be unlikely to adversely affect otter. Under this legislation, there would only be an offence when disturbance is of sufficient extent or magnitude to:
- impair the ability of otter to survive, to breed or reproduce, or to rear or nurture their young; or
  - significantly affect the local distribution or abundance of the species.
- NERC Act 2006**
- 12F.8.10 The NERC Act (2006), as amended, put an obligation on public bodies to have regard, so far as is consistent with the proper exercise of their functions, to the purpose of conserving biodiversity. Under the terms of the NERC Act, conserving biodiversity includes restoring or enhancing populations and/or habitats. The Local Planning Authority (LPA) or other determining authority must therefore consider the effects of planning applications upon biodiversity and how it can be mitigated for or enhanced.
- 12F.8.11 A list of species and habitats 'of principal importance for the purpose of conserving biodiversity' is published under Section 41 of the NERC Act (2006). The list which includes 56 habitats, and 943 species has been drawn up in consultation with Natural England and draws upon the previous UK Biodiversity Action Plan (BAP) List of Priority Species and Habitats which is now obsolete. Otter and water vole are listed as a priority species on the NERC Act, 2006.
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### Local Biodiversity Action Plans

- 12F.8.12 The Tees Valley Biodiversity Action Plan (Tees Valley Nature Partnership, 2012) is the relevant LBAP for the defined Study Area (refer to Appendix 12A: Phase 1 Habitat and Botanical Survey Report) and was updated in 2012. The LBAP outlines biodiversity conservation objectives within the region and identifies priorities for action for priority habitats, species, locally important wildlife and sites.
- 12F.8.13 Water vole: *"Once a familiar sight in lowland Britain water vole populations have been plummeting. It is believed to be our most declining mammal with the Mammal Society estimating that it is now absent from over 90% of sites occupied in the 1900's. The reasons for its decline are complex but involve a combination of loss and fragmentation of beckside habitats, changes in watercourse management, and predation by mink which have spread through our countryside. In the Tees Valley local declines have mirrored the national pattern; however, water voles do thrive in parts of the Tees Valley. One example is the urban Becks of Middlesbrough."*
- 12F.8.14 Otter: *"Once abundant in the Tees, salmon numbers declined with the growth of industry in the lower Tees to the extent that the river was considered to be devoid of this fish between the 1920s and 1983. Ironically a pollution incident in Teesdale revealed that some salmon were still managing to migrate through Teesside's 'anoxic plug' and less and cleaner industry has seen numbers gradually increase. Salmon are an important food source for a wide range of predators including otters, seals and goosander. Salmon need clean, aerated water and clean substrates to successfully spawn in. Egg survival is compromised by fine sediment smothering reeds and „spikes“ of nutrient, such as ammonia, from field run-off. Invertebrates, the primary food source of salmon fry are similarly impacted. Salmon are an anadromous species and can complete numerous migrations in a lifetime. The Tees barrage presents a problem to the recovery of this species in the river at both inward and seaward migrations although recent modifications to the canoe slalom may improve the situation. Other barriers are being addressed through Water Framework Directive initiatives."*

12F.9 ANNEX 3: Survey Data

Table 12F-5: Survey Dates and Weather Conditions

SURVEYED WATERCOURSE	SURVEY DATE	WEATHER CONDITIONS AT THE TIME OF SURVEY	RECENT WEATHER PRIOR TO SURVEY
<i>Habitat Suitability Assessment and first terrestrial habitat survey (otter) and presence/likely absence (water vole)</i>			
Cowpen Marsh	08/09/2023	17°C, dry, overcast, humid	Sunny and warm
Belasis Beck/Holme fleet	08/09/2023	20°C, dry, clear, humid	Sunny and warm
Sabic	07/06/2023	14°C, dry, overcast, mild	Sunny
Inovyn	15/09/2023	17°C, dry, overcast, warm	Sunny and warm
Knitting Wife Beck	22/09/2023	20°C, dry, clear and warm	Warm and sunny
Mill Race/Kinkerdale Beck	22/08/2023	20°C, dry, clear and warm	Warm and sunny
Mains Dike	30/06/2023	16°C, light precipitation, scattered clouds, mild	Warm and sunny
The Fleet	28/06/2023	15°C, light precipitation, scattered clouds, mild	Warm and sunny
Dabholm Gut/Dabholm Beck	29/06/2023	15°C, dry, few clouds, mild	Warm and sunny
<i>Second terrestrial habitat survey (otter) and presence/likely absence (water vole)</i>			
Sabic	07/06/2023	14°C, drizzle, scattered clouds, mild	Sunny and clear
Mill Race/Kinkerdale Beck	14/09/2023	19°C, dry, scattered clouds, warm	Warm and sunny
Mains Dike	13/09/2023	17°C, dry, few clouds, warm	Warm and sunny
The Fleet/Ash Gill	14/09/2023	18°C, dry, few clouds, warm	Warm and sunny
Dabholm Gut	13/09/2023	12°C, dry, few clouds, mild	Sunny intervals with scattered showers
<i>Artificial latrine survey one (water vole only)</i>			
Belasis Beck/Holme fleet	16/10/2023	10°C, dry, heavy clouds, cool	Storm Babet

SURVEYED WATERCOURSE	SURVEY DATE	WEATHER CONDITIONS AT THE TIME OF SURVEY	RECENT WEATHER PRIOR TO SURVEY
Sabic	26/10/2023	10°C, drizzle, overcast, cool	Sunny intervals and showers
Inovyn	26/10/2023	10°C, rain, overcast, cool	Sunny intervals and rain
The Fleet/Ash Gill	14/09/2023	11°C, dry, few clouds, cool	Light rain
Artificial latrine survey two ( <i>water vole only</i> )			
Belasis Beck/Holme fleet	23/10/2023	10°C, dry, overcast, cool	Heavy rain
Sabic	31/10/2023	10°C, drizzle, scattered clouds, cool	Light rain
Inovyn	01/11/2023	11°C, recent rain, scattered clouds, cool	Rain
The Fleet/Ash Gill	30/10/2023	11°C, dry, few clouds, cool	Light rain



12F.10 ANNEX 4: Habitat Suitability Assessments

Table 12F-6: Watercourse Habitat Suitability Assessments for Otter and Water Vole

WATERBODY ID	WEATHER	TYPE	WIDTH/WATERBODY SIZE	DEPTH AND FLOW	CONNECTIVITY/SUITABILITY AS WILDLIFE CORRIDOR	PRESENCE OF REFUGES/COVER	LEVEL OF HUMAN DISTURBANCE	OPPORTUNITIES FOR BREEDING HOLTS	OPPORTUNITY FOR ABOVE GROUND RESTING SITES/COUCHES	PRESENCE OF FOOD SOURCE/FORAGING OPPORTUNITIES	ANY OTHER RELEVANT FACTORS	WATERCOURSE/BODY SUITABLE FOR OTTER	LIMITATIONS TO THE HSA
The Fleet (23)	dry, mild, moderate breeze	Dyke	5 m	Sluggish	Good connectivity throughout linking to grasslands, dense scrub and areas of swamp	moderate cover within tall grass and scrub	low within 20m either side, rubble stockpiles beyond that to the south where disturbance is higher	Moderate, banks are quite steep but provide good cover in ruderal and scrub vegetation	Moderate, banks are quite steep but provide good cover in ruderal and scrub vegetation	Likely fish within the dyke, good foraging opportunities	Full of pennywort ( <i>Hydrocotyle rabunculoides</i> ), typha and ( <i>glyceria maxima</i> )	Yes	Banks too steep to access water level and water course heavily vegetated
Dabholm Gut	dry, hot, slight breeze	Coastal	30 m	Fast	Good suitability between the site and wider Tees area	limited available cover amongst scrub in steep sided banks, bottom part generally rocky on each side for 2-3 m	Moderate	limited availability due to rocky nature and steep banks	low opportunity due to steep rocky banks but scrub does provide potential resting sites approximately 6 m above water level	Moderate	None	Yes	Not able to enter watercourse, observed from bank edge with binoculars
Mains Dike (483)	cloudy, moderate breeze, mild	Ditch	2 m	Sluggish	Poor - Dike is dredged and flows under Wilton	None, cover atop banks suitable although bank profile is steep	High, drain is dredged yearly	None	None	moderate, drain unlikely to have fish	None	No	None
Knitting Wife Beck (65)	Cloudy, moderate breeze, mild	Dyke	1.5 m	Fast	Good - in an area of open mosaic habitat on previously developed land	None although suitable	High, litter present	Moderate - none observed during survey	Moderate - none observed during survey	Moderate - none observed during survey	None	No	None
97	cloudy, moderate breeze, mild	Ditch	4 m	Static	Moderate - many waterbodies and watercourses, swamp and grassland	None	low	Moderate - none observed during survey	Moderate - none observed during survey	Moderate - none observed during survey	None	Yes	None

WATERBODY ID	WEATHER	TYPE	WIDTH/WATERBODY SIZE	DEPTH AND FLOW	CONNECTIVITY/SUITABILITY AS WILDLIFE CORRIDOR	PRESENCE OF REFUGES/COVER	LEVEL OF HUMAN DISTURBANCE	OPPORTUNITIES FOR BREEDING HOLTS	OPPORTUNITY FOR ABOVE GROUND RESTING SITES/COUCHES	PRESENCE OF FOOD SOURCE/FORAGING OPPORTUNITIES	ANY OTHER RELEVANT FACTORS	WATERCOURSE/BODY SUITABLE FOR OTTER	LIMITATIONS TO THE HSA
The Mill Race (43)	Passing clouds and warm	Ditch	4 m	Static	Moderate - woodland plantation, dense scrub, grassland, open mosaic habitat on previously developed land	None	None	None	None	None	None	No	Section of watercourse underground
Knitting Wife Beck (47)	Passing clouds and warm	River	8 m	Slow	Good - in an area of open mosaic habitat on previously developed land	Yes	None	Further south - beyond the flood gate	Further south - beyond the flood gate	Yes	None	Yes	None
Knitting Wife Beck (47)	Passing clouds and warm	Other	10 m	Static	Good - in an area of open mosaic habitat on previously developed land	Yes	Minor	Within the central island area - it seems to be slag which is being colonised by vegetation	Within the central island area - it seems to be slag which is being colonised by vegetation	Yes	This area looks like it has been turned in to some kind of reserve. Water levels extremely deep with areas of reed bed and a central island of lush vegetation	Yes	None
The Mill Race (34)	Broken clouds, gentle breeze and cool	Ditch	3 m	Static	Moderate - woodland plantation, dense scrub, grassland, open mosaic habitat on previously developed land	None	Minimal	Limited	Potential within the broadleaved woodland plantation	Fish present in some parts of the ditch where water has collected and flowing	None	No	None

WATERBODY ID	WEATHER	TYPE	WIDTH/WATERBODY SIZE	DEPTH AND FLOW	CONNECTIVITY/SUITABILITY AS WILDLIFE CORRIDOR	PRESENCE OF REFUGES/COVER	LEVEL OF HUMAN DISTURBANCE	OPPORTUNITIES FOR BREEDING HOLTS	OPPORTUNITY FOR ABOVE GROUND RESTING SITES/COUCHES	PRESENCE OF FOOD SOURCE/FORAGING OPPORTUNITIES	ANY OTHER RELEVANT FACTORS	WATERCOURSE/BODY SUITABLE FOR OTTER	LIMITATIONS TO THE HSA
The Mill Race (34)	Broken clouds, gentle breeze and cool	Ditch	1.5 m	Static	Moderate - woodland plantation, dense scrub, grassland, open mosaic habitat on previously developed land	Broadleaved plantation and scrub	None	None	Potential in BL woodland plantation	Fish present in areas where water is deeper before heading underground	None	No	None
456	Scattered clouds and humid	Ditch	Dry	Static	Good - Large marsh area connected to the farming landscape with many watercourses, grassland and swamp	Areas of woodland, scrub and dense vegetation	Limited	Potential	In dense vegetation	In nearby waterbodies and watercourses	None	No	None
Holme Fleet	Passing clouds and warm	Stream	1 m	Slow	Connected to RSPB reserve, areas of swamp and other watercourses	Yes - reedbeds, woodlands and tall grasslands	None	Potential with areas of swamp	Potential in nearby small, wooded areas and swamp areas	Fish, oysters etc available	None	Yes	None
The Fleet (23)	dry, mild, moderate breeze	Dyke	5 m wide	Sluggish	Good connectivity throughout linking to grasslands, dense scrub and areas of swamp	Moderate cover within tall grass and scrub	low within 20 m either side, rubble stockpiles beyond that to the south where disturbance is higher	Moderate, banks are quite steep but provide good cover in ruderal and scrub vegetation	Moderate, banks are quite steep but provide good cover in ruderal and scrub vegetation	Likely fish within the dyke, good foraging opportunities	None	Yes	Banks too steep to access water level and water course heavily vegetated

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 6	Running Water	2 m	Slow	Steep >45 degrees	Earth	Yes	0	Tall Tussocky Grass	High	Tall Tussocky Grass	1.5 m	70	No	Western side of ditch is heavily damaged by cattle	Yes	None
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 5	Ditch	4 m	Static	Shallow <45 degrees	Earth	Yes	0	Tall Tussocky Grass	Dense	Tall Tussocky Grass	3.5 m	90	No	None	Yes	None
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 9	Ditch	4.5 m	Static	Steep >45 degrees	Earth	Yes	None	Tall Tussocky Grass	Dense	Tall Grasses/Weeds	4.5 m	Dense	No	None	Yes	None
The Fleet	28/06/2023	Dry, mild and a moderate breeze.	Fleet 1	Ditch	5 m	Sluggish	Steep >45 degrees	Earth	Yes	Pennywort dominated watercourse - 100% shade	Tall Grasses/Weeds	Dense	Other	5 m	Dense	None	Pennywort throughout this section	Yes	Steep banks, dense scrub and potentially deep waters
Dabholm Gut	29/06/2023	dry, sunny, slight breeze	DB 1	Running Water	30 m wide	Fast	Steep >45 degrees	Boulders	Yes	None	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	0 m	None	Underground and aboveground pipelines on north and south side of Gut are mown	None	No	Unable to fully access for H&S reasons
Mains Dike	30/06/2023	cloudy, moderate breeze, mild	MD 1	Ditch	2 m	Sluggish	Steep >45 degrees	Earth	Yes	9%	Tall Grasses/Weeds	dense		0 m	None	Recently dredged which is done yearly within compound	Flows west but underneath Wilton International - unknown outflow location	No	None
Knitting Wife Beck	30/06/2023	Light rain and mild	KWB 7	Ditch	2-3 m	Slow	Shallow <45 degrees	Earth	Yes	100%	Tall Grasses/Weeds	Low		0 m	None	None	Large area of fly tipping where watercourse meets Kinkerdale Beck to the south. Northern part of this stretch that flows under the	No	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
																	Trunk Road is overgrown with INNS Himalayan Balsam		
Sabic	30/06/2023	Light rain and mild	Sabic 10	Ditch	4 m	Static	Shallow <45 degrees	Earth	Yes	None	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	4 m	Dense	None	Parts of the ditch are heavily damaged by cattle	Yes	None
Mill Race	22/08/2023	Dry, clear and calm	MR 10	Ditch	Unknown	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	Dense	None	None	No	Section of Mill Race flows underground
Knitting Wife Beck	22/08/2023	Scattered clouds and warm	KWB 3	Ditch	10 m	Static	Steep >45 degrees	Earth	Only fluctuation in water level beyond the flood gate	None	Tall Grasses/Weeds	Dense	Other	4 m	Dense	None	Most banks are of earth substrate but there are small sections where the banks have been reinforced with corrugated metal	Yes	Inner island inaccessible and banks steep, dense vegetation and deep water.
Mill Race	29/08/2023	Scattered clouds and warm	MR 1	Ditch	4.5 m	Sluggish	Flat <10 degrees	Gravel	Levels of water likely to rise during winter	Completely	Other	0%	Other	0 m	None	No management	A section of Mill Race which reappears after being underground. A small channel through an area of scrub which flows into a hollow which is saturated and dominated by bulrush	No	None
Mill Race	29/08/2023	Scattered clouds and warm	MR 5	Ditch	1.5 m	Static	Shallow <45 degrees	Earth	Ditch likely to remain dry most of the year - heavy rain is likely to cause	90%	Other	0%	Other	0 m	0%	None	None	No	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
									standing water										
Cowpen Marsh	08/09/2023	Clear and warm	CM 5	Ditch	Dry	Static	Shallow <45 degrees	Earth	N/A	None	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	1 m	Dense	None	Dry ditch	Yes	Parts of ditch are extremely overgrown with rosebay willow herb and nettle.
Cowpen Marsh	08/09/2023	Foggy and overcast	CM 1	Ditch	4.5-5 m	Static	Flat <10 degrees	Earth	Subject to flooding	None	Tall Tussocky Grass	Dense	Other	4.5-5 m	Dense	No management	None	No	Watercourse overgrown and matted with Yorkshire Fog
Cowpen Marsh	08/09/2023	Overcast	CM 4	Ditch	4.5-5 m	Static	Shallow <45 degrees	Earth	Subject to flooding	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	4.5-5 m	Dense	No management	Overgrown	No	Overgrown, matting of grass over water making it unstable and difficult to enter
Holme Fleet	08/09/2023	Overcast and warm	HF 2	Ditch	4 m	Static	Shallow <45 degrees	Earth	Subject to flooding and rainfall	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	4 m	Dense	No management	Overgrown	Yes	Overgrown, difficult to access, visibility restricted
Sembcorp	13/09/2023	Dry and sunny	Sem 1	Ditch	2 m	Static	Shallow <45 degrees	Earth	Part of the area's drainage ditches	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	1 m	60%	None	None	Yes	Dense vegetation
Sembcorp	13/09/2023	Dry and sunny	Sem 2	Ditch	1 m	Static	Shallow <45 degrees	Earth	No info	None	Tall Tussocky Grass		Tall Tussocky Grass	1 m	Dense	Grazed banks	Disturbed banks	Yes	None
Cowpen Marsh	08/11/2023	Foggy and humid	CM 2	Ditch	4 m	Static	Shallow <45 degrees	Earth	No info	30%	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	4 m	Dense	Adjacent fields are cut for silage	None	Yes	None
Cowpen Marsh	08/09/2023	Foggy and overcast	CM 3	Ditch	4 m	Sluggish	Shallow <45 degrees	Earth	No info	20-30%	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	3-4 m	70%	Adjacent fields cut for silage	None	Yes	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
Cowpen Marsh	08/09/2023	Clear and warm	CM 7	Ditch	3-4 m	Static	Shallow <45 degrees	Earth	Dependent on rainfall	20-30%	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	2-3 m	Dense	None	None	Yes	None
Cowpen Marsh	08/09/2023	Clear and warm	CM 8	Ditch	1 m	Static	Flat <10 degrees	Earth	No info	0%	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	1 m	Dense	Mown verges	None	No	None
Cowpen Marsh	08/09/2023	Clear and warm	CM 9	Ditch	2 m	Static	Shallow <45 degrees	Earth	No info	0%	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	2 m	Dense	None	None	Yes	None
Cowpen Marsh	08/09/2023	Clear and warm	CM 6	Ditch	3-4 m	Static	Shallow <45 degrees	Earth	No info	20%	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	2-3 m	Dense	None	None	Yes	None
Holme Fleet	08/09/2023	Clear and warm	HF 1	Ditch	4.5 m	Sluggish	Shallow <45 degrees	Earth	No info	0%	Tall Tussocky Grass	Dense	Tall Tussocky Grass	4.5 m	Dense	None	None	Yes	None
Holme Fleet	08/09/2023	Clear and warm	HF 3	Ditch	3 m	Slow	Flat <10 degrees	Earth	Water level rises with heavy rain	0%	Other	20%	Tall Tussocky Grass	3 m	100%	Area grazed and disturbed by cattle	This part of Holme Fleet is connected to a large area of swamp habitat. Early in the season the swamp had tall common reed. Later on in the season, the common reed looked like it had been cut.	Yes	None
Belasis Beck	08/09/2023	Clear and warm	BB 1	Marsh	5 m+	Slow	Shallow <45 degrees	Earth	Dependent on rainfall	0%	Tall Tussocky Grass	Dense	Tall Tussocky Grass	5 m+	Dense	Common reed swamp habitat cut	Area of swamp is potential managed by the RSPB or local farmer. Belasis Beck watercourse flows but is essentially connected to a large swamp habitat - there	Yes	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
																	is no defining boundaries between either		
Belasis Beck	08/09/2023	Clear and warm	BB 2	Ditch	4 m	Slow	Flat <10 degrees	Earth	Dependent on rainfall	0%	Tall Tussocky Grass	Dense	Tall Tussocky Grass	5 m+	Dense	Common reed swamp habitat cut	Area of swamp is potential managed by the RSPB or local famer. Belasis Beck watercourse flows but is essentially connected to a large swamp habitat - there is no defining boundaries between either	Yes	Section of Belasis Beck flows under and between Sembcorp pipeline connection corridors - inaccessible.
Belasis Beck	08/09/2023	Clear and warm	BB 3	Ditch	8 m	Sluggish	Flat <10 degrees	Earth	Dependent on rainfall	0%	Tall Tussocky Grass	Dense	Tall Tussocky Grass	5 m+	Dense	Common reed swamp habitat cut	Area of swamp is potential managed by the RSPB or local famer. Belasis Beck watercourse flows but is essentially connected to a large swamp habitat - there is no defining boundaries between either	Yes	None
Belasis Beck	08/09/2023	Clear and warm	BB 4	Ditch	8m	Sluggish	Flat <10 degrees	Earth	Dependent on rainfall	0%	Tall Tussocky Grass	Dense	Tall Tussocky Grass	5m+	Dense	Common reed swamp habitat cut	Area of swamp is potential managed by the RSPB or local famer. Belasis Beck watercourse flows but is essentially connected to a	Yes	None



NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
																	large swamp habitat - there is no defining boundaries between either		
Sembcorp / RSPB	13/09/2023	Sunny and dry	Sem 3	Ditch	1-2 m	Sluggish	Steep >45 degrees	Earth	Not visible	Not visible	Not visible	Not visible	Not visible	Not visible	Not visible	Not visible	Not visible	Yes	Ditch flows under Sembcorp pipeline connection corridor and into the RSPB Saltholme Reserve - inaccessible.
Sembcorp	13/09/2023	Sunny and dry	Sem 4	Ditch	5-6 m	Static	Steep >45 degrees	Earth	N/A	0%	Tall Tussocky Grass	Dense	None	0m	None	None	Above ground outside of RLB	Yes	Steep banks and deep water
Sembcorp	13/09/2023	Scattered clouds and mild	Sem 5	Ditch	5-6 m	Sluggish	Shallow <45 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	None	None	None	No	Ditch flows underground
Inovyn	15/09/2023	Warm and humid	Ino 1	Lowland Lake	1 ha	Static	Shallow <45 degrees	Earth	Dependent on flood gates	None	Tall Grasses/Weeds	Dense	No info	1 m	10%	None	None	Yes	None
Inovyn	15/09/2023	Warm and humid	Ino 2	Lowland Lake	1 ha	Static	Shallow <45 degrees	Earth	No info	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	2 m	Dense	None	None	Yes	None
Inovyn	15/09/2023	Warm and humid	Ino 3	Lowland Lake	1 ha	Static	Steep >45 degrees	Earth	No info	None	Tall Grasses/Weeds	Dense	No info	0 m	None	None	Burrows present	Yes	None
Inovyn	15/09/2023	Broken clouds and cool	Ino 4	Lowland Lake	1 ha	Static	Steep >45 degrees	Earth	No info	None	Tall Grasses/Weeds	Dense	No info	0 m	None	None	None	Yes	None
Inovyn	15/09/2023	Broken clouds and cool	Ino 5	Lowland Lake	1 ha	Static	Steep >45 degrees	Earth	No info	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	2-3 m	Dense	None	None	Yes	None
Inovyn	15/09/2023	Broken clouds and cool	Ino 6	Lowland Lake	0.33 ha	Static	Shallow <45 degrees	Earth	No info	None	Tall Grasses/Weeds	80%	No info	0 m	None	None	None	Yes	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
Inovyn	15/09/2023	Broken clouds and cool	Ino 7	Lowland Lake	0.33 ha	Static	Flat <10 degrees	Boulders	No info	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	None	No	None
Inovyn	15/11/2023	Broken clouds and cool	Ino 8	Lowland Lake	1.1 ha	Static	Shallow <45 degrees	Earth	No info	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	2-3 m	Dense	None	None	Yes	None
Inovyn	15/09/2023	Broken clouds and cool	Ino 9	Lowland Lake	1.1 ha	Static	Shallow <45 degrees	Boulders	No info	None	Tall Tussocky Grass	Dense	No info	None	None	None	No cover and exposed	No	None
Inovyn	15/09/2023	Broken clouds and cool	Ino 10	Lowland Lake	0.63 ha	Static	Shallow <45 degrees	Stones	No info	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	Algae growth in water - water extremely turbid	No	None
Inovyn	15/09/2023	Broken clouds and cool	Ino 11	Lowland Lake	1 ha	Static	Flat <10 degrees	Stones	No info	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	Algae growth in water and turbid	No	None
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 1	Lowland Lake	1.26 ha	Sluggish	Flat <10 degrees	Stones	No info	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	None	No	None
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 2	Running Water	0.66 ha	Sluggish	Flat <10 degrees	Stones	No info	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	None	No	None
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 3	Running Water	0.66 ha	Sluggish	Flat <10 degrees	Stones	No info	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	None	No	None
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 4	Running Water	0.66 ha	Sluggish	Flat <10 degrees	Earth	No info	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	5 m	Dense	None	None	No	None
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 7	Ditch	Unknown	Slow	No info	Earth	No info	No info	No info	No info	No info	No info	No info	None	Section of ditch flows underground	No	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
Sabic	07/06/2023	Partly sunny and 12 degrees	Sabic 8	Ditch	2.5 m	Sluggish	Shallow <45 degrees	Earth	Yes	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	1.5 m	Dense	None	Western side of ditch is heavily damaged by cattle	Yes	None
Sabic	07/07/2023	Partly sunny and 12 degrees	Sabic 11	Ditch	2.5 m	Slow	Flat <10 degrees	Earth	Yes	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	Grazed and damaged by cattle	No	None
Knitting Wife Beck	22/08/2023	22c, mild, sunny with passing clouds and light air	KWB 1	Running Water	6.5 m	Fast	Steep >45 degrees	Boulders	Yes	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	Watercourse flows underground and then into the River Tees	No	None
Knitting Wife Beck	22/08/2023	22c, mild, sunny with passing clouds and light air	KWB 2	Ditch	10 m	Static	Steep >45 degrees	Earth	Yes	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	1-2 m	Dense	None	None	Yes	Banks steep, vegetation dense and water very deep
Knitting Wife Beck	22/08/2023	22c, mild, sunny with passing clouds and light air	KWB 4	Ditch	10 m	Static	Steep >45 degrees	Earth	No info	No info	No info	No info	No info	No info	No info	None	None	Yes	Large section of Knitting Wife Beck flows underground and reappears adjacent to KWB Power Station
Knitting Wife Beck	22/08/2023	22c, mild, sunny with passing clouds and light air	KWB 5	Ditch	10 m	Static	Steep >45 degrees	Earth	No info	No info	No info	No info	No info	No info	No info	None	None	Yes	Large section of Knitting Wife Beck flows underground with unknown reemergence.
Dabholm Gut	29/06/2023	Warm and sunny 20c	DB 2	Running Water	30 m wide	Fast	Steep >45 degrees	Stones	Yes	None	Tall Tussocky Grass	Dense	No info	0 m	None	None	Connected to tidal waters leading to the	No	Inaccessible due to H&S reasons

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																	River Tees. Further upstream connected to The Fleet.		
Dabholm Beck	29/06/2023	Warm and sunny 20c	DB 1	Running Water	8 m	Fast	Vertical or Undercut	Reinforced	Unknown	100% (tunnel)	No info	None	No info	Unknown	Unknown	None	Flows underground	Yes	None
The Fleet	28/06/2023	Dry, mild and a moderate breeze	Fleet 2	Ditch	5 m	Sluggish	Steep >45 degrees	Earth	Yes	None	Tall Tussocky Grass	Dense	Tall Tussocky Grass	2 m	Dense	None	To the south, The Fleet flows underground and connects to Dabholm Gut and Dabholm Beck	Yes	None
The Fleet	28/06/2023	Dry, mild and a moderate breeze	Fleet 3	Ditch	4 m	Sluggish	Vertical or Undercut	Reinforced	Yes	100% (tunnel)	No info	0%	Other	4 m	Dense	None	Flows underground and connects to Dabholm Gut and Dabholm Beck	No	Section of The Fleet flows underground
The Fleet	28/06/2023	Dry, mild and a moderate breeze	Fleet 4	Running Water	5 m	Sluggish	Vertical or Undercut	Reinforced	Yes	100% (tunnel)	Other	None	Other	5 m	Dense	None	Section of The Fleet flows underground	No	Section of The Fleet flows underground
The Fleet	16/11/2022	8c and partly sunny	Fleet 5	Running Water	8 m	Slow	Shallow <45 degrees	Earth	Yes	100% by Floating Pennywort	Tall Tussocky Grass	Dense	Other	8 m	Dense	None	Connected to Coatham Marsh LWS - flows through South Tees Development Corporation (STDC) into the River Tees	Yes	None
The Fleet	16/11/2022	8c and partly sunny	Fleet 6	Running Water	8 m	Sluggish	Steep >45 degrees	Earth	Yes	90% from Floating Pennywort	Tall Tussocky Grass	Dense	Other	8 m	Dense	None	INNS present	Yes	Section of The Fleet flows underground
Mill Race	29/08/2023	Passing clouds and warm	MR 3	Ditch	2-3 m	Static	Steep >45 degrees	Earth	Yes	90%	Tall Grasses/Weeds	Dense	Tall Grasses/Weeds	2 m	Dense	None	Part of and connected with	Yes	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
																	STDC drainage ditches		
Mill Race	29/08/2023	Passing clouds and warm	MR 2	No info	No info	Static	Steep >45 degrees	Earth	No info	No info	No info	No info	No info	No info	No info	None	None	No	Section of Mill Race flows and disappears underground
Mill Race	29/08/2023	Passing clouds and warm	MR 4	No info	No info	Static	Steep >45 degrees	Earth	No info	No info	No info	No info	No info	No info	No info	None	None	No	Section of Mill Race flows underground
Mill Race	29/08/2023	Passing clouds and warm	MR 6	Ditch	2-3 m	Static	Steep >45 degrees	Reinforced	Yes	80%	Tall Grasses/Weeds	Dense	No info	None	None	None	Small section disappears underground and reappears northwest. This section of Mill Race is reinforced but adjacent parts are of earth substrate	Yes	None
Mill Race	29/08/2023	Passing clouds and warm	MR 7	Ditch	2-3 m	Static	Shallow <45 degrees	Earth	Yes	60%	Tall Tussocky Grass	Dense	Tall Tussocky Grass	1-2 m	Dense	None	Parts of this section have clearings of standing water	Yes	None
Mill Race	29/08/2023	Passing clouds and warm	MR 8	Ditch	2-3m	Static	Shallow <45 degrees	Earth	Yes	50%	Tall Grasses/Weeds	No info	Tall Tussocky Grass	1 m	Dense	None	None	Yes	None
Mill Race	29/08/2023	Passing clouds and warm	MR 9	Ditch	Unknown	Static	Shallow <45 degrees	Earth	Yes	50%	Tall Grasses/Weeds	No info	No info	No info	No info	None	None	No	Section of Mill Race flows under extremely dense bramble vegetation and then flows underground
Mains Dike	29/08/2023	Passing clouds and warm	MD 2	Ditch	1 m	Slow	Steep >45 degrees	Earth	Yes	100%	Tall Grasses/Weeds	Dense	No info	0 m	None	Ditch is dredged - likely by local farmer - ditch	None	No	Steep banks and extremely dense and

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																used as arable drainage			overgrown scrub
Sabic	30/07/2023	Passing clouds and warm	Sabic 11	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 12	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 14	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 13	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 15	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 16	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/11/2023	Passing clouds, light rain and cool	Sabic 18	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 17	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 19	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in	No	None

NAME	SURVEY DATE	WEATHER	SECTION	TYPE	WIDTH	FLOW	BANK	SUBSTRATE	WATER LEVEL	SHADING	BANK VEG	VEG DENSITY	IN-CHANNEL VEG	IN-CHANNEL VEG WIDTH	IN-CHANNEL DENSITY	EVIDENCE OF MANAGEMENT	OTHER FACTORS	WATER VOLE SUITABILITY	LIMITATIONS
																	terrain- not deep enough for a ditch		
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 20	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 21	Ditch	2m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None
Sabic	30/06/2023	Passing clouds, light rain and cool	Sabic 22	Ditch	2 m	Static	Flat <10 degrees	Earth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Watercourse not suitable-dry, no vegetation, no cover, only slight dip in terrain- not deep enough for a ditch	No	None