Hillhouse IBA Processing Facility

Transport Statement

Prepared for

Fortis IBA Limited

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Document Control

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CONTENTS

IMAGES

TABLES

APPENDICES

FIGURES

1.0 INTRODUCTION

1.1 Purpose of this Report

1.1.1 This Transport Statement (TS) has been prepared by AXIS on behalf of Fortis IBA Ltd to consider the highways and transport matters associated with an application for the construction and operation of an Incinerator Bottom Ash (IBA) facility on land at Hillhouse International Enterprise Zone (HIEZ), Thornton-Cleveleys, Lancashire (hereafter referred to as the 'Proposed Development').

1.1.2 This TS accompanies the planning application for the proposed scheme to inform the Waste Planning Authority (WPA) and Local Highway Authority (LHA) of the nature of the proposals and to provide an assessment of the highway-related implications associated with the scheme. The WPA and LHA in this context is Lancashire County Council (LCC).

1.2 Structure of this Report

1.2.1 The structure of this TS is as follows:

i) **Chapter 2** provides a review of the relevant local and national planning policies;
ii) **Chapter 3** provides a description of the existing highway conditions around the site, including a review of the existing accident record and traffic survey data;
iii) **Chapter 4** provides a description of the development, including the proposed site access arrangements;
iv) **Chapter 5** sets out the trip generation assumptions for the proposals;
v) **Chapter 6** presents the traffic analysis including percentage impact assessments for key highways links for the immediate local highway network;
vi) **Chapter 7** provides a description of the proposed construction phase; and,
vii) **Chapter 8** provides the summary and conclusions.

2.0 NATIONAL AND LOCAL POLICY

2.1 Background

2.1.1 This Section of the TS identifies the national and local policies that are relevant to the Proposed Development from a transportation point of view. It considers the following documents:

i) National Planning Policy Framework (December 2023);
ii) Joint Lancashire Minerals and Waste Development Framework Core Strategy (CSDPD) (2009);
iii) Site Allocation and Development Management Policies (SADMP) (2013)
iv) Wyre Local Plan (2019); and,
v) Hillhouse Technology Enterprise Zone Masterplan Report (2018).

2.1.2 Subsequent sections of this report demonstrate how the Proposed Development adheres with the above documents.

2.2 National Planning Policy Framework (December 2023)

2.2.1 The Department for Levelling Up, Housing & Communities published the latest version of the National Planning Policy Framework (NPPF) in December 2023.

2.2.2 At the heart of the NPPF (paragraph 11) is: "*a presumption in favour of sustainable development…For decision-taking this means: approving development proposals that accord with an up-to-date development plan without delay*."

2.2.3 Paragraph 108 of the NPPF states: "*Transport issues should be considered from the earliest stages of plan-making and development proposals, so that*:

a. the potential impacts of development on transport networks can be addressed;
b. opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
c. opportunities to promote walking, cycling and public transport use are identified and pursued;
d. the environmental impacts of traffic and transport infrastructure can be identified, assessed, and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and

e. *patterns of movement, streets, parking, and other transport considerations are integral to the design of schemes and contribute to making high quality places."*

2.2.4 At paragraph 109 the NPPF states: *"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health."*

2.2.5 In line with the above, paragraph 110 of the NPPF states that: *"Planning policies should….provide for attractive and well-designed walking and cycling networks with supporting facilities such as secure cycle parking."*

2.2.6 The NPPF then sets out a key test for the acceptability of planning applications in terms of transport and highways at paragraphs 110 and 111.

2.2.7 Paragraph 114 of the NPPF states that it should be ensured that:

a) "appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
b) safe and suitable access to the site can be achieved for all users;
c) the design of streets, parking areas, other transport elements and the content of the associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and
d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

2.2.8 At paragraph 115 of the NPPF it is stated that: *"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."*

2.3 The Statutory Development Plan

2.3.1 In the case of this planning application, the relevant statutory development plan comprises the Adopted Wyre Local Plan 2011 – 2031 (Incorporating partial update of 2022) (January 2023), the Joint Lancashire Minerals and Waste Local Plan (JLMWLP) Development Framework Core Strategy Development Plan Document

(CSDPD) (February 2009), and Site Allocation and Development Management Policies (SADMP) (September 2013).

Wyre Local Plan (2023)

2.3.2 The Wyre Local Plan (incorporating partial update of 2022) was adopted in January 2023 and sets out the strategic framework for development in the Borough and the policies which will form the basis for determining planning applications, as a statutory consultee in the case of this development.

2.3.3 The 2019 Adopted Policies Map (which has not been changed by the partial update and therefore remains up to date) supports the Local Plan confirms that the application site is located within the Hillhouse Technology Enterprise Zone. Policy SA4 states that the Hillhouse Technology Enterprise Zone is a sub regionally significant employment area which will also contribute to local employment needs. Policy SA4 goes on to state that "*This site is to be brought forward in line with a masterplan for the Enterprise Zone to be produced covering the whole of the designated Area."*

2.3.4 The masterplan developed to accord with this policy is considered in greater detail in **Section 2.4**.

2.3.5 The key development considerations section of the policy indicates that connectivity for pedestrians and cyclists would be a key demand for the development:

"*The development should be supported by a landscape and green infrastructure framework incorporating structured tree planting, and pedestrian and cycle connectivity within and where possible outside the site*."

2.3.6 Core Development Management Policy 3 (CDMP3) requires that developments are provided to a high standard of design, including the internal layout, parking and internal roads where it says:

"*Development will, in particular, be assessed against the following criteria:* […]

a) Development will be required to create or make a positive contribution to an attractive and coherent townscape both within the development itself and by reference to its integration with the wider built environment having regard to the pattern and design of internal roads and footpaths in respect of permeability and connectivity, car parking, open spaces, landscaping, and views into and out of the development."

Joint Lancashire Minerals and Waste Development Framework Core Strategy (CSDPD) (2009)

2.3.7 The CSDPD was adopted in February 2009 and sets out:

a) The vision, aims and objectives of the JLMWLP; and
b) The principles by which development will progress over the planned period.

2.3.8 With particular regard to site selection (notwithstanding that the proposal is already allocated for the development of a waste management facility under Policy WM2 of the SADMP, see below), Policy CS5 of the CSDPD outlines that a selection criteria for waste sites should consider;

"(v) the amenity, health, economic well-being and safety of the population are protected by the introduction of high operating standards, sensitive working practices and environmental management systems that minimise harm and nuisance to the environment and local communities throughout the life of the development;

(vi) essential infrastructure and services to the public will be protected;"

2.3.9 The potential traffic impact of the proposal is considered later in this report and the potential for environmental impacts are considered in greater detail in the ES accompanying this application.

Site Allocation and Development Management Policies (SADMP) (2013)

2.3.10 The SADMP was adopted in September 2013 and identifies specific locations for development, specific requirements for individual proposals and policies to ensure that development of the identified locations is done in line with the CSDPD. The Policies Map to accompany this policy document identifies that the site lies within 'BWF5 Land at Hillhouse Industrial Estate' which is allocated for the development of large scale built waste management facilities under Policy WM2.

2.3.11 Policy DM2 indicates that developments will be supported where it can be shown that any potential harm can be eliminated or reduced to acceptable levels;

"Development for minerals or waste management operations will be supported where it can be demonstrated to the satisfaction of the mineral and waste planning

authority, by the provision of appropriate information, that all material, social, economic or environmental impacts that would cause demonstrable harm can be eliminated or reduced to acceptable levels. In assessing proposals account will be taken of the proposal's setting, baseline environmental conditions and neighbouring land uses, together with the extent to which its impacts can be controlled in accordance with current best practice and recognised standards."

2.3.12 In particular regard to transport, the policy states;

"In accordance with Policy CS5 and CS9 of the Core Strategy developments will be supported for minerals or waste developments where it can be demonstrated to the satisfaction of the mineral and waste planning authority, by the provision of appropriate information, that the proposals will, where appropriate, make a positive contribution to the: …

The control of the numbers, frequency, timing and routing of transport related to the development"

2.3.13 This report considers the traffic generating potential, HGV distribution and HGV routing strategy. Further consideration of the traffic related impacts of the proposed development and the requirement for mitigation methods are provided in the ES accompanying this application.

2.4 Hillhouse Technology Enterprise Zone Masterplan Report (2018)

2.4.1 In 2018 Blackpool, Fylde and Wyre Economic Development Company and NPL Group, as the primary owner of the site, commissioned Mott MacDonald to develop the masterplan for the Enterprise Zone Area ('The Hillhouse Technology Enterprise Zone Masterplan Report', November 2018) in accordance with Policy SA4 of the Wyre Local Plan.

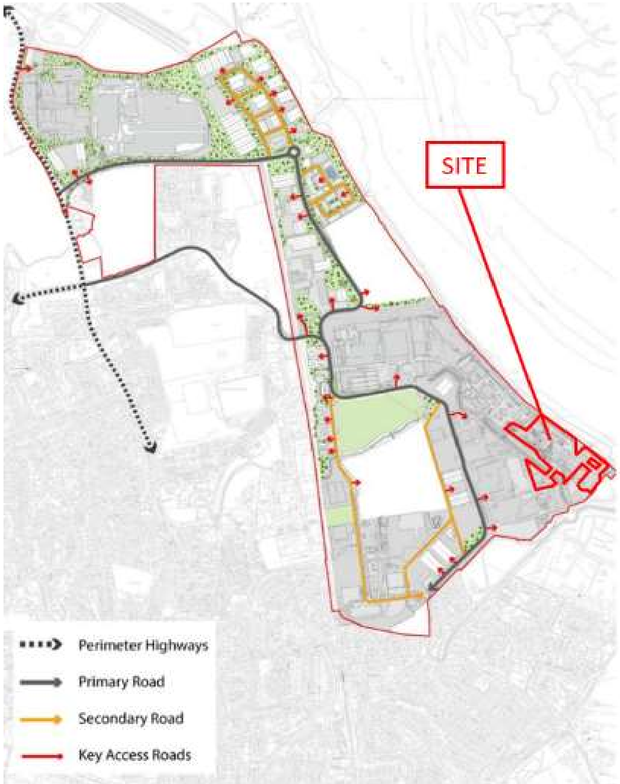
2.4.2 The masterplan sets out a number of aspirational infrastructure provisions, including;

a) A new primary access road from the B5268 Fleetwood Road (crossing the Poulton to Fleetwood railway line);
b) A north / south central access corridor through the site; and,
c) Relocation of the existing gatehouse further into the HIEZ and redevelopment of the gatehouse to feature an additional HGV lane (permission for which has subsequently been applied for and approved. See **Section 3.3**).

2.4.3 Planning permission was granted by Wyre Council (WC) for the relocation of the gatehouse and the introduction of an additional access lane (ref: 21/00705/FUL). The approved new gatehouse is illustrated in **Appendix 1**. The new gatehouse allows staff and designated card holders immediate access to the site (controlled by ANPR). The revised measures have significantly alleviated congestion and have eased traffic flows along Bourne Road.

2.4.4 The masterplan infrastructure is shown on **Image 2.1**.

Image 2.1 – Masterplan Features



2.4.5 There are no specific triggers identified for the provision of the primary access road from the B5268 Fleetwood Road, and the delivery of the new northern 'primary' access remains hampered by uncertainty over the future of the Fleetwood Railway Line and the engineering standard of crossing that will be required. The status of the Fleetwood Railway Line is under review, and whether the route becomes reinstated or not, it is likely to be several years from construction / delivery.

2.4.6 Given the uncertainty in delivering the primary access road off the B5268 Fleetwood Road and the timescales involved, it would be unreasonable for the delivery of the northern primary access road to be a prerequisite of the IBA proposal, which can be adequately and safely accessed without it (via the existing, albeit improved, site access arrangements via Bourne Street / Road, including the provision of a revised gatehouse and additional access lane), particularly given that the masterplan does not prevent development of the IBA processing facility without the completion of the northern access road.

2.4.7 Section 4.2 of the masterplan sets out pedestrian and cycle infrastructure as one of the key principles of the overall site:

"Deliver active movement through the site via connected pedestrian and cycle networks which link employees and visitors through the site and encourage activity, potentially through the creation of a recreational loop and activity parks;"

2.4.8 Section 6.2 of the masterplan goes further to set out the approach to accessible infrastructure on the wider site:

"The layout has sought to encourage active movement through multi-modal streets and pedestrian and cycle networks, which are punctuated by attractive and strategically located public spaces and green corridors."

2.4.9 The accessible credentials of the site are considered in greater detail in **Chapter 5** of this report which also includes consideration of the effect of the proposed forthcoming infrastructure included in the masterplan.

3.0 EXISTING CONDITIONS

3.1 General

3.1.1 This chapter provides a detailed description of the site, the local highway network and the existing road safety record.

3.1.2 The application site is located in the HIEZ on the western bank of the River Wyre and east of the A585 Amounderness Way.

3.1.3 The application site comprises previously developed land which has since been cleared and now consists largely of hardstanding and internal roadways remaining from its previous industrial use. To the west and south of the site are several heavy engineering, industrial manufacturing and distribution companies located within the Hillhouse Business Park. To the north of the site is the river Wyre.

3.2 Existing Site

3.2.1 The Site, which measures approximately 3.7 ha, is located in the south-eastern corner of the Hillhouse International Enterprise Zone. The Site comprises an area of previously developed 'brownfield' land, including an existing office building which is proposed to be removed and a metal storage building provided in its place.

3.2.2 The Site was previously occupied (between 1980 and 2020) by operations to manufacture polyvinyl chloride (PVC). The buildings and structures previously located at the Site include:

i) A 4 storey high 'Additive Building';
ii) 6no. Autoclave vessels (equivalent of 5 storeys in height);
iii) 3no. Cooling towers;
iv) Effluent treatment plant;
v) Workshops, office and laboratories; and
vi) Storage of raw materials, finished products and waste products.

3.2.3 The above buildings and infrastructure previously located at the site were removed and demolished to slab level between October 2020 and July 2021.

3.2.4 The Site is separated into two sections by Royles Brook. The majority of the Site is to the north east of Royles Brook. A bridge provides access over Royles Brook to a smaller portion of the Site, south-west of the watercourse.

3.2.5 The Site is bound to the north-east by a public right of way ('PRoW'), with the River Wyre beyond, to the south and south-east by an area of woodland, beyond which is Flint's Caravan Park and the Stanah Substation, and to the west and north-west by the remainder of Hillhouse International Enterprise Zone, comprising various employment and industrial uses, and vacant pieces of brownfield land.

3.2.6 The nearest permanently occupied residential property is located approximately 300m to the south of the Site. Flint's Caravan Park which located circa. 60m to the south of the Site, currently comprises static holiday caravans and park homes, is being assessed for residential use.

3.2.7 There are several industrial neighbours in close proximity to the Site. The activities undertaken by these facilities include door and window manufacture, and steel fabrication.

3.2.8 The Site is accessed by a private road (South Road), which connects to other private estate roads within the Hillhouse International Enterprise Zone. Access to the Hillhouse International Enterprise Zone is provided via Bourne Road (a Gatehouse and weighbridge are located at the entrance to the Enterprise Zone), which connects to the nearest adopted highway (Fleetwood Road North) to the north-west of the Enterprise Zone.

3.3 Local Highway Network

3.3.1 The location of the site is shown in relation to the local highway network on **Image 3.1**.

Image 3.1 – Local Highway Network

3.3.2 Vehicular access to the site is currently provided via a simple bellmouth junction off an unnamed industrial access road (the industrial road infrastructure of the HIEZ) (South Road). The HIEZ itself is accessed via Bourne Street which meets with the HIEZ at a priority-controlled crossroads.

3.3.3 Bourne Road / Bourne Street is an unadopted private road and features a secure gatehouse which controls entry into the HIEZ for HGVs and staff. Planning permission was granted by Wyre Council (WC) for the relocation of the existing gatehouse and the introduction of an additional access lane (ref: 21/00705/FUL). The new gatehouse layout is illustrated in **Appendix 1**. Staff and designated card holders now access the site without checking in at the gatehouse booking office. This has significantly reduced congestion at the gatehouse and reduced traffic flows along Bourne Road.

Bourne Road / Bourne Street

3.3.4 Bourne Road / Bourne Street is a private two-way single lane road which runs in an approximately east / west alignment in the vicinity of the site. The road runs from the Bourne Road / Fleetwood Road North signalised junction to the west of the site to the existing HIEZ gatehouse circa 800m to the east.

3.3.5 Bourne Road / Bourne Street features a circa 7.5m carriageway width with a circa 1.0m wide pedestrian footway on the southern side of the road over its entire length.

3.3.6 Although Bourne Road is a private road and is not therefore subject to a publicly enforceable speed limit, the distinction between the public road network and Bourne Road is not clear, and it is expected that drivers accord with the publicly enforced speed limit of 30mph. At the existing gatehouse and leading into the HIEZ there is a 20mph speed limit (denoted by signage at the approach to the gatehouse).

B5268 Fleetwood Road North

3.3.7 The B5268 Fleetwood Road North is a two-way, single lane classified B-road which runs in a roughly north / south alignment in the vicinity of the site. The road runs from the Fleetwood Road North / Amounderness Way 'Eros Roundabout' to the north-west of the site to the Fleetwood Road North / Victoria Road East / Fleetwood Road South signalised crossroad circa 3.75km to the south.

3.3.8 Fleetwood Road North forms a main arterial route connecting the residential area surrounding Thornton to Fleetwood to the north and running parallel to Amounderness Way to the west.

3.3.9 Fleetwood Road North features a circa 2.0m – 3.0m variable width pedestrian footway on the western side of the road and a circa 3.0m wide footway on the eastern side of the road.

3.3.10 A mandatory 30mph speed limit is enforced over the section of Fleetwood Road North between the Bourne Road / Fleetwood Road North signalised junction to the west of the site and the Fleetwood Road North / Victoria Road East / Fleetwood Road South signalised crossroads. North of the Bourne Road / Fleetwood Road North signalised junction the road transitions into a 40mph speed limit.

Bourne Way

3.3.11 Bourne Way is a two-way single lane road which runs in an approximately east / west alignment in the vicinity of the site. The road runs from the Bourne Way / Amounderness Way signalised junction to the Bourne Way / Fleetwood Road North / Bourne Road signalised crossroad circa 600m to the east.

3.3.12 Bourne Way features a circa 7.5m carriageway width with a circa 2.0m wide pedestrian footway on both sides of the eastern section of the road up to the Pheasent Wood Drive junction. Bourne Way features a circa 2.5m wide shared foot / cycleway on the southern side of the road on the western section of the road from the Bourne Way / Amounderness Way signalised junction to the Pheasant Wood Drive junction.

3.3.13 The road is subject to a mandatory 30mph speed limit.

A585 Amounderness Way

3.3.14 The A585 Amounderness way is a two-lane dual carriageway which runs in an approximately north / south alignment in the vicinity of the site. The road is a primary A-road which runs from the A585 / A587 / Anchorage Road roundabout at Fleetwood to the Amounderness Way / Breck Road roundabout at Poulton-le-Fylde circa 7.75km to the south-east.

3.3.15 Within the vicinity of the site, Amounderness Way features a two-lane dual carriageway, widening to three lanes on the northbound approach to the

Amounderness Way / Bourne Road signalised junction. Amounderness Way features a circa 20.0m width (including the variable circa 2.0m – 5.0m wide central reservation).

3.3.16 There is a circa 3.0m wide shared foot / cycleway on the eastern side of the road in the vicinity of the site and the road is subject to a 40mph mandatory speed limit.

3.4 Planning and Site Allocation History

3.4.1 A review of the LCC and WC websites has confirmed several planning permissions pertaining to the site, dating back to 1983, reflecting its historic industrial uses.

3.4.2 The Policies Map which supports the Wyre Local Plan confirms that the application site is located within the Hillhouse Technology Enterprise Zone (to which Policy SA4 relates). Policy SA4 states that the Hillhouse Technology Enterprise Zone is a sub regionally significant employment area which will also contribute to local employment needs.

3.4.3 The Joint Lancashire Minerals and Waste Local Plan (JLMWLP) also forms part of the statutory development plan for the Site. The JLMWLP was prepared by the Joint Authority Area of Lancashire County Council, Blackburn and Darwen Borough Council and Blackpool Council, and consists of two documents; the Development Framework Core Strategy Development Plan Document (CSDPD) and the Site Allocation and Development Management Policies (SADMP) (Parts 1 and 2) (see Section 2.3 for additional details). Hillhouse Business Park is allocated within the SADMP under Policy WM2 for large scale built waste management facilities for waste recycling, transfer, materials recovery and processing (site ref: BWF5).

3.5 Pre-Application Advice

3.5.1 A request for pre-application advice was submitted in January 2024, for the proposal for an Incinerator Bottom Ash (‘IBA’) recycling facility. Appendix 1 of the letter considered the scope of the highway related elements.An EIA screening request (under regulation 6 of the Regulations) was submitted alongside the pre-application request.

3.5.2 Appendix 1 of the pre-application request considered a preliminary traffic generation exercise, the intention to provide a percentage impact link assessment and the intended study area of the assessments.

3.5.3 Copies of the request for pre-application advice along with the response from Lancashire County Council (LCC) are provided within **Appendix 2** at the end of this report.

3.5.4 LCC has screened the proposal as EIA development on the basis that the throughput of the proposal (350,000tpa) would be considerably more than the indicative threshold (50,000tpa) which would have implications for traffic, noise and potentially dust and water pollution. Specifically the following was stated in respect of Transport:

'The development involves traffic movements associated with the importation of waste. The access to the site is via the main access to the industrial estate and is along a road (Bourne Road) where are a number of existing residential properties and also further properties under construction'.

3.5.5 LCC's pre-application advice stated that the proposal would generally be supported by Policy WM2 / WM4 of the Lancashire Minerals and Waste Local Plan. However it was noted that support in these policies were conditional upon the provision of the access improvements identified in in policy SA2:

'This is the northern access to the Hillhouse site thereby providing an alternative to the current industrial estate access via Bourne Road. You will note that the allocation of the Hillhouse site for an area of development within the Wyre Local Plan does not contain the same policy requirement neither does the Hillhouse Enterprise zone masterplan. There is therefore a conflict between the development plan policies relating to this site. The Wyre Local Plan and Masterplan policies are more recent than the LMWLP and it could be concluded that the LMWLP are out of date and are superseded.

However Bourne Road appears to be increasingly residential in character with houses currently being constructed up to its frontage. It is therefore debatable if this road is suitable as an access to the site in terms of residential amenity and if further development on the industrial estate should only be brought forward once there is a firm commitment to delivering the northern access road. This is particularly the case given the relatively large throughput of the proposed facility and associated HGV traffic generation. If the proposal is to be acceptable in terms of the use of Bourne Road, I think consideration needs to be given to the times when HGV's will access the site. Early morning / evening and weekend movements will be more problematic'.

3.5.6 In summary, the pre-application advice indicated that the proposed scope of works was acceptable and that a TS, rather than Transport Assessment (TA), would be required. The LHA's response has been considered when preparing this report.

3.5.7 The preparation of this TS has therefore been based on the suggested scope put forward to LCC as part of the pre-app, and on the feedback received.

3.6 Baseline Traffic Data

3.6.1 To provide an indication of local network operating conditions for the likely routes of development related traffic (see Section 5.6), baseline traffic flow have been utilised from the 2022 Thornton Energy Recovery Centre (TERC) application. These traffic flow patterns were established via Manual Classified Count (MCC) traffic surveys undertaken at the following key network locations:

i) The Fleetwood Road North / Bourne Road / Bourne Way signalised crossroads; and,
ii) The Amounderness Way / Bourne Way signalised junction.

3.6.2 The above surveys were collected during a neutral weekday (Tuesday 13th September 2022), covering three-hour periods surrounding the traditional peak hours (7:00am – 10:00am and 4:00pm – 7:00pm).

3.6.3 Additional Automatic Traffic Counters (ATCs) were also installed at the following links:

i) Bourne Road (East of Beech Drive); and,
ii) Bourne Road (West of Beech Drive).

3.6.4 The ATC data was collected over a 7-day period between 20th and 26th September 2022.

3.6.5 Interrogation of the traffic survey data indicates that the network peak hours for the surrounding highway network are 8:00am – 9:00am and 4:00pm – 5:00pm in the AM and PM, respectively.

3.6.6 The raw survey data is contained within **Appendix 3** at the end of this document. **Figures 1, 2, 3 & 4** summarise the recorded traffic flows on the immediate local highway network for the AM network peak hour (8:00am – 9:00am), PM network peak hour (4:00pm – 5:00pm), and the traffic flow across the core waste delivery hours (6:00am – 7:00pm) for the Annual Average Weekday Traffic (AAWT) and Saturday, respectively.

3.6.7 The 2022 baseline traffic flows are further illustrated in **Table 3.1** following:

Table 3.1 – Summary of 2022 Baseline Traffic Flows

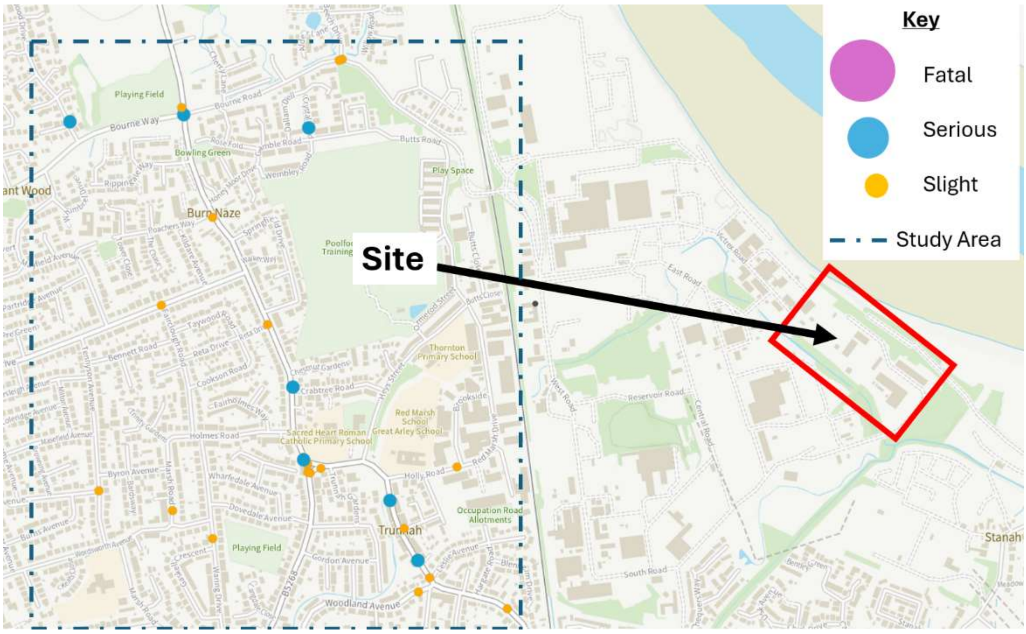
Link	Description	AM		PM		AAWT		Sat	
		Vehs	HGVs	Vehs	HGVs	Vehs	HGVs	Vehs	HGVs
1	Bourne Road east of Beech Drive	167	28	185	20	1655	349	569	95
2	Bourne Road east of the Bourne Road / Fleetwood Road North signalised junction	344	17	363	8	3325	118	1143	40
3	Bourne Way west of the Bourne Road / Fleetwood Road North signalised junction	254	25	287	17	2544	197	875	68
4	Bourne Way east of the Amounderness Way / Bourne Way signalised junction	344	19	347	15	3249	160	1117	55
5	Amounderness Way north of the Amounderness Way / Bourne Way signalised junction	1477	34	1486	20	13933	254	4790	87
6	Amounderness Way south of the Amounderness Way / Bourne Way signalised junction	1653	51	1701	35	15771	404	5422	139

3.7 Road Safety

3.7.1 Personal Injury Accident (PIA) data for the highway network adjacent to the site has been obtained from the LCC 'MARIO' webmap. The data includes all of the accidents available within MARIO for the surrounding study area. This covers a five-year period from 2019 to 2023.

3.7.2 The accident record on the surrounding highway network is shown on **Image 3.2**.

Image 3.2 – Personal Injury Accident Data



3.7.3 **Image 3.2** illustrates that a total of 24 accidents occurred in the vicinity of the site within the 5-year period, 17 of which resulted in 'slight' injury and 7 of which resulted in 'serious' injury. When considered volumetrically this equates to just over 4 accidents per year on average.

3.7.4 The accident record is not considered to be unusually onerous. Therefore, it is considered that the existing accident record does not present a material concern in the context of the Proposed Development.

4.0 PROPOSED DEVELOPMENT

4.1 General

4.1.1 This chapter presents the specific details associated to the proposed IBA facility. The facility would have a maximum processing capacity of 350,000 tpa of IBA.

4.1.2 A copy of the indicative proposed site layout is contained within **Appendix 4** at the end of this report.

4.2 Processing / Operation

4.2.1 The proposed IBA facility will take bottom ash from non-hazardous waste Energy from Waste facilities (EfWs) that accept municipal (household), commercial and industrial wastes, and process it into IBA aggregate (for use in the construction industry) and metals (for recycling at other facilities). The IBA processing operation is described below.

i) Following the maturation process, a loading shovel will feed the IBA into a feed hopper and a belt feeder will regulate the flow of material into the processing plant.

ii) Having entered the processing plant, the material will be passed over by a magnet which will remove any larger pieces of ferrous metal from the IBA. These metals are then sold on for recycling and reuse.

iii) The IBA material will then pass through a screen, which will separate the larger material. At this stage an operator will also remove any mixed oversize metal (typically oversized brick and concrete pieces). Crushing of oversize material may be required on a campaign basis.

iv) The finer material (typically <50mm) will then pass through a second screening process, separating material into processable fractions (typically fines / medium /large). Subsequently, the material will enter a metals separation process, which will remove further ferrous material (such as batteries) and small particles of non-ferrous metals. These metals are also sold on for recycling and reuse

v) Screens are then used to split the remaining material into three size categories. These three grades of material are then passed over a series of specialist equipment designed specifically for non-ferrous metal recovery. These non-ferrous metals are exported for recycling.

4.2.2 The remaining material is then blended to form IBA Aggregate (IBAA).

4.2.3 The metals extracted throughout the process, will be stored before being exported from the facility.

4.3 Facilities

4.3.1 The proposal will deliver the equipment necessary to undertake the above outlined IBA recycling process effectively and safely on the Site. Ancillary facilities will also be provided for administration, staff welfare and security purposes. The key elements of the Proposed Site are as follows:

i) The processing plant comprising:
ii) Feed hopper;
iii) Modular plant including conveyors, magnets, eddy current separators and screens;
iv) Processing area canopy (a clad, steel portal-framed building measuring circa 17m in height);
v) IBA and IBAA storage shed;
vi) Demolition of the existing office building for construction of the proposed Metal storage bay area with canopy
vii) Modular office, laboratory (aggregate testing) and welfare units;
viii) Boundary treatment, a gated site access and weighbridges; and
ix) Parking for staff and visitors.

4.4 Location / Orientation

Processing Plant

4.4.1 The IBA processing plant is proposed on the smaller portion of the site, to the west of Royles Brook. Materials would be transferred to and from the plant via conveyor belts, running in both directions, linking this section of the Site to the main area (including the material storage and maturation areas).

4.4.2 The processing plant will consist of clad, steel portal-framed housings, supported by covered external conveyors and occupy a footprint of approximately 2,200m^2.

Storage Area

4.4.3 Storage areas for the raw IBA material (whilst maturing) and the processed material (IBA Aggregate) would be provided in the northern area of the Site. Importation of primary aggregates (circa 10,800t) is also proposed to create blended sub-base aggregate for sale. The storage shed would provide separated covered storage for each material / product type ahead of export from the Site.

Office Buildings

4.4.4 The existing office building within the south-east of the site will be demolished to provide space for the construction of the proposed Metal storage bay area with canopy.

4.5 Site Access Arrangements

4.5.1 The site access junction has been designed in order that vehicular entry is retained to existing site uses both to the north-east and south-west of the IBA site. The existing priority T-junction will be reconfigured to facilitate unrestricted access to the IBA site. Priority intersections will be formed both to the east and west of this to provide access to existing businesses Express Trade Frames window supplier and Karpa Engineering Solutions, respectively.

4.5.2 The proposed IBA facility will be secured via the use of vehicle gates located at the reconfigured access. Gates will open into the site facilitating access for staff, visitors and HGVs.

4.5.3 The access junction has been designed by BdR Civil and Structural Engineering Consultants (BdR) and is illustrated in BdR Drawing No: C11101 rev A, provided in **Appendix 5** at the end of this report.

4.5.4 Detailed swept path analysis of a 16.5.m FTA design articulated HGV vehicle has been undertaken by BdR. BdR Drawing No: C11101 rev A shows that the HGV vehicle will be able to access, egress and manoeuvre within the site satisfactorily. The drawing also shows that it will be possible for a large car to access and egress the site and manoeuvre within the parking area satisfactorily.

4.5.5 Two weighbridges are proposed to the south-east of the site access point for delivery vehicle use which will enable the monitoring of material quantities passing through the facility.

4.5.6 Internal (Metal traffic) movements will be necessary between the plant and the metal storage areas. These will consist of between 7 to 10 movements per day. No movement of metals will be undertaken during night-time operations. It is anticpated that a Tractor and Tipping Trailer type vehicle will be utilised for such movements. This is further illustrated in **Image 4.1** following:

Image 4.1 – Internal Movements (Example of a Tractor and Tipping Trailer)

4.6 Parking

4.6.1 A total of 24no staff and visitor car parking spaces will be provided to the southeastern section of the site near the site entrance.

4.7 Operating Hours

4.7.1 IBA recycling using the processing plant on the Site is proposed to take place 24 hours a day, seven days a week.

4.7.2 HGV movements to and from the Site are proposed to take place between 06:00 and 19:00 six days a week, 304 days per year (excluding Sundays and bank holidays).

4.7.3 Members of staff would work either two or three shifts. Between six to nine members of staff would work at any given time, depending on whether each 24-hour period is split into two or three shifts.

5.0 TRAFFIC IMPACT

5.1 Introduction

5.1.1 This chapter of the TS forecasts the trip-generating potential of the Proposed Development and predicts the likely traffic related impact of the proposal on the local highway network.

5.2 Assessment Time Periods

5.2.1 As identified in **Section 3.6** of this report, review of background daily traffic patterns derived from the September 2022 traffic surveys suggests that maximum background traffic levels over the local highway network are experienced during the following time periods:

i) Local highway network AM Peak hour: 8:00am - 9:00am; and,
ii) Local highway network PM Peak hour: 4:00pm - 5:00pm.

5.2.2 Additionally, the weekday operational delivery hours (7:00am – 7:00pm) (referred to as the AAWT in this report) have also been considered. As noted previously, although the Proposed Development will operate over 24 hours, the core delivery of imported IBA and exported IBAA will occur between 6:00am and 7:00pm, dependent on EfW operations and the demand of the construction industry respectively. With regard to the percentage impact assessments provided later in this report, the core delivery hours therefore represent the 'worst case' period in terms of traffic generation compared to the 24-hour operating period.

5.2.3 Accordingly, these time periods have been utilised for the percentage impact assessment included in this TS (see **Section 5.9**).

5.3 Future Year Traffic Growth Assumptions

5.3.1 The 2026 opening year has been analysed. To account for future network traffic conditions, an additional future design year of 2031 has been considered. This represents 5 years beyond the opening year, in accordance with National Planning Practice Guidance (NPPG).

5.3.2 Guidance published by the DfT identifies that future estimates of traffic should be made through the application of regional growth factors derived from the National Transport Model (NTM). NTM forecasts give traffic growth by region, road type and whether the area is built up or not. These forecasts are then adjusted by local TEMPRO factors to reflect local traffic trends. **Appendix 6** provides the TEMPRO growth factor outputs for the Middle Layer Super Output area of 'Wyre 011' for the above future year periods, whilst **Table 5.1** summarises the results.

Table 5.1 – TEMPRO Adjusted NTM Growth Factors

Period	2022 - 2026	2022 - 2031
Weekday AM Peak	1.0277	1.0832
Weekday PM Peak	1.0281	1.0843
Average Weekday	1.0293	1.0871

5.3.3 The TEMPRO adjusted NTM growth factors have been applied to the 2022 background traffic flows presented in **Figures 1**, **Figure 2, Figure 3** and **Figure 4** to produce the 2026 and 2031 future year baseline traffic flows illustrated respectively at **Figures 5** to **12**.

5.4 Committed Development Traffic

5.4.1 AXIS has investigated information available from the WC planning application portal to examine the status and proximity any nearby committed developments that might have a material effect on flows within the TS study area, and which also satisfy the relevant NPPG criteria which advises only including "*development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next 3 years*".

5.4.2 The key committed developments of relevance to this assessment are:

i) 20/00405/LMAJ – The erection of 210 residential dwellings on land off Bourne Road;
ii) 19/00347/FULMAJ – A hybrid planning application consisting of full planning permission for the erection of 41 dwellings and outline permission for up to 45 dwellings and 42 apartments (all matters reserved except for access) at the site of the Thornton-Cleveleys Football Club;
iii) 23/01214/LCC – Proposed development of an Energy Recovery Centre and associated infrastructure (LCC/2023/0003); and
iv) 22/00762/FULMAJ – Proposed erection of 160 new dwellings on land located to the west of Fleetwood Road North, Thornton Cleveleys.

5.4.3 Development trips for each of these developments have been calculated for the AM, PM and AAWT periods, as per the methodologies outlined below. Committed development trips at weekends are expected to be negligible for all of these sites. As such it is considered that any additional weekend trips associated with these sites will be covered by the background growth accounted for within the TEMPRO growth factors, and no separate committed development trips have been calculated for the Saturday period.

20/00405/LMAJ

5.4.4 The traffic generation forecast by the application for 210 dwellings off Bourne road have been extracted from the Transport Statement (TS) accompanying that application. No distribution has been provided for the application trips within the TS. To assign the committed development trips to the local highway network in this assessment, the observed turning proportions of surrounding junctions (based on observed survey flows) has therefore been used.

5.4.5 The assigned traffic flows are provided in **Figure 13**, **Figure 14** and **Figure 15**.

19/00347/FULMAJ

5.4.6 The traffic assignment of the application for 128 dwellings in total at the site of the Thornton-Cleveleys Football Club have been extracted from the TA that accompanied that planning application.

5.4.7 The assigned traffic flows are provided in **Figure 16**, **Figure 17** and **Figure 18**.

23/01214/LCC

5.4.8 The traffic generation of the application for the construction and operation of Thornton Energy Recovery Centre (TERC), and Energy from Waste Facility and associated infrastructure on land at Hillhouse International Enterprise Zone (HIEZ) has been extracted from the TA that accompanied that planning application.

5.4.9 The assigned traffic flows are provided in **Figure 19**, **Figure 20** and **Figure 21**.

22/00762/FULMAJ

5.4.10 The traffic assignment that accompanies this application has been extracted from the associated TA. The development results in some limited additional two-way movements along Bourne Way during the AM and PM peak periods only.

5.4.11 Traffic flows associated to this development have not been included in the traffic model analysis. This is a robust approach since any additional background traffic flow levels would result in a reduced percentage development impact.

5.5 Total Committed Development Flows

5.5.1 Both the Bourne Road and Thornton-Cleveleys Football Club committed developments were partially constructed when the traffic surveys were undertaken and therefore a proportion of the development trips would have already been counted (see **Section 3.6**).

5.5.2 To account for the ongoing build-out of the committed developments during the future baseline scenarios, a percentage build-out figure has been estimated with regards to the existing completion rate of the developments and phasing details provided in the planning applications for those developments. The traffic assignment of the committed developments has been reduced commensurately to their completion status during the future baseline scenarios.

5.5.3 The percentage completion during the 2026 and 2031 scenarios are shown in **Table 5.2** below:

Table 5.2 – Committed Development Completion Status

Committed Development	% Completion		
	2022	2026	2031
20/00405/LMAJ	15%	25%	100%
19/00347/FULMAJ	35%	60%	100%

5.5.4 The total committed development flows for the 2026 opening year are shown on **Figures 22** to **24** and for the 2031 future year on **Figures 25** to **27**.

5.6 TEMPRO Growth

5.6.1 TEMPRO growth factors for the assessments of future year development impact are also included as noted previously. Given that TEMPRO factors already include for both local housing and employment growth projections (as derived from sources such as Local Plans), the effects of any other committed development schemes should be inherently accounted for within the application of general network growth.

5.6.2 The ‘Do Nothing’ flows comprise the factored baseline and committed development flows and are included in **Figures 28** to **31** for the 2026 future year and in **Figures 32** to **35** for the 2031 future year.

5.7 Traffic Generation

5.7.1 As mentioned previously the proposed IBA facility would have a maximum processing capacity of 350,000 tpa of IBA, of which 10% would be water. The remaining 315,000 tpa, following screening and maturation, would be exported off site (10% metals, 90% as IBA aggregate for use in the construction industry).

5.7.2 Given the nature of the scheme, trip rates cannot be obtained from the industry standard TRICS database. The traffic-generating potential of the scheme has therefore been calculated using a first principles approach utilising industry knowledge and information supplied by the applicant.

HGV Trips

5.7.3 The first principles Trip Generation for the daily HGV Trips has been based on the following assumptions:

i) The Proposed Development will have a maximum throughput of 350,000 tpa of waste;
ii) Include the importation of primary aggregates for blending;
iii) It will operate all-year round for 304 days per annum;
iv) Deliveries will be carried out 6 days a week (there will be no deliveries on Sundays or Bank Holidays);
v) Whilst processing facilities would operate 24hrs a day, HGV movements would be restricted to agreed delivery periods (06:00 – 19:00 on weekdays and 06:00-19:00 on Saturdays);
vi) Further controls would also be implemented to limit the number of HGV movements that would occur on Saturdays. This is likely to include the implementation of a booking / logging system to manage HGV arrivals; and
vii) Deliveries and exports would be undertaken by articulated HGVs with payloads of 27 and 20 tonnes.

5.7.4 The resultant forecast trip generation would therefore be as presented within **Table 5.3** following:

Table 5.3 – Hillhouse Daily HGV Trip Generation

Material	Annual Tonnage	Vehicle Type	Vehicle Capacity	Loads per annum	Loads per day (Weekday)	Movements per day (Weekday)	Loads per day (Saturday)	Movements per day (Saturday)
IN								
IBA In	350,000	Artic	27	12,963	45	90	31	62
Primary Aggregate In	10,000	Artic	27	400	2	4	0	0
OUT								
Metals Out	35,000	Artic	27	1,296	5	10	1	2
IBAA Out	280,000	8-Wheeler	20	14,540	51	102	33	66
Total					**103**	**206**	**65**	**130**
Assumes 10% metal content and 10% moisture loss during maturation								

5.7.5 The above table presents the first principles trip generation identifying the forecast daily HGV movements associated with the IBA facility. The calculation indicates that 206 daily two-way HGV movements will be generated by the facility on weekdays, with 130 two-way HGV movements on Saturdays.

Staff Trips

5.7.6 In order to assess a worst-case scenario of traffic movements it is assumed that staff will operate two shifts throughout a 24 hour period. This will result in a total of 9 staff per 12-hour shift. The two 12-hour shifts will take place between 06:00 – 18:00 and 18:00 – 06:00. This equates to a total of 36 two-way movements in a day.

Total Trip Generation

5.7.7 The total trip generation has been based on the aforementioned parameters for HGV and Staff movements and is illustrated within **Table 5.4** and **Table 5.5** following, for Weekdays and Saturdays, respectively.

Table 5.4 – Hillhouse Total Trip Generation - Weekdays

Trip Generation Profile (Typical Weekday)										
Hour Begin	Hour End	HGVs			Staff (Two Shifts)			TOTAL		
		Arrive	Depart	Two-Way	Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
00:00	01:00			0			0	0	0	0
01:00	02:00			0			0	0	0	0
02:00	03:00			0			0	0	0	0
03:00	04:00			0			0	0	0	0
04:00	05:00			0			0	0	0	0
05:00	06:00			0	9		9	9	0	9
06:00	07:00	8	8	16		9	9	8	17	25
07:00	08:00	8	8	16			0	8	8	16
08:00	09:00	8	8	16			0	8	8	16
09:00	10:00	8	8	16			0	8	8	16
10:00	11:00	8	8	16			0	8	8	16
11:00	12:00	8	8	16			0	8	8	16
12:00	13:00	8	8	16			0	8	8	16
13:00	14:00	8	8	16			0	8	8	16
14:00	15:00	8	8	16			0	8	8	16
15:00	16:00	8	8	16			0	8	8	16
16:00	17:00	8	8	16			0	8	8	16
17:00	18:00	8	8	16	9		9	17	8	25
18:00	19:00	7	7	14		9	9	7	16	23
19:00	20:00			0			0	0	0	0
20:00	21:00			0			0	0	0	0
21:00	22:00			0			0	0	0	0
22:00	23:00			0			0	0	0	0
23:00	00:00			0			0	0	0	0
Daily Total		**103**	**103**	**206**	**18**	**18**	**36**	**121**	**121**	**242**

Table 5.5 – Hillhouse Total Trip Generation - Saturdays

Trip Generation Profile (Typical Saturday)										
Hour Begin	Hour End	HGVs			Staff (Two Shifts)			TOTAL		
		Arrive	Depart	Two-Way	Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
00:00	01:00			0			0	0	0	0
01:00	02:00			0			0	0	0	0
02:00	03:00			0			0	0	0	0
03:00	04:00			0			0	0	0	0
04:00	05:00			0			0	0	0	0
05:00	06:00			0	9		9	9	0	9
06:00	07:00	5	5	10		9	9	5	14	19
07:00	08:00	5	5	10			0	5	5	10
08:00	09:00	5	5	10			0	5	5	10
09:00	10:00	5	5	10			0	5	5	10
10:00	11:00	5	5	10			0	5	5	10
11:00	12:00	5	5	10			0	5	5	10
12:00	13:00	5	5	10			0	5	5	10
13:00	14:00	5	5	10			0	5	5	10
14:00	15:00	5	5	10			0	5	5	10
15:00	16:00	5	5	10			0	5	5	10
16:00	17:00	5	5	10			0	5	5	10
17:00	18:00	5	5	10	9		9	14	5	19
18:00	19:00	5	5	10		9	9	5	14	19
19:00	20:00			0			0	0	0	0
20:00	21:00			0			0	0	0	0
21:00	22:00			0			0	0	0	0
22:00	23:00			0			0	0	0	0
23:00	00:00			0			0	0	0	0
Daily Total		**65**	**65**	**130**	**18**	**18**	**36**	**83**	**83**	**166**

5.7.8 The above tables present the forecast daily HGV and staff combined trip generation which indicates that in summary the proposed development is expected to result in up to around 242 two-way vehicle trips per weekday. Approximately 16 two-way vehicle movements would be generated during both the identified local highway network AM (08:00 – 09:00) and PM (16:00 – 17:00) weekday peak hours. There would be approximately 166 two-way vehicle trips in total on Saturdays, which would include a maximum of 130 two-way HGV movements.

5.8 Trip Distribution

HGV distribution

5.8.1 The exact source of waste and associated distribution is unknown at this stage, HGV deliveries will nonetheless route via appropriate routes through the strategic highway network, minimising impact on sensitive receptors and avoiding residential areas where possible or where such movements are expressly prohibited (i.e. weight restrictions).

5.8.2 In order to provide an initial reasonable forecast of likely HGV distribution, and in order to inform the scope of study required for the surrounding highway network, it is estimated that approximately 70% of development-related HGV movements will route via a southerly direction along the A585 Amounderness Way to / from the A585 Amounderness Way / Bourne Way signalised junction, and 30% of HGVs would travel via a northerly direction to / from the junction.

5.8.3 As an additional sensitivity test, and in order to ensure that local links are robustly able to accommodate the Proposed Development traffic generation, a separate scenario will also be considered in which 100% of HGV traffic is distributed in a southernly direction along the A585 Amounderness Way. This represents a theoretical ‘worst case’ in terms of traffic distribution, with regards to the likely origin of waste materials and the layout of the surrounding strategic road network.

Staff Distribution

5.8.4 The commuting travel patterns of staff at the Proposed Development are expected to be similar to those of people who currently work in the local industrial area.

5.8.5 The site is located within the Middle Super Output Area (MSOA) of ‘Wyre 011’ and the staff trips that would be generated by the Proposed Development have therefore been distributed and assigned on the wider surrounding highway network using the 2011 census ‘journey to work’ statistics (census dataset WU03EW) for this MSOA. The resultant distribution model is contained in **Appendix 7** and is summarised in **Table 5.6**.

Table 5.6 – Staff Car Distribution

Route (From the Site)	% Distribution
North on Amounderness Way (N)	4%
South on Amounderness Way (S)	50%
North on Fleetwood Road North (N)	12%
South on Fleetwood Road North (S)	34%
Total	**100 %**

5.8.6 The Proposed Development trip distribution is illustrated diagrammatically on **Figure 36** and the sensitivity test trip distribution is shown on **Figure 49**.

5.8.7 The associated development traffic assignment is shown on **Figures 37** to **40** for the core scenarios and on **Figures 50** to **53** for the sensitivity test scenario.

5.8.8 The 'Do Something' flows comprise the growthed future baseline and committed development flows, plus the development traffic assignment, and are included in **Figures 41** to **44** for the 2026 future year, **Figures 45** to **48** for the 2031 future year, **Figures 54** to **57** for the 2026 future year sensitivity test and **Figures 58** to **61** for the 2031 future year sensitivity test scenario.

5.9 Percentage Impact Assessment

5.9.1 The percentage traffic impact assessment of the Proposed Development considers a number of links on the local highway network. The links that have been considered are shown on **Image 5.1** and are summarised below:

i) Link 1: Bourne Road east of Beech Drive;
ii) Link 2: Bourne Road east of the Bourne Road / Fleetwood Road North signalised junction;
iii) Link 3: Bourne Way west of the Bourne Road / Fleetwood Road North signalised junction;
iv) Link 4: Bourne Way east of the Amounderness Way / Bourne Way signalised junction;
v) Link 5: Amounderness Way north of the Amounderness Way / Bourne Way signalised junction; and,
vi) Link 6: Amounderness Way south of the Amounderness Way / Bourne Way signalised junction.

Image 5.1 – Assessed Link Locations

5.9.2 As noted previously, the percentage traffic impact assessment of the proposal has been considered for two separate future scenarios;

i) The 2026 opening year; and,

ii) The 2031 future year.

5.9.3 The guidance on critical thresholds for percentage traffic impacts within The Institute of Environmental Management and Assessment (IEMA) publication '*Guidelines for the Environmental Assessment of Traffic and Movement*' (July 2023) has been considered in the assessment of the results. Although intended to identify highway links that should be included in an environmental impact assessment, it nonetheless offers a useful reference guide for the thresholds at which a development might be considered to cause a material impact on the local highway network.

5.9.4 Paragraph 2.16 of the guidance states:

"*Following the determination of a study area, it is recommended the competent traffic and movement expert applies two broad rules of thumb as criteria to assist in delimiting the scale and extent of the environmental assessment:*

Rule 1 *include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)*

Rule 2 *include highway links of high sensitivity where traffic flows have increased by 10% or more.*"

5.9.5 Paragraph 2.18 states that:

"*Traffic forecasting is not an exact science and the accuracy of projections is open to debate. It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day-to-day variation of traffic on a road is frequently at least some + or –10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact.*"

5.9.6 With regard to the above, a link impact of less than 10% can be considered nominal as the daily fluctuations of traffic may frequently exceed this figure. A 30% impact is therefore taken as the threshold at which a development might begin to cause material adverse environmental effects.

2026 Opening Year

5.9.7 **Table 5.7** summarises the anticipated percentage impact of development-related traffic on the local highway network during the average 2026 weekday operating hours (denoted as AAWT – Annual Average Weekday Traffic. 6:00am – 7:00pm), and also the network AM and PM peak hours of 8:00am – 9:00am and 4:00pm – 5:00pm, and Saturday delivery hours (6:00am – 7:00pm), to provide additional context to the AAWT figures.

Table 5.7 – Percentage Impact Assessment Summary (2026)

2026 AM Peak Hour Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles**	**% Impact HGVs**
1	184	34	16	16	8.71	47.56
2	375	22	16	16	4.26	71.63
3	274	31	16	16	5.84	52.36
4	367	24	16	16	4.36	65.60
5	1521	36	5	5	0.32	13.19
6	1709	56	11	11	0.66	20.07
2026 PM Peak Hour Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles**	**% Impact HGVs**
1	201	25	16	16	7.95	62.92
2	394	13	16	16	4.06	122.23
3	273	18	16	16	5.85	87.76
4	371	20	16	16	4.32	78.87

5	1530	22	5	5	0.31	21.80
6	1760	39	11	11	0.64	28.43
2026 Saturday Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles**	**% Impact HGVs**
1	586	98	166	130	28.31	132.78
2	1178	42	158	130	13.38	312.14
3	810	47	149	130	18.44	278.69
4	1151	57	149	130	12.97	229.51
5	4936	90	40	39	0.82	43.35
6	5588	143	109	91	1.95	63.52
2026 AAWT Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles**	**% Impact HGVs**
1	1865	418	242	206	12.98	49.30
2	3634	179	234	206	6.43	114.84
3	2493	194	225	206	9.04	106.24
4	3490	223	225	206	6.46	92.40
5	14369	279	63	62	0.44	22.16
6	16350	457	162	144	0.99	31.55

Link 1: Bourne Road east of Beech Drive;

Link 2: Bourne Road east of the Bourne Road / Fleetwood Road North signalised junction;

Link 3: Bourne Way west of the Bourne Road / Fleetwood Road North signalised junction;

Link 4: Bourne Way east of the Amounderness Way / Bourne Way signalised junction; and,

Link 5: Amounderness Way north of the Amounderness Way / Bourne Way signalised junction; and,

Link 6: Amounderness Way south of the Amounderness Way / Bourne Way signalised junction.

5.9.8 **Table 5.7** shows that the development-related traffic impact (total vehicles) will be less than the lower IEMA 10% impact threshold on all links during the AM and PM peak hours in 2026 and would only exceed it on link 1 in the AAWT scenario, and on links 1, 2, 3 & 4 on Saturdays. (This is notwithstanding the fact none of the local links are particularly sensitive receptors – see the accompanying ES chapter on Transport).

5.9.9 The scheme is anticipated to result in an HGV percentage impact greater than the higher IEMA 30% threshold on some localised links (links 1, 2, 3, & 4), with the impact being above this threshold on all links on Saturdays. (This is notwithstanding the fact none of the local links are particularly sensitive receptors – see the accompanying ES chapter on Transport).

5.9.10 However, the percentage impact assessment should be viewed in the context of the low baseline traffic flows observed on many of the links, particularly on Saturdays, which therefore creates the impression, when viewed comparatively, that the impact of the Proposed Development might be greater than it actually would be.

5.9.11 In practice, the increase in HGV movements along these links would be relatively small in absolute terms, and from a high-level review, there are no practical or amenity impact reasons why these links would not be capable of accommodating the proposed HGV trips. Additional consideration of the potential impact of the scheme is provided in the Environmental Statement (ES) accompanying this application.

Sensitivity Test

5.9.12 As noted previously, as an additional sensitivity test a separate traffic distribution scenario has been considered in which 100% of HGV traffic is routed to / from Amounderness Way south at the Amounderness Way / Bourne Way junction (see **Section 5.7.3**).

5.9.13 **Table 5.8** summarises the anticipated percentage impact of development-related traffic on the local highway network during the 2026 sensitivity test scenario.

Table 5.8 – Percentage Impact Assessment Summary (2026 Sensitivity Test)

2026 AM Peak Hour Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	184	34	16	16	8.71	47.56
2	375	22	16	16	4.26	71.63
3	274	31	16	16	5.84	52.36
4	367	24	16	16	4.45	65.60
5	1521	36	0	0	0.02	0.00
6	1709	56	16	16	0.94	28.66
2026 PM Peak Hour Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	201	25	16	16	7.95	62.92
2	394	13	16	16	4.06	122.23
3	273	18	16	16	5.85	87.76
4	371	20	16	16	4.32	78.87
5	1530	22	0	0	0.00	0.00
6	1760	39	16	16	0.91	40.62
2026 Saturday Scenario						

Link	Base vehicles	Base HGVs	Development vehicles	Development HGVs	% Impact vehicles*	% Impact HGVs*
1	586	98	166	130	28.31	132.78
2	1178	42	158	130	13.38	312.14
3	810	47	149	130	18.44	278.69
4	1151	57	149	130	12.97	229.51
5	4936	90	1	0	0.03	0.00
6	5588	143	148	130	2.64	90.74
2026 AAWT Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	1865	418	242	206	12.98	49.30
2	3634	179	234	206	6.43	114.84
3	2493	194	225	206	9.04	106.24
4	3490	223	225	206	6.46	92.40
5	14369	279	1	0	0.01	0.00
6	16350	457	224	206	1.37	45.07

Link 1: Bourne Road east of Beech Drive;

Link 2: Bourne Road east of the Bourne Road / Fleetwood Road North signalised junction;

Link 3: Bourne Way west of the Bourne Road / Fleetwood Road North signalised junction;

Link 4: Bourne Way east of the Amounderness Way / Bourne Way signalised junction; and,

Link 5: Amounderness Way north of the Amounderness Way / Bourne Way signalised junction; and,

Link 6: Amounderness Way south of the Amounderness Way / Bourne Way signalised junction.

5.9.14 **Table 5.8** shows that the development-related traffic impact (total vehicles) will be less than the lower IEMA 10% impact threshold on all links during the AM and PM peak hours in the 2026 sensitivity test scenario and would only exceed it on link 1 in the AAWT scenario, and on links 1, 2, 3 & 4 on Saturdays. (This is notwithstanding the fact none of the local links are particularly sensitive receptors – see the accompanying ES chapter on Transport).

5.9.15 The scheme is anticipated to result in an HGV percentage impact greater than the higher IEMA 30% threshold on links 1, 2, 3, & 4 during the AM peak periods and on links 1, 2, 3, 4 & 6 during the PM, Saturday and AAWT periods.

5.9.16 Again, the percentage impact assessment should be viewed in the context of the low baseline traffic observed on many of the links, particularly on Saturdays, which therefore creates the impression, when viewed comparatively, that the impact of the Proposed Development might be greater than it actually would be.

2031 Future Year

5.9.17 In percentage impact terms, the above 2026 assessments are considered to be the 'worst-case' design scenario, as background traffic flows are expected to rise in the future, whilst the traffic of the development is expected to remain the same. Nonetheless, for completeness the 2031 future assessment scenario has also been considered.

5.9.18 **Table 5.9** summarises the anticipated percentage impact of development-related traffic on the local highway network during the 2031 future scenario.

Table 5.9 – Percentage Impact Assessment Summary (2031)

2031 AM Peak Hour Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	247	35	16	16	6.48	45.46
2	464	23	16	16	3.45	68.73
3	316	32	16	16	5.07	50.09
4	414	25	16	16	3.87	62.88
5	1609	38	5	5	0.30	12.54
6	1823	59	11	11	0.61	19.10
2031 PM Peak Hour Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	257	27	16	16	6.22	60.26
2	475	14	16	16	3.37	118.17
3	320	19	16	16	5.01	84.38
4	423	21	16	16	3.78	75.72
5	1619	23	5	5	0.30	20.74
6	1883	41	11	11	0.59	27.08
2031 Saturday Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	620	103	166	130	26.78	125.62
2	1245	44	158	130	12.66	295.32
3	856	49	149	130	17.44	263.67
4	1217	60	149	130	12.27	217.14
5	5217	95	40	39	0.78	41.02
6	5906	151	109	91	1.84	60.09
2031 AAWT Scenario						

Link	Base vehicles	Base HGVs	Development vehicles	Development HGVs	% Impact vehicles*	% Impact HGVs*
1	2433	438	242	206	9.95	47.03
2	4379	186	234	206	5.34	110.65
3	2898	202	225	206	7.77	102.23
4	3957	232	225	206	5.69	88.72
5	15221	294	63	62	0.42	21.05
6	17496	480	162	144	0.93	30.01

Link 1: Bourne Road east of Beech Drive;

Link 2: Bourne Road east of the Bourne Road / Fleetwood Road North signalised junction;

Link 3: Bourne Way west of the Bourne Road / Fleetwood Road North signalised junction;

Link 4: Bourne Way east of the Amounderness Way / Bourne Way signalised junction; and,

Link 5: Amounderness Way north of the Amounderness Way / Bourne Way signalised junction; and,

Link 6: Amounderness Way south of the Amounderness Way / Bourne Way signalised junction.

5.9.19 **Table 5.9** shows that the development-related traffic impact (total vehicles) will be less than the lower IEMA 10% impact threshold on all links during the AM and PM peak periods and the AAWT period in 2031, and would only exceed it on links 1, 2, 3 & 4 on Saturdays. (This is notwithstanding the fact none of the local links are particularly sensitive receptors – see the accompanying ES chapter on Transport).

5.9.20 The scheme is anticipated to result in an HGV percentage impact greater than the higher IEMA 30% threshold on link 1, 2, 3 & 4 during the AM and PM peak periods and AAWT periods, although it is indicated to exceed this threshold on all links on Saturdays.

5.9.21 Again, the percentage impact assessment should be viewed in the context of the low baseline traffic observed on many of the links, particularly on Saturdays, which therefore creates the impression, when viewed comparatively, that the impact of the Proposed Development might be greater than it actually would be.

Table 5.10 – Percentage Impact Assessment Summary (2031 Sensitivity Test)

2031 AM Peak Hour Scenario						
Link	Base vehicles	Base HGVs	Development vehicles	Development HGVs	% Impact vehicles*	% Impact HGVs*
1	247	35	16	16	6.48	45.46
2	464	23	16	16	3.45	68.73
3	316	32	16	16	5.07	50.09
4	414	25	16	16	3.95	62.88
5	1609	38	0	0	0.02	0.00
6	1823	59	16	16	0.88	27.28

2031 PM Peak Hour Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	257	27	16	16	6.22	60.26
2	475	14	16	16	3.37	118.17
3	320	19	16	16	5.01	84.38
4	423	21	16	16	3.78	75.72
5	1619	23	0	0	0.00	0.00
6	1883	41	16	16	0.85	38.69
2031 Saturday Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	620	103	166	130	26.78	125.62
2	1245	44	158	130	12.66	295.32
3	856	49	149	130	17.44	263.67
4	1217	60	149	130	12.27	217.14
5	5217	95	1	0	0.03	0.00
6	5906	151	148	130	2.50	85.85
2031 AAWT Scenario						
Link	**Base vehicles**	**Base HGVs**	**Development vehicles**	**Development HGVs**	**% Impact vehicles***	**% Impact HGVs***
1	2433	438	242	206	9.95	47.03
2	4379	186	234	206	5.34	110.65
3	2898	202	225	206	7.77	102.23
4	3957	232	225	206	5.69	88.72
5	15221	294	1	0	0.01	0.00
6	17496	480	224	206	1.28	42.87

5.9.22 **Table 5.10** shows that the development-related traffic impact (total vehicles) will be less than the lower IEMA 10% impact threshold on all links during the AM and PM peak periods and the AAWT period in 2031 sensitivity test scenario, and would only exceed it on links 1, 2, 3 & 4 on Saturdays. (This is notwithstanding the fact none of the local links are particularly sensitive receptors – see the accompanying ES chapter on Transport).

5.9.23 The scheme is anticipated to result in an HGV percentage impact greater than the higher IEMA 30% threshold on links 1, 2, 3 & 4 during the AM peak periods and on links 1, 2, 3, 4 & 6 during the PM, Saturday and AAWT periods.

5.9.24 Again, the percentage impact assessment should be viewed in the context of the low baseline traffic observed on many of the links, particularly on Saturdays, which therefore creates the impression, when viewed comparatively, that the impact of the Proposed Development might be greater than it actually would be.

5.10 Summary

5.10.1 Overall, the effect of this additional traffic on the local highway network will be acceptable during the 2026 opening year, 2026 sensitivity test and 2031 future year scenarios. Although some localised links will be subject to an HGV percentage impact greater than the 30% IEMA thresholds, the impact in actual terms will be low and the low baseline traffic levels leave the impression that the impact would be greater than it actually would be. It is therefore considered that the proposed scheme will not lead to an unacceptable impact on the local highway network.

5.10.2 Further assessment of the potential environmental effects of development-related traffic are set out in the Transport Chapter of the accompanying Environmental Statement.

5.10.3 Paragraph 115 of the National Planning Policy Framework states that:

"*Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe*".

5.10.4 With particular regard to the analysis provided in this TS, the Proposed Development does not result in any severe level of forecast traffic generation or result in any unacceptable impact on highway safety. The proposal is therefore considered to be acceptable from a traffic impact and safety perspective.

6.0 CONSTRUCTION TRAFFIC

6.1 Introduction

6.1.1 This chapter of the TS provides details of the construction of the Proposed Development, with a focus on construction related traffic impacts. It is considered that additional details regarding the construction of the Proposed Development may be provided through a Construction Traffic Management Plan (CTMP) to be secured by a suitably worded planning condition.

6.1.2 Details of the main processes associated with each construction phase are outlined further within Chapter 4.0 of the supporting Environmental Statement.

6.1.3 It is currently anticipated that construction would commence in Q3 2025 and last approximately 16 months. This duration includes site construction, delivery and set up of modular buildings, the installation and commissioning of the processing plant.

6.1.4 The core construction hours are proposed to be 7:00am to 7:00pm during weekdays (Monday – Friday) and 8:00am to 1:00pm on Saturdays. No work is planned on Sundays or bank holidays, however there may be occasions when construction would need to be undertaken outside of the core hours, for example, during major concrete pours or the transfer of abnormal loads.

6.1.5 The erection of building frames and the main structural works would be staggered throughout the construction period and would not therefore result in more significant requirements for construction related HGV traffic.

6.2 Site Access and Routeing

6.2.1 Construction access would be via the proposed site access junction (see Section 4.5), with the clearing and formalisation of the existing access junction completed under the first phase of the construction works.

6.2.2 Routing of construction vehicles would be as proposed in the operational stage, with HGV traffic routeing primarily via the A585 Amounderness Way south of the A585 Amounderness Way / Bourne Way signalised junction. This route would be prescribed within the CTMP and appropriate temporary signage would be erected on local roads to ensure that routeing of construction HGVs is in accordance with agreed haulage routes.

6.3 Traffic Generation

6.3.1 The traffic generating potential of the construction scheme has been established using information supplied by the applicant and AXIS's experience in delivering similar schemes throughout the UK. An initial estimate of construction related traffic during the separate phases of the proposed construction is provided in **Appendix 8**.

6.3.2 **Appendix 8** indicates that the proposal is anticipated to result in approximately 105 two-way vehicle trips per day, on average, during the construction phase. The anticipated construction traffic generation would comprise approximately 73 two-way staff trips and 32 two-way HGV trips per day on average. HGV deliveries during the construction phase would be managed, where practical, to avoid vehicles travelling during typical AM and PM peak hour periods.

6.3.3 As noted in Section 5.7 previously, the proposed operational phase of the development is anticipated to result in approximately 242 two-way vehicle trips per day on weekdays, and 166 two-way vehicle movements on Saturdays. The construction phase of the development is therefore expected to result in a lesser traffic impact than the operational phase. On that basis it is not considered that any further link-based traffic analysis is required beyond what has already been provided in Chapter 5.

6.4 Construction Traffic Management Plan

6.4.1 As noted previously, a CTMP may be secured via a suitably worded planning condition to ensure that suitable mitigation measures will be adopted to manage any adverse effects of construction. It is anticipated that the CTMP may include the following:

- i) restrictions on vehicle delivery hours;
- ii) on-site construction vehicle parking & manoeuvring arrangements;
- iii) HGV routing strategy;
- iv) staff parking arrangements;
- v) management and procedures for access by abnormal loads;
- vi) local signage strategy;
- vii) storage of materials;
- viii) construction noise management; and
- ix) construction dust management.

7.0 ACCESSIBILITY

7.1 Introduction

7.1.1 Paragraph 109 of the NPPF states that:

"Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health."

7.1.2 Due to the nature of the Proposed Development, the large majority of trips generated by the Proposed Development are related to the movement of IBA/IBAA by HGVs. As these trips are necessarily undertaken by HGV, the accessibility of the site is therefore only relevant to the small number of staff trips, as outlined in **Chapter 5** of this report. The remainder of this chapter therefore discusses the alternative modes of transport to the private car that are available for these staff.

7.2 Pedestrian Accessibility

7.2.1 Access between the site and local areas by foot has been assessed using the 2km preferred maximum walking distance suggested in the Institution for Highways and Transportation's (IHT's, now CIHT's) "*Guideline for Providing for Journeys on Foot*" document.

7.2.2 Based on these distances, it is recognised that the likelihood of walking being a suitable mode of travel for a daily commute journey to work is currently limited. As a result, it is considered that cycling perhaps presents a more realistic opportunity for travel to the site. This should however be viewed in the context of the general desirability for industrial uses such as the proposed to be separated from surrounding residential areas and the requirements for security that may otherwise be limited by excessive pedestrian permeability.

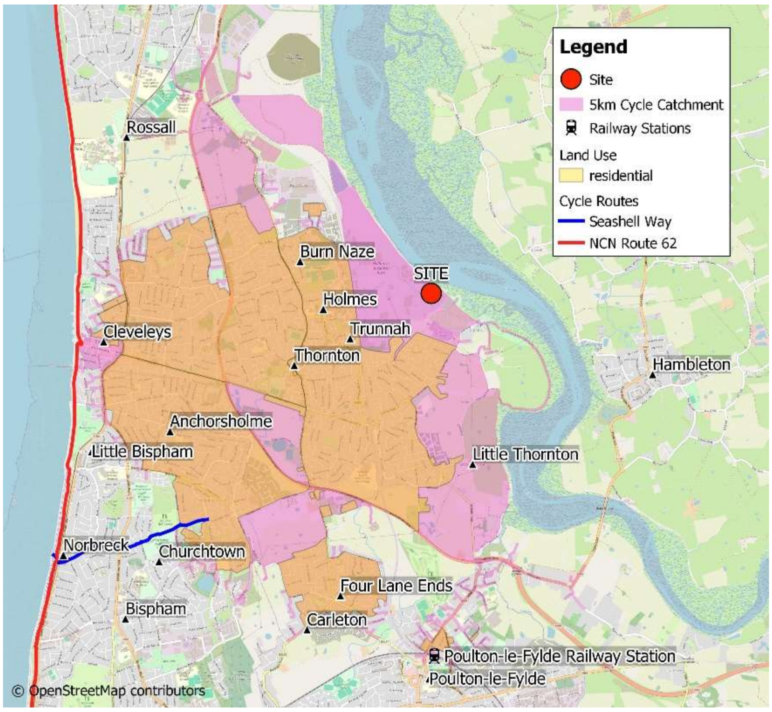
7.2.3 In the longer term, and as set out in the Hillhouse Technology Enterprise Zone Masterplan Report (2018) (see **Section 2.4**) pedestrian accessibility to the wider HIEZ site will be enhanced through the green infrastructure framework incorporating pedestrian and cycle connectivity including attractive green corridors. Nonetheless, due to the industrial nature of the site it is not considered that the lack of such infrastructure should reasonably prevent development of this proposal in the context of the wider enterprise zone.

7.3 Cycle Accessibility

7.3.1 It is generally accepted that 5km is a reasonable distance for making trips by bicycle or as part of a longer journey by public transport.

7.3.2 The accessibility of the development has been assessed to determine the area that lies within a 5km cycle distance from the site, as shown on **Image 7.1.**

Image 7.1 – 5km Cycle Catchment



7.3.3 **Image 7.1** shows that a number of residential areas including a large part of the built up area surrounding Thornton-Cleveleys lie within a 5km cycle distance from the site. Cycling therefore provides a viable mode of travel to the site for staff living in the surrounding area.

7.3.4 **Image 7.1** also shows that National Cycle Network Route 62 lies within cycle distance of the site. NCN Route 62 provides a combination of high quality on and off-street cycle infrastructure. Within the vicinity of Thornton-Cleveleys NCN Route 62 is an attractive cycle route which runs in a north-south alignment from Fleetwood to Blackpool along the western coast and further afield to the south, thus providing for longer journeys to and from the site by cycle.

7.4 Accessibility Summary

7.4.1 In summary, the site is well located to facilitate staff journeys to be made by sustainable travel modes considering the general desirability to separate industrial / waste developments such as the one proposed from surrounding residential areas.

7.4.2 The accessible credentials of the site will improve in the future as part of planned infrastructure included in the wider Enterprise Zone Masterplan.

7.4.3 The site currently offers a good level of accessibility by cycle, with a large residential area lying within cycle distance of the site and access to the NCN Route 62 for journeys further afield.

7.4.4 The adoption of sustainable transport modes by staff will be promoted further still by a Travel Plan (TP), with a Framework Travel Plan already having been prepared and submitted as part of this application.

7.4.5 Accordingly, the site is reasonably accessible by sustainable transport modes and is therefore compliant with paragraph 109 of the NPPF.

8.0 SUMMARY AND CONCLUSIONS

8.1.1 This Transport Statement (TS) has been prepared by AXIS on behalf of Fortis IBA Ltd to consider the highways and transport matters associated with an application for the construction and operation of an Incinerator Bottom Ash (IBA) facility on land at Hillhouse International Enterprise Zone (HIEZ), Thornton-Cleveleys.

8.1.2 The road safety record of the local highway network has been examined within the most recently available 5-year period (2019 - 2023). The analysis does not indicate that there are any existing highway safety issues that could be worsened by the Proposed Development.

8.1.3 The sustainability of the site has been assessed. Accessibility by alternative modes of transport to the car was found to be reasonably good, with a reasonable level of cycle accessibility in the area and future sustainable infrastructure provision as part of the Hillhouse Technology Enterprise Zone Masterplan.

8.1.4 Swept path analysis demonstrates that the proposed site access arrangements will satisfactorily cater for the traffic movements associated with the proposal.

8.1.5 The traffic-generating potential of the proposal has been compared to the baseline traffic flows for a 2026 opening year scenario and a future 2031 scenario. In absolute terms, the impact of the proposal on the local highway network would be low, with flows which are largely within the expected day to day fluctuations of traffic.

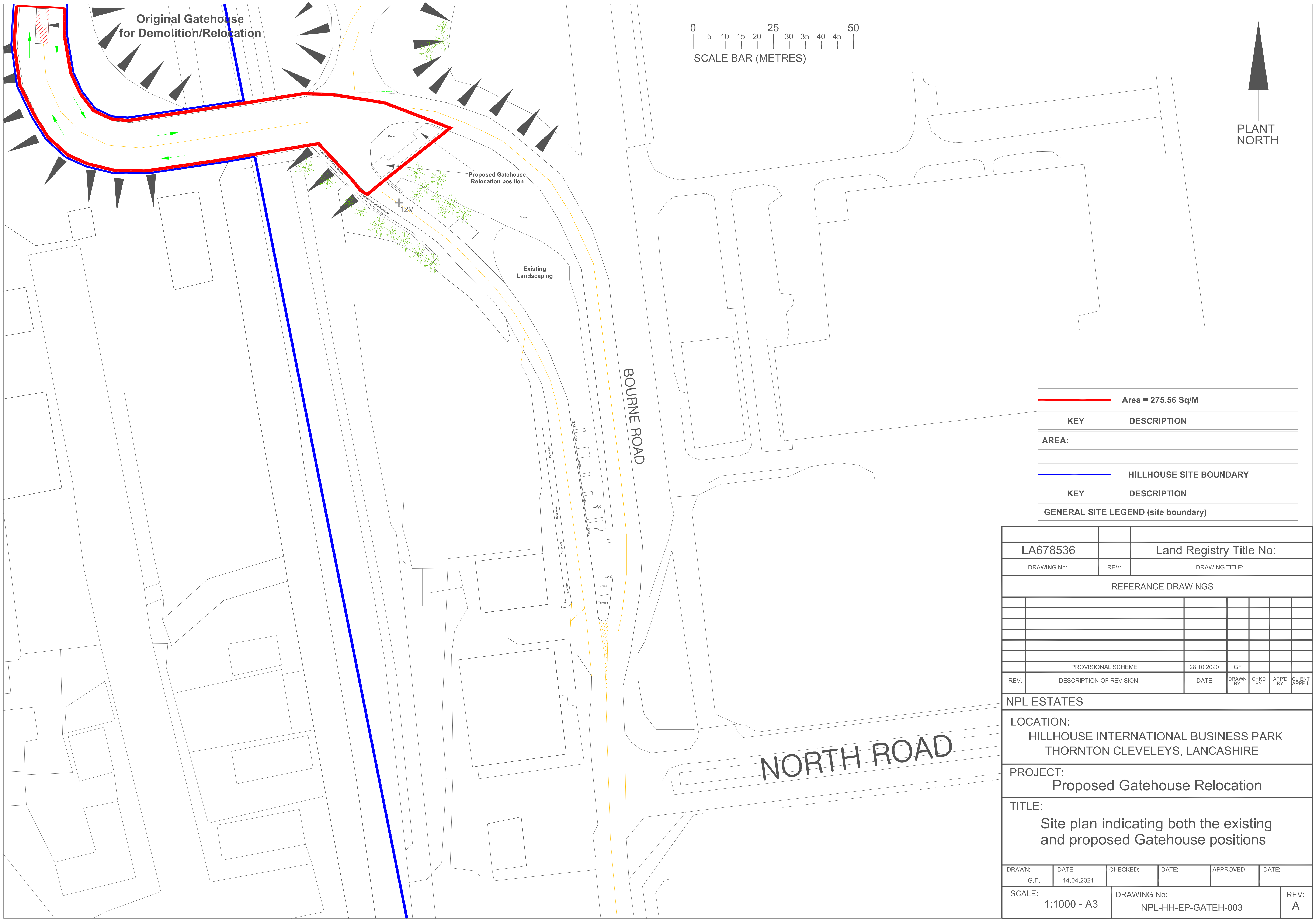
8.1.6 Although the proposal exceeds the 30% IEMA threshold for some localised links (in terms of percentage HGV impact), the proposed traffic generation must be viewed in the context of the low baseline traffic flows observed on many of the assessed links which creates the impression, when viewed in relative percentage impact terms, that the impact of the proposal might be greater than it actually would be. In absolute terms, there are no practical reasons why the assessed links would not be capable of accepting this number of HGVs and therefore there is no reason to expect that the modest increase in trips will have a cumulative negative impact on the local highway network.

8.1.7 Paragraph 115 of the National Planning Policy Framework states that:

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe".

8.1.8 Based on the evidence presented in this TS, no unacceptable impact would be created by the scheme.

Appendix 1 – Approved Gatehouse



KEY	DESCRIPTION
(red line)	Area = 275.56 Sq/M
AREA:	

KEY	DESCRIPTION
(blue line)	HILLHOUSE SITE BOUNDARY
GENERAL SITE LEGEND (site boundary)	

DRAWING No:	REV:	DRAWING TITLE:
LA678536		Land Registry Title No:

REFERANCE DRAWINGS

REV:	DESCRIPTION OF REVISION	DATE:	DRAWN BY	CHKD BY	APP'D BY	CLIENT APPR'L
	PROVISIONAL SCHEME	28:10:2020	GF			

NPL ESTATES

LOCATION:
HILLHOUSE INTERNATIONAL BUSINESS PARK
THORNTON CLEVELEYS, LANCASHIRE

PROJECT:
Proposed Gatehouse Relocation

TITLE:
Site plan indicating both the existing and proposed Gatehouse positions

DRAWN:	DATE:	CHECKED:	DATE:	APPROVED:	DATE:
G.F.	14.04.2021				

SCALE:	DRAWING No:	REV:
1:1000 - A3	NPL-HH-EP-GATEH-003	A

Appendix 2 – Pre-application and Response

Hillhouse IBA

Technical Note 01

Appendix 1 Highways Technical Note – Input to Pre-Application Request

Prepared for: Fortis IBA

January 2024

3566-01-TN01

1. INTRODUCTION

1. AXIS has been commissioned by Fortis IBA, hereafter referred to as 'the Applicant,' to provide transport planning and highways advice in relation to the development of the Hillhouse IBA, an IBA plant on land at Hillhouse International Enterprise Zone (HIEZ) at Thornton-Cleveleys, Lancashire.

2. This Note has been prepared to set out a suggested scope of transport-related work that will accompany the planning application. This note has been prepared based on information provided by the applicant and a desktop-based review of the application site.

3. A Transport Statement (TS) report will be prepared which will consider the following scope of assessment:

    i) Review of relevant transport-related planning policies;
    ii) Review of existing conditions pertaining to the site, including description of the site location, existing use, the local highway network, and baseline traffic conditions;
    iii) Description of development proposals including access arrangements and HGV routing;
    iv) Review of the traffic generating potential of the proposed development;
    v) Highways analysis including percentage impact assessments; and,
    vi) Summary and conclusions.

4. The following sections provide greater detail as to what each of the report chapters would cover:

2. NATIONAL AND LOCAL PLANNING POLICY CONTEXT

5. The transport policies of relevance to the application will be examined and summarised.

6. The Policies Map which supports the Wyre Local Plan confirms that the application site is located within the Hillhouse Technology Enterprise Zone (to which Policy SA4 relates). Furthermore, the Policy Map to support the SADMP identifies that the application site lies within the 'BWF5 Land at Hillhouse Industrial Estate' site which is allocated for the development of large scale built waste management facilities under Policy WM2, subject to the provision of access improvements.

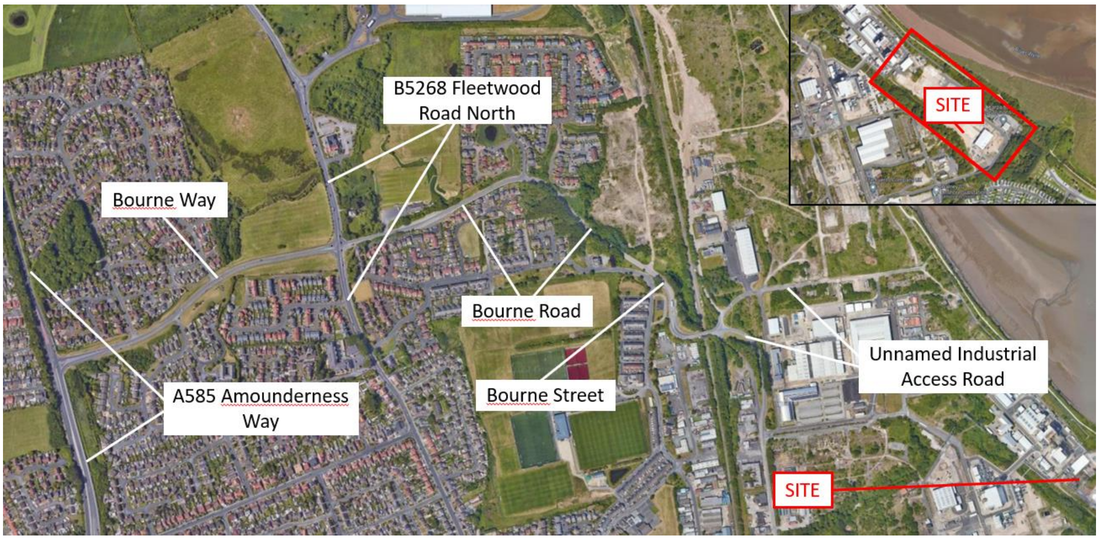
3. SITE LOCATION AND EXISTING CONDITIONS

7. The application site is located in the HIEZ on the western bank of the River Wyre and east of the A585 Amounderness Way.

8. The application site comprises previously developed land which consists largely of hardstanding and internal roadways remaining from its previous industrial use. To the west and south of the site are several heavy engineering, industrial manufacturing and distribution companies located within the Hillhouse Business Park. To the north of the site is the former Hillhouse landfill site.

9. The site is shown in relation to the local highway network on **Plan 1**.

Plan 1 – Local Highway Network



10. Personal Injury Accident (PIA) date for the highway network adjacent to the site will be obtained from the LCC 'MARIO' webmap and will cover a six-year period between 2018 and 2023 inclusive. An analysis of this will be presented within the report.

4. PROPOSED DEVELOPMENT

11. The proposed IBA facility would accept 350,000 tpa of IBA, of which 10% would be water. The remaining 315,000 tpa, following screening and maturation, would be exported off site (10% metals, 90% as IBA for use in aggregate manufacturing).

12. Vehicular access to the facility will be provided via the existing priority-controlled junction to the southwest of the site boundary, off the private industrial road infrastructure of the HIEZ via Bourne Street / Road.

13. Policy WM2 of the Site Allocation and Development Management Policies allocates the application site for large scale built waste management facilities subject to the provision of access improvements identified in Policy SA2. Policy SA2 of the SADMP safeguards land for a new access road and other access improvements to Hillhouse Industrial Estate. The Hillhouse Enterprise Zone Masterplan (November 2018) identifies (at section 6.2) that four interventions are proposed as part of the works. These comprise:

    i) The new northern access road from the roundabout on the B5268 into the northern part of the site;
    ii) Reconfiguration of the Bourne Road access gatehouse and provision of an additional entry lane;
    iii) Relocating the gatehouse further into the HIEZ; and,
    iv) Providing the north-south spine road.

14. There are no specific triggers identified for the provision of the above works, and the delivery of the new northern access remains hampered by uncertainty over the future of the Fleetwood Railway Line and the engineering standard of crossing that will be required. The status of the Fleetwood Railway Line is under review and whether the route becomes reinstated or not, it is several years from construction / delivery. Thus, creating uncertainty on the required specification to cross the railway. Given this uncertainty and the timescales involved, it would be unreasonable for the delivery of the northern access road to be a prerequisite of the IBA proposal, which can be adequately and safely accessed without it (via the existing, albeit improved, site access arrangements via Bourne Street / Road).

5. TRAFFIC GENERATION AND DISTRUBUTION

15. Given the nature of the scheme, trip rates cannot be obtained from the industry standard TRICS database. The traffic-generating potential of the scheme has therefore been calculated using a first principles approach utilising industry knowledge and information supplied by the applicant.

HGV Trips

a) The Proposed Development will have a maximum throughput of 350,000 tpa of residual waste;

b) Inclusion of importation of primary aggregates for blending;

c) The Proposed Development will operate all-year round for 304 days per annum;

d) Deliveries will be carried out 6 days a week (there will be no deliveries on Sundays or Bank Holidays);

e) Whilst processing facilities at the Proposed Development would operate 24hrs a day, it is proposed that HGV movements would be restricted to agreed delivery periods (06:00 – 19:00 on weekdays and 06:00-19:00 on Saturdays); and

f) Deliveries and exports would be undertaken by articulated HGVs with payloads of 27 and 20 tonnes.

Table 1 – Hillhouse HGV Trip Generation

Material	Annual Tonnage	Vehicle Type	Vehicle Capacity	Loads per annum	Loads per day	Movements per day
IN						
IBA In	350,000	Artic	27	12,963	43	86
Primary Aggregate In	10,800t	Artic	27	400	2	4
OUT						
Metals Out	35,000	Artic	27	1,296	5	10
IBAA Out	280,000	8 Wheeler	20	14540	48	96
Total						**196**
Assumes 10% metal content and 10% moisture loss during maturation						

Staff Trips

16. Staff Numbers will be 9 people per shift, with two shifts throughout 24 hours. The two 12 hour shifts will take place from 06:00 – 18:00 and 18:00 – 06:00.

17. In summary, the Proposed Development is therefore expected to result in up to around 232 two-way vehicle trips per weekday (including both staff and HGV trips) and approximately 16 two-way vehicle movements during the traditional AM (08:00 – 09:00) and 23 two-way vehicle movements during the traditional PM (17:00 – 18:00) peak hours.

Traffic Distribution

18. The exact source of waste and associated distribution is unknown at this stage, HGV deliveries will nonetheless route via appropriate routes through the strategic highway network, minimising impact on sensitive receptors and avoiding residential areas where possible or where such movements are expressly prohibited (i.e. weight restrictions).

19. In order to provide an initial reasonable forecast of likely HGV distribution, and in order to inform the scope of study required for the surrounding highway network, it is estimated that approximately 70% of development-related HGV movements will route via a southerly direction along the A585 Amounderness Way to / from the A585 Amounderness Way / Bourne Way signalised junction, and 30% of HGVs would travel via a northerly direction to / from the junction.

20. As an additional sensitivity test, and in order to ensure that local links are robustly able to accommodate the Proposed Development traffic generation, a separate scenario will also be considered in which 100% of HGV traffic is distributed in a southernly direction along the A585 Amounderness Way. This represents a theoretical 'worst case' in terms of traffic distribution, with regards to the likely origin of waste materials and the layout of the surrounding strategic road network.

6. TRAFFIC IMPACT ANALYSIS

21. Traffic Impact – The traffic impact of the proposals will be presented within a comprehensive report chapter.

22. The local highway network peak hour time periods (of 08:00-09:00 and 16:00-17:00) would be assessed. These time periods have been derived from examination and analysis of traffic surveys procured during September 2022.

23. Additionally, a 12 hour weekday operation delivery period (07:00 to 19:00) will be considered (the Annual Average Weekday Traffic (AAWT)). Since the core delivery of waste will occur between 06:00 and 19:00 this represents the 'worst case' period in terms of traffic generation compared to the 24-hour operating period.

24. Both the application year along with a future design year (5 years beyond the application year) will be derived using TEMPRO traffic growth assumptions.

25. The proposed future baseline scenarios will include development traffic generated by nearby committed developments. If there are any particular committed developments that are required to be included, then these should be confirmed by the Local Highway Authority (LHA) at the soonest opportunity.

26. Operational impact of the proposal upon the surrounding highway network. Traffic-related changes will be established via the comparative assessment between the following two core scenarios:

    i) Baseline 'Do Nothing' Scenario: Background network traffic + any committed development traffic movements (Opening year and future year: (application year plus 5), AM and PM); and,
    ii) 'Do Something' Scenario: Background network traffic + committed development traffic movements + the Proposed Development traffic (Opening year and future year: (application year plus 5), AM and PM).

Study Area

27. The scope of the junction analysis study area will be decided by the distribution of trips outlined above. Although since superseded, the DfT's "*Guidance on Transport Assessment*" (GoTA) document (2007) indicates, in para 2.11, that detailed capacity assessment work should only be necessary where a new development might generate 30 or more two-way vehicle trips per hour. Whilst there is no suggestion that 30 two-way peak hour vehicle trips would, in themselves, cause a detrimental impact, it is a useful point of reference to consider the scale and nature of assessment work that is required.

28. With regards to the above it is considered that the modest traffic generation of the proposed development would not give rise to any material impact on highway safety or capacity beyond the immediate local highway network as trips will disperse the further they travel from the site. It is therefore considered that detailed junction capacity assessments will not be necessary in this case.

29. Nonetheless for completeness, the capability of the surrounding highway network to accommodate development trips will be considered on a percentage link impact basis. The proposed percentage impact study area is illustrated below;

    i) Link 1: Bourne Road west of the Bourne Street / unnamed road crossroads;
    ii) Link 2: Bourne Way west of the Bourne Road / Fleetwood Road North signalised junction;

iii) Link 3: Amounderness Way north of the Amounderness Way / Bourne Way signalised junction; and,

iv) Link 4: Amounderness Way south of the Amounderness Way / Bourne Way signalised junction.

Plan 2 – Proposed Percentage Impact Study Area

30. If additional junction / link assessments are required by the LHA then this should be raised at the soonest opportunity.

7. SUMMARY AND CONCLUSION

31. The TA report will be summarised with a series of conclusions.

Laura Mackey
AXIS
Well House Barns
Bretton
Chester
CH4 0DH

Email: Devman@lancashire.gov.uk
Phone: 01772 534130
:
Date: 22nd March 2024

Dear Ms Mackey

Application: PRE/2024/0008
Request for pre application advice regarding IBA Recycling Facility at Hillhouse International Enterprise Zone, Thornton-Cleveleys

I refer to your letter of 31st January 2024 requesting pre application advice on behalf of Fortis UK Ltd in relation to a proposed incinerator bottom ash proposal at the above site.

This advice is based upon the description of development as set out in your letter and subsequent email regarding covering of the storage area. I understand that the proposed development would comprise a recycling facility for bottom ash generated from incinerator / waste to energy sites. The material would be processed into an aggregate suitable for use in the construction industry. Metals would be extracted for separate recycling. The imported materials would first be stored in external windrows being processing within the plant by screening and if necessary crushing before transport to a covered storage area

If there is any significant change to the development that would have environmental implications you may wish to seek further advice.

In this pre application advice I have set out the likely information requirements, the relevant planning policies and my general planning advice in terms of the issues you would need to discuss in any planning application.

This pre application advice is provided without prejudice to the determination of any planning application.

Relevant planning policies :

National Planning Policy Framework:
Paragraphs 11, 115 – 117, 135, 165 – 173, 175, 180, 185, 188, 189 – 192, 194, 216 are particularly relevant to your proposal.

National Planning Policy for Waste

Lancashire Minerals and Waste Core Strategy and Local Plan : These documents were adopted in February 2009 and September 2013 respectively and the plan period was for these documents was between 2001 and 2021. Both plans are therefore time expired and some of the policies may now be considered as out of date in terms of paragraph 11 of the NPPF. However, some of the policies may still be considered relevant particularly where they are consistent with the NPPF and the other policies of the Development Plan.

Lancashire Minerals and Waste Core Strategy :- Policies CS3, CS7, CS8 and CS9

Lancashire Minerals and Waste Local Plan : Policies WM1, WM2, WM4, DM2

Wyre Local Plan : Policies SP1, SP2, SP7, SP8, CDMP1, CDMP2, CDMP3, CDMP4, CDMP6, EP2, SA4

Wyre Hillhouse Enterprise Zone Masterplan

Information Requirements for Planning Application

- Completed application forms and certificates
- Red line plan
- A supporting statement providing in detail information on the following matters : the waste management processes to be undertaken, a comprehensive description of the materials to be imported and processed, methods of processing, tonnages to be imported, the anticipated end use of the material, the likely environmental impacts of the proposals and how such impacts would be mitigated. The supporting statement should also describe the likely level of vehicle movements to the site and hours of operation for processing and also import / export of materials.
- Detailed plan(s) showing the layout of the site including the positions of any new buildings, external plant and equipment, vehicular access points and circulation routes and any external storage /processing areas. Any plans should be referenced to the supporting statement
- Plan(s) showing elevations of buildings and if necessary, the design of any external storage areas.
- Flood Risk Assessment – the site is in Flood Zone 3. Finished floor levels of the buildings must be above the undefended appropriate design flood level plus an allowance for climate change for the life of the development. If the finished flood levels cannot be above this level, the application / FRA should explain the reasons and identify / explain flood proofing / resilience measures that will protect occupants and their property up to that floor level.
- Sustainable drainage assessment : There is further guidance on this on the County Council's planning webpage. You should complete the Lancashire SuDS pro forma. The sustainable drainage systems should be designed to ensure that run off from the site is controlled to the green field rate plus a suitable allowance for climate change. The sustainable drainage measures to be used should be explained in the application.
- Drainage – the site design also appears to require a conveyor crossing of the water course (Royles Brook) dividing the two areas of the site. Information should be submitted showing the design of the conveyor crossing with respect to the

watercourse to demonstrate that the free flow of the watercourse would not be affected including in flood conditions. There should also be demonstration that the conveyor crossing would not have any implications for water quality or contamination.

- Ecology : the site is situated approximately 50 metres from the boundary of the Wyre Estuary SSSI / SPA. The application should be accompanied by sufficient information (a shadow Habitats Regulations Assessment) to allow the County Council to conclude that there would be no likely significant effect on the SPA and the special interest features for which it is designated. The assessment should include factors such as visual effects, disturbance during construction / operation and control of pollution from site run off and the mitigation measures that would be employed.
- Protected species – it appears that there are some existing buildings on the site which would be demolished as part of the development. If any demolition works are proposed, the existing buildings should be assessed for their value for bat species or barn owls. Any assessments / surveys should be undertaken at the correct times of the year and use the accepted methodologies. If mitigation is required, details of the mitigation measures should be included within the application.
- Completed Biodiversity Net Gain Assessment spreadsheet based upon a recent ecological survey of the site to map broad habitat types
- Tree survey. It is appreciated that the site is a brown field location. However, from air photograph information it appears that there are several areas of trees on the site particularly along the eastern boundary and alongside the water course which divides the two parts of the site. An assessment should be undertaken of the existing trees and other vegetation and identification of which trees or other vegetation would require removal.
- Noise assessment – to assess the existing background noise levels at the nearest residential properties and to assess the likely noise impacts from the proposed development based upon an assessment of the noise levels that would be produced from the plant and equipment and processing activities that would be undertaken. The assessment should be undertaken in accordance with the methodology in BS4142 and should take account of any particular tonal or impulsive characteristics of the noise that would be produced. Given that night time operations are proposed, the assessment should include an assessment of night time noise impacts including the measurement of background noise levels during the night time period. The assessment should include details of any mitigation measures that are required to reduce noise levels from the proposed operation.
- Dust assessment – the application should include an assessment of dust impacts. The assessment should provide sufficient information to understand the chemical composition of the materials to be processed and any likely human health implications that might arise from dust impacts. An assessment of particulate matter (pm10 and pm 2.5) should also be undertaken.
- Highways – the proposal would generate a significant volume of HGV movements. The planning application should include a transport assessment to demonstrate that the highway network between the site and the A585 has the

capacity to accommodate the proposed numbers of HGVs without impacting upon highway capacity or safety.
- An assessment of the impacts on the public right of way (Wyre Way) running along the eastern boundary of the site. Some cross sectional detail or visualisations might assist with this.
- The site is previously developed land and therefore there is the potential for ground and surface water contamination from any construction activities. A desk top study should be carried out and then a more detailed site investigation undertaken if required by the results of the desk top study.
- Landscape / Visual – I note that you have included this topic within your pre application letter. Given the context of the proposed site, I would not regard this topic as significant but given the size of some of the buildings proposed I agree that there would be some benefit in illustrating the landscape impacts of the scheme. The viewpoints that you have listed in Table 1 of your letter would appear to be appropriate.

Comments on Proposals

- Waste hierarchy / proximity principle: The National Planning Policy for Waste requires waste management to take place at the highest possible level in the waste hierarchy. I would expect this proposal to secure the management of IBA at a higher level in the hierarchy but it would be useful to know how the material is currently managed – is it landfilled? It would also be useful to understand where the IBA material would be sourced from. Although I acknowledge that this is not necessarily a determining factor, as far as I am aware there are currently no sites in Lancashire that are producing IBA.
- Use of material ; It would be useful to provide some more information on the uses of the recycling material – does it always have to be used in conjunction with primary aggregates material? What kinds of application can the material be used for and are there any limitations on its use in construction products? What is the anticipated distribution distance of the material?
- The proposal would generally be supported by Policy WM2 / WM4 of the Lancashire Minerals and Waste Local Plan. However, you will note that the support in these policies is conditional upon the provision of the access improvements identified in policy SA2. This is the northern access to the Hillhouse site thereby providing an alternative to the current industrial estate access via Bourne Road. You will note that the allocation of the Hillhouse site for an area of development within the Wyre Local Plan does not contain the same policy requirement neither does the Hillhouse Enterprise zone masterplan. There is therefore a conflict between the development plan policies relating to this site. The Wyre Local Plan and Masterplan policies are more recent than the LMWLP and it could be concluded that the LMWLP are out of date and are superseded.

  However Bourne Road appears to be increasingly residential in character with houses currently being constructed up to its frontage. It is therefore debatable if this road is suitable as an access to the site in terms of residential amenity and if further development on the industrial estate should only be brought forward once there is a firm commitment to delivering the northern access road. This is particularly the case given the relatively large throughput of the proposed facility and associated HGV traffic generation. If the proposal is to be acceptable in terms of the use of Bourne Road, I think consideration needs to be given to the times when HGV's will access the site. Early morning / evening and weekend movements will be more problematic.

- The other main issue will be dust impacts given the nature of the materials to be imported and the proposed methods of processing. There don't appear to be any residential properties in close proximity to the site but there is a static caravan site located approximately 40 metres to the south of the site. It will be important for you to properly and fully characterise the nature of the materials that will be imported to the site. It was my understanding that ash type materials from waste to energy plants can be classified as hazardous wastes. I note that you have discussed this issue in your pre application letter but I think it would be helpful to explain under what circumstances the IBA can be classified as hazardous and when it is non hazardous.
- Night time noise levels will also need careful consideration given your wish to process material during the night. You will need to be clear what activities will be undertaken during the night time period and the relative noise impacts.
- I have read your email of 25th March 2024 regarding enclosure of the windrow stockpiles within a building and I agree that this would be of benefit in addressing the dust impacts of the operation if the stockpiling was to otherwise take place in the open air.

Please do not hesitate to contact me if you wish to discuss further the content of this letter. I have also attached a copy of my EIA screening opinion.

Yours sincerely

Jonathan Haine

Team Leader – Development Management

Appendix 3 – Traffic Survey Data

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - West

21 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	21/09/20	2	0	1	0	0	0	0	0	0	0	1	0	0	20.3	-	6.2
0100	21/09/20	3	0	1	0	2	0	0	0	0	0	0	0	0	20	-	4.9
0200	21/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	21/09/20	2	0	0	0	0	0	0	0	0	1	1	0	0	22.8	-	7.8
0400	21/09/20	4	0	2	0	1	0	0	0	0	0	1	0	0	23.2	-	0.4
0500	21/09/20	23	0	19	0	1	1	1	0	0	0	1	0	0	26.1	30.8	4.5
0600	21/09/20	40	1	34	0	2	0	1	0	0	0	2	0	0	27.4	31.2	5.8
0700	21/09/20	23	0	16	0	2	3	0	0	2	0	0	0	0	22.1	26.7	3.8
0800	21/09/20	26	0	18	0	4	1	2	0	1	0	0	0	0	21.8	24.2	4.4
0900	21/09/20	47	0	31	1	12	1	1	0	0	0	0	1	0	25	30	4.3
1000	21/09/20	50	0	27	0	21	1	0	0	0	0	1	0	0	22.5	27	4.1
1100	21/09/20	40	1	25	0	8	3	1	0	0	2	0	0	0	22.3	26.3	3.9
1200	21/09/20	90	1	72	0	15	0	0	0	0	2	0	0	0	22.6	26.3	3.8
1300	21/09/20	52	2	34	0	12	2	0	0	1	1	0	0	0	22.6	26	3.5
1400	21/09/20	55	2	34	0	14	3	1	0	0	1	0	0	0	23	27.9	4.1
1500	21/09/20	88	4	63	0	19	2	0	0	0	0	0	0	0	23.4	27.5	4
1600	21/09/20	158	7	135	0	16	0	0	0	0	0	0	0	0	24.4	28.2	3.9
1700	21/09/20	123	5	108	0	7	0	1	0	1	0	1	0	0	24	27.6	3.8
1800	21/09/20	107	6	94	0	7	0	0	0	0	0	0	0	0	24.5	28.9	4.2
1900	21/09/20	12	1	9	0	2	0	0	0	0	0	0	0	0	23.5	26.2	2.9
2000	21/09/20	11	1	10	0	0	0	0	0	0	0	0	0	0	24	27.6	3.2
2100	21/09/20	9	0	7	0	1	0	0	0	0	0	1	0	0	28.6	-	6.5
2200	21/09/20	4	0	3	0	1	0	0	0	0	0	0	0	0	19.1	-	5.1
2300	21/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	21.7	-	-
00-07	**-**	**74**	**1**	**57**	**0**	**6**	**1**	**2**	**0**	**0**	**1**	**6**	**0**	**0**	**26.1**	**30.5**	**5.5**
07-10	**-**	**96**	**0**	**65**	**1**	**18**	**5**	**3**	**0**	**3**	**0**	**0**	**1**	**0**	**23.5**	**28**	**4.4**
10-16	**-**	**375**	**10**	**255**	**0**	**89**	**11**	**2**	**0**	**1**	**6**	**1**	**0**	**0**	**22.8**	**26.8**	**3.9**
16-19	**-**	**388**	**18**	**337**	**0**	**30**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**24.3**	**28.3**	**4**
19-00	**-**	**37**	**2**	**30**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**24.3**	**29.4**	**5**
00-00	**-**	**970**	**31**	**744**	**1**	**147**	**17**	**8**	**0**	**5**	**7**	**9**	**1**	**0**	**23.8**	**28**	**4.3**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - West

22 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
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0100	22/09/20:	1	0	0	0	0	0	0	0	0	0	1	0	0	16.2	-	-
0200	22/09/20:	2	0	1	0	1	0	0	0	0	0	0	0	0	21.8	-	0.9
0300	22/09/20:	1	0	0	0	1	0	0	0	0	0	0	0	0	22.3	-	-
0400	22/09/20:	3	0	2	0	0	0	0	0	0	0	1	0	0	23.1	-	1.9
0500	22/09/20:	26	0	24	1	0	0	0	0	0	0	1	0	0	26.4	29.9	3.8
0600	22/09/20:	29	1	21	0	4	1	1	0	0	0	1	0	0	27.9	32.8	5.8
0700	22/09/20:	28	1	20	0	3	0	2	0	0	0	1	0	1	20.2	24.3	5.2
0800	22/09/20:	27	0	15	0	7	3	0	1	0	1	0	0	0	22.6	27.9	4.6
0900	22/09/20:	48	0	29	1	12	3	0	0	1	2	0	0	0	21.5	26.1	4
1000	22/09/20:	41	0	26	0	12	1	0	0	1	0	1	0	0	22.5	26.9	4.4
1100	22/09/20:	54	1	35	1	13	1	3	0	0	0	0	0	0	21.4	25.4	4.2
1200	22/09/20:	96	2	73	0	17	1	2	0	0	1	0	0	0	23.3	27.5	4.1
1300	22/09/20:	57	0	41	0	14	0	1	0	0	1	0	0	0	22.4	26.8	4
1400	22/09/20:	65	2	42	0	18	1	1	0	0	1	0	0	0	21.7	25.2	4.2
1500	22/09/20:	82	4	66	0	7	1	0	1	0	2	1	0	0	22.6	26.9	4.1
1600	22/09/20:	153	5	135	1	11	0	0	1	0	0	0	0	0	23.9	27.4	3.5
1700	22/09/20:	109	8	88	0	12	0	0	0	1	0	0	0	0	23.8	29.1	4.5
1800	22/09/20:	96	5	87	0	4	0	0	0	0	0	0	0	0	24.4	28.9	4.5
1900	22/09/20:	10	0	8	0	1	0	0	0	0	0	1	0	0	21.6	-	6.2
2000	22/09/20:	7	0	6	0	1	0	0	0	0	0	0	0	0	24.6	-	3.3
2100	22/09/20:	2	0	2	0	0	0	0	0	0	0	0	0	0	27.3	-	1.4
2200	22/09/20:	4	0	1	0	2	0	0	0	0	0	1	0	0	21.1	-	3.1
2300	22/09/20:	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
00-07	**-**	**63**	**1**	**49**	**1**	**6**	**1**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**26.7**	**31.8**	**5.1**
07-10	**-**	**103**	**1**	**64**	**1**	**22**	**6**	**2**	**1**	**1**	**3**	**1**	**0**	**1**	**21.4**	**26.1**	**4.6**
10-16	**-**	**395**	**9**	**283**	**1**	**81**	**5**	**7**	**1**	**1**	**5**	**2**	**0**	**0**	**22.5**	**26.7**	**4.2**
16-19	**-**	**358**	**18**	**310**	**1**	**27**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**24**	**28**	**4.1**
19-00	**-**	**23**	**0**	**17**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**22.9**	**27.7**	**4.9**
00-00	**-**	**942**	**29**	**723**	**4**	**140**	**12**	**10**	**3**	**3**	**8**	**9**	**0**	**1**	**23.2**	**27.7**	**4.5**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - West

23 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	23/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0100	23/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	20.8	-	1.7
0200	23/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	27.2	-	-
0300	23/09/20	3	0	1	0	2	0	0	0	0	0	0	0	0	24.2	-	4
0400	23/09/20	7	0	6	0	0	0	0	0	0	0	1	0	0	24	-	3
0500	23/09/20	21	0	18	0	2	0	0	0	0	0	1	0	0	26.2	29.8	4.8
0600	23/09/20	33	0	26	0	2	1	1	0	0	1	2	0	0	25.5	30.9	4.2
0700	23/09/20	19	0	12	1	4	0	1	1	0	0	0	0	0	24	28	3.3
0800	23/09/20	36	0	23	0	6	2	0	2	1	2	0	0	0	22.3	26.3	4.3
0900	23/09/20	49	1	38	0	7	2	0	0	0	0	1	0	0	22.8	27.8	5.4
1000	23/09/20	58	1	28	3	19	3	1	1	1	1	0	0	0	22.2	27.3	5.1
1100	23/09/20	56	1	38	0	13	1	1	0	0	1	1	0	0	23.4	27.1	4.2
1200	23/09/20	93	1	76	0	13	1	2	0	0	0	0	0	0	24	28.8	4.9
1300	23/09/20	65	0	49	0	14	1	0	0	0	1	0	0	0	23.6	28.3	4.2
1400	23/09/20	60	4	38	0	14	0	3	0	0	0	1	0	0	22.4	26.8	4.8
1500	23/09/20	98	2	82	0	10	1	2	0	1	0	0	0	0	24.8	28.2	3.4
1600	23/09/20	115	3	99	1	10	0	1	1	0	0	0	0	0	24.6	28.7	3.9
1700	23/09/20	74	6	55	1	12	0	0	0	0	0	0	0	0	25	28.6	4.4
1800	23/09/20	79	4	71	0	4	0	0	0	0	0	0	0	0	24.9	28.4	4.2
1900	23/09/20	5	0	4	0	0	0	0	0	0	0	1	0	0	21.7	-	2
2000	23/09/20	3	0	3	0	0	0	0	0	0	0	0	0	0	26.9	-	4.5
2100	23/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	24.8	-	2.7
2200	23/09/20	2	0	1	0	1	0	0	0	0	0	0	0	0	23.7	-	1.3
2300	23/09/20	3	0	3	0	0	0	0	0	0	0	0	0	0	24.1	-	2.6
00-07	**-**	**67**	**0**	**54**	**0**	**6**	**1**	**1**	**0**	**0**	**1**	**4**	**0**	**0**	**25.4**	**29.6**	**4.3**
07-10	**-**	**104**	**1**	**73**	**1**	**17**	**4**	**1**	**3**	**1**	**2**	**1**	**0**	**0**	**22.8**	**27.2**	**4.7**
10-16	**-**	**430**	**9**	**311**	**3**	**83**	**7**	**9**	**1**	**2**	**3**	**2**	**0**	**0**	**23.6**	**28.2**	**4.5**
16-19	**-**	**268**	**13**	**225**	**2**	**26**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**24.8**	**28.5**	**4.1**
19-00	**-**	**15**	**0**	**13**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**23.9**	**26.6**	**3**
00-00	**-**	**884**	**23**	**676**	**6**	**133**	**12**	**12**	**5**	**3**	**6**	**8**	**0**	**0**	**24**	**28.3**	**4.4**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - West

24 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	24/09/20	6	0	4	0	2	0	0	0	0	0	0	0	0	25	-	4.7
0100	24/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0200	24/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	24/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	35.6	-	-
0400	24/09/20	4	0	3	0	0	0	0	0	0	0	1	0	0	24.4	-	5.3
0500	24/09/20	14	2	12	0	0	0	0	0	0	0	0	0	0	26.3	31.9	4.9
0600	24/09/20	25	1	21	0	3	0	0	0	0	0	0	0	0	27.9	32	4.3
0700	24/09/20	11	0	5	0	5	0	0	0	0	0	1	0	0	23.7	30.3	4.8
0800	24/09/20	5	0	2	0	3	0	0	0	0	0	0	0	0	21.3	-	4.7
0900	24/09/20	27	1	18	1	6	0	0	0	1	0	0	0	0	24.1	27.2	4.1
1000	24/09/20	17	0	13	0	4	0	0	0	0	0	0	0	0	22.1	25	3.1
1100	24/09/20	23	0	19	0	4	0	0	0	0	0	0	0	0	24.6	28.7	3.7
1200	24/09/20	28	1	25	0	2	0	0	0	0	0	0	0	0	24.8	28.6	4.4
1300	24/09/20	20	0	18	0	2	0	0	0	0	0	0	0	0	24	27	4.6
1400	24/09/20	12	0	10	0	2	0	0	0	0	0	0	0	0	24.2	27.1	2.6
1500	24/09/20	30	0	26	1	3	0	0	0	0	0	0	0	0	24.8	30	5.1
1600	24/09/20	23	2	17	2	2	0	0	0	0	0	0	0	0	23.3	27.4	4.1
1700	24/09/20	33	2	30	0	1	0	0	0	0	0	0	0	0	26.6	31.8	5
1800	24/09/20	47	0	47	0	0	0	0	0	0	0	0	0	0	26.2	29.1	3
1900	24/09/20	5	0	4	0	1	0	0	0	0	0	0	0	0	24	-	8.2
2000	24/09/20	2	0	1	0	1	0	0	0	0	0	0	0	0	21	-	10
2100	24/09/20	4	0	4	0	0	0	0	0	0	0	0	0	0	20.3	-	2.9
2200	24/09/20	4	1	3	0	0	0	0	0	0	0	0	0	0	27.9	-	3.2
2300	24/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
00-07	**-**	**50**	**3**	**41**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**27**	**31.7**	**4.7**
07-10	**-**	**43**	**1**	**25**	**1**	**14**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**23.7**	**27.9**	**4.3**
10-16	**-**	**130**	**1**	**111**	**1**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24.2**	**28.1**	**4.2**
16-19	**-**	**103**	**4**	**94**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**25.7**	**29.3**	**4.1**
19-00	**-**	**15**	**1**	**12**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**23.6**	**30.5**	**6.3**
00-00	**-**	**341**	**10**	**283**	**4**	**41**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**25**	**29.4**	**4.5**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - West

25 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	25/09/20:	5	0	3	0	2	0	0	0	0	0	0	0	0	22.7	-	3.4
0100	25/09/20:	1	0	1	0	0	0	0	0	0	0	0	0	0	27.3	-	-
0200	25/09/20:	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	25/09/20:	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0400	25/09/20:	3	0	1	0	0	0	0	0	0	0	2	0	0	22.1	-	1.6
0500	25/09/20:	13	1	11	0	1	0	0	0	0	0	0	0	0	25.4	30.5	3.3
0600	25/09/20:	24	1	21	0	1	0	0	0	0	0	1	0	0	28.9	33.6	3.9
0700	25/09/20:	5	0	3	0	1	0	0	0	0	0	1	0	0	25.3	-	3.1
0800	25/09/20:	8	0	5	1	1	0	0	0	0	0	1	0	0	23.9	-	4.1
0900	25/09/20:	22	0	17	0	5	0	0	0	0	0	0	0	0	23.9	30	5.1
1000	25/09/20:	11	1	9	0	0	0	0	0	0	0	1	0	0	21.5	26.8	5.3
1100	25/09/20:	7	0	7	0	0	0	0	0	0	0	0	0	0	23.5	-	2.8
1200	25/09/20:	13	1	10	0	2	0	0	0	0	0	0	0	0	25.2	30.2	4.8
1300	25/09/20:	22	0	17	1	3	0	0	0	1	0	0	0	0	23.8	28	4.3
1400	25/09/20:	13	0	9	0	3	0	0	0	0	0	1	0	0	21.8	27.9	5.8
1500	25/09/20:	26	2	22	1	1	0	0	0	0	0	0	0	0	24.3	28.7	4
1600	25/09/20:	15	0	12	0	3	0	0	0	0	0	0	0	0	26.6	33.7	6.3
1700	25/09/20:	26	1	24	0	1	0	0	0	0	0	0	0	0	27.3	31.2	3.7
1800	25/09/20:	55	1	54	0	0	0	0	0	0	0	0	0	0	26.5	29.7	4.3
1900	25/09/20:	5	1	3	0	1	0	0	0	0	0	0	0	0	23.8	-	7.7
2000	25/09/20:	3	0	2	0	0	0	0	0	1	0	0	0	0	23.6	-	5.3
2100	25/09/20:	4	0	4	0	0	0	0	0	0	0	0	0	0	26.7	-	4.2
2200	25/09/20:	1	0	1	0	0	0	0	0	0	0	0	0	0	28.9	-	-
2300	25/09/20:	1	0	1	0	0	0	0	0	0	0	0	0	0	22.1	-	-
00-07	**-**	**46**	**2**	**37**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**26.7**	**31.7**	**4.2**
07-10	**-**	**35**	**0**	**25**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**24.1**	**29.8**	**4.5**
10-16	**-**	**92**	**4**	**74**	**2**	**9**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**23.6**	**28**	**4.6**
16-19	**-**	**96**	**2**	**90**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26.7**	**31.2**	**4.4**
19-00	**-**	**14**	**1**	**11**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**24.8**	**31**	**5.5**
00-00	**-**	**283**	**9**	**237**	**3**	**25**	**0**	**0**	**0**	**2**	**0**	**7**	**0**	**0**	**25.3**	**30**	**4.7**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - West

26 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	26/09/20	2	0	1	0	1	0	0	0	0	0	0	0	0	21.9	-	0.9
0100	26/09/20	1	0	0	0	1	0	0	0	0	0	0	0	0	21	-	-
0200	26/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	26/09/20	1	0	0	0	1	0	0	0	0	0	0	0	0	30.4	-	-
0400	26/09/20	4	0	1	0	1	0	0	0	0	0	2	0	0	23.3	-	5.9
0500	26/09/20	22	2	13	0	2	0	0	0	0	0	5	0	0	25.3	31	4.6
0600	26/09/20	40	2	32	2	1	1	0	0	0	0	2	0	0	24.7	30.1	5.2
0700	26/09/20	16	0	13	0	1	1	0	0	0	0	1	0	0	23.4	26.3	2.1
0800	26/09/20	36	0	27	0	4	2	0	0	1	1	1	0	0	22.7	25.2	2.9
0900	26/09/20	46	0	30	0	8	1	0	0	2	2	3	0	0	21.6	26.5	4.6
1000	26/09/20	46	0	31	1	14	0	0	0	0	0	0	0	0	23.1	26	3.8
1100	26/09/20	47	0	31	0	13	0	0	0	0	2	1	0	0	23.1	27.5	3.9
1200	26/09/20	84	0	72	0	10	2	0	0	0	0	0	0	0	22.6	27.4	3.9
1300	26/09/20	46	0	34	1	6	2	0	0	0	3	0	0	0	22.7	27.1	4.2
1400	26/09/20	47	0	31	1	11	2	0	0	0	2	0	0	0	21.5	27.3	4.6
1500	26/09/20	68	4	49	0	12	1	0	0	1	1	0	0	0	23.3	27.1	3.9
1600	26/09/20	152	3	135	0	12	2	0	0	0	0	0	0	0	23.6	27.3	3.8
1700	26/09/20	119	5	105	0	7	0	0	0	1	0	1	0	0	24.6	28.7	4.2
1800	26/09/20	96	5	87	0	4	0	0	0	0	0	0	0	0	25.3	28.5	4
1900	26/09/20	6	1	5	0	0	0	0	0	0	0	0	0	0	22.1	-	5.5
2000	26/09/20	8	0	5	0	2	0	0	0	0	1	0	0	0	26.7	-	4.1
2100	26/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	26	-	4.7
2200	26/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2300	26/09/20	3	0	3	0	0	0	0	0	0	0	0	0	0	36.5	-	9.6
00-07	**-**	**70**	**4**	**47**	**2**	**7**	**1**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**24.7**	**30.3**	**4.9**
07-10	**-**	**98**	**0**	**70**	**0**	**13**	**4**	**0**	**0**	**3**	**3**	**5**	**0**	**0**	**22.3**	**25.8**	**3.7**
10-16	**-**	**338**	**4**	**248**	**3**	**66**	**7**	**0**	**0**	**1**	**8**	**1**	**0**	**0**	**22.7**	**27.2**	**4.1**
16-19	**-**	**367**	**13**	**327**	**0**	**23**	**2**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**24.3**	**28.2**	**4**
19-00	**-**	**19**	**1**	**15**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**26.7**	**32**	**7**
00-00	**-**	**892**	**22**	**707**	**5**	**111**	**14**	**0**	**0**	**5**	**12**	**16**	**0**	**0**	**23.6**	**27.7**	**4.3**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - East

20 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	20/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0100	20/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0200	20/09/20	1	0	0	0	1	0	0	0	0	0	0	0	0	26.9	-	-
0300	20/09/20	3	0	2	0	1	0	0	0	0	0	0	0	0	20.7	-	2.7
0400	20/09/20	3	0	2	0	1	0	0	0	0	0	0	0	0	24.2	-	4.5
0500	20/09/20	78	10	64	0	3	0	1	0	0	0	0	0	0	19.7	24.2	4.8
0600	20/09/20	84	3	78	0	3	0	0	0	0	0	0	0	0	20.8	24.3	3.3
0700	20/09/20	160	6	133	1	16	3	0	1	0	0	0	0	0	16.6	22.4	5.3
0800	20/09/20	137	1	111	4	18	1	1	0	0	1	0	0	0	19.1	23	3.8
0900	20/09/20	76	1	57	0	14	2	0	0	0	0	2	0	0	20.4	23.5	3.7
1000	20/09/20	65	0	47	0	15	1	1	0	0	1	0	0	0	21.2	25.3	3.7
1100	20/09/20	36	0	21	0	10	1	2	0	0	1	1	0	0	22.4	26.9	3.7
1200	20/09/20	76	1	57	0	17	0	1	0	0	0	0	0	0	20.5	24.1	3.3
1300	20/09/20	70	1	52	0	15	1	0	0	0	1	0	0	0	20.7	23.8	4.4
1400	20/09/20	31	1	17	0	11	2	0	0	0	0	0	0	0	22.1	26.1	3.9
1500	20/09/20	35	0	15	1	11	0	3	0	2	1	2	0	0	20.1	23.9	3.5
1600	20/09/20	34	1	25	0	5	2	0	0	0	0	1	0	0	21.7	25.7	3.6
1700	20/09/20	37	0	28	0	3	1	0	1	3	1	0	0	0	22.6	25.6	3.3
1800	20/09/20	21	1	17	1	2	0	0	0	0	0	0	0	0	24	29.8	4.6
1900	20/09/20	11	0	10	0	1	0	0	0	0	0	0	0	0	21.7	26.1	3.5
2000	20/09/20	3	0	2	0	1	0	0	0	0	0	0	0	0	21.5	-	5.5
2100	20/09/20	5	1	4	0	0	0	0	0	0	0	0	0	0	24.5	-	1.8
2200	20/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	18.8	-	4
2300	20/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
00-07	**-**	**169**	**13**	**146**	**0**	**9**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**20.4**	**24.3**	**4.1**
07-10	**-**	**373**	**8**	**301**	**5**	**48**	**6**	**1**	**1**	**0**	**1**	**2**	**0**	**0**	**18.3**	**22.9**	**4.7**
10-16	**-**	**313**	**3**	**209**	**1**	**79**	**5**	**7**	**0**	**2**	**4**	**3**	**0**	**0**	**21**	**24.8**	**3.8**
16-19	**-**	**92**	**2**	**70**	**1**	**10**	**3**	**0**	**1**	**3**	**1**	**1**	**0**	**0**	**22.6**	**25.9**	**3.8**
19-00	**-**	**21**	**1**	**18**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22.1**	**25.9**	**3.7**
00-00	**-**	**968**	**27**	**744**	**7**	**148**	**14**	**9**	**2**	**5**	**6**	**6**	**0**	**0**	**20**	**24.3**	**4.5**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - East

21 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	21/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0100	21/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	19.2	-	-
0200	21/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	21/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	19.9	-	4.2
0400	21/09/20	4	0	4	0	0	0	0	0	0	0	0	0	0	21.3	-	2.7
0500	21/09/20	67	12	51	0	3	1	0	0	0	0	0	0	0	19.3	24.4	4.9
0600	21/09/20	93	4	88	0	1	0	0	0	0	0	0	0	0	21.5	25.9	4.3
0700	21/09/20	180	10	140	0	27	2	1	0	0	0	0	0	0	18.9	23.1	4.1
0800	21/09/20	136	2	114	0	18	0	2	0	0	0	0	0	0	20.3	23.8	3.7
0900	21/09/20	63	1	48	0	13	0	1	0	0	0	0	0	0	20.8	23.6	3.5
1000	21/09/20	64	0	41	0	19	2	0	0	1	0	1	0	0	20.9	25.2	3.6
1100	21/09/20	38	3	19	0	13	2	1	0	0	0	0	0	0	20	25.1	4.3
1200	21/09/20	69	2	52	0	13	2	0	0	0	0	0	0	0	19.7	22.9	4.3
1300	21/09/20	57	1	43	0	12	1	0	0	0	0	0	0	0	21	25.3	3.9
1400	21/09/20	36	1	21	1	8	2	2	0	1	0	0	0	0	21.5	25.3	3.7
1500	21/09/20	34	0	18	0	9	1	1	1	2	1	1	0	0	21.7	24.6	3.3
1600	21/09/20	29	0	18	2	8	1	0	0	0	0	0	0	0	22.2	25.4	3.3
1700	21/09/20	41	1	31	1	5	1	0	0	0	1	1	0	0	21.9	25.4	4
1800	21/09/20	26	1	20	0	3	1	0	0	0	0	1	0	0	23.2	27.9	3.7
1900	21/09/20	12	0	11	0	1	0	0	0	0	0	0	0	0	21.2	24.6	2.5
2000	21/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	24.9	-	5.3
2100	21/09/20	3	0	3	0	0	0	0	0	0	0	0	0	0	25.9	-	3.3
2200	21/09/20	4	0	4	0	0	0	0	0	0	0	0	0	0	29.5	-	3.4
2300	21/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	29.2	-	-
00-07	**-**	**167**	**16**	**146**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20.6**	**25**	**4.6**
07-10	**-**	**379**	**13**	**302**	**0**	**58**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**19.7**	**23.5**	**4**
10-16	**-**	**298**	**7**	**194**	**1**	**74**	**10**	**4**	**1**	**4**	**1**	**2**	**0**	**0**	**20.7**	**24.7**	**3.9**
16-19	**-**	**96**	**2**	**69**	**3**	**16**	**3**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**22.3**	**25.8**	**3.7**
19-00	**-**	**22**	**0**	**21**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24.1**	**29**	**4.4**
00-00	**-**	**962**	**38**	**732**	**4**	**153**	**16**	**8**	**1**	**4**	**2**	**4**	**0**	**0**	**20.5**	**24.4**	**4.1**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - East

22 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	22/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0100	22/09/20	2	0	1	0	0	1	0	0	0	0	0	0	0	21.3	-	9.3
0200	22/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	22/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0400	22/09/20	5	0	5	0	0	0	0	0	0	0	0	0	0	20.1	-	3
0500	22/09/20	66	9	54	0	3	0	0	0	0	0	0	0	0	19.6	25.3	5.6
0600	22/09/20	88	4	78	0	6	0	0	0	0	0	0	0	0	22.2	25.4	3.9
0700	22/09/20	171	8	144	1	14	1	2	0	0	1	0	0	0	16.6	21.7	5.3
0800	22/09/20	111	4	86	0	17	3	0	0	1	0	0	0	0	18.8	23	4.4
0900	22/09/20	58	2	42	0	10	2	1	0	0	0	1	0	0	20.2	23.8	4
1000	22/09/20	59	0	39	0	16	1	2	0	1	0	0	0	0	20.5	24.5	3.6
1100	22/09/20	32	0	16	0	13	2	0	0	0	0	1	0	0	21.6	25.4	3.5
1200	22/09/20	74	0	51	0	19	2	2	0	0	0	0	0	0	22	25.1	3
1300	22/09/20	79	2	54	0	19	2	2	0	0	0	0	0	0	21.3	24.9	4.2
1400	22/09/20	28	0	14	0	10	2	2	0	0	0	0	0	0	21	24.2	3.2
1500	22/09/20	35	1	19	1	11	1	1	0	0	1	0	0	0	21.5	25.9	4
1600	22/09/20	17	0	14	0	1	1	0	0	0	0	1	0	0	21.8	25.4	3.8
1700	22/09/20	39	1	31	1	4	1	0	0	0	0	1	0	0	23.1	25.6	3.1
1800	22/09/20	25	0	19	0	3	1	0	0	1	0	1	0	0	24.1	28.2	4.6
1900	22/09/20	8	0	5	0	2	1	0	0	0	0	0	0	0	20.7	-	3.1
2000	22/09/20	4	0	2	0	2	0	0	0	0	0	0	0	0	20.6	-	2.5
2100	22/09/20	4	0	4	0	0	0	0	0	0	0	0	0	0	24	-	3.8
2200	22/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2300	22/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
00-07	**-**	**161**	**13**	**138**	**0**	**9**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**21.1**	**25.3**	**4.8**
07-10	**-**	**340**	**14**	**272**	**1**	**41**	**6**	**3**	**0**	**1**	**1**	**1**	**0**	**0**	**17.9**	**22.6**	**5**
10-16	**-**	**307**	**3**	**193**	**1**	**88**	**10**	**9**	**0**	**1**	**1**	**1**	**0**	**0**	**21.3**	**24.9**	**3.7**
16-19	**-**	**81**	**1**	**64**	**1**	**8**	**3**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**23.1**	**26.6**	**3.8**
19-00	**-**	**16**	**0**	**11**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**21.5**	**26.8**	**3.3**
00-00	**-**	**905**	**31**	**678**	**3**	**150**	**21**	**12**	**0**	**3**	**2**	**5**	**0**	**0**	**20.2**	**24.6**	**4.8**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - East

23 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	23/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0100	23/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0200	23/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	23/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	22.1	-	-
0400	23/09/20	5	0	4	0	1	0	0	0	0	0	0	0	0	20.6	-	3.1
0500	23/09/20	68	9	52	0	6	0	0	0	1	0	0	0	0	19.9	25.1	5
0600	23/09/20	96	3	80	0	10	0	1	0	1	0	1	0	0	21.4	26	5.1
0700	23/09/20	154	7	129	0	15	1	0	0	0	1	1	0	0	20	23.8	4
0800	23/09/20	101	1	78	0	17	3	1	0	0	1	0	0	0	19.4	23.8	4.4
0900	23/09/20	61	0	44	0	12	3	1	0	0	1	0	0	0	20.5	23.8	3.7
1000	23/09/20	62	1	43	0	16	2	0	0	0	0	0	0	0	20.6	24.8	4.6
1100	23/09/20	31	0	16	0	10	1	3	0	0	1	0	0	0	23	27.4	3.8
1200	23/09/20	57	0	43	0	12	2	0	0	0	0	0	0	0	22	26.1	4
1300	23/09/20	77	1	54	2	16	1	1	0	1	0	1	0	0	22.4	26	3.4
1400	23/09/20	37	0	20	1	7	2	4	1	0	1	1	0	0	21.3	25.4	4.2
1500	23/09/20	35	0	18	0	12	1	2	0	1	0	1	0	0	21.8	25.3	3.3
1600	23/09/20	18	0	13	0	3	1	0	1	0	0	0	0	0	23.1	26.5	2.6
1700	23/09/20	43	4	29	0	7	2	0	0	0	1	0	0	0	21.6	25.4	3.2
1800	23/09/20	24	1	19	1	2	1	0	0	0	0	0	0	0	23.6	27.2	3.9
1900	23/09/20	6	0	5	0	1	0	0	0	0	0	0	0	0	22	-	4.7
2000	23/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	28.8	-	1
2100	23/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	22	-	3.6
2200	23/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2300	23/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	19.6	-	-
00-07	**-**	**170**	**12**	**137**	**0**	**17**	**0**	**1**	**0**	**2**	**0**	**1**	**0**	**0**	**20.8**	**25.4**	**5.1**
07-10	**-**	**316**	**8**	**251**	**0**	**44**	**7**	**2**	**0**	**0**	**3**	**1**	**0**	**0**	**19.9**	**23.8**	**4.1**
10-16	**-**	**299**	**2**	**194**	**3**	**73**	**9**	**10**	**1**	**2**	**2**	**3**	**0**	**0**	**21.8**	**25.8**	**4**
16-19	**-**	**85**	**5**	**61**	**1**	**12**	**4**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**22.5**	**26.3**	**3.4**
19-00	**-**	**11**	**0**	**10**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**23**	**29.7**	**4.6**
00-00	**-**	**881**	**27**	**653**	**4**	**147**	**20**	**13**	**2**	**4**	**6**	**5**	**0**	**0**	**21**	**25.2**	**4.3**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - East

24 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	24/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	23.1	-	3.4
0100	24/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	32.5	-	1.2
0200	24/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	24/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0400	24/09/20	3	1	2	0	0	0	0	0	0	0	0	0	0	18.2	-	3.9
0500	24/09/20	45	3	40	0	2	0	0	0	0	0	0	0	0	21.3	25.3	4
0600	24/09/20	53	0	46	1	6	0	0	0	0	0	0	0	0	23	26.7	3.4
0700	24/09/20	30	0	27	0	2	1	0	0	0	0	0	0	0	21.4	24.8	3.6
0800	24/09/20	29	0	20	1	7	0	0	0	1	0	0	0	0	21.2	25.5	4
0900	24/09/20	25	0	21	0	4	0	0	0	0	0	0	0	0	21.9	24.9	3.2
1000	24/09/20	23	0	13	0	10	0	0	0	0	0	0	0	0	23.9	28	3.9
1100	24/09/20	14	0	10	1	3	0	0	0	0	0	0	0	0	23.8	29	3.8
1200	24/09/20	20	0	17	1	2	0	0	0	0	0	0	0	0	22.5	26.4	3.6
1300	24/09/20	13	0	10	0	3	0	0	0	0	0	0	0	0	23.3	29	4.3
1400	24/09/20	8	0	5	0	2	0	0	0	0	0	1	0	0	20.3	-	5.2
1500	24/09/20	12	0	8	0	0	1	0	0	0	0	3	0	0	20.8	22.9	2.7
1600	24/09/20	15	0	8	0	4	0	0	0	0	0	3	0	0	22	26.2	3.2
1700	24/09/20	25	2	21	0	1	0	0	0	0	0	1	0	0	21.7	25.5	3.5
1800	24/09/20	11	1	9	0	1	0	0	0	0	0	0	0	0	22.2	26.8	4.4
1900	24/09/20	5	0	4	0	1	0	0	0	0	0	0	0	0	19.7	-	1.3
2000	24/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	21.3	-	-
2100	24/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	23.7	-	2.7
2200	24/09/20	4	1	3	0	0	0	0	0	0	0	0	0	0	22.1	-	1.4
2300	24/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
00-07	**-**	**105**	**4**	**92**	**1**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22.3**	**25.9**	**4**
07-10	**-**	**84**	**0**	**68**	**1**	**13**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**21.5**	**24.7**	**3.6**
10-16	**-**	**90**	**0**	**63**	**2**	**20**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**22.8**	**26.7**	**4**
16-19	**-**	**51**	**3**	**38**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**21.9**	**25.7**	**3.5**
19-00	**-**	**12**	**1**	**10**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**21.3**	**23.3**	**2.1**
00-00	**-**	**342**	**8**	**271**	**4**	**48**	**2**	**0**	**0**	**1**	**0**	**8**	**0**	**0**	**22.1**	**25.7**	**3.8**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - East

25 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	25/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	23.1	-	7.2
0100	25/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	24.5	-	5.8
0200	25/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	25/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	23.9	-	-
0400	25/09/20	2	1	1	0	0	0	0	0	0	0	0	0	0	18.1	-	7.7
0500	25/09/20	44	0	42	0	2	0	0	0	0	0	0	0	0	22.5	26.7	3.8
0600	25/09/20	40	1	36	1	2	0	0	0	0	0	0	0	0	22.9	26.4	3.7
0700	25/09/20	28	0	26	1	1	0	0	0	0	0	0	0	0	21.8	26.9	3.6
0800	25/09/20	14	0	11	1	2	0	0	0	0	0	0	0	0	22.7	26.4	3.2
0900	25/09/20	13	0	7	0	5	0	0	0	1	0	0	0	0	19.8	22.1	2.6
1000	25/09/20	16	0	15	0	1	0	0	0	0	0	0	0	0	23.8	31.2	5.7
1100	25/09/20	7	1	4	0	2	0	0	0	0	0	0	0	0	21.5	-	1.7
1200	25/09/20	12	0	10	0	2	0	0	0	0	0	0	0	0	23.5	26.8	2.2
1300	25/09/20	19	0	15	0	2	0	0	0	0	0	2	0	0	23.9	28.1	3.8
1400	25/09/20	12	0	10	0	1	1	0	0	0	0	0	0	0	21.7	28	4.5
1500	25/09/20	12	1	6	0	2	2	0	0	0	0	1	0	0	22.2	26.2	4.1
1600	25/09/20	5	0	3	0	2	0	0	0	0	0	0	0	0	19.8	-	2.1
1700	25/09/20	31	5	24	1	1	0	0	0	0	0	0	0	0	22.5	28.3	4.9
1800	25/09/20	9	1	7	0	1	0	0	0	0	0	0	0	0	22.8	-	3.8
1900	25/09/20	7	0	6	0	1	0	0	0	0	0	0	0	0	20.9	-	5.1
2000	25/09/20	2	0	1	0	0	0	0	0	1	0	0	0	0	16.4	-	10.8
2100	25/09/20	5	0	4	0	0	0	0	0	0	0	1	0	0	20.6	-	2.6
2200	25/09/20	2	0	2	0	0	0	0	0	0	0	0	0	0	23.2	-	0.6
2300	25/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	22.1	-	-
00-07	**-**	**91**	**2**	**84**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22.6**	**26.7**	**3.9**
07-10	**-**	**55**	**0**	**44**	**2**	**8**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**21.6**	**25.8**	**3.4**
10-16	**-**	**78**	**2**	**60**	**0**	**10**	**3**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**23**	**27.8**	**4.1**
16-19	**-**	**45**	**6**	**34**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22.3**	**27.9**	**4.5**
19-00	**-**	**17**	**0**	**14**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**20.6**	**24.4**	**4.7**
00-00	**-**	**286**	**10**	**236**	**4**	**27**	**3**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**22.4**	**26.7**	**4**

Mercury Traffic Surveys Ltd, Class Report

Report Id - CustomList-183
Site Name - AXI-THO-02
Description - BOURNE ROAD, WEST OF BOURNE STREET, EAST ATC
Direction - East

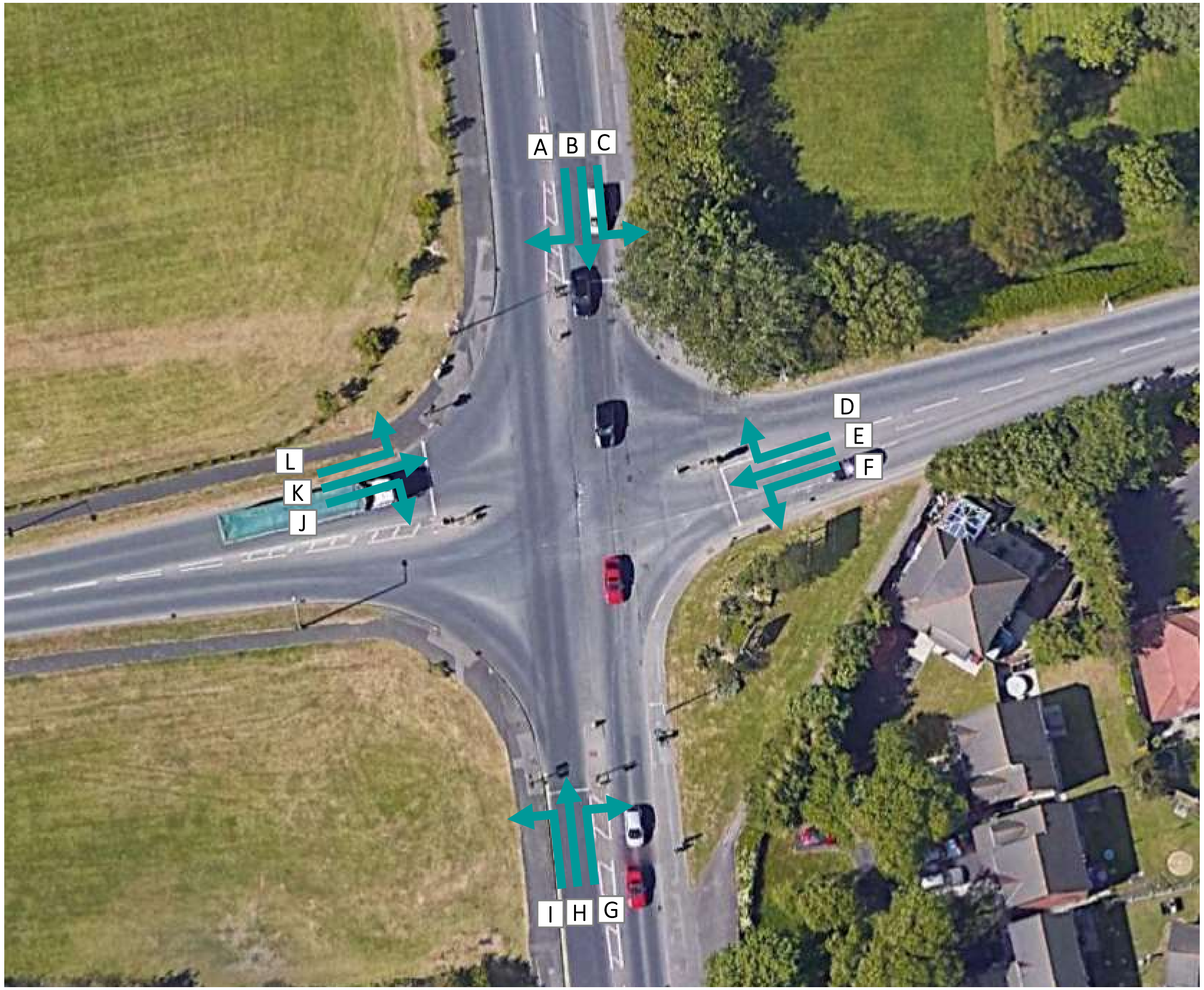
26 September 2022

Time [--	Date	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85	SD
0000	26/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0100	26/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0200	26/09/20	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
0300	26/09/20	3	0	3	0	0	0	0	0	0	0	0	0	0	28.2	-	6.6
0400	26/09/20	2	1	0	0	1	0	0	0	0	0	0	0	0	14.5	-	1.3
0500	26/09/20	63	5	55	0	3	0	0	0	0	0	0	0	0	21.9	26.2	4.5
0600	26/09/20	81	2	75	0	4	0	0	0	0	0	0	0	0	22.8	25.9	3.7
0700	26/09/20	149	7	130	0	9	0	3	0	0	0	0	0	0	19.4	23.2	4.1
0800	26/09/20	119	3	98	0	14	3	0	0	0	0	1	0	0	18.2	23.3	4.9
0900	26/09/20	66	0	52	0	14	0	0	0	0	0	0	0	0	20.6	25.3	4.1
1000	26/09/20	57	1	35	1	18	1	0	0	0	0	1	0	0	21.7	25.8	3.9
1100	26/09/20	42	0	25	0	14	2	0	0	0	1	0	0	0	20.9	25.2	3.9
1200	26/09/20	69	0	56	0	12	1	0	0	0	0	0	0	0	20.6	24.8	4.9
1300	26/09/20	63	0	46	2	12	2	0	0	1	0	0	0	0	20.7	24.8	4
1400	26/09/20	38	0	17	0	17	1	1	0	0	2	0	0	0	21.6	25.7	3.1
1500	26/09/20	30	0	19	0	8	0	1	0	1	1	0	0	0	22.1	26	4.2
1600	26/09/20	25	0	15	0	8	1	0	0	0	0	1	0	0	22.6	25.8	2.6
1700	26/09/20	43	3	35	0	3	0	0	0	1	1	0	0	0	22	26.1	3.8
1800	26/09/20	23	1	17	1	1	1	0	0	0	1	1	0	0	23.1	27.5	4.4
1900	26/09/20	10	0	8	0	1	1	0	0	0	0	0	0	0	21.4	-	3.9
2000	26/09/20	4	0	4	0	0	0	0	0	0	0	0	0	0	24.9	-	9.3
2100	26/09/20	3	0	1	0	2	0	0	0	0	0	0	0	0	22.4	-	1.2
2200	26/09/20	1	0	0	1	0	0	0	0	0	0	0	0	0	26.6	-	-
2300	26/09/20	1	0	1	0	0	0	0	0	0	0	0	0	0	31.6	-	-
00-07	**-**	**149**	**8**	**133**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22.4**	**26.1**	**4.3**
07-10	**-**	**334**	**10**	**280**	**0**	**37**	**3**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**19.2**	**23.7**	**4.5**
10-16	**-**	**299**	**1**	**198**	**3**	**81**	**7**	**2**	**0**	**2**	**4**	**1**	**0**	**0**	**21.2**	**25.3**	**4.1**
16-19	**-**	**91**	**4**	**67**	**1**	**12**	**2**	**0**	**0**	**1**	**2**	**2**	**0**	**0**	**22.4**	**26**	**3.7**
19-00	**-**	**19**	**0**	**14**	**1**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**23.1**	**31.1**	**5.4**
00-00	**-**	**892**	**23**	**692**	**5**	**141**	**13**	**5**	**0**	**3**	**6**	**4**	**0**	**0**	**20.8**	**25.1**	**4.5**

CLIENT: AXIS **PROJECT NUMBER:** 220903

PROJECT MANAGER: ADAM CARTER **DATE:** TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY - MCC - SITE 2 - SITE PLAN



CLIENT: AXIS **PROJECT NUMBER:** 220903

PROJECT MANAGER: ADAM CARTER **DATE:** TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY - MCC - SITE 2

	MOVEMENT A							MOVEMENT B							MOVEMENT C						
	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:00 - 07:15	0	0	0	0	0	0	0	23	4	0	0	1	1	0	11	1	0	0	0	0	2
07:15 - 07:30	0	0	0	0	0	0	0	29	11	2	0	1	2	2	7	3	0	0	0	0	1
07:30 - 07:45	3	0	0	6	0	0	0	50	6	0	0	3	0	0	12	1	1	0	0	0	1
07:45 - 08:00	4	2	1	3	1	0	0	49	16	1	1	1	1	3	16	1	0	0	0	0	0
TOTAL	7	2	1	9	1	0	0	151	37	3	1	6	4	5	46	6	1	0	0	0	4
08:00 - 08:15	1	1	0	1	0	0	0	74	17	3	0	2	0	1	14	0	0	0	0	0	0
08:15 - 08:30	4	1	3	1	0	0	0	78	14	2	1	0	0	2	13	2	0	0	0	0	0
08:30 - 08:45	3	0	1	1	0	0	0	85	14	2	1	3	0	0	2	0	0	0	0	0	0
08:45 - 09:00	1	0	0	2	1	0	0	58	16	2	0	2	1	1	6	1	1	0	0	0	0
TOTAL	9	2	4	5	1	0	0	295	61	9	2	7	1	4	35	3	1	0	0	0	0
09:00 - 09:15	3	1	1	1	0	0	0	46	11	2	0	2	0	2	2	1	0	0	0	0	0
09:15 - 09:30	2	0	1	2	0	0	0	58	11	2	0	1	0	1	7	2	0	0	0	0	0
09:30 - 09:45	1	0	1	1	0	0	0	48	16	4	0	2	3	0	2	1	1	0	0	0	0
09:45 - 10:00	4	1	1	1	1	0	0	45	12	0	0	1	2	0	2	0	0	0	0	0	1
TOTAL	10	2	4	5	1	0	0	197	50	8	0	6	5	3	13	4	1	0	0	0	1
PERIOD TOTAL	26	6	9	19	3	0	0	643	148	20	3	19	10	12	94	13	3	0	0	0	5
16:00 - 16:15	6	3	0	2	0	0	0	130	15	0	0	2	1	2	3	0	0	0	0	0	0
16:15 - 16:30	5	1	0	0	0	0	0	111	24	1	0	1	0	3	3	1	0	1	0	0	0
16:30 - 16:45	7	0	0	1	0	0	0	126	16	0	0	2	0	2	9	1	0	0	0	0	0
16:45 - 17:00	7	1	0	0	1	1	0	132	16	1	0	1	0	0	5	1	0	0	0	0	0
TOTAL	25	5	0	3	1	1	0	499	71	2	0	6	1	7	20	3	0	1	0	0	0
17:00 - 17:15	5	0	0	0	0	0	0	126	16	0	0	1	1	0	8	1	0	0	0	0	0
17:15 - 17:30	7	0	0	1	0	0	0	131	15	0	0	0	0	1	14	0	0	0	0	0	0
17:30 - 17:45	4	1	0	0	0	0	0	102	11	0	1	3	0	0	7	0	0	1	0	0	0
17:45 - 18:00	4	0	0	0	1	0	0	94	1	0	0	1	0	0	9	1	0	0	0	0	0
TOTAL	20	1	0	1	1	0	0	453	43	0	1	5	1	1	38	2	0	1	0	0	0
18:00 - 18:15	8	2	0	0	0	0	0	78	9	0	0	2	0	2	2	1	0	1	0	0	2
18:15 - 18:30	8	2	0	0	0	0	1	59	5	0	0	1	0	3	6	0	0	0	0	0	0
18:30 - 18:45	1	0	0	0	0	0	0	60	10	0	0	0	0	2	2	0	0	0	0	0	0
18:45 - 19:00	2	0	0	0	1	0	0	67	4	0	0	1	0	1	2	1	0	0	0	0	0
TOTAL	19	4	0	0	1	0	1	264	28	0	0	4	0	8	12	2	0	1	0	0	2
PERIOD TOTAL	64	10	0	4	3	1	1	1216	142	2	1	15	2	16	70	7	0	3	0	0	2
DAILY TOTAL	90	16	9	23	6	1	1	1859	290	22	4	34	12	28	164	20	3	3	0	0	7
GRAND TOTAL	146							2249							197						

MERCURY TRAFFIC SURVEYS LTD

CLIENT: AXIS

PROJECT NUMBER: 220903

PROJECT MANAGER: ADAM CARTER

DATE: TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY - MCC - SITE 2

	MOVEMENT D							MOVEMENT E							MOVEMENT F						
	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:00 - 07:15	5	0	1	0	0	0	0	9	3	1	0	0	0	0	9	3	0	0	0	0	0
07:15 - 07:30	1	0	0	1	0	0	0	3	3	0	1	0	1	0	14	3	0	0	0	1	0
07:30 - 07:45	2	0	0	1	0	0	0	15	1	0	0	0	0	0	18	3	0	0	0	0	0
07:45 - 08:00	5	1	0	0	0	0	0	11	0	0	1	0	0	0	28	4	0	0	0	0	0
TOTAL	13	1	1	2	0	0	0	38	7	1	2	0	1	0	69	13	0	0	0	1	0
08:00 - 08:15	3	2	0	0	0	0	0	11	0	0	0	0	0	0	17	0	0	0	0	0	0
08:15 - 08:30	7	0	0	0	0	0	0	12	4	0	0	0	0	0	14	4	1	0	0	0	0
08:30 - 08:45	4	0	0	0	0	0	0	10	1	1	0	0	0	0	32	5	0	1	0	0	0
08:45 - 09:00	4	0	0	0	0	0	0	5	0	0	0	0	0	0	19	1	0	1	0	1	0
TOTAL	18	2	0	0	0	0	0	38	5	1	0	0	0	0	82	10	1	2	0	1	0
09:00 - 09:15	2	1	0	0	0	0	0	3	1	1	0	0	0	0	7	2	0	1	0	0	0
09:15 - 09:30	2	2	1	0	0	0	0	3	1	0	1	0	0	0	9	2	3	1	0	0	0
09:30 - 09:45	3	1	0	0	0	0	0	1	0	0	0	0	0	0	9	6	1	0	0	0	0
09:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	7	4	1	0	0	0	0	7	2	1	1	0	0	0	25	10	4	2	0	0	1
PERIOD TOTAL	38	7	2	2	0	0	0	83	14	3	3	0	1	0	176	33	5	4	0	2	1
16:00 - 16:15	18	2	0	0	0	1	1	17	2	0	0	0	0	1	18	9	0	0	0	0	0
16:15 - 16:30	11	1	0	0	0	1	0	11	2	2	0	0	0	1	15	4	0	0	0	0	0
16:30 - 16:45	9	3	0	0	0	0	0	19	2	0	0	0	0	0	32	9	0	0	0	1	3
16:45 - 17:00	4	3	0	0	0	0	0	15	1	0	0	0	0	0	18	3	0	1	0	0	0
TOTAL	42	9	0	0	0	2	1	62	7	2	0	0	0	2	83	25	0	1	0	1	3
17:00 - 17:15	4	0	0	0	0	0	1	10	2	0	0	0	0	0	33	3	0	0	0	1	0
17:15 - 17:30	13	2	0	0	0	0	1	12	0	0	1	0	0	0	15	2	1	0	0	0	0
17:30 - 17:45	16	1	0	0	0	0	1	9	4	0	0	0	0	0	22	2	0	0	0	0	0
17:45 - 18:00	10	2	0	0	0	0	0	16	2	0	1	0	0	0	12	2	1	0	0	0	0
TOTAL	43	5	0	0	0	0	3	47	8	0	2	0	0	0	82	9	2	0	0	1	0
18:00 - 18:15	11	2	0	0	0	0	1	14	3	0	0	0	0	0	22	4	0	0	0	0	0
18:15 - 18:30	9	0	0	0	0	1	0	9	0	0	0	0	0	0	12	4	0	0	0	0	0
18:30 - 18:45	3	1	0	0	0	0	1	9	3	0	0	0	0	0	13	1	0	1	0	0	0
18:45 - 19:00	2	0	0	0	0	0	0	7	2	0	0	0	0	0	11	1	0	0	0	0	3
TOTAL	25	3	0	0	0	1	2	39	8	0	0	0	0	0	58	10	0	1	0	0	3
PERIOD TOTAL	110	17	0	0	0	3	6	148	23	2	2	0	0	2	223	44	2	2	0	2	6
DAILY TOTAL	148	24	2	2	0	3	6	231	37	5	5	0	1	2	399	77	7	6	0	4	7
GRAND TOTAL	185							281							500						

MERCURY TRAFFIC SURVEYS LTD

CLIENT: AXIS **PROJECT NUMBER:** 220903

PROJECT MANAGER: ADAM CARTER **DATE:** TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY - MCC - SITE 2

	MOVEMENT G							MOVEMENT H							MOVEMENT I						
	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:00 - 07:15	12	5	0	0	0	0	0	21	4	0	0	0	1	1	3	2	1	0	0	0	0
07:15 - 07:30	18	11	0	0	0	0	0	32	7	0	0	2	0	2	3	1	0	0	0	0	0
07:30 - 07:45	17	7	0	3	0	0	0	57	4	1	0	3	0	2	8	0	0	0	0	0	0
07:45 - 08:00	21	8	3	2	0	0	1	68	13	0	0	2	0	3	19	3	0	0	0	0	0
TOTAL	68	31	3	5	0	0	1	178	28	1	0	7	1	8	33	6	1	0	0	0	0
08:00 - 08:15	16	2	0	2	0	0	0	67	11	2	0	2	0	1	14	3	0	0	0	0	0
08:15 - 08:30	13	7	1	0	0	0	0	82	12	2	0	1	1	1	10	1	0	0	0	0	0
08:30 - 08:45	7	4	0	2	0	1	0	64	20	4	0	2	0	0	8	0	1	0	0	0	0
08:45 - 09:00	17	4	1	1	0	0	0	72	14	2	0	1	0	1	7	1	0	0	0	0	0
TOTAL	53	17	2	5	0	1	0	285	57	10	0	6	1	3	39	5	1	0	0	0	0
09:00 - 09:15	23	5	1	0	0	0	0	84	16	0	1	1	0	0	7	2	0	0	0	0	0
09:15 - 09:30	12	6	0	0	0	0	0	51	16	1	0	1	2	1	6	3	1	0	0	0	0
09:30 - 09:45	8	8	0	0	0	0	0	70	13	1	0	1	1	0	7	0	0	0	0	0	0
09:45 - 10:00	11	7	3	0	0	0	0	68	11	0	1	2	0	0	10	0	0	0	0	0	0
TOTAL	54	26	4	0	0	0	0	273	56	2	2	5	3	1	30	5	1	0	0	0	0
PERIOD TOTAL	175	74	9	10	0	1	1	736	141	13	2	18	5	12	102	16	3	0	0	0	0
16:00 - 16:15	10	3	0	0	0	0	0	65	17	1	1	0	0	2	16	3	0	0	0	0	0
16:15 - 16:30	12	1	0	0	0	0	0	76	13	0	0	2	0	1	8	2	0	0	0	0	0
16:30 - 16:45	12	2	0	1	0	0	0	70	9	2	0	0	2	1	14	0	0	0	0	0	0
16:45 - 17:00	26	1	0	0	0	0	1	77	14	1	0	2	0	1	20	1	0	0	0	0	0
TOTAL	60	7	0	1	0	0	1	288	53	4	1	4	2	5	58	6	0	0	0	0	0
17:00 - 17:15	13	4	0	0	0	1	0	75	8	0	0	2	1	3	12	2	0	0	0	0	0
17:15 - 17:30	16	0	0	0	0	0	0	58	9	0	0	1	0	0	27	3	0	0	0	0	0
17:30 - 17:45	14	5	1	0	0	0	0	74	6	0	0	0	2	1	21	2	0	0	0	0	0
17:45 - 18:00	13	4	0	1	0	0	2	70	8	0	1	3	0	4	17	4	0	0	0	0	0
TOTAL	56	13	1	1	0	1	2	277	31	0	1	6	3	8	77	11	0	0	0	0	0
18:00 - 18:15	21	2	0	0	0	0	0	82	8	0	0	1	1	2	16	1	0	0	0	0	0
18:15 - 18:30	19	0	0	0	0	0	0	46	10	0	0	1	0	0	15	0	0	0	0	0	0
18:30 - 18:45	15	1	0	0	0	0	0	59	1	0	0	1	0	0	13	1	0	0	0	0	0
18:45 - 19:00	14	1	0	0	0	0	0	60	4	0	0	2	1	0	8	1	0	0	0	0	0
TOTAL	69	4	0	0	0	0	0	247	23	0	0	5	2	2	52	3	0	0	0	0	0
PERIOD TOTAL	185	24	1	2	0	1	3	812	107	4	2	15	7	15	187	20	0	0	0	0	0
DAILY TOTAL	360	98	10	12	0	2	4	1548	248	17	4	33	12	27	289	36	3	0	0	0	0
GRAND TOTAL	486							1889							328						

CLIENT: AXIS

PROJECT NUMBER: 220903

PROJECT MANAGER: ADAM CARTER

DATE: TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY - MCC - SITE 2

	MOVEMENT J							MOVEMENT K							MOVEMENT L						
	CAR	**LGV**	**OGV 1**	**OGV 2**	**PSV**	**M/C**	**CYCLE**	**CAR**	**LGV**	**OGV 1**	**OGV 2**	**PSV**	**M/C**	**CYCLE**	**CAR**	**LGV**	**OGV 1**	**OGV 2**	**PSV**	**M/C**	**CYCLE**
07:00 - 07:15	2	1	0	0	0	1	0	11	3	0	0	0	0	0	2	0	0	0	0	0	1
07:15 - 07:30	4	2	0	0	0	0	0	17	2	0	0	0	0	0	3	2	0	1	1	0	0
07:30 - 07:45	9	2	0	0	0	0	0	17	1	0	1	0	0	0	4	1	0	0	0	0	1
07:45 - 08:00	8	0	0	0	1	0	1	11	7	0	0	0	0	0	4	0	1	0	0	0	0
TOTAL	23	5	0	0	1	1	1	56	13	0	1	0	0	0	13	3	1	1	1	0	2
08:00 - 08:15	15	2	0	0	1	0	0	12	2	1	0	0	0	0	5	2	0	0	0	0	0
08:15 - 08:30	11	0	0	0	0	0	0	18	7	0	1	0	0	0	7	0	1	1	1	0	0
08:30 - 08:45	11	0	0	0	0	0	0	10	4	0	0	0	0	0	5	0	2	1	0	1	0
08:45 - 09:00	4	2	0	0	0	0	0	10	1	2	1	0	0	0	3	0	0	1	0	0	0
TOTAL	41	4	0	0	1	0	0	50	14	3	2	0	0	0	20	2	3	3	1	1	0
09:00 - 09:15	9	3	0	0	0	0	0	7	4	0	0	0	0	0	3	1	1	1	0	0	0
09:15 - 09:30	8	1	0	0	0	0	0	5	0	0	0	0	0	0	2	1	1	1	1	0	0
09:30 - 09:45	8	0	0	0	0	0	0	6	1	0	0	0	0	0	1	0	1	0	0	0	0
09:45 - 10:00	10	1	1	0	0	0	0	8	4	2	0	0	0	0	5	3	1	2	0	0	0
TOTAL	35	5	1	0	0	0	0	26	9	2	0	0	0	0	11	5	4	4	1	0	0
PERIOD TOTAL	99	14	1	0	2	1	1	132	36	5	3	0	0	0	44	10	8	8	3	1	2
16:00 - 16:15	5	3	0	0	0	0	0	4	0	0	1	0	0	0	6	0	2	1	0	0	0
16:15 - 16:30	10	0	0	0	0	0	0	9	2	0	0	0	0	0	7	1	0	2	1	0	0
16:30 - 16:45	15	2	0	0	0	0	0	11	0	0	1	0	0	0	3	2	0	2	0	0	0
16:45 - 17:00	8	1	0	0	0	0	0	10	1	0	1	0	0	0	7	0	0	0	0	0	0
TOTAL	38	6	0	0	0	0	0	34	3	0	3	0	0	0	23	3	2	5	1	0	0
17:00 - 17:15	9	2	0	0	0	0	0	7	2	0	0	0	0	0	5	0	0	1	0	0	0
17:15 - 17:30	12	1	1	0	0	1	0	20	0	0	0	0	0	1	2	1	0	1	0	0	0
17:30 - 17:45	7	2	0	0	0	0	0	10	0	0	0	0	0	0	6	0	0	1	1	0	0
17:45 - 18:00	10	0	0	0	0	0	1	11	0	0	0	0	1	1	6	1	0	0	0	0	0
TOTAL	38	5	1	0	0	1	1	48	2	0	0	0	1	2	19	2	0	3	1	0	0
18:00 - 18:15	5	1	0	0	0	0	0	12	2	0	0	0	0	0	1	0	0	0	0	0	0
18:15 - 18:30	5	0	0	0	0	0	0	6	1	0	1	0	0	0	2	0	0	0	1	0	0
18:30 - 18:45	13	0	0	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	0	0	0
18:45 - 19:00	3	0	0	0	0	0	0	6	1	0	0	0	0	0	3	1	0	1	0	0	0
TOTAL	26	1	0	0	0	0	0	29	4	0	1	0	0	0	11	1	0	1	1	0	0
PERIOD TOTAL	102	12	1	0	0	1	1	111	9	0	4	0	1	2	53	6	2	9	3	0	0
DAILY TOTAL	201	26	2	0	2	2	2	243	45	5	7	0	1	2	97	16	10	17	6	1	2
GRAND TOTAL	235							303							149						

MERCURY
TRAFFIC SURVEYS LTD

CLIENT: AXIS **PROJECT NUMBER:** 220903

PROJECT MANAGER: ADAM CARTER **DATE:** TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY - MCC - SITE 1 - SITE PLAN

MERCURY
TRAFFIC SURVEYS LTD

CLIENT: AXIS **PROJECT NUMBER:** 220903

PROJECT MANAGER: ADAM CARTER **DATE:** TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY- MCC - SITE 1

	MOVEMENT A							MOVEMENT B						
	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:00 - 07:15	76	29	1	1	2	3	1	0	2	0	0	0	0	0
07:15 - 07:30	101	27	3	1	1	2	1	0	0	0	0	0	0	0
07:30 - 07:45	118	32	1	0	1	2	0	0	0	0	0	0	0	0
07:45 - 08:00	107	22	0	0	1	0	0	6	1	0	0	0	0	0
TOTAL	402	110	5	2	5	7	2	6	3	0	0	0	0	0
08:00 - 08:15	124	29	4	2	0	0	0	5	0	0	0	0	0	0
08:15 - 08:30	125	14	2	1	0	0	0	7	0	0	0	0	0	0
08:30 - 08:45	131	21	2	1	0	4	0	5	0	0	0	0	0	0
08:45 - 09:00	106	30	0	1	0	0	0	0	0	0	0	0	0	0
TOTAL	486	94	8	5	0	4	0	17	0	0	0	0	0	0
09:00 - 09:15	95	10	7	2	1	0	0	3	0	0	0	0	0	0
09:15 - 09:30	88	13	9	1	0	3	0	3	0	0	0	0	0	0
09:30 - 09:45	76	15	0	1	1	2	1	5	0	0	0	0	0	0
09:45 - 10:00	89	23	6	1	1	2	0	4	1	1	0	0	0	0
TOTAL	348	61	22	5	3	7	1	15	1	1	0	0	0	0
PERIOD TOTAL	1236	265	35	12	8	18	3	38	4	1	0	0	0	0
16:00 - 16:15	155	19	2	2	1	1	0	4	2	0	0	0	1	0
16:15 - 16:30	166	18	2	0	0	2	1	7	0	0	0	0	0	0
16:30 - 16:45	155	20	1	0	0	1	0	6	0	0	0	0	0	0
16:45 - 17:00	148	14	1	1	0	2	1	4	0	0	0	0	0	0
TOTAL	624	71	6	3	1	6	2	21	2	0	0	0	1	0
17:00 - 17:15	158	11	0	0	0	0	0	3	0	0	0	0	0	0
17:15 - 17:30	156	8	0	1	0	1	2	7	2	0	0	0	0	0
17:30 - 17:45	142	13	0	0	0	1	0	9	1	0	0	0	0	0
17:45 - 18:00	110	10	0	0	0	1	5	5	0	0	0	0	0	0
TOTAL	566	42	0	1	0	3	7	24	3	0	0	0	0	0
18:00 - 18:15	108	7	0	0	0	0	0	3	2	0	0	0	0	0
18:15 - 18:30	96	5	0	0	0	1	0	4	0	0	0	0	0	0
18:30 - 18:45	96	8	1	0	0	1	0	4	0	0	0	0	0	0
18:45 - 19:00	77	8	0	0	1	0	0	4	0	0	0	0	0	0
TOTAL	377	28	1	0	1	2	0	15	2	0	0	0	0	0
PERIOD TOTAL	1567	141	7	4	2	11	9	60	7	0	0	0	1	0
DAILY TOTAL	2803	406	42	16	10	29	12	98	11	1	0	0	1	0
GRAND TOTAL	3318							111						

MERCURY TRAFFIC SURVEYS LTD

CLIENT: AXIS **PROJECT NUMBER:** 220903

PROJECT MANAGER: ADAM CARTER **DATE:** TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY- MCC - SITE 1

	MOVEMENT C							MOVEMENT D						
	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:00 - 07:15	2	0	0	0	0	0	0	5	3	0	0	0	0	0
07:15 - 07:30	5	0	0	0	0	0	0	25	4	0	0	0	1	0
07:30 - 07:45	3	1	0	0	0	0	0	36	3	0	7	0	0	0
07:45 - 08:00	17	6	0	0	0	0	1	39	5	2	3	0	0	0
TOTAL	27	7	0	0	0	0	1	105	15	2	10	0	1	0
08:00 - 08:15	23	4	0	0	0	0	0	29	3	0	1	0	0	0
08:15 - 08:30	16	3	0	0	0	0	0	33	3	3	1	0	1	0
08:30 - 08:45	12	1	1	0	0	0	0	33	3	1	0	0	1	0
08:45 - 09:00	7	0	0	0	0	1	0	18	2	0	2	0	0	0
TOTAL	58	8	1	0	0	1	0	113	11	4	4	0	2	0
09:00 - 09:15	11	2	1	1	0	0	0	6	1	0	0	0	0	0
09:15 - 09:30	4	1	0	0	0	0	0	19	1	4	2	0	0	0
09:30 - 09:45	4	1	0	0	0	0	0	13	4	1	1	0	0	0
09:45 - 10:00	6	1	0	0	0	0	0	18	3	1	2	0	0	0
TOTAL	25	5	1	1	0	0	0	56	9	6	5	0	0	0
PERIOD TOTAL	110	20	2	1	0	1	1	274	35	12	19	0	3	0
16:00 - 16:15	10	2	0	0	0	0	0	27	7	0	2	0	0	2
16:15 - 16:30	4	2	0	0	0	0	1	26	6	1	1	0	1	0
16:30 - 16:45	9	1	0	0	0	0	0	27	4	0	1	0	0	0
16:45 - 17:00	14	1	0	0	0	0	1	27	2	1	0	0	1	0
TOTAL	37	6	0	0	0	0	2	107	19	2	4	0	2	2
17:00 - 17:15	10	0	0	0	0	0	0	26	2	0	0	0	0	0
17:15 - 17:30	18	1	0	0	0	0	0	24	1	1	1	0	0	0
17:30 - 17:45	8	1	0	0	0	0	0	30	4	0	0	0	0	0
17:45 - 18:00	10	1	0	0	0	0	0	31	2	0	1	0	1	0
TOTAL	46	3	0	0	0	0	0	111	9	1	2	0	1	0
18:00 - 18:15	5	0	0	0	0	0	0	34	3	0	0	0	0	0
18:15 - 18:30	4	0	0	0	0	0	0	24	1	0	0	0	0	0
18:30 - 18:45	10	0	0	0	0	0	0	22	3	0	0	0	0	0
18:45 - 19:00	3	0	0	0	0	0	0	18	3	0	0	0	0	0
TOTAL	22	0	0	0	0	0	0	98	10	0	0	0	0	0
PERIOD TOTAL	105	9	0	0	0	0	2	316	38	3	6	0	3	2
DAILY TOTAL	215	29	2	1	0	1	3	590	73	15	25	0	6	2
GRAND TOTAL	251							711						

MERCURY
TRAFFIC SURVEYS LTD

CLIENT: AXIS **PROJECT NUMBER:** 220903

PROJECT MANAGER: ADAM CARTER **DATE:** TUES 13TH SEP 2022

SURVEY DESCRIPTION: THORNTON-CLEVERLEY- MCC - SITE 1

	MOVEMENT E							MOVEMENT F						
	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:00 - 07:15	16	3	0	0	0	0	0	32	11	1	2	1	0	0
07:15 - 07:30	21	6	0	0	0	0	0	90	15	0	2	0	1	1
07:30 - 07:45	23	5	0	1	0	0	0	100	19	4	1	0	1	0
07:45 - 08:00	16	8	2	0	0	0	1	169	15	1	1	0	1	0
TOTAL	76	22	2	1	0	0	1	391	60	6	6	1	3	1
08:00 - 08:15	21	5	0	1	1	0	0	193	24	2	2	0	1	0
08:15 - 08:30	32	10	2	1	0	0	0	163	26	6	0	0	1	0
08:30 - 08:45	19	4	0	1	0	1	0	131	24	1	5	0	0	0
08:45 - 09:00	22	5	2	2	0	0	0	197	22	3	1	0	0	0
TOTAL	94	24	4	5	1	1	0	684	96	12	8	0	2	0
09:00 - 09:15	17	7	1	1	0	0	0	145	27	7	8	4	0	0
09:15 - 09:30	15	1	1	1	0	0	0	118	23	6	0	2	2	1
09:30 - 09:45	11	3	1	0	0	0	0	115	23	3	2	1	1	0
09:45 - 10:00	20	7	2	3	0	0	0	120	24	3	3	1	1	0
TOTAL	63	18	5	5	0	0	0	498	97	19	13	8	4	1
PERIOD TOTAL	233	64	11	11	1	1	1	1573	253	37	27	9	9	2
16:00 - 16:15	20	3	0	2	0	0	0	133	27	0	1	0	1	1
16:15 - 16:30	31	3	0	3	0	0	0	152	30	1	0	5	0	0
16:30 - 16:45	45	3	0	2	0	0	0	151	30	1	1	0	1	0
16:45 - 17:00	31	4	1	1	0	0	0	152	30	0	1	0	1	0
TOTAL	127	13	1	8	0	0	0	588	117	2	3	5	3	1
17:00 - 17:15	23	5	0	1	0	1	0	139	34	0	1	0	2	2
17:15 - 17:30	49	4	0	2	0	0	1	161	14	0	1	1	1	0
17:30 - 17:45	29	1	0	0	0	0	0	164	27	1	1	1	3	0
17:45 - 18:00	39	2	0	0	0	1	1	139	20	1	0	1	0	0
TOTAL	140	12	0	3	0	2	2	603	95	2	3	3	6	2
18:00 - 18:15	33	5	0	0	0	0	0	113	19	1	0	1	0	1
18:15 - 18:30	21	3	0	1	0	0	0	112	22	0	1	0	1	0
18:30 - 18:45	16	5	0	0	0	0	0	114	14	0	0	0	0	0
18:45 - 19:00	27	5	0	1	0	0	0	105	14	0	1	0	3	0
TOTAL	97	18	0	2	0	0	0	444	69	1	2	1	4	1
PERIOD TOTAL	364	43	1	13	0	2	2	1635	281	5	8	9	13	4
DAILY TOTAL	597	107	12	24	1	3	3	3208	534	42	35	18	22	6
GRAND TOTAL	747							3865						

Appendix 4 – Indicative Proposed Site Layout

Site Boundary
Proposed Fence Line
Retaining Wall
Building Footprint
Water Storage Tank (partially above ground)
Concrete Slab
Asphalt
Compacted Type 1
Mixed Scrub
Retained Vegetation

0344 8700 007
axis.co.uk

axis

Client
Fortis IBA Ltd

Project
Hillhouse IBA

Drawing Title
Site Layout Plan

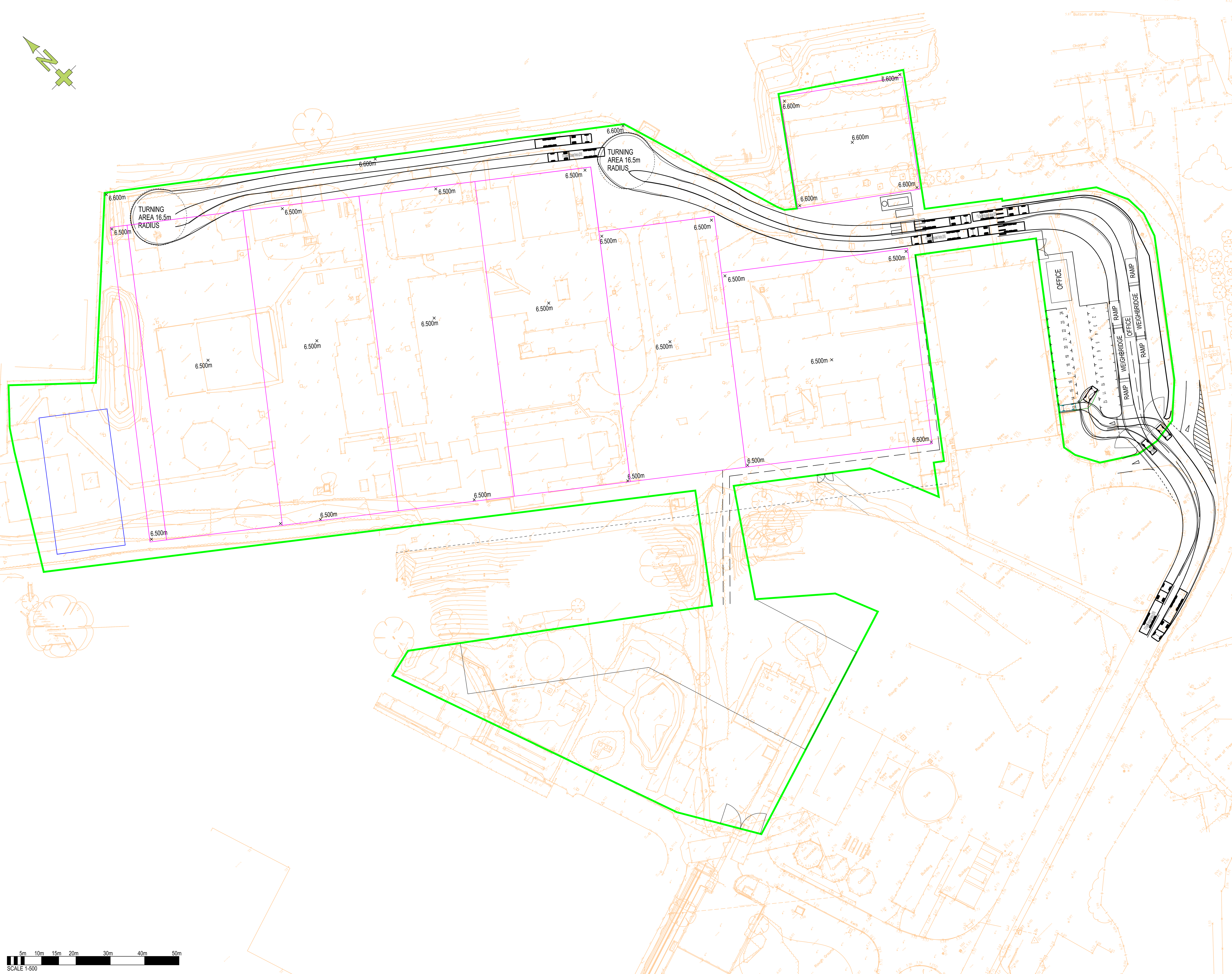
Scale	Status
1:1500 @A3	--

Date	Drawn	Checked
July 2024	JD	LM

Dwg no: **3566-01-03**
Rev

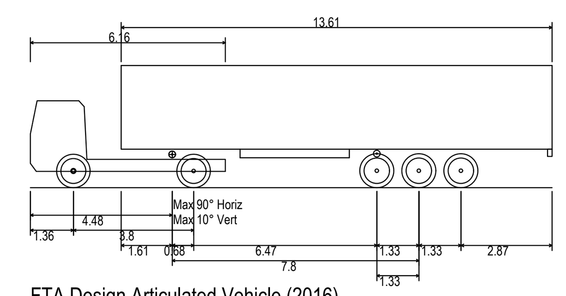
revision: desc: date:

Appendix 5 – 3566-01-ATR01 Swept Path Analysis



Notes:

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT.



FTA Design Articulated Vehicle (2016)	
Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.600m

Rev	Description	Drn	Chk	Date
A	FOR COMMENTS	SGS	CJM	03.05.24

BdR
Civil & Structural Engineering Consultants
The Old Engine House, Goblands Farm Business Park
Court Lane, Hadlow, Kent. TN11 0DP
Tel 01732 851416
email: engineering@bdr.uk.com

Client
FORTIS
Preserving our Natural Resources

Project
IBA PROCESSING FACILITY
HILLHOUSE, FY5 4QD

Drawing
VEHICLE TRACKING

FOR COMMENT ONLY

Scale @ A1	Date	Drawn by	Checked
1:500	27.03.24	SGS	CJM

Job No.	Drg. No.	Rev
24-0045	C11101	A

Appendix 6 – TEMPRO Growth Factors

TEMPRO Growth Factors 2022 - 2026

Weekday AM Peak Period (0700 - 0959)

Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2022
Future Year:	2026
Trip Purpose Group:	All purposes
Time Period:	Weekday AM peak period (0700 - 0959)
Trip End Type:	Origin/Destination
Alternative Assumptions Applied:	No

Level	Area	Local Growth Figure
E02005329	Wyre 011	1.0277

Weekday PM Peak Period (1600 - 1859)

Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2022
Future Year:	2026
Trip Purpose Group:	All purposes
Time Period:	Weekday PM peak period (1600 - 1859)
Trip End Type:	Origin/Destination
Alternative Assumptions Applied:	No

Level	Area	Local Growth Figure
E02005329	Wyre 011	1.0281

Average Weekday

Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2022
Future Year:	2026
Trip Purpose Group:	All purposes
Time Period:	Average Weekday
Trip End Type:	Origin/Destination
Alternative Assumptions Applied:	No

Level	Area	Local Growth Figure
E02005329	Wyre 011	1.0293

TEMPRO Growth Factors 2022 - 2031

Weekday AM Peak Period (0700 - 0959)

Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2022
Future Year:	2031
Trip Purpose Group:	All purposes
Time Period:	Weekday AM peak period (0700 - 0959)
Trip End Type:	Origin/Destination
Alternative Assumptions Applied:	No

Level	Area	Local Growth Figure
E02005329	Wyre 011	1.0832

Weekday PM Peak Period (1600 - 1859)

Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2022
Future Year:	2031
Trip Purpose Group:	All purposes
Time Period:	Weekday PM peak period (1600 - 1859)
Trip End Type:	Origin/Destination
Alternative Assumptions Applied:	No

Level	Area	Local Growth Figure
E02005329	Wyre 011	1.0843

Average Weekday

Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2022
Future Year:	2031
Trip Purpose Group:	All purposes
Time Period:	Average Weekday
Trip End Type:	Origin/Destination
Alternative Assumptions Applied:	No

Level	Area	Local Growth Figure
E02005329	Wyre 011	1.0871

Appendix 7 – Staff Distribution Model

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

population	All usual residents aged 16 and over in employment the week before the census
units	Persons
date	2011
method of travel to work	Driving a car or van

usual residence	place of work	Route (FROM the site)							
		A	B	C	D	E	F	G	H
E02002633	68	25%		75%					
E02002634	60	25%		75%					
E02002635	29	25%		75%					
E02005319	89	25%		75%					
E02002641	27		25%		75%				
E02002646	11		25%		75%				
E02005203	24		25%		75%				
E02005204	13		25%		75%				
E02005207	9		25%		75%				
E02005209	9		25%		75%				
E02005210	10		25%		75%				
E02005211	11		25%		75%				
E02005254	6		25%		75%				
E02005258	5		25%		75%				
E02005262	5		25%		75%				
E02005322	79		25%		75%				
E02005324	18		25%		75%				
E02005325	16		25%		75%				
E02005327	31		25%		75%				
E02005330	128		25%		75%				
E02005331	71		25%		75%				
E02005332	48		25%		75%				
E02002633	68		100%						
E02002634	60		100%						
E02002635	29		100%						
E02002637	25		100%						
E02002638	6		100%						
E02002642	5		100%						
E02002643	10		100%						
E02002647	11		100%						
E02002648	22		100%						
E02002649	16		100%						
E02002650	10		100%						
E02002651	16		100%						
E02005206	6		100%						
E02005207	9		100%						
E02005208	12		100%						
E02005326	83		100%						
E02005328	128		100%						
E02005332	48		100%						
Blackburn with Darwen	14		25%		75%				
Bolton	6		25%		75%				
Burnley	6		25%		75%				
Chorley	30		25%		75%				
Hyndburn	11		25%		75%				
Lancaster	33		25%		75%				
Ribble Valley	17		25%		75%				
Rochdale	5		25%		75%				
South Ribble	20		25%		75%				
Wigan	8		25%		75%				
	1,481								

usual residence	Route (FROM the site)							
	A	B	C	D	E	F	G	H
E02002633	17	0	51	0	0	0	0	0
E02002634	15	0	45	0	0	0	0	0
E02002635	7	0	22	0	0	0	0	0
E02005319	22	0	67	0	0	0	0	0
E02002641	0	7	0	20	0	0	0	0
E02002646	0	3	0	8	0	0	0	0
E02005203	0	6	0	18	0	0	0	0
E02005204	0	3	0	10	0	0	0	0
E02005207	0	2	0	7	0	0	0	0
E02005209	0	2	0	7	0	0	0	0
E02005210	0	3	0	8	0	0	0	0
E02005211	0	3	0	8	0	0	0	0
E02005254	0	2	0	5	0	0	0	0
E02005258	0	1	0	4	0	0	0	0
E02005262	0	1	0	4	0	0	0	0
E02005322	0	20	0	59	0	0	0	0
E02005324	0	5	0	14	0	0	0	0
E02005325	0	4	0	12	0	0	0	0
E02005327	0	8	0	23	0	0	0	0
E02005330	0	32	0	96	0	0	0	0
E02005331	0	18	0	53	0	0	0	0
E02005332	0	12	0	36	0	0	0	0
E02002633	0	68	0	0	0	0	0	0
E02002634	0	60	0	0	0	0	0	0
E02002635	0	29	0	0	0	0	0	0
E02002637	0	25	0	0	0	0	0	0
E02002638	0	6	0	0	0	0	0	0
E02002642	0	5	0	0	0	0	0	0
E02002643	0	10	0	0	0	0	0	0
E02002647	0	11	0	0	0	0	0	0
E02002648	0	22	0	0	0	0	0	0
E02002649	0	16	0	0	0	0	0	0
E02002650	0	10	0	0	0	0	0	0
E02002651	0	16	0	0	0	0	0	0
E02005206	0	6	0	0	0	0	0	0
E02005207	0	9	0	0	0	0	0	0
E02005208	0	12	0	0	0	0	0	0
E02005326	0	83	0	0	0	0	0	0
E02005328	0	128	0	0	0	0	0	0
E02005332	0	48	0	0	0	0	0	0
Blackburn with Darwen	0	4	0	11	0	0	0	0
Bolton	0	2	0	5	0	0	0	0
Burnley	0	2	0	5	0	0	0	0
Chorley	0	8	0	23	0	0	0	0
Hyndburn	0	3	0	8	0	0	0	0
Lancaster	0	8	0	25	0	0	0	0
Ribble Valley	0	4	0	13	0	0	0	0
Rochdale	0	1	0	4	0	0	0	0
South Ribble	0	5	0	15	0	0	0	0
Wigan	0	2	0	6	0	0	0	0
	62	732	185	503	0	0	0	0

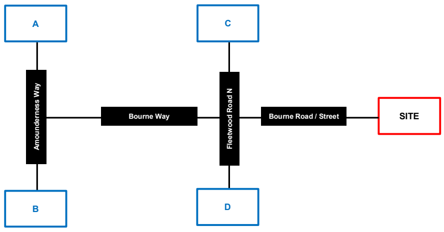
usual residence	Route (TO the site)							
	A	B	C	D	E	F	G	H
E02002633	25%		75%					
E02002634	25%		75%					
E02002635	25%		75%					
E02005319	25%		75%					
E02002641		25%		75%				
E02002646		25%		75%				
E02005203		25%		75%				
E02005204		25%		75%				
E02005207		25%		75%				
E02005209		25%		75%				
E02005210		25%		75%				
E02005211		25%		75%				
E02005254		25%		75%				
E02005258		25%		75%				
E02005262		25%		75%				
E02005322		25%		75%				
E02005324		25%		75%				
E02005325		25%		75%				
E02005327		25%		75%				
E02005330		25%		75%				
E02005331		25%		75%				
E02005332		25%		75%				
E02002633		100%						
E02002634		100%						
E02002635		100%						
E02002637		100%						
E02002638		100%						
E02002642		100%						
E02002643		100%						
E02002647		100%						
E02002648		100%						
E02002649		100%						
E02002650		100%						
E02002651		100%						
E02005206		100%						
E02005207		100%						
E02005208		100%						
E02005326		100%						
E02005328		100%						
E02005332		100%						
Blackburn with Darwen		25%		75%				
Bolton		25%		75%				
Burnley		25%		75%				
Chorley		25%		75%				
Hyndburn		25%		75%				
Lancaster		25%		75%				
Ribble Valley		25%		75%				
Rochdale		25%		75%				
South Ribble		25%		75%				
Wigan		25%		75%				

usual residence	Route (TO the site)							
	A	B	C	D	E	F	G	H
E02002633	17	0	51	0	0	0	0	0
E02002634	15	0	45	0	0	0	0	0
E02002635	7	0	22	0	0	0	0	0
E02005319	22	0	67	0	0	0	0	0
E02002641	0	7	0	20	0	0	0	0
E02002646	0	3	0	8	0	0	0	0
E02005203	0	6	0	18	0	0	0	0
E02005204	0	3	0	10	0	0	0	0
E02005207	0	2	0	7	0	0	0	0
E02005209	0	2	0	7	0	0	0	0
E02005210	0	3	0	8	0	0	0	0
E02005211	0	3	0	8	0	0	0	0
E02005254	0	2	0	5	0	0	0	0
E02005258	0	1	0	4	0	0	0	0
E02005262	0	1	0	4	0	0	0	0
E02005322	0	20	0	59	0	0	0	0
E02005324	0	5	0	14	0	0	0	0
E02005325	0	4	0	12	0	0	0	0
E02005327	0	8	0	23	0	0	0	0
E02005330	0	32	0	96	0	0	0	0
E02005331	0	18	0	53	0	0	0	0
E02005332	0	12	0	36	0	0	0	0
E02002633	0	68	0	0	0	0	0	0
E02002634	0	60	0	0	0	0	0	0
E02002635	0	29	0	0	0	0	0	0
E02002637	0	25	0	0	0	0	0	0
E02002638	0	6	0	0	0	0	0	0
E02002642	0	5	0	0	0	0	0	0
E02002643	0	10	0	0	0	0	0	0
E02002647	0	11	0	0	0	0	0	0
E02002648	0	22	0	0	0	0	0	0
E02002649	0	16	0	0	0	0	0	0
E02002650	0	10	0	0	0	0	0	0
E02002651	0	16	0	0	0	0	0	0
E02005206	0	6	0	0	0	0	0	0
E02005207	0	9	0	0	0	0	0	0
E02005208	0	12	0	0	0	0	0	0
E02005326	0	83	0	0	0	0	0	0
E02005328	0	128	0	0	0	0	0	0
E02005332	0	48	0	0	0	0	0	0
Blackburn with Darwen	0	4	0	11	0	0	0	0
Bolton	0	2	0	5	0	0	0	0
Burnley	0	2	0	5	0	0	0	0
Chorley	0	8	0	23	0	0	0	0
Hyndburn	0	3	0	8	0	0	0	0
Lancaster	0	8	0	25	0	0	0	0
Ribble Valley	0	4	0	13	0	0	0	0
Rochdale	0	1	0	4	0	0	0	0
South Ribble	0	5	0	15	0	0	0	0
Wigan	0	2	0	6	0	0	0	0
	62	732	185	503	0	0	0	0

*In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

Route	Description (FROM the site)	Number	%
A	North on Amounderness Way (N)	62	4%
B	South on Amounderness Way (S)	732	49%
C	North on Fleetwood Road North (N)	185	12%
D	South on Fleetwood Road North (S)	503	34%
		1481	100%

Route	Description (TO the site)	Number	%
A	South on Amounderness Way (N)	62	4%
B	North on Amounderness Way (S)	732	49%
C	South on Fleetwood Road North (N)	185	12%
D	North on Fleetwood Road North (S)	503	34%
		1481	100%



axis

Project Name: Packsaddle Way, Frome
Project Number: 3082-01
Description: Distribution Model

Appendix 8 – Construction Traffic Average

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hillhouse IBA Approximate Construction Schedule	Phase 1 - Site est. and enabl. works			Phase 2 - Site groundworks					Phase 3 - Building structural works					Phase 4 - Plant installation		Phase 5 -Plant testing and commissioning

	Hillhouse IBA (two-way)																Average
HGVs	5	5	5	30	30	30	30	30	25	25	25	25	25	40	40	136	**32**
Cars / Lights	9	9	9	74	74	74	74	74	96	96	96	96	96	133	133	22	**73**
Total vehicles	14	14	14	104	104	104	104	104	121	121	121	121	121	173	173	158	**105**

Hillhouse Enterprise Zone,

Thornton Cleveleys

Preliminary Ecological Appraisal

2024

RACHEL
HACKING
ECOLOGY

Client	Fortis IBA Ltd
Project Title	Hillhouse IBA Processing Facility
Project Reference	RHE.4015.01
Project Leader	Simon Holden
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	Name	Position	Date
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Revision	Simon Holden	Associate Ecologist	20/02/2024
Revision	Simon Holden	Associate Ecologist	25/07/2024
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Report Contents

Executive Summary

Development Details

The client is proposing an Incinerator Bottom Ash (IBA) processing facility at Hillhouse Enterprise Zone, Thornton Cleveleys, hereafter referred to as the 'site'.

This report describes the ecological features of the site and its surroundings and assesses the potential impacts of the development on the ecological interest. Recommendations are provided so that the development is compliant with biodiversity policy and legislation.

Ecological Interest

The site has a low level of ecological interest. The site is in close proximity to several internationally important designated sites, including Morecambe Bay Ramsar site. A non-statutory designated site is adjacent to the northeast boundary. Habitats on site are of importance at the site level. Japanese Rose (an invasive non-native species) is present on site. Surveys indicate the likely absence of Great Crested Newt and Water Vole from the site. Evidence of Otter was recorded on Royle's Brook, but no impacts to this species are anticipated.

Outcomes

Mitigation should include measures to avoid pollution, measures to protect retained habitats during construction and sensitive timing to avoid risk of impacts to nesting birds.

The proposed development is predicted to result in a net loss of biodiversity units and offsetting will be required to achieve 10% net gain. A Habitat Regulations Assessment will be required.

1. Introduction

1.1 Project Brief

1.1.1 Rachel Hacking Ecology Limited was commissioned in 2023 by Fortis IBA Ltd to carry out an ecological appraisal of land at Hillhouse Enterprise Zone, Thornton Cleveleys, hereafter referred to as the 'site'. The site is located at O.S. grid reference: SD349433 (see Figure 1).

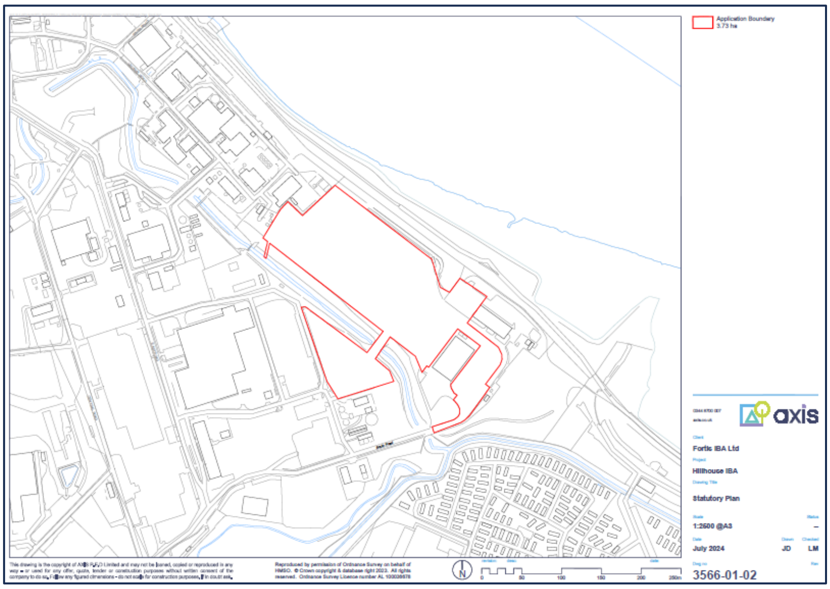


Figure 1. Map showing the location of the site

Description of Development

1.1.2 The site will be the subject of a planning application for an Incinerator Bottom Ash (IBA) processing facility.

Relevant Planning History

1.1.3 No previous planning applications of relevance to ecology, or ecology surveys, were identified using the Wyre Council or Lancashire County Council websites.

1.2 Scope of Work

1.2.1 The Client commissioned Rachel Hacking Ecology to carry out the following works:

- Desk-based study to obtain details of designated sites, protected and notable species within a specified search area.
- Record the extent, type, and condition of habitats within and next to the site.

- Search for signs of protected species and assessment of the potential of habitats and features to support protected and notable species.

1.3 Site Visit Information

Surveyor Details

1.3.1 Simon Holden MCIEEM (Associate Ecologist) visited the site on 13th December 2023 and again on 25th January 2024. Simon has 18 years' professional experience and has undertaken numerous similar surveys throughout the UK. Simon holds several protected species survey licences, including Great Crested Newt and bats.

Weather

1.3.2 The weather at the time of the first survey was dry, bright and 8^{o}C. During the second visit the weather was overcast with intermittent light rain and 10^{o}C.

2. Methods

2.1 Desk Study

2.1.1 The Magic website (Multi-Agency Geographical Information for the Countryside) was interrogated for the presence of Statutory Designated Sites (and European Protected Species licences) within a 2km radius of the site.

2.1.2 The site was checked to determine if it is located within an Impact Risk Zone for any Site of Special Scientific Interest (SSSI) and if so, whether the Local Planning Authority will need to consult Natural England.

2.1.3 Lancashire Environmental Records Network (LERN) was contacted to provide details of non-statutory designated sites and records of protected and notable species within a 2km radius of the site.

2.2 Field Survey

Extended Phase 1 Habitat Survey

2.2.1 In accordance with JNCC guidelines[1] the site was walked over and the habitats and features of ecological interest were mapped and described. Habitats and features of particular interest were target noted.

2.2.2 During the walkover habitat and features were assessed for their suitability to support protected and notable species in accordance with CIEEM guidelines[2]. Field signs of protected, notable, and invasive non-native species, if encountered, were mapped, and described.

Great Crested Newt

2.2.3 The small body of standing water on site was sampled using standard methodology[3] on 17th April 2024. Samples were sent to an approved laboratory for analysis.

---

[1] JNCC (2010). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. Joint Nature Conservation Committee, Peterborough

[2] CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal.* Chartered Institute of Ecology and Environmental Management, Winchester.

[3] *Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.*

Bats

2.2.4 The exterior of the buildings on site was surveyed from the ground using binoculars and a high-powered torch. Any features offering potential access to roosting bats were recorded. Such features may include suitable gaps in roof coverings, gaps behind external cladding/facia and gaps in masonry.

2.2.5 Evidence indicating the presence of roosting bats was also searched for. This may include bat droppings on walls, windows or on the ground below roost entrances or staining from fur oil around roost entry points.

2.2.6 Any trees on the site were subject to a ground-level assessment, searching for Potential Roosting Features (PRFs), such as flaking bark, woodpecker holes, knot holes and limb splits.

Otter and Water Vole

2.2.7 Royles Brook was surveyed for Otter and Water Vole by Simon Holden and Austin Rigby (Junior Ecologist) on 17th April 2024. Conditions during the survey were dry and clear. Water levels were at normal summer level and visibility was good. The length of Royle's Brook within the red line was walked (waded where possible) and both banks were surveyed for field signs indicating the presence of Otter and Water Vole. Such signs may include:

Otter:

- Spraint (faeces)
- Prints
- Holts/couches (resting sites)
- Mammal paths/slides

Water Vole:

- Burrows
- Latrines/droppings
- Mammal paths/runs
- Seeing or hearing Water Voles

2.3 Habitat Condition Assessment

2.3.1 During the site walkover the ecological condition of each habitat was assessed in accordance with the Defra guidelines[4].

[4] Defra (2023) The Statutory Biodiversity Metric: User Guide (draft). November 2023.

2.4 Mitigation Hierarchy

2.4.1 Mitigation measures should be embedded within the masterplan design and planning application process. This process from proposal to implementation needs to consider the 'mitigation hierarchy' of avoid, reduce, compensate, and enhance:

- Aim to avoid negative effects through the design process.
- Mitigate if negative effects cannot be avoided.
- Use compensation measures to offset residual impacts.
- Identify and implement opportunities to enhance biodiversity.

3. Results

3.1 Survey Constraints

3.1.1 Field survey results are valid for a limited duration and no investigation can provide a complete description and characterisation of a site. The composition of habitats and species can change depending on environmental variables and the mobility of species, so the results of a study become less reliable over time. In some cases, surveys that are 3 years old may be acceptable for a project assuming that habitats have not significantly changed in the intervening period, but for protected species it is likely that survey data will need to be no more than 18 months old.

3.1.2 Table 1 describes the survey limitations and how these were mitigated.

Table 1. Survey Constraints and Mitigated Response.	
Constraints	Mitigated Response
The surveys were undertaken during winter when many plants may have died back.	The surveys enabled the broad habitat types to be identified and recorded. No priority habitats are present and a robust assessment was possible.

3.2 Designated Sites

3.2.1 Statutory designated sites within the study area are listed below in Table 2.

Table 2. Statutory Designated Sites			
Name	Status	Location/distance	Interest
Morecambe Bay	Ramsar site	30m northwest	Estuarine and intertidal habitats. Internationally important wildfowl and wintering waterbird populations.
Morecambe Bay and Duddon Estuary	Special Protection Area (SPA)	30m northwest	Internationally important wildfowl and wintering waterbird populations.

Wyre-Lune	Marine Conservation Zone (MCZ)	30m northwest	Smelt *Osmerus eperlanus*.
Morecambe Bay	Special Area for Conservation (SAC)	5.5km north	Intertidal and coastal habitats. Great Crested Newt.
Wyre Estuary	Site of Special Scientific Interest (SSSI)	30m northwest	Estuarine habitats including extensive saltmarsh and mudflats. Wintering and passage Black-tailed Godwit, wintering Turnstone and Teal.

3.2.2 Morecambe Bay Ramsar site, SPA and SAC are of international importance.

3.2.3 Wyre Estuary SSSI is of national importance.

3.2.4 The site is located within the Impact Risk Zone of the Wyre Estuary SSSI. The proposed development will require the Local Planning Authority to consult with Natural England.

3.2.5 Non-statutory designated sites within the study area are listed in Table 3.

Table 3. Non-statutory Designated Sites

Name	Status	Location/distance	Interest
ICI Hillhouse Estuary Banks	Biological Heritage Site (BHS)	Adjacent to northeast	Scrub, dry reedbed, tall herb and grassland.
Fleetwood Railway Branch Line – Trunnah to Burn Naze	BHS	700m west	Former railway line supporting species rich open habitats, grassland and scrub.
Skippool Marsh and Thornton Bank	BHS	1.4km southeast	Ungrazed saltmarsh and relict woodland. Lax-flowered Sea-lavender and Wild Celery.

Burglars Alley Field	BHS	1.7km northwest	Upper saltmarsh transitional habitats. Water vole.
Fleetwood Farm Fields	BHS	1.9km northwest	Agricultural fields used by large numbers of Pink-footed Goose, also roosting Lapwing and Oystercatcher. Brackish Water-crowfoot recorded on a pit margin.

3.2.6 Biological Heritage Sites are of county level importance.

3.3 Habitats

3.3.1 The habitats survey plan is contained in Appendix 2.

Ephemeral/Short Perennial

3.3.2 The dominant habitat is sparsely vegetated ground, with mosses and perennial herbs including Black Medick *Medicago lupulina*, Bird's-foot Trefoil *Lotus corniculatus*, Ribwort Plantain *Plantago lanceolata*, Wild Basil *Clinopodium vulgare*, Selfheal *Prunella vulgaris*, Bent grass *Agrostis* sp., Butterfly Bush *Buddleija davidii* and mosses (see Photograph 1). The vegetation has colonised areas of gravel and hardstanding, with more bare ground than vegetation. The topography of this habitat is flat.

Photograph 1 showing short ephemeral/perennial vegetation

3.3.3 The ephemeral/short perennial habitat is in moderate condition as it passes two of the three assessment criteria but fails on structural diversity. It is of ecological importance at the site level.

Hardstanding

3.3.4 Hardstanding is present as roads, car parking areas and in the footprint of previous buildings (see Photograph 2). This habitat has a sealed surface and condition assessment does not apply. This habitat is of negligible ecological importance.

Photograph 2 showing hardstanding

Rank Grassland

3.3.5 Species poor grassland is present around the edges of the site, including road verges (see Photograph 3). Species include Yorkshire Fog *Holcus lanatus*, Cock's-foot *Dactylis glomerata*, Reed Canary-grass *Phalaris arundinacea*, Wild Carrot *Daucus carota*, Evening Primrose *Oenothera* agg. and Bramble *Rubus fruticosus* agg.. A single stand of Wood Small-reed *Calamagrostis epigejos* was recorded.

Photograph 3 showing rank grassland

3.3.6 The grassland is in poor condition as it fails essential criterion 1 (less than eight species per square metre). It is of importance at the site level.

Scrub

3.3.7 Bramble scrub is present around the site peripheries (see Photograph 4). Butterfly Bush *Buddleja davidii* is widespread and is colonising the other habitats on site. Condition assessment does not apply to Bramble scrub.

3.3.8 Dense mixed scrub is present in the southwest and along Royles Brook. Species comprise Bramble, Blackthorn *Prunus spinosa* and Hawthorn *Crataegus monogyna*. The mixed scrub is in moderate condition as it passes four of the five assessment criteria but fails due to the prevalence of Butterfly Bush. Scrub habitats are of importance at the site level.

Photograph 4 showing Bramble scrub

Bare Ground

3.3.9 Bare ground (artificial unsealed surface) is present as car parking in the southeast of the site (see Photograph 5). Some of the bare ground is sparsely vegetated and is in moderate condition; and some of it is unvegetated (artificial unsealed, unvegetated) and condition assessment is not applicable. This habitat is of negligible importance.

Photograph 5 showing bare ground

Buildings

3.3.10 Two buildings are present on the site. Building 1 is a single-storey structure with a flat roof and is entirely clad in folded steel (see Photograph 6).

Photograph 6 showing Building 1

3.3.11 Building 2 is a small pre-fabricated cabin of fibreglass construction in the southwest of the site (see Photograph 7).

Photograph 7 showing Building 2

3.3.12 Buildings are classed as Developed land; sealed surface and score zero in the biodiversity metric. The buildings are of negligible ecological importance.

Standing Water

3.3.13 A small concrete pit, approximately 2m x 2m, is present in the southwest of the site. The water was too turbid to determine the depth. Occasional Bulrush *Typha latifolia* is present (see Photograph 8). The pit is connected to a covered drainage channel. The pond is in poor condition as it passes four of the nine assessment criteria. It is of no more than site level importance.

Photograph 8 showing standing water

3.4 Baseline Biodiversity Units

3.4.1 The baseline biodiversity units are shown in Table 4. No irreplaceable habitats are present on site.

Table 4. Baseline biodiversity units

Phase 1 Habitat Classification	UK Hab Classification	Area (Ha)	Biodiversity Units
Ephemeral/short perennial	Sparsely vegetated land; ruderal/ephemeral	2.1	8.4
Buildings and hardstanding	Urban; developed land, sealed surface	0.94	0.00
Dense scrub	Heathland and shrub; mixed scrub	0.267	2.14
Bare ground	Artificial; developed land, unsealed surface	0.251	0.00
Semi-improved grassland	Other neutral grassland	0.138	1.1
Tall ruderal herb	Sparsely vegetated land; ruderal/ephemeral	0.031	0.13
Standing water	Ornamental lake/pond	0.001	0.00
Total		3.73	11.77

3.5 Species

Invertebrates

3.5.1 Records returned include several priority species such as Grey Dagger *Acronicta psi* (2003), Green-brindled Crescent *Allophyes oxyacanthae* (2000), Rosy Rustic *Hydraecia micacea* (2002) and Mouse Moth *Amphipyra tragopoginis* (2002). Most of these records appear to be from the garden of a local enthusiast.

3.5.2 Habitats on site are unlikely to support an important invertebrate assemblage, although the range of habitats does provide opportunities for a common assemblage. The topography of the site is largely flat, which reduces the availability of microhabitats.

Amphibians

3.5.3 Numerous records of Great Crested Newt *Triturus cristatus* were returned, the most recent being from 2017. The records all relate to ponds more than 500m southeast of the site, or on the opposite side of the Wyre Estuary. Common Frog *Rana temporaria*, Common Toad *Bufo bufo* and Smooth Newt *Lissotriton vulgaris* are also recorded within the search area.

3.5.4 The results of the eDNA analysis were negative, indicating that Great Crested Newt is likely to be absent (see Appendix 3). Small numbers of Smooth Newt and Common Frog tadpoles were recorded during the second survey. Terrestrial habitats on site are likely to be used by small numbers of foraging and sheltering amphibians, however the site is unlikely to be important in maintaining any populations due to the sparsity of suitable aquatic habitats.

Reptiles

3.5.5 A single record of Common Lizard *Zootoca vivipara* was returned from 1.8km northwest of the site (2006).

3.5.6 Habitats on site are sub-optimal for reptiles due to the largely flat topography and extent of very sparse vegetation cover. The site is unlikely to be important in maintaining any reptile populations.

Birds

3.5.7 Numerous bird records were returned; most originated from a ringing area 1.4km northwest of the site, or from Wyre Estuary Country Park 500m southeast of the site. The mudflats and saltmarsh of the Wyre Estuary Ramsar and SSSI are of international and national importance for the populations of sea birds and waders they support. The site is within the Pink-footed Goose *Anser brachyrhynchus* major feeding zone, but habitats on site are not suitable for this species, which uses agricultural fields.

3.5.8 Habitats on site are of limited interest for birds. The dense scrub in the southwest of the site and the scrub and woodland adjacent to Royles Brook offer suitable nesting habitat for a range of bird species. The open areas of gravel with occasional areas of pooled water offer suitable nesting habitat for Little Ringed Plover *Charadrius dubius*.

Badger

3.5.9 No records of Badger *Meles meles* were returned.

3.5.10 The densely vegetated embankment adjacent to the eastern boundary offers suitable habitat for Badger setts but no evidence of Badger was recorded during the survey. Habitats on site are generally unsuitable for Badger.

Bats

3.5.11 Records returned included Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *P. pygmaeus* and Brown Long-eared *Plecotus auritus*.

3.5.12 The two buildings on site offer negligible potential to support roosting bats due to the absence of suitable features.

3.5.13 No trees on site offer potential to support roosting bats due to the absence of suitable features.

3.5.14 Habitats on site are generally open and exposed. The vegetated corridor of Royle's Brook and the densely vegetated embankment along the eastern boundary offer suitable habitats for foraging bats.

Otter

3.5.15 No records of Otter *Lutra lutra* were returned.

3.5.16 Habitats on site are not suitable for Otter.

3.5.17 During the survey of Royle's Brook a fresh spraint and clear paw prints were recorded in one location. No resting sites were recorded. Royles Brook is likely to be used for commuting and as a source of fresh water but it is unlikely to be an important in maintaining the favourable conservation status of the local population. The Wyre Estuary offer suitable foraging and commuting habitat for Otter.

Water Vole

3.5.18 Several records of Water Vole *Arvicola amphibius* were returned, although most were around 20 years old. The closest record is from 65m southeast of the site (2016). Most records are associated with ditches in Burglar's Alley Field, 1.7km northwest of the site.

3.5.19 Habitats on site are not suitable for Water Vole.

3.5.20 No evidence of Water Vole was recorded during the survey of Royle's Brook. Habitats within the reach adjacent to the site are suboptimal due to the sparsity of marginal vegetation and the presence of culverts upstream and downstream.

3.6 Invasive Species

3.6.1 Numerous records of species listed on the Lancashire Key Species: Invasive Species were returned. Butterfly Bush is one such species and is widespread on site.

3.6.2 Japanese Rose *Rosa rugosa* was recorded during the survey. Small, isolated stands were identified on site.

4. Assessment

4.1 Development Context

4.1.1 The following assessment assumes that an Incinerator Bottom Ash processing facility will be constructed. It is likely that habitats on site will be lost to facilitate construction. Detailed plans are not available at the time of writing the PEA.

4.2 Impacts on Designated Sites

4.2.1 The site is in close proximity to several internationally important designated sites. The high vegetated bund along the sites northwestern boundary is expected to prevent any visual disturbance to qualifying bird species using the Wyre Estuary. There is potential for disturbance from noise during construction. There is potential for air- or waterborne pollution to affect these sites in the absence of mitigation.

4.2.2 No impacts to the non-statutory designated sites are anticipated due to the distance between them and the site. ICI Hillhouse Estuary Banks SBI could potentially be affected by airborne pollution or mechanical damage from plant or machinery.

4.3 Impacts on Habitats

4.3.1 The habitats on site will be lost to facilitate the proposed development.

4.3.2 The ephemeral/short perennial habitat does not meet the criteria for the UK priority habitat Open Mosaic Habitat (OMH) on Previously Developed Land as the habitats are not present as a mosaic, but rather large, homogenous parcels. The site topography is flat and lacks structural diversity such as south-facing slopes. The majority of this habitat is on a sealed surface, limiting opportunities for burrowing invertebrates. The vegetation cover is extremely sparce and species poor and therefore does not provide a good source of pollen and nectar. The habitats are of limited ecological importance and losses would be significant at the site level only.

4.3.3 In the absence of mitigation, there is potential for pollution to enter Royle's Brook during both construction and operation phases. This could potentially enter the Wyre Estuary, which could lead to significant impacts, depending on the nature of the pollutants.

4.4 Impacts on Species

Invertebrates

4.4.1 No significant impacts to invertebrates are anticipated.

Amphibians

4.4.2 No significant impacts are anticipated to amphibians.

Reptiles

4.4.3 No impacts to reptiles are anticipated.

Birds

4.4.4 Impacts to birds in the adjacent Wyre Estuary are considered unlikely due to the screening provided by the bund along the northwest boundary. Some of the buildings will reach above the bund but the presence of a public right of way between the site and the Wyre Estuary, and the industrial nature of the wider site means the risk of visual disturbance is low. It is possible that birds could be disturbed by noise during construction, although it is anticipated that they would become accustomed to operational activities in time. In the absence of mitigation, clearance of scrub could result in impacts to nesting birds.

Badger

4.4.5 No impacts to Badger are anticipated and Badgers are not discussed further in this report.

Bats

4.4.6 No impacts to roosting bats are anticipated.

4.4.7 Increased artificial lighting could potentially affect bats that may forage along Royle's Brook or the northwestern site boundary.

Otter

4.4.8 Impacts to Otter are considered unlikely. No resting sites would be affected. There is a low risk of disturbance during construction.

Water Vole

4.4.9 No impacts to Water Vole are considered likely.

4.5 Impacts on Invasive Species

4.5.1 In the absence of mitigation, the proposed development could result in Japanese Rose being spread to other areas. This would be a breach of the Wildlife and Countryside Act 1981 (as amended).

4.6 Biodiversity Net Gain

4.6.1 The baseline habitats score 11.77 biodiversity units. It will not be possible to deliver Biodiversity Net Gain on site due to the scale of the proposed development.

4.6.2 In order to achieve 10% net gain, it will be necessary to provide 12.95 biodiversity units. Offsite BNG delivery could be achieved, subject to appropriate legal agreements.

5. Recommendations

5.1 Further Surveys

5.1.1 No further surveys are recommended.

5.2 Mitigation and Enhancement Measures

5.2.1 Protection of ecological features (habitats and species) during the construction phase will be described in a Construction Environmental Management Plan (CEMP). Mitigation measures to protect, maintain and enhance ecological features during the operational phase of development will be described in a Biodiversity Management Plan (BMP). Management Plans will contain Operational Aims and Objectives, Rationale for management, Prescriptions and schedules detailing the timing and responsibility for delivering the prescriptions. It is anticipated that the CEMP and BMP will be provided as a planning condition in advance of the commencement of the proposed development.

Designated Sites

5.2.2 Given the proximity of the site to several internationally important designated sites, it will be necessary to produce a Habitat Regulations Assessment (HRA). The LPA is the competent authority and it is their responsibility to do so. However, it is standard practice for the developer's consultants to produce a 'Shadow' HRA, which the LPA can then adopt if it chooses to.

Habitats

5.2.3 Adjacent habitats, including the scrub and woodland along Royle's Brook, should be protected during construction with fencing to prevent accidental incursion.

5.2.4 Standard pollution prevention measures should be included in a CEMP to avoid risk of pollution entering Royle's Brook.

5.2.5 The proposed development offers an opportunity to create small areas of new habitat on site. Small areas of mixed native scrub will be created in these areas.

Nesting Birds

5.2.6 Impacts to nesting birds should be avoided by carrying out site clearance and similar operations outside of the bird breeding season (March- September). If vegetation has to be cleared during the bird breeding season checks immediately before clearance by a suitably qualified ecologist will be required. If nesting activity is detected work in that area will need to stop until the ecologist considers that nesting activity is finished.

Bats

5.2.7 Any artificial lighting should avoid illuminating habitats along Royle's Brook or the vegetated embankment along the northwest boundary.

Otter

5.2.8 A pre-construction survey is recommended to check for resting sites along Royle's Brook. Lighting should avoid affecting the brook.

Appendix 1: Planning Policy & Legislation

National Policy

The National Planning Policy Framework (NPPF 2023) describes the Government's planning policy for England and how it should be applied. Within this framework, the requirements in relation to biodiversity are included within several policies. The two most relevant to individual planning decisions are Paragraphs 180 and 180, shown below:

- 180. Planning policies and decisions should contribute to and enhance the natural and local environment by:
    - a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
    - b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
    - c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
    - d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
    - e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
    - f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
- 186. When determining planning applications, local planning authorities should apply the following principles:
    - a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
    - b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments),

should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

Legislation

The Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000) includes the notification and confirmation of Sites of Special Scientific Interest (SSSIs). SSSIs can be notified for their floral, faunal, geological, or physiographical features. Protection against damaging operations and management of SSSIs is also included within the Act. Impact Risk Zones (IRZs) are zones around an SSSI account for the particular sensitivities of the features for which it is notified and identify development proposal which could have adverse impacts.

The Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000) protects native animals, plants and habitats. Under the Act it is an offence to intentionally kill, injure or take any wild animal listed on Schedule 5 and it is an offence to interfere with places used for shelter or protection, or intentionally disturb animals occupying such places. The Act prohibits picking, uprooting or destroy any wild plant (or any attached seed or spore) listed in Schedule 8.

European Protected Species (EPS) such as bats, Hazel Dormouse, Otter, Natterjack Toad, Smooth Snake, Sand Lizard and Great Crested Newt are protected by the Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000) and the Conservation of Habitats and Species Regulations 2017. The Acts make it an offence to:

a) Deliberately capture, injure or kill an EPS;
b) Deliberately impair an EPS's ability to survive, breed, reproduce, rear or nurture young; to hibernate or migrate; or significantly affect the local distribution or abundance of the EPS.
c) Possess or control live or dead EPS or any part of, or anything derived from a EPS;
d) Damage or destroy a breeding site or resting place of an EPS;

e) Intentionally or recklessly obstruct access to any place that is used for shelter or protection by an EPS;

f) Intentionally or recklessly disturb a structure or place that it uses for shelter or protection that is occupied by an EPS.

All common herptiles are protected under the Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000). Grass Snake, Slow Worm, Common Lizard, Adder are protected against intentional killing or injury. Common Frog, Common Toad, Smooth Newt and Palmate Newt is protected against sale. In addition, all British reptiles, Common toad and Great Crested Newt are listed as Species of Principal Importance.

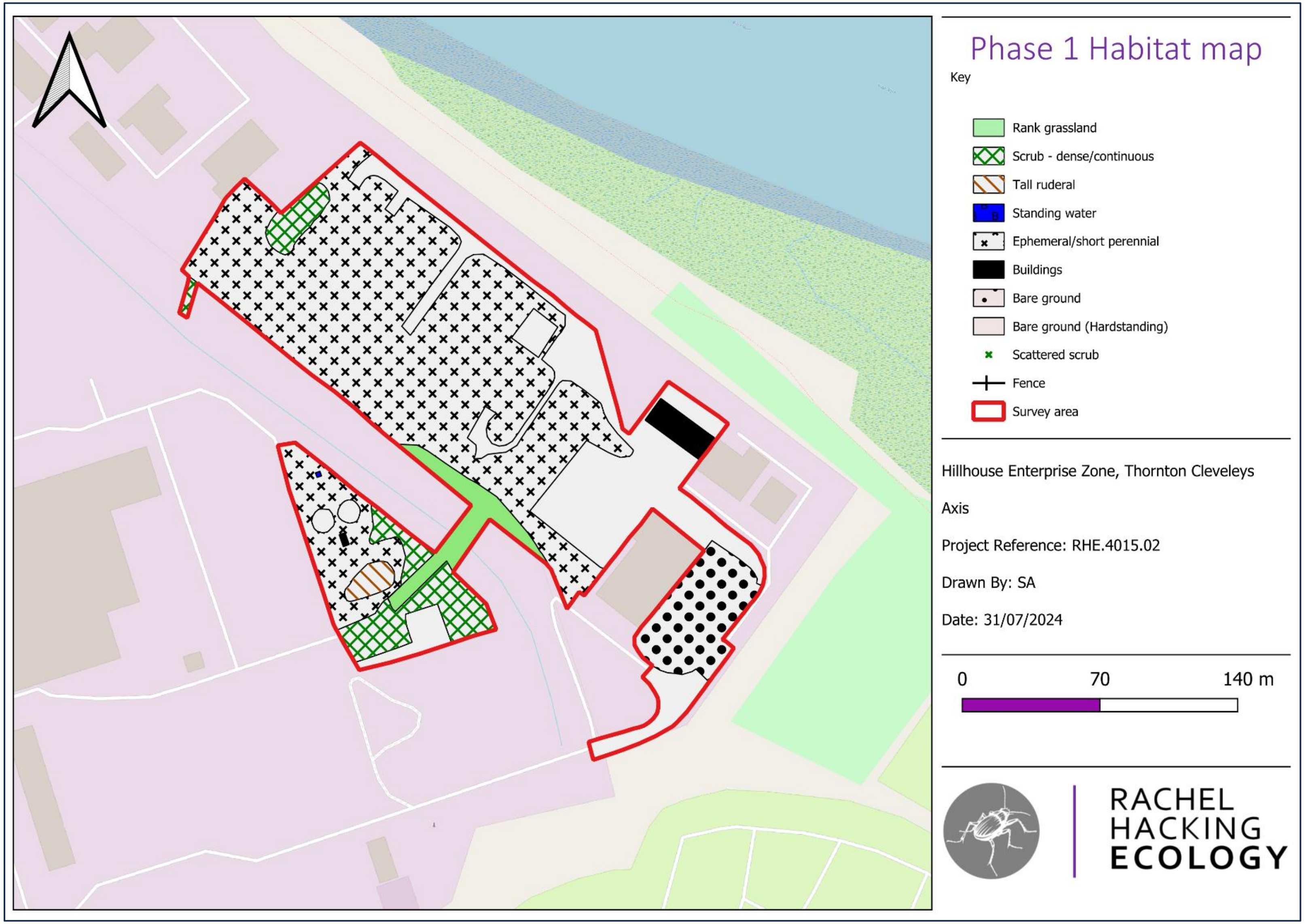
All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally kill, injure or take any wild bird or take, damage, or destroy its nest whilst in use or being built, or take or destroy its eggs. It is an offence to intentionally or recklessly disturb a species listed on Schedule 1 of the Act while they are nest building or at or near a nest with eggs or young, or to disturb the dependent young.

The Protection of Badgers Act 1992 makes it an offence to wilfully, or to attempt to kill, injure, take, possess or cruelly ill-treat a Badger, or intentionally or recklessly interfere with a sett. Interference of a sett includes disturbing badgers during occupation of a sett, or damaging or destroying a sett, or obstructing access to the sett.

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on every public authority to have regard to conserving biodiversity. Section 41 of the same Act requires the Secretary of State to publish a list of the living organisms and types of habitats that are of 'Principal Importance' for the purpose of conserving biodiversity. The Secretary of State must take steps, as appear reasonably practicable, to further the conservation of those living organisms and habitats in any list published under this section. The list of species and habitats of principal importance currently includes 943 species and 56 habitats. These are the species and habitats found in England which are regarded as conservation priorities under the UK Post-2010 Biodiversity Framework

The Hedgerows Regulations 1997 protect 'important' hedgerows from destruction or damage. A hedgerow is 'important' if it (a) has existed for 30 years or more; and (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations. Under the Regulations, it is against the law to remove or destroy 'important' hedgerows unless permitted by the local planning authority.

Appendix 2: Habitat Map



Appendix 3 eDNA Results Summary

Client: Joel Hacking,
Rachel Hacking Ecology

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Sample ID: ADAS-4133	Condition on Receipt: Good	Volume: Passed
Client Identifier: Hillhouse 1	Description: pond water samples in preservative	
Date of Receipt: 29/04/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	02/05/2024
Degradation Control§	Within Limits	Real Time PCR	02/05/2024
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	02/05/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN
Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	03/05/2024	Date of issue:	03/05/2024

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

† Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

§ No degradation is expected within time frame of kit preparation, sample collection and analysis.

#Additional positive controls (10^{-1}, 10^{-2}, 10^{-3} ng/µL) are also routinely run, results not shown here.

ADAS eDNA Results Sheet: 1040068-0019 Hillhouse (01) Page | 1 Edition: 01

Appendix 1: Interpretation of results

Sample Condition

Upon sample receipt we score your samples according to quality: good, low sediment, medium sediment, high sediment, white precipitate, and presence of algae.

There are three reasons as to why sediment should be avoided:
1. It is possible for DNA to persist within the sediment for longer than it would if it was floating in the water which could lead to a false positive result i.e. in this case GCN not recently present but present a long time ago
2. In some cases sediment can cause inhibition of the PCR analysis used to detect GCN eDNA within samples which could lead to an indeterminate result.
3. In some cases sediment can interfere with the DNA extraction procedure resulting in poor recovery of the eDNA which in turn can lead to an indeterminate result.

Algae can make the DNA extraction more difficult to perform so if it can be avoided then this is helpful.

Sometimes samples contain a white precipitate which we have found makes the recovery of eDNA very difficult. This precipitate can be present in such high amounts that it interferes with the eDNA extraction process meaning that we cannot recover the degradation control (nor most likely the eDNA itself) at sufficient levels for the control to be within the acceptable limits for the assay, therefore we have to classify these type of samples as indeterminate.

What do my results mean?

A positive result means that great crested newts are present in the water or have been present in the water in the recent past (eDNA degrades over around 7-21 days).

A negative result means that DNA from the great crested newt has not been detected in your sample.

On occasion an inconclusive result will be issued. This occurs where the DNA from the great crested newt has not been detected but the controls have indicated that either: the sample has been degraded and/or the eDNA was not fully extracted (poor recovery); or the PCR inhibited in some way. This may be due to the water chemistry or may be due to the presence of high levels of sediment in samples which can interfere with the DNA extraction process. A re-test could be performed but a fresh sample would need to be obtained. We have successfully performed re-tests on samples which have had high sediment content on the first collection and low sediment content (through improved sample collection) on the re-test. If water chemistry was the cause of the indeterminate then a re-test would most likely also return an inconclusive result.

The results will be recorded as indeterminate if the GCN result is negative and the degradation result is recorded as:
1. evidence of decay - meaning that the degradation control was outside of accepted limits
2. evidence of degradation or residual inhibition - meaning that the degradation control was outside of accepted limits but that this could have been due to inhibitors not being removed sufficiently by the dilution of inhibited samples (according to the technical advice note)

ADAS eDNA Results Sheet: 1040068-0019 Hillhouse (01) Page | 2 Edition: 01

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Appendix 8.1: Baseline Air Quality Analysis

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Document approval

	Name	Signature	Position	Date
Prepared by:	Stuart Nock	SNock	Senior Environmental Consultant	16/07/2024
Checked by:	Rosalind Flavell	RFlavell	Lead Environmental Consultant	16/07/2024

Document revision record

Revision no	Date	Details of revisions	Prepared by	Checked by
0	16/07/2024	First issue	SMN	RSF

Contents

1 Introduction

This Appendix contains a review of the baseline air quality and defines appropriate baseline concentrations to describe the existing air quality conditions in the local area of the Hillhouse IBA Facility (the Proposed Development). The Proposed Development is to be located within the Hillhouse Business Park, Thornton-Cleveleys, Lancashire (the Site).

The results of this baseline analysis are drawn upon in the Chapter 8 [Air Quality] of the Environmental Statement (ES), and Appendix 8.4 [Emissions Modelling].

As part of this review, national modelling data, local authority and national monitoring networks have been considered. This has included all pollutants covered in ES Chapter 8.

2 National modelling – mapped background data

In order to assist local authorities with their responsibilities under Local Air Quality Management, the Department for Environment Food and Rural Affairs (Defra) provides modelled background concentrations of pollutants across the UK on a 1 km by 1 km grid. This model is based on known pollution sources and background measurements and is used by local authorities in lieu of suitable monitoring data. Mapped background concentrations have been downloaded for the grid squares containing the Site and immediate surroundings. In addition, mapped atmospheric concentrations of ammonia are available from Defra via the National Environment Research Council (NERC) Centre for Ecology and Hydrology (CEH) throughout the UK.

The mapped background data is calibrated against monitoring data. For instance, the 2018 mapped background concentrations are based on 2018 meteorological data and are calibrated against monitoring undertaken in 2018. The 2018-based background maps include predictions for each year until 2030.

Data for 2022 has been extracted for all grid squares containing a receptor location (refer to ES Chapter 8 for the receptor locations) to inform the assessment of pollutant concentrations in the baseline year of 2022, which aligns with the meteorological data, traffic data, and most recent year of air quality monitoring data. Data for 2026 has been extracted to inform the assessment of pollutant concentrations in the opening year of the Proposed Development. The data is presented in Table 1.

Table 1: Mapped Background Data

Grid Square		Annual mean concentration (µg/m³)					
		Nitrogen dioxide		PM_{10}		$PM_{2.5}$	
X	Y	2022	2026	2022	2026	2022	2026
333500	443500	7.56	6.68	9.45	9.14	6.57	6.33
333500	444500	7.82	7.14	10.53	10.18	7.77	7.49
333500	443500	7.56	6.68	9.45	9.14	6.57	6.33
334500	443500	8.45	7.65	8.63	8.33	5.93	5.68
332500	443500	7.46	6.56	9.31	9.01	6.47	6.23
334500	442500	9.98	9.00	9.09	8.79	6.23	6.00

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3 AURN and LAQM monitoring

3.1 Overview

Monitoring locations are broadly classified into 'roadside' and 'background' locations. 'Background' locations are typically sited so that no single pollutant source is dominant and are intended to be representative of background concentrations over several square kilometres. 'Roadside' sites are dominated by road traffic emissions and only representative of concentrations in the immediate vicinity of the analyser. The air quality assessment requires consideration of background and roadside concentrations. Therefore, this analysis has considered background monitoring locations within 3 km of the Site or any of the modelled road network, and roadside monitoring locations along the modelled road network.

The UK Automatic Urban and Rural Network (AURN) is a country-wide network of air quality monitoring stations operated on behalf of Defra. This includes automatic monitoring of nitrogen dioxide and particulate matter. The nearest AURN monitoring station is Blackpool Marton, an urban background site located 9.27 km south of the Site. As there are no AURN sites within 3 km of the modelled road network, AURN monitoring has not been considered further in this analysis.

Wyre Council does not have any continuous monitoring sites within their jurisdiction. However, they do undertake non-automatic (diffusion tube) monitoring for nitrogen dioxide at various sites across the district. No monitoring of PM_{10} or $PM_{2.5}$ is undertaken by Wyre Council.

3.2 Review of monitoring data

A summary of monitoring data from the non-automatic (diffusion tube) monitoring sites within 3 km of the modelled road network are listed in Table 2. The latest available data (2017 -2021) has been taken from the 2021 Wyre Council Local Air Quality Monitoring (LAQM) Annual Status Report (September 2021).

Table 2: Summary of non-automatic monitoring data within 5 km of the Site

ID	Site type	Annual mean concentration (µg/m³)				
		2017	2018	2019	2020	2021
Background/Suburban Monitoring						
7	Suburban(1)	14.8	14.8	13.3	10.5	11.6
11	Suburban(1)	19.1	20.0	17.9	14.1	13.8
16	Suburban(1)(2)	14.3	15.7	13.4	11.0	11.8

Notes:

(1) No sites designated as 'roadside' have been identified along the modelled road network. All three of the identified suburban sites are located within 12 m of main roads, so a significant road contribution will be included in the monitored concentrations.

(2) Lies along Bourne Road close to the junction with Fleetwood Road North. This site has been used for model verification.

Source: Wyre Council 2022 LQAM Annual Status Report and © Crown 2024 copyright Defra via uk-air.defra.gov.uk, licenced under the Open Government Licence (OGL).

As shown, the monitored concentrations are all well below the AQAL of 40 µg/m³, despite the influence of road traffic at all three monitoring locations. The monitored concentrations are somewhat higher than the mapped background concentrations presented in Table 1, potentially due to the local vehicle emissions. The mapped background concentrations have been used in the assessment to avoid double-counting of vehicle emissions, and provide receptor-specific baseline concentrations for the two different years assessed (2022 and 2026).

Monitoring location 16 has been used to verify the dispersion modelling. As the traffic and meteorological data is from 2022, the monitored concentration for 2022 must be used to verify the model output. This concentration is 10.7 µg/m³, as provided by email by the Environmental Health Technician at Wyre Council[1].

3.3 Other monitoring data

The only other pollutant included in the assessment is ammonia, which is measured as part of the UKEAP project at rural background locations. There are no UKEAP monitoring locations within 10 km of the Site, so no representative monitoring data is available. Ammonia is only a concern with regard to the impact on ecology. The assessment presented in Appendix 8.4 [Emissions Modelling] did not identify any potentially significant effect on an ecological receptor due to concentrations of ammonia, so no detail regarding baseline concentrations is required.

1 Email correspondence with Nicola Pythian, dated 8 May 2024.

4 Summary

The preceding sections have provided a review of the local and national monitoring data and national modelled background concentrations. No local monitoring data is available for PM_{10} or $PM_{2.5}$. For nitrogen dioxide some monitoring data is available but the locations identified are all influenced by local vehicle emissions. One site, ID 16, has been used for model verification. Otherwise, the Defra mapped background data as presented in Table 1 has been used to assess the baseline pollutant concentrations.

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Appendix 8.2: Construction Dust Assessment Methodology

ENGINEERING CONSULTING

Document approval

	Name	Signature	Position	Date
Prepared by:	Stuart Nock	SNock	Senior Environmental Consultant	16/07/2024
Checked by:	Rosalind Flavell	RFlavell	Lead Environmental Consultant	16/07/2024

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Contents

1 Introduction

This Appendix presents the methodology for the assessment of construction phase dust impacts of the Hillhouse IBA Facility (the Proposed Development). The assessment has been undertaken in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the assessment of dust from demolition and construction v2.2' (January 2024). This guidance sets out the methodology for assessing the air quality impacts of construction and demolition and identifies good practice for mitigating and managing air quality impacts.

The assessment is based on the risk of a construction site giving rise to dust impacts and the sensitivity of the surrounding area. The risk of dust emissions from a construction site causing loss of amenity and / or health or ecological effects is related to:

- The activities being undertaken (demolition, number of vehicles and plant etc.);
- The duration of these activities;
- The size of the site;
- The meteorological conditions (wind speed, direction and rainfall);
- The proximity of receptors to the activity;
- The adequacy of the mitigation measures applied to reduce or eliminate dust; and
- The sensitivity of the receptors to dust.

The quantity of dust emitted is related to the area of land being worked and the level of construction activities, in terms of the nature, magnitude and duration of those activities. The wind direction, wind speed and rainfall at the time when a construction activity is taking place will also influence whether there is likely to be a dust impact. Atmospheric conditions which promote adverse impacts can occur in any direction from a site. However, adverse impacts are more likely to occur downwind of the prevailing wind direction and / or close to the worked areas. Impacts are also more likely to occur during drier periods as rainfall acts as a natural dust suppressant.

Activities are divided into four types to reflect their different potential impacts. These are:

1. Demolition;
2. Earthworks;
3. Construction; and
4. Trackout.

"Trackout" is a less well-known term and is defined by the IAQM as "The transport of dust and dirt from the construction/ demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network.

The approach considers three separate dust effects:

1. Annoyance due to dust deposition;
2. Harm to ecological receptors; and
3. The risk of health effects due to significant increase in exposure to PM_{10} (particulate matter with a diameter less than 10 µm).

2 Methodology

The first stage is to determine whether the impact can be screened out as 'negligible', or whether a more detailed assessment is required. The IAQM recommends that the developer would normally be required to undertake a detailed assessment where there is:

- A human receptor within 250 m of the boundary of the site;
- An ecological receptor within 50 m of the boundary of the site; or
- A human or ecological receptor within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

A human receptor, in this context, is any location where a person may experience the annoyance effects of airborne dust or dust deposition or suffer exposure to PM_{10} over a period of time relevant to the AQALs. These include:

- Residential dwellings;
- Schools;
- Hospitals;
- Care homes;
- Hotels;
- Gardens (where relevant public exposure is likely i.e. excluding extremities of gardens or front gardens); and
- Sensitive commercial premises including; vehicle showrooms, food manufacturers; and electronics manufacturers.

Ecological receptors should include statutory and non-statutory designated sites.

If a detailed assessment is required, the second stage is to assess the risk of dust effects arising. A site is allocated to a risk category based on two factors; dust emission magnitude; and the sensitivity of the area. These factors are combined to give the risk of dust impact in the absence of any mitigation measures.

The third stage is to define appropriate, site-specific, mitigation measures. The final stage is to determine whether significant effects are likely. For almost all construction activities, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience has shown that this is normally possible.

3 Assessment Criteria

For developments where a detailed assessment is required, a risk category is determined based on two factors;

1. dust emission magnitude (Table 1); and
2. the sensitivity of the area (Table 2 to Table 7).

These factors are combined to give the risk of dust impacts (Table 8) in the absence of any mitigation measures.

3.1 Dust emission magnitude

The dust emission magnitude is based on the scale of the anticipated works and should be classified as "Small", "Medium" or "Large". The following are example of how the potential dust emissions magnitude for different activities can be defined as set out in the IAQM guidance:

Table 1: Dust Emission Magnitude Criteria

Magnitude	Description
Demolition Activities	
Large	total building volume > 75,000m^3, potentially dusty construction material (i.e. concrete), on-site crushing and screening, demolition activities > 12m above ground level
Medium	total building volume 12,000 - 75,000m^3, potentially dusty construction material, demolition activities 6 – 12m above ground level
Small	total building volume < 12,000m^3, construction material with low potentially for dust release (i.e. metal cladding or timber), demolition activities <6m above ground level, demolition during wetter months
Earthworks	
Large	total size area > 110,000m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), > 10 heavy earth moving vehicles active at any one time, formation of bunds > 6m in height,
Medium	total size area 18,000 – 110,000m^2, moderately dusty soil type (i.e. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 3 – 6m in height
Small	total size area < 18,000m^2, soil type with large grain size (i.e. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 3m in height
Construction Activities	
Large	total building volume > 75,000m^3, piling, on site concrete batching, sandblasting
Medium	total building volume 12,000 – 75,000m^3, potentially dusty construction material (e.g. concrete), piling, on site concrete batching
Small	total building volume < 12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber)

Magnitude	Description
Trackout	
Large	> 50 HDV (> 3.5t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100 m
Medium	20 – 50 HDV (> 3.5t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100 m
Small	< 20 HDV (> 3.5t) trips in any one day, surface material with low potential for dust release, unpaved road length < 50 m

Source: Section 7.2, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

Only receptors within 50 m of the routes(s) used by vehicles on the public highway and up to 250 m from the site entrance(s) are considered to be at risk from the effects of dust from trackout.

3.2 Sensitivity of the area

The sensitivity of the area takes account of a number of factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees or other vegetation, to reduce the risk of wind-blown dust.

The type of receptors at different distances from the site boundary or, if known, from the dust generating activities, should be included. Consideration should also be given to the number of `human receptors'. Exact counting of the number of `human receptors' is not required. Instead, the guidance recommends that judgement is used to determine the receptors (a residential unit is one receptor) within each distance band.

There is no unified sensitivity classification scheme that covers the different potential effects on property, human health and ecological receptors. However, the following guidance is provided on the sensitivity of different types of receptors. For the sensitivity of people and their property to soiling, it is recommended that professional judgement is used to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the principles presented in Table 2.

Table 2: Sensitivity to Dust Soiling Effects

Sensitivity	Justification
High	Users can reasonably expect an enjoyment of a high level of amenity; or The appearance, aesthetics or value of their property would be diminished by dust deposition; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.
Medium	Users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home; or

Sensitivity	Justification
	The appearance, aesthetic or value of their property could be diminished by dust deposition; or The people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land; Indicative examples include parks and places of work.
Low	The enjoyment of amenity would not reasonably be expected; or Property would not reasonably be expected to be diminished in appearance, aesthetics or value by dust deposition; or There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short-term car parks and roads.

Source: Box 6, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

For the sensitivity of people to the health effects of PM_{10} the IAQM categorises the sensitivity based on whether or not the receptor is likely to be exposed to elevated concentrations over a 24-hour period, as presented in Table 3.

Table 3: Sensitivity to Heath Effects of PM_{10}

Sensitivity	Justification
High	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.
Medium	• Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24- hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.
Low	• Locations where human exposure is transient. Indicative examples include public footpaths, playing fields, parks and shopping streets

Source: Box 7, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

Table 4 provides an example of possible sensitivities of receptors to ecological effects.

Table 4: Sensitivity to Ecological Effects

Sensitivity	Justification
High	• Locations with an international or national designation and the designated features may be affected by dust deposition; or • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain. Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	• Locations with a local designation where the features may be affected by dust deposition. Indicative example is a local Nature Reserve with dust sensitive features.

Source: Box 8, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

Table 5, Table 6 and Table 7 show how sensitivity of the area should be determined for dust deposition, human health and ecosystem impacts respectively. The sensitivity of the is then derived for construction, earthworks and trackout.

Table 5: Sensitivity of the Area to Dust and Soiling Impacts on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Source: Table 2, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

Table 6: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Conc.	No. of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28 - 32 µg/m³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24 – 28 µg/m³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m³	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28 – 32 µg/m³	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24 - 28 µg/m³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Source: Table 3, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

Table 7: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Source: Table 4, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

3.3 Risk of dust impacts

The dust magnitude and sensitivity of the area are then combined using the following matrices to determine the risk of impacts with no mitigation applied. For the cases where the risk category is 'negligible', no mitigation measures beyond those required by accepted best practice would be necessary.

Table 8: Risk of Dust Impacts – to Determine the Level of Mitigation Required

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: Tables 6-9, Guidance on the assessment of dust from demolition and construction, IAQM (2024)

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Appendix 8.3: Operational Phase Dust Assessment Methodology

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Document approval

	Name	Signature	Position	Date
Prepared by:	Stuart Nock	SNock	Senior Environmental Consultant	16/07/2024
Checked by:	Rosalind Flavell	RFlavell	Lead Environmental Consultant	16/07/2024

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0	16/07/2024	First issue	SMN	RSF

Contents

1 Introduction

This Appendix presents the methodology for the assessment of operational phase dust impacts of the Hillhouse IBA Facility (the Proposed Development). The assessment has been undertaken in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the assessment of mineral dust impacts for planning' (May 2016). This guidance sets out the methodology for assessing the air quality impacts due to dust emissions from minerals sites, principally mines and quarries. Although the Proposed Development is not a mine or quarry, the proposed activities have the potential to cause dust emissions. Therefore, applicable aspects of the guidance have been adapted to allow an assessment of the potential effects of dust emissions during the operational phase to be undertaken.

Three types of effects are considered in the assessment:

1. The risk of dust disamenity, i.e. the risk of dust soiling or annoyance due to airborne or deposited dust; and
2. The risk of human health effects due to significant increase in exposure to PM_{10} (particulate matter with a diameter less than 10 µm);
3. The risk of dust impacts on ecological receptors.

2 Methodology

The first stage is to determine whether the need for an assessment can be screened out. The IAQM guidance states that:

- If there are no relevant receptors within 1 km of dust-generating activities, a detailed dust assessment can be screened out.
- Where there are receptors between 400 m and 1 km, a dust assessment is usually not required but the decision should be justified on a site-specific basis.
- Where there are receptors within 250 m of dust-generating activities (for soft rock types like sandstone) or 400 m (for hard rock types like granite), a dust assessment is required.

A human receptor is any location where a person may experience the annoyance effects of airborne dust or dust deposition or suffer exposure to PM_{10} over a period of time relevant to the AQALs. These include:

- Residential dwellings;
- Schools;
- Hospitals;
- Care homes;
- Hotels;
- Gardens (where relevant public exposure is likely i.e. excluding extremities of gardens or front gardens); and
- Sensitive commercial premises including; vehicle showrooms, food manufacturers; and electronics manufacturers.

Ecological receptors should include statutory and non-statutory designated sites.

If a detailed assessment is required, the IAQM guidance presents several options for the assessment methodology, including qualitative (risk-based) assessments, screening models, or detailed dispersion modelling. As it is not possible to quantify the source terms for operational phase dust emissions from the Proposed Development with any certainty, the qualitative approach has been followed and the assessment criteria presented in section 3 relate to the qualitative risk-based assessment approach prescribed in the IAQM guidance.

The IAQM guidance states that an assessment of human health impacts is usually only necessary if the annual mean baseline PM_{10} concentration exceeds 17 µg/m³. As detailed in Appendix 8.4 [Emissions Modelling], the with-development baseline concentrations, excluding dust emissions from operation, will be much less than 17 µg/m³ at all receptor locations. Therefore, the assessment of the risk of dust emissions from operational activities on human health effects has been screened out.

The assessment of the risk of dust disamenity and dust soiling on ecological receptors is used to describe the magnitude of the impact at individual receptors. The magnitude and extent of the individual impacts at receptor locations is then assessed to determine the overall effect from dust deposition on the surrounding area. A conclusion is then reached as to whether the overall effect is 'significant' or 'not significant'. Where the overall effect is 'significant', additional mitigation measures beyond those embedded in the design will be required to reduce the impacts to a 'not significant' level.

3 Assessment Criteria

For developments where a detailed assessment is required, the assessment is undertaken using the 'source-pathway-receptor' concept. The residual source emissions, pathway effectiveness, and receptor sensitivity are assessed and combined to determine the magnitude of the impact at each receptor.

3.1 Residual source emissions

Appendix 4 of the IAQM guidance provides indicative criteria for determining the residual source emissions. The term 'residual' refers to the magnitude of emissions considering the effect of any mitigation measures already embedded in the design. Five source types are considered in the guidance. Indicative residual source emissions categories are presented in Table 1. Where a category is not relevant to the operation of the Proposed Development this has been stated.

Table 1: Dust Emission Magnitude Criteria

Activity	Indicative criteria
Site Preparation/Restoration	Not relevant.
Mineral Extraction	Not relevant.
Materials Handling	Larger: High number of heavy plant, bare surfaces, activities close to site boundary, material of high dust potential. Smaller: Low number of heavy plant, hard standing surfaces, activities within quarry void (or covered building), material of low dust potential.
On-Site Transportation	Larger: Unconsolidated or unpaved roads, >250 HGV movements, uncontrolled vehicle speeds. Smaller: Use of conveyors, paved roads, <100 HGV movements, controlled (low) vehicle speeds
Minerals Processing	Larger: Raw and end product material of high dust potential, complex or multiple processes, high volume of material (>1 million tonnes per annum). Smaller: Raw and end product material of low dust potential, single process, low volume of material (>0.2 million tonnes per annum).
Stockpiles/exposed surfaces	Larger: Long-term storage, frequent disturbance, unconsolidated or dry material, large surface area. Smaller: Short-term storage, infrequent disturbance, stable or wet material, small surface area.
Off-site transport	Larger: High number of HGV movements, unpaved site roads, no vehicle cleaning facilities, short access road. Smaller: Low number of HGV movements, paved site roads, extensive vehicle cleaning facilities, long access road.

Source: Appendix 4, Guidance on the assessment of mineral dust impacts for planning, IAQM (2016)

3.2 Pathway effectiveness

The IAQM guidance states that the primary factor influencing the pathway is the distance between the source and the receptor. Other factors such as prevailing wind direction and topography, terrain and physical features (i.e. barriers to dust transport) should be considered.

Box 2 of the IAQM guidance states that the greatest impacts would be within 100 m of the source, with significant impacts beyond 400 m unlikely.

For the purpose of this assessment the pathway to each receptor should be assessed as 'highly effective', 'moderately effective' or 'ineffective' based on the above considerations.

3.3 Receptor sensitivity

The IAQM guidance provides the following categories for the sensitivity of human receptors to dust soiling effects:

Table 2: Sensitivity to Dust Soiling Effects

Sensitivity	Justification
High	• Users can reasonably expect an enjoyment of a high level of amenity; or • The appearance, aesthetics or value of their property would be diminished by dust deposition; and • the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.
Medium	• Users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home; or • The appearance, aesthetic or value of their property could be diminished by dust deposition; or • The people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.
Low	• The enjoyment of amenity would not reasonably be expected; or • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by dust deposition; or • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short-term car parks and roads.

Source: Box 3, Guidance on the assessment of mineral dust impacts for planning, IAQM (2016)

The IAQM guidance includes indicative criteria for assessing the sensitivity of people to the health effects of PM_{10}. However, effects on human health have been screened out so these are not relevant to the assessment.

Table 3 provides an example of possible sensitivities of receptors to ecological effects.

Table 3: Sensitivity to Ecological Effects

Sensitivity	Justification
High	• Locations with an international or national designation and the designated features may be affected by dust deposition; or • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain. Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to a minerals development releasing alkaline dusts.
Medium	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. Indicative example is a Site of Special Scientific Interest (SSSI) or local wildlife sites with very specific sensitivities.
Low	• Locations with a local designation where the features may be affected by dust deposition. Indicative example is a local Nature Reserve with dust sensitive features.

Source: Box 5, Guidance on the assessment of mineral dust impacts for planning, IAQM (2016)

3.4 Assessment of impacts

The residual source emissions and pathway effectiveness are then combined using the following matrix to determine the risk of impacts.

Table 4: Estimation of Dust Impact Risk

Pathway effectiveness	Residual Source Emissions		
	Small	Medium	Large
Highly effective	Low risk	Medium risk	High risk
Moderately effective	Negligible risk	Low risk	Medium risk
Ineffective	Negligible risk	Negligible risk	Low risk

Source: Table 2, Guidance on the assessment of mineral dust impacts for planning, IAQM (2016)

The risk of dust impacts and receptor sensitivity are then combined using the following matrix to determine the magnitude of the impacts.

Table 5: Dust Impact Magnitude Descriptors

Risk of dust impacts	Receptor sensitivity		
	Low	Medium	High
High risk	Slight adverse	Moderate adverse	Substantial adverse
Medium risk	Negligible	Slight adverse	Moderate adverse
Low risk	Negligible	Negligible	Slight adverse
Negligible risk	Negligible	Negligible	Negligible

3.5 Assessment of significance of effect

The magnitude and extent of the individual impacts at receptor locations is then assessed to determine the overall effect from dust deposition on the surrounding area. A conclusion is then reached as to whether the overall effect is 'significant' or 'not significant'.

Where the effect is 'not significant', it is considered that the proposed control measures are sufficient. If the effect is assessed as 'significant', additional mitigation will be required to reduce the impacts to a 'not significant' level.

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Appendix 8.4: Vehicle Emissions Modelling

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Document approval

	Name	Signature	Position	Date
Prepared by:	Stuart Nock		Senior Environmental Consultant	19/07/2024
Checked by:	Rosalind Flavell		Lead Environmental Consultant	19/07/2024

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0	16/07/2024	First issue	SMN	RSF
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Contents

1 Introduction

This Appendix sets out the approach taken to modelling exhaust emissions from vehicle movements generated by the Hillhouse IBA Facility (the Proposed Development). The Proposed Development is to be located within the Hillhouse Business Park, Thornton-Cleveleys, Lancashire (the Site).

This Appendix includes all model inputs and justifications where appropriate. Finally, this Appendix presents the results of the modelling. These results are drawn upon in Chapter 8 [Air Quality] of the Environmental Statement (ES).

2 Sensitive Receptors

As part of this assessment, the predicted Process Contribution (PC) at the point of maximum impact and a number of sensitive receptors has been evaluated. Refer to Chapter 8 [Air Quality] of the ES for details of the human sensitive receptors modelled.

The ecological designations to be included in the assessment are identified in Chapter 8 [Air Quality] of the ES and the model output points detailed in Table 1 and displayed in Figure 8.2.

Table 1: Ecological Sensitive Receptors

ID	Name	Assessment point location(s)		
		x	y	Z
E1	Morecambe Bay Ramsar site/ Morecambe Bay and Duddon Estuary SPA/ Wyre Estuary SSSI(1)	335171	443398	0
E2	Fleetwood Railway Branch Line Trunnah to Burn Naze Biological Habitat Site (BHS)(2)	334112 334112 334112 334112 334112 334112 334112 334112	443812 443814 443816 443818 443797 443795 443793 443791	0 0 0 0 0 0 0 0

Notes:

(1) Modelled at the closest point to the site access road.

(2) Modelled as a north-south oriented transect of points up to 8 m either side of the road edge.

The access road to the Hillhouse Business Park passes over the Fleetwood Railway Branch Line Trunnah to Burn Naze BHS on a bridge. To represent the vertical distance between the road and the receptors, this section of road has been modelled at a height of 4 m, which is the estimated height of the bridge. A transect of points has been modelled as, due to the height difference between source and receptor, the maximum impact may not occur directly at the edge of the road.

3 Modelling Methodology

3.1 Model used

All traffic modelling has been undertaken using the ADMS-Roads (version 5.0) dispersion modelling package. The ADMS-Roads model is a version of ADMS, which was developed by CERC and is commonly used throughout the UK for environmental assessment purposes. ADMS-Roads is routinely used for modelling of emissions for planning purposes to the satisfaction of local authorities.

3.2 Input data

The model requires input data that details the following parameters:

- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Discrete receptor points;
- Meteorological data;
- Roughness length; and,
- Monin-Obukhov length.

3.2.1 Traffic flow data

24-hour AADT flows and HDV numbers have been provided by AXIS, the transport consultant for the project, for the following scenarios:

- Scenario 1: 2022 Baseline;
- Scenario 2: 2026 opening year do-minimum: including TEMPro growth to represent general traffic growth, plus committed development traffic;
- Scenario 3: 2026 opening year do-something: as scenario 2, plus the Proposed Development flows.

The study area of the Transport Statement (TS) for the Proposed Development covers the following road links where sensitive receptors are located:

- Bourne Road;
- Bourne Way;
- Fleetwood Way; and
- Amounderness Way.

The main traffic distribution case considered in the TS assumes that 30% of development-generated HGVs travel north along Amounderness Way and 70% travel south. A sensitivity analysis scenario assumes that 100% of the HGVs travel south along Amounderness way. The dispersion modelling has been based on the sensitivity analysis scenario, which results in a conservative assessment as it assumes all development-generated HGVs travel past sensitive receptors on Amounderness Way south of Bourne Way, rather than 70% of the HGVs as assumed in the main case in the TS.

A receptor on Roscoe Terrance (R22) to the south of the Hillhouse Business Park has been included in the model as it lies within 200 m of the Site access road. No information is available regarding baseline traffic on this section of the Site access road, but it is assumed to be negligible and the impact has been modelled assuming zero traffic on the adjacent section of the Site access road link in the ‘do minimum’ scenario, and assuming development-generated traffic only in the ‘do something’ scenario.

As noted in section 5, three committed developments have been included in the traffic data for the opening year scenarios:

- 20/00405/LMAJ – erection of 210 residential dwellings at Land off Bourne Road;
- 19/00357/FULMAJ – Thornton Cleveleys Football Club; and
- LCC/2023/0003 – Thornton Energy Recovery Centre (TERC).

The TERC includes point source emissions from two stacks. The cumulative impact of emissions has been assessed by adding the contribution from stack and vehicle emissions at each identified receptor location.

Traffic has been modelled at the speed limit, except for at junction approaches. In accordance with the guidance outlined in Defra’s LAQM.TG22, road junctions have been modelled with the assumption of approximately a 50 m slow-down phase, prior to the junction line. These slow-down phases have been modelled at a speed of 20 km/h.

The roads included in the model are shown in Figure 8.2 and the traffic data used in the assessment is presented in Table 2.

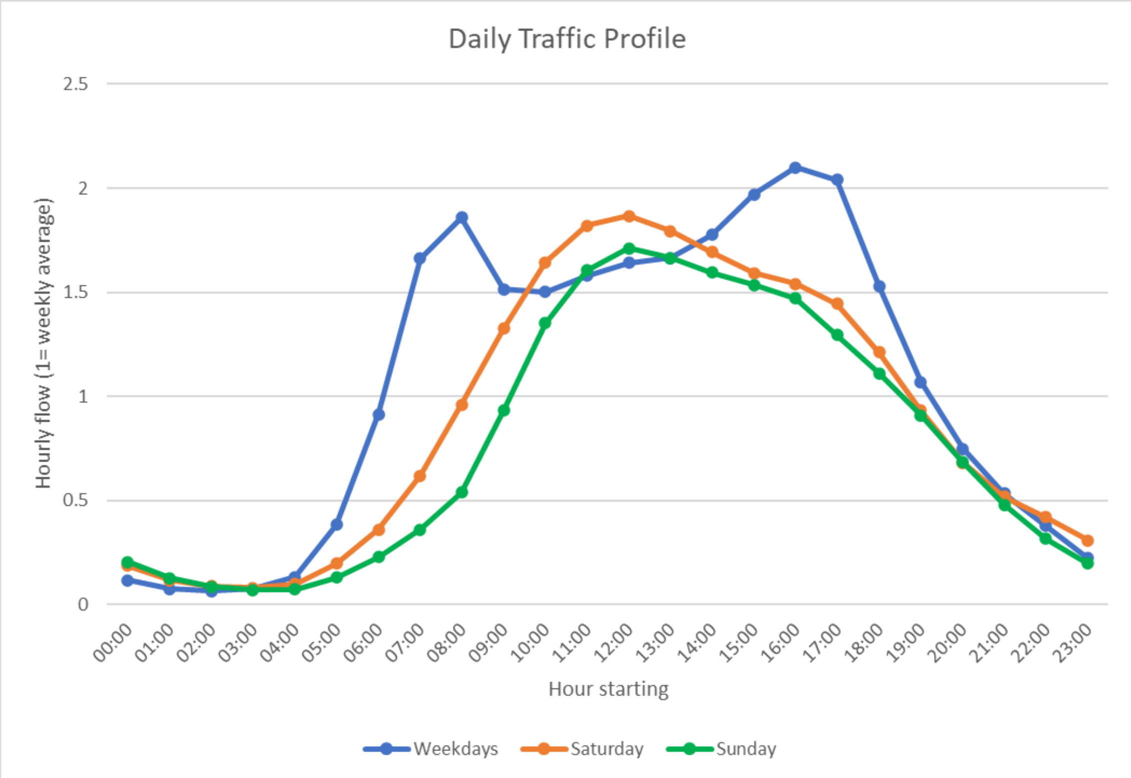
Table 2: Traffic Data (AADT)

Road link	Speed (kph)	Baseline 2022		Do Minimum 2026		Do Something 2026		Development Traffic	
		LDVs	HDVs	LDVs	HDVs	LDVs	HDVs	LDVs	HDVs
Bourne Road W of Beech Drive	32	2,823	103	3,059	165	3,090	331	31	166
Bourne Road E of Beech Drive	32	1,167	290	1,304	357	1,335	523	31	166
Bourne Way W of Fleetwood Road	48	2,065	174	2,213	237	2,230	403	17	166
Fleetwood Road S of Bourne Way	48	8,869	269	9,200	277	9,210	275	10	0
Fleetwood Road N of Bourne Way	48	7,574	339	7,830	349	7,833	347	3	0
Bourne Way E of Amounderness Way	48	2,719	141	2,886	203	2,903	369	17	166
Amounderness Way N of Bourne Way	64	12,039	223	12,405	248	12,407	246	2	0
Amounderness Way S of Bourne Way	64	13,524	356	14,001	407	14,016	573	15	166

3.2.2 Daily profile of traffic volume

Traffic flows are not evenly distributed throughout the day. To account for this a time varying emission profile has been applied to traffic data, based on the average profile from Department for Transport count points in the UK in 2022. The following graph shows the diurnal profile.

Figure 1: Baseline Traffic Diurnal Profile



For the purpose of the dispersion modelling the calculated profile was applied to all traffic flows.

3.2.3 Vehicle emission factors

Emission factors for NO_X, PM_{10} and $PM_{2.5}$ have been determined for each scenario using the traffic data and the Emissions Factors Toolkit (EFT) v 12.0 database of road traffic emission factors within ADMS Roads. All roads were classified as “England (Urban)”. Emissions for each link for the 2022 baseline year and 2026 opening year have been calculated using the EFT. Emissions factors for NOx, PM and $PM_{2.5}$ from vehicles are predicted to decrease with time as newer, cleaner vehicles enter the fleet; therefore, assessing the opening year of 2026 will result in the worst-case impacts.

For baseline traffic the 2 vehicle class (2VC) emissions factors have been used. However, for development-generated traffic, detailed option 1 has been used which allows the user to split out HGVs from other heavy vehicles such as buses and coaches. All heavy vehicles generated by the Proposed Development have been input into the EFT as HGVs.

The EFT does not include emissions of ammonia from vehicles. However, petrol vehicles emit ammonia due to the degradation of catalytic converters, and diesel vehicles emit ammonia due to measures to reduce NOx emissions. This has been shown to be a significant source of nitrogen deposition at roadside locations[1]. Air Quality Consultants (AQC) has published the Calculator for Realistic Emissions of Ammonia (CREAM V1A[2]) for the calculation of emissions of ammonia from vehicles, which has been used to calculate ammonia emissions for the assessment of the effect of ammonia on ecological receptors. As noted in section 4.2, only two ecological receptors have been identified as requiring assessment. Ammonia emissions have only been included on the roads within 200 m of the ecological receptors, which are the site access road (which is within 200 m of E1) and the section of Bourne Road that is adjacent to E2.

Unlike emissions of NOx, PM and $PM_{2.5}$, ammonia emissions from vehicles are not predicted to decrease with time and could increase. However, when development-generated traffic is considered, ammonia emissions in 2030 are predicted by CREAM to be only 6% higher in 2030 than 2022. The uncertainties in other model inputs, such as traffic flows and weather conditions, are much higher than 6%. As such, it is considered that this is not a significant source of uncertainty and ammonia emissions factors for 2026 have been used for the opening year scenarios for consistency with the other pollutants modelled.

Ammonia emissions from vehicles are not a concern with regard to human health due to the high AQAL for the protection of human health and relatively low contributions from vehicles.

3.2.4 Spatial co-ordinates of vehicle emissions

Street locations and widths were estimated from a desk-top mapping study and referenced to UK National Grid Reference (NGR) co-ordinates.

It is not possible to enter building dimension data into the ADMS-Roads dispersion modelling software to calculate building downwash. However, it is possible to define some roads as 'street canyons'. A desk-stop study has been carried out through a review of aerial photos. It is not considered necessary to model any sections of road in the study area as street canyons.

Bourne Road crosses the Fleetwood Railway Branch Line Trunnah to Burn Naze BHS on a bridge. As such, the road has been modelled at 4 m above the receptor, which is the estimated bridge height.

3.3 Meteorological data and surface characteristics

The dispersion modelling has been undertaken using weather data from the Blackpool Airport meteorological recording station. Blackpool Airport is approximately 13 km to the south of the Proposed Development and is the closest and most representative meteorological station available. To verify the model output, meteorological data from the baseline traffic year and most recent year of air quality monitoring data (2022) has been used. A wind rose for Blackpool 2022 is presented as Figure 8.5.

The minimum Monin-Obukhov length can be selected in ADMS for both the dispersion site and the meteorological site. This is a measure of the minimum stability of the atmosphere and can be adjusted to account for urban heat island effects which prevent the atmosphere in urban areas from ever becoming completely stable. The minimum Monin-Obukhov length has been set to 30 m for the dispersion site, which is recommended by CERC for "mixed urban/industrial" areas such as the setting of the Proposed Development. The minimum Monin-Obukhov length has been set to 10 m for the meteorological site which is recommended by CERC for "small towns <50,000

[1] Air Quality Consultants, Ammonia Emissions from Roads for Assessing Impacts on Nitrogen-sensitive Habitats, February 2020

[2] Available from https://www.aqconsultants.co.uk/resources

[population]", and is considered appropriate for the mix of suburbs, sea and semi-rural areas surrounding the meteorological site.

The surface roughness length utilised in ADMS can also be selected for both the dispersion site and meteorological site. A surface roughness length of 0.5 m has been selected for the dispersion site, which is recommended by CERC for "parkland and open suburbia" and is considered representative of the land use across the modelled road network. A surface roughness length of 0.3 m has been selected for Blackpool Airport. CERC recommends that this value is the maximum value suitable for "agricultural areas" and is considered representative of the mix of land uses around the meteorological station.

A summary of the meteorological parameters used in the dispersion modelling is shown in Table 3

Table 3: Meteorological parameters

Parameter	Dispersion Site Value (m)	Met Site Value (m)
Surface roughness length	0.5	0.3
Minimum Monin-Obukhov length	30	10

3.4 Background data

For the purpose of the assessment the mapped background concentrations for each receptor point have been extracted from the Defra 2022 and 2026 mapped background datasets. Full details of the analysis of baseline pollutant concentrations are presented in Appendix 8.1 [Baseline Air Quality].

3.5 Post modelling – conversion from NOx to nitrogen dioxide (NO_2)

The modelled road-NOx and the mapped background concentrations have been used as inputs in Defra's NOx to NO_2 calculator (V8.1) to convert modelled NOx to NO_2 in accordance with the methodology outlined in LAQM.TG22.

When converting from NOx to NO_2 the following inputs have been used:

- The year has been taken as the same as the emissions data, i.e., 2022 or 2026, as appropriate;
- The local authority has been selected as "Wyre District"; and
- The traffic mix has been selected as "All other urban UK traffic".

3.6 Verification

The ADMS Model has been validated against real world monitoring, however LAQM.TG22 recommends that the model output is verified. The verification process should involve the comparison between predicted and measured concentrations at one or more suitable local sites and forms an essential component of a detailed assessment for road traffic models. Part of the verification process involves improvements to the base model to provide a better representation of the monitored data. This includes checks on:

- Traffic data;
- Road widths;
- Distance between sources and monitoring locations;
- Speed estimates;
- Street canyons;

- Background concentrations; and
- Monitoring data.

All of these have been reviewed and the model refined to increase the accuracy as much as possible.

LAQM.(TG22) recommends that ideally at least three points are used and the results plotted. The regression correction factor (the m value in y = mx) of the data should then be used as the verification factor. Analysis of a number of data points can be used to see if the model is not performing well in a given area and highlight issues within the modelling, e.g. incorrect traffic data.

There is only one monitoring location available for model verification, located at 24 Rose Fold (monitoring location WBC 16). Although described as 'suburban' in WBC's Air Quality Annual Status Report (ASR), the ASR also states it lies 10 m from the kerb of the nearest road (Bourne Road), so is suitable for model verification. The ASR gives the location of the monitoring site as 333429, 443983, but this point is in the middle of a building. The location of the diffusion tube has been estimated as 333422, 443985 based on the map in Appendix D of the ASR. The nitrogen dioxide concentration monitored at WBC 16 in 2022 was 10.7 µg/m³.

Although only one point is available for verification, it is considered that it is appropriate to undertake the verification procedure given the potential for under-prediction of emissions of NOx. The results of the verification procedure are detailed below. As there is only one point available for verification, the monitored road-NOx contribution has been calculated from the monitoring data and compared to the modelled road-NOx contribution to determine the adjustment factor.

Table 4: Verification Procedure: Raw Model Results Comparison

Location	2022 monitored road NOx (µg/m³)	2022 modelled road NOx (µg/m³)	Ratio of monitored to modelled road NOx	2022 adjusted modelled total NO_2 (µg/m³)	Ratio of monitored to modelled total NO_2
WBC 16	5.65	2.03	2.78	10.7	1.00

Note:
All NOx to NO_2 conversions undertaken using DEFRA's NOx to NO_2 calculator V8.1, for 2022 emissions and using the 'All other urban UK traffic' traffic mix setting.

An adjustment factor of 2.78 to modelled road NOx is required for total modelled nitrogen dioxide to be equal to the monitored nitrogen dioxide. This is a relatively high adjustment factor. With only one point available for verification the reason for the under-prediction is not clear, and could lie in the traffic data/speeds, the background nitrogen dioxide concentration, the meteorological data, or the model set up (i.e. road geometry), or a combination of these factors. The model set up has been checked as aligned with reality as closely as possible and the under-prediction remains. Therefore, it is considered appropriate to apply the adjustment factor of 2.78 to the modelled road-NOx contribution.

No representative monitoring of PM_{10} or $PM_{2.5}$ is available. To ensure a robust assessment of the impact on human health, the adjustment factors calculated for NOx have also been applied to the modelled concentrations of road PM_{10} and $PM_{2.5}$, in line with approach set out in LAQM.TG22.

The supporting documentation for AQC's CREAM V1A explains that the ammonia emissions factors obtained from CREAM V1A will often be used as inputs to ADMS-Roads, but model users will often not be able to verify calculation of ammonia emissions from vehicles due to a lack of roadside ammonia monitoring, which is the case for this modelling exercise. The supporting documentation for CREAM V1A includes details of calibration against measurements taken from summer 2014 to summer 2016 at 29 sites in the Ashdown Forest. This shows that the emissions factors obtained using CREAM V1A align well with measurements. This is in contrast to emissions of NOx, which have historically been shown to be under-predicted by Defra's EFT. Therefore, the adjustment factor has not been applied to ammonia emissions from vehicles.

4 Impact Assessment

4.1 Operational phase impact - human health

The dispersion modelling results at each receptor location are presented in Table 5 to Table 8.

Table 5: Annual Mean Baseline Concentrations (2022)

Receptor	Nitrogen dioxide			PM_{10}			$PM_{2.5}$		
	Bg (µg/m³)	Baseline µg/m³	Baseline % AQAL	Bg (µg/m³)	Baseline µg/m³	Baseline% AQAL	Bg (µg/m³)	Baseline µg/m³	Baseline % AQAL
R1	7.82	9.59	23.98%	10.53	10.95	27.37%	7.77	8.00	79.99%
R2	7.82	8.89	22.23%	10.53	10.78	26.95%	7.77	7.91	79.09%
R3	7.56	10.63	26.58%	9.45	10.09	25.22%	6.57	6.92	69.17%
R4	7.82	8.65	21.63%	10.53	10.72	26.81%	7.77	7.88	78.78%
R5	7.82	9.02	22.55%	10.53	10.81	27.02%	7.77	7.92	79.24%
R6	7.82	8.41	21.03%	10.53	10.67	26.67%	7.77	7.85	78.48%
R7	7.82	8.52	21.30%	10.53	10.67	26.69%	7.77	7.85	78.54%
R8	7.56	9.92	24.80%	9.45	10.01	25.02%	7.77	8.08	80.78%
R9	8.45	9.02	22.55%	8.63	8.73	21.82%	7.77	7.83	78.29%
R10	7.82	8.76	21.90%	10.53	10.72	26.80%	6.57	6.67	66.73%
R11	8.45	9.08	22.70%	8.63	8.75	21.87%	7.77	7.84	78.39%
R12	7.56	9.68	24.20%	9.45	9.98	24.95%	7.77	8.06	80.63%
R13	7.56	9.54	23.85%	9.45	9.95	24.88%	7.77	8.05	80.46%
R14	7.46	10.79	26.98%	9.31	10.00	25.00%	6.57	6.94	69.45%
R15	7.46	11.00	27.50%	9.31	10.08	25.21%	5.93	6.35	63.52%
R16	9.98	10.00	25.00%	9.09	9.10	22.74%	7.77	7.78	77.77%
R17	7.82	9.59	23.98%	10.53	10.95	27.37%	7.77	8.00	79.99%
R18	7.82	8.89	22.23%	10.53	10.78	26.95%	7.77	7.91	79.09%
R19	7.56	10.63	26.58%	9.45	10.09	25.22%	6.57	6.92	69.17%
R20	7.82	8.65	21.63%	10.53	10.72	26.81%	7.77	7.88	78.78%

Receptor	Nitrogen dioxide			PM_{10}			$PM_{2.5}$		
	Bg (µg/m³)	Baseline µg/m³	Baseline % AQAL	Bg (µg/m³)	Baseline µg/m³	Baseline% AQAL	Bg (µg/m³)	Baseline µg/m³	Baseline % AQAL
R21	7.82	9.02	22.55%	10.53	10.81	27.02%	7.77	7.92	79.24%
R22	7.82	8.41	21.03%	10.53	10.67	26.67%	7.77	7.85	78.48%

Table 6: Annual Mean Nitrogen Dioxide – 2026 Opening Year

Receptor	Do-minimum		Do-something		Impact		IAQM impact descriptor
	µg/m³	% AQAL	µg/m³	% AQAL	µg/m³	% AQAL	
R1	8.39	20.98%	8.59	21.48%	0.20	0.50%	Negligible
R2	7.88	19.70%	7.98	19.95%	0.10	0.25%	Negligible*
R3	8.77	21.93%	8.99	22.48%	0.22	0.55%	Negligible
R4	7.72	19.30%	7.81	19.53%	0.09	0.23%	Negligible*
R5	7.98	19.95%	8.12	20.30%	0.14	0.35%	Negligible*
R6	7.55	18.88%	7.62	19.05%	0.07	0.18%	Negligible*
R7	7.60	19.00%	7.70	19.25%	0.10	0.25%	Negligible*
R8	8.23	20.58%	8.27	20.68%	0.04	0.10%	Negligible*
R9	8.03	20.08%	8.11	20.28%	0.08	0.20%	Negligible*
R10	7.76	19.40%	7.89	19.73%	0.13	0.33%	Negligible*
R11	8.07	20.18%	8.16	20.40%	0.09	0.23%	Negligible*
R12	8.06	20.15%	8.08	20.20%	0.02	0.05%	Negligible*
R13	7.97	19.93%	7.98	19.95%	0.01	0.03%	Negligible*
R14	7.34	18.35%	7.41	18.53%	0.07	0.18%	Negligible*
R15	7.27	18.18%	7.33	18.33%	0.06	0.15%	Negligible*
R16	8.03	20.08%	8.09	20.23%	0.06	0.15%	Negligible*
R17	8.03	20.08%	8.09	20.23%	0.06	0.15%	Negligible
R18	8.28	20.70%	8.37	20.93%	0.09	0.23%	Negligible*
R19	8.50	21.25%	8.59	21.48%	0.09	0.23%	Negligible*
R20	8.72	21.80%	8.83	22.08%	0.11	0.27%	Negligible*
R21	8.86	22.15%	8.95	22.38%	0.09	0.23%	Negligible*

Receptor	Do-minimum		Do-something		Impact		IAQM impact descriptor
	µg/m³	% AQAL	µg/m³	% AQAL	µg/m³	% AQAL	
R22	9.02	22.55%	9.23	23.08%	0.21	0.53%	Negligible
*Note: * Indicates that the impact is described as 'negligible' irrespective of the total concentration*							

Table 7: Annual Mean PM_{10} – 2026 Opening Year

Receptor	Do-minimum		Do-something		Impact		IAQM impact descriptor
	µg/m³	% AQAL	µg/m³	% AQAL	µg/m³	% AQAL	
R1	10.64	26.59%	10.71	26.78%	0.076	0.19%	Negligible*
R2	10.45	26.12%	10.49	26.21%	0.036	0.09%	Negligible*
R3	9.80	24.49%	9.85	24.63%	0.057	0.14%	Negligible*
R4	10.39	25.98%	10.43	26.06%	0.033	0.08%	Negligible*
R5	10.48	26.21%	10.54	26.34%	0.053	0.13%	Negligible*
R6	10.33	25.83%	10.35	25.89%	0.024	0.06%	Negligible*
R7	10.34	25.85%	10.38	25.94%	0.035	0.09%	Negligible*
R8	9.70	24.24%	9.71	24.28%	0.014	0.03%	Negligible*
R9	8.43	21.08%	8.46	21.14%	0.024	0.06%	Negligible*
R10	10.39	25.98%	10.44	26.10%	0.049	0.12%	Negligible*
R11	8.45	21.13%	8.48	21.20%	0.029	0.07%	Negligible*
R12	9.67	24.17%	9.67	24.18%	0.006	0.02%	Negligible*
R13	9.64	24.09%	9.64	24.10%	0.005	0.01%	Negligible*
R14	9.27	23.18%	9.30	23.24%	0.026	0.06%	Negligible*
R15	9.36	23.40%	9.39	23.48%	0.033	0.08%	Negligible*
R16	9.47	23.68%	9.49	23.72%	0.018	0.05%	Negligible*
R17	9.50	23.76%	9.53	23.81%	0.021	0.05%	Negligible*
R18	9.55	23.87%	9.57	23.92%	0.023	0.06%	Negligible*
R19	9.61	24.03%	9.64	24.09%	0.025	0.06%	Negligible*
R20	9.69	24.22%	9.71	24.29%	0.028	0.07%	Negligible*
R21	9.77	24.42%	9.80	24.50%	0.032	0.08%	Negligible*

Receptor	Do-minimum		Do-something		Impact		IAQM impact descriptor
	µg/m³	% AQAL	µg/m³	% AQAL	µg/m³	% AQAL	
R22	8.80	21.99%	8.82	22.06%	0.028	0.07%	Negligible*
*Note: * Indicates that the impact is described as 'negligible' irrespective of the total concentration*							

Table 8: Annual Mean $PM_{2.5}$ – 2026 Opening Year

Receptor	Do-minimum		Do-something		Impact		IAQM impact descriptor
	µg/m³	% AQAL(1)	µg/m³	% AQAL(1)	µg/m³	% AQAL(1)	
R1	7.73	77.3%	7.77	77.68%	0.041	0.41%	Negligible*
R2	7.63	76.3%	7.65	76.49%	0.020	0.20%	Negligible*
R3	6.67	66.7%	6.71	67.06%	0.032	0.32%	Negligible*
R4	7.60	76.0%	7.62	76.18%	0.018	0.18%	Negligible*
R5	7.65	76.5%	7.68	76.77%	0.029	0.29%	Negligible*
R6	7.57	75.7%	7.58	75.81%	0.013	0.13%	Negligible*
R7	7.57	75.7%	7.59	75.94%	0.019	0.19%	Negligible*
R8	6.62	66.2%	6.63	66.30%	0.008	0.08%	Negligible*
R9	5.74	57.4%	5.75	57.54%	0.013	0.13%	Negligible*
R10	7.60	76.0%	7.63	76.28%	0.026	0.26%	Negligible*
R11	5.75	57.5%	5.77	57.67%	0.016	0.16%	Negligible*
R12	6.61	66.1%	6.61	66.11%	0.003	0.03%	Negligible*
R13	6.59	65.9%	6.59	65.94%	0.003	0.03%	Negligible*
R14	6.37	63.7%	6.39	63.88%	0.014	0.14%	Negligible*
R15	6.45	64.5%	6.46	64.64%	0.018	0.18%	Negligible*
R16	6.48	64.8%	6.49	64.88%	0.010	0.10%	Negligible*
R17	6.50	65.0%	6.51	65.12%	0.012	0.12%	Negligible*
R18	6.52	65.2%	6.53	65.29%	0.012	0.12%	Negligible*
R19	6.55	65.5%	6.56	65.65%	0.014	0.14%	Negligible*
R20	6.59	65.9%	6.61	66.06%	0.016	0.16%	Negligible*
R21	6.64	66.4%	6.66	66.56%	0.018	0.18%	Negligible*

Receptor	Do-minimum		Do-something		Impact		IAQM impact descriptor
	µg/m³	% AQAL[(1)]	µg/m³	% AQAL[(1)]	µg/m³	% AQAL[(1)]	
R22	6.00	60.0%	6.01	60.14%	0.015	0.15%	Negligible*

*Notes: * Indicates that the impact is described as 'negligible' irrespective of the total concentration*

(1) AQAL taken to be the Environmental Target, to be achieved by 2040, as this is the most stringent limit.

As shown, the impact of vehicle emissions associated with the Proposed Development on annual mean concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ is less than 0.5% of the AQAL and the magnitude of change is described as 'negligible' irrespective of the total concentration at all human sensitive receptors considered, with the exception of nitrogen dioxide at R1, R3, and R22, where the impact rounds to 1% of the AQAL. However, the total concentration is well below 75% of the AQAL, so the magnitude of change at these receptors is also described as 'negligible'.

Defra's LAQM.TG22 includes guidance on assessing the risk of exceeding the short-term AQALs for nitrogen dioxide and PM_{10}. If annual mean nitrogen dioxide concentrations are above 60 µg/m^3 (i.e. 150% of the annual mean AQAL), analysis should be undertaken of short term nitrogen dioxide concentrations as there is the potential for exceedances of the 1-hour AQAL.

With regard to daily mean PM_{10}, LAQM.TG22 states that the number of exceedances of the AQAL per year can be predicted from the annual mean concentration using the following relationship:

$$No. of\ 24\ hour\ mean\ exceedances\ =$$
$$-18.5\ +\ 0.00145\ \times annual\ mean^3 +\ (206/annual\ mean)$$

The maximum annual mean nitrogen dioxide concentration predicted at any receptor location for the 2026 opening year is 9.23 µg/m³, well below 60 µg/m³, so there is no potential for exceedance of the hourly mean AQAL.

The maximum predicted annual mean PM_{10} concentration at a receptor location for the 2026 opening year is 10.71 µg/m³. LAQM.TG22 states that the relationship is not valid for annual mean concentrations below 14.8 µg/m, at which point the formula predicts 0.1 exceedances per year. On this basis, no exceedances of the daily mean AQAL for M_{10} are predicted. Therefore, there is no potential for any exceedance of a short-term AQAL.

4.2 Operational phase impact – ecological receptors

The impact of vehicle emissions at the two ecological receptors identified within the screening distance of affected roads is presented in Table 9. For E2 (the Fleetwood Railway Branch Line Trunnah to Burn Naze BHS), for which a transect of points has been modelled to assess emissions from the elevated source (i.e. a bridge), the maximum impact at any output point has been presented. The deposition calculation methodology is presented in Annex A.

Table 9: Annual Mean Impact at Ecological Receptors

ID	Annual mean process contribution							
	Oxides of nitrogen		Ammonia		Nitrogen deposition		Acid deposition	
	µg/m³	% CL	µg/m³	% CL	kgN/ha/yr	% CL	keq/ha/yr	% CL
E1	0.09	0.07	0.25%	0.001	0.014	0.14%	0.001	-(1)
E2	0.83	0.18	0.58%	0.006	0.046	0.76%	0.003	0.07%

Note:
(1) Habitats present are not sensitive to acid deposition.

As shown, the impact of vehicle emissions is less than 1% of the relevant Critical Levels and Critical Loads, and can be screened out as 'insignificant'.

Consideration has also been given to the maximum daily NOx concentrations for comparison with the Critical Level of 75 µg/m³.

Table 10: Daily Mean NOx Process Contribution at Ecological Receptors

ID	Process contribution - µg/m³	% CL
E1	0.36	0.48%
E2	0.68	0.91%

The process contribution is well below 10% of the Critical Level and can be screened out as 'insignificant'.

4.3 Construction phase

The maximum number of vehicle movements during the construction phase is not yet known. However, the maximum construction traffic is anticipated to be less than the regular staff vehicle and HGV movements during the operational phase. The impact of operational phase traffic has been assessed using dispersion modelling and found to be 'negligible' at all receptor locations. Therefore, the effect of construction phase vehicle emissions will also be 'negligible'.

5 Cumulative Effects

To align with the TS, the assessment of vehicle emissions already includes the traffic generated by the following developments in the baseline:

- 20/00405/LMAJ – erection of 210 residential dwellings at Land off Bourne Road;
- 19/00357/FULMAJ – Thornton Cleveleys Football Club; and
- LCC/2023/0003 – Thornton Energy Recovery Centre (TERC).

As these developments have been included within the baseline for the assessment of vehicle emissions, in accordance with the IAQM 2017 guidance methodology, the cumulative effect has been included in the main assessment and there will be no additional cumulative effects due to traffic emissions.

The TERC includes point source emissions from the stacks, which includes emissions of oxides of nitrogen, PM_{10} and $PM_{2.5}$, as well as ammonia which is only relevant to ecological impacts. The Air Quality Assessment submitted with the planning application for the TERC has been reviewed and maximum impacts extracted to undertake the cumulative assessment.

5.1 Human health

In the first instance as a screening assessment the maximum contribution from the stacks of the TERC has been added to the maximum 'do-something' concentration at any receptor. The results are presented in Table 11.

Table 11: TERC Stack Emissions – Cumulative Screening Assessment – Human Receptors

Pollutant	Proposed Development – max 'do something' at any receptor		TERC – max at any location		In-combination screening concentration	
	µg/m³	% AQAL	µg/m³	% AQAL	µg/m³	% AQAL
Nitrogen dioxide	9.23	23.08%	1.09	2.72%	10.32	25.80%
PM_{10}	10.71	26.78%	0.08	0.19%	10.79	26.97%
$PM_{2.5}$	7.77	77.68%	0.08	0.76%	7.85	78.44%

As shown, the total in-combination concentration in this conservative screening scenario remains well below 75% of the AQAL for nitrogen dioxide and PM_{10}, so all impacts of the Proposed Development on these pollutants remains 'negligible'. The total concentration of $PM_{2.5}$ remains 75-96% of the AQAL; as the impact of the Proposed Development at all receptors is less than 0.5% of the AQAL the impact remains 'negligible' irrespective of the total concentration. This conservatively assumes that the entire PM emissions from the TERC consist of only PM_{10} or $PM_{2.5}$ for comparison with the relevant AQALs.

5.2 Ecology

The maximum impact of the Proposed Development at E1 (Morecambe Bay Ramsar site/ Morecambe Bay and Duddon Estuary SPA/ Wyre Estuary SSSI) is predicted to be 0.25% of the relevant long-term and 0.48% of the short-term assessment levels; these impacts are much less than the long- and short-term screening thresholds of 1% and 10% respectively and can reasonably be considered 'de-minimis' so would be imperceptible in reality. Therefore, there is no potential for a significant in-combination impact at E1.

At E2 (the Fleetwood Railway Branch Line Trunnah to Burn Naze BHS) the impact of the Proposed Development alone is less than 1% of the assessment level for all pollutants and can be screened out as 'insignificant'.

A review of the contour plots submitted with the Air Quality Assessment submitted with the planning application for the TERC shows that the impact of stack emissions at the point where the road crosses E2 is much less than the maximum impact of stack emissions within the designated site, which occurs much further to the north. The small additional contribution from vehicles generated by the Proposed Development would not increase the roadside impact to be greater than the maximum impact of stack emissions alone within the designated site. It was concluded that this maximum impact of emissions from the TERC would not have a significant effect on the designated site, and this conclusion was accepted by Lancashire County Council in granting consent for the TERC. It therefore follows that the cumulative roadside impact, which would be lower, would also not have a significant effect on the Fleetwood Railway Branch Line Trunnah to Burn Naze BHS.

6 Summary

This Appendix provides details of the dispersion modelling undertaken to quantify the effect of vehicle emissions from the Proposed Development on human health and ecology. This includes all model inputs and justifications as appropriate. The results of the modelling are summarised as follows:

1. All impacts on human health are described as ‘negligible’;
2. All impacts on designated ecological receptors can be screened out as ‘insignificant’; and
3. No significant cumulative impacts have been identified.

These results are drawn upon in determining the significance of effect of emissions in Chapter 8 [Air Quality] of the ES.

Annexes

A Deposition Calculation and Critical Loads

A.1 Deposition of emissions - Critical Loads

In addition to the Critical Levels for the protection of ecosystems, habitat specific Critical Loads for nature conservation sites at risk from acidification and nitrogen deposition (eutrophication) are outlined in APIS. The nitrogen and acid deposition Critical Loads and background levels of deposition appropriate to each habitat are presented in Table 14 and Table 15.

If the impact of process emissions from the Proposed Development upon nitrogen or acid deposition is greater than 1% of the Critical Load, further assessment has been undertaken.

A.2 Nitrogen deposition – eutrophication

Table 14 presents the Critical Loads for nitrogen deposition and background deposition rates as detailed in APIS for each identified receptor. The impact has been assessed against these Critical Loads for nitrogen deposition.

A.3 Acidification

The APIS Database contains a maximum critical load for sulphur (CLmaxS), a minimum Critical Load for nitrogen (CLminN) and a maximum Critical Load for nitrogen (CLmaxN). These components define the Critical Load function. Where the acid deposition flux falls within the area under the Critical Load function, no exceedances are predicted.

Table 15 presents the Critical Loads for acidification and background deposition rates as detailed in APIS for each identified habitat. The impact has been assessed against these Critical Load functions.

A.4 Calculation methodology – nitrogen deposition

The impact of deposition has been assessed using the methodology detailed within the Habitats Directive AQTAG06[3] (March 2014). The steps to this method are as follows.

1. Determine the annual mean ground level concentrations of nitrogen dioxide and ammonia.
2. Calculate the dry deposition flux (µg/m^2/s) at each site by multiplying the annual mean ground level concentration by the relevant deposition velocity presented in Table 12.
3. Convert the dry deposition flux into units of kgN/ha/yr using the conversion factors presented in Table 12.
4. Compare this result to the nitrogen deposition Critical Load.

Table 12: Deposition Factors

Pollutant	Deposition Velocity (m/s)		Conversion Factor (µg/m^2/s to kg/ha/year)
	Grassland	Woodland	
Nitrogen dioxide	0.0015	0.003	96.0
Ammonia	0.0200	0.030	259.7

[3] Air Quality Advisory Group, AQTAG06 Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air, March 2014

A.5 Acidification

Deposition of nitrogen and ammonia can cause acidification and should be taken into consideration when assessing the impact of process emissions from the Proposed Development.

The steps to determine the acid deposition flux are as follows.

1. Determine the dry deposition rate in kg/ha/yr of nitrogen and ammonia using the methodology outlined in Section A.2.
2. Apply the conversion factor for N outlined in Table 13 to the nitrogen and ammonia deposition rate in kg/ha/year to determine the total keq N/ha/year.
3. Plot the results against the Critical Load functions.

Table 13: Conversion Factors

Pollutant	Conversion Factor (kg/ha/year to keq/ha/year)
Nitrogen	Divide by 14

The contribution from process emissions from the Proposed Development has been calculated using the APIS formula:

Where Predicted environmental Concentration (PEC) N Deposition < CLminN:

PC as % of CL function = PC S deposition / CLmaxS

Where PEC N Deposition > CLminN:

PC as % of CL function = (PC S + N deposition) / CLmaxN

The application of this formula means that where the PEC for N deposition is less than the CLminN, nitrogen deposition does not contribute to acidification of the habitat. As shown in Table 15, background nitrogen acid deposition already exceeds the CLminN, so the second formula in which nitrogen deposition contributes to acidification has been applied.

Table 14: Nitrogen Deposition Critical Loads

Site	Species/Habitat Type	NCL Class	Lower Critical Load (kgN/ha/yr)	Upper Critical Load (kgN/ha/yr)	Maximum Background (kgN/ha/yr)
Wyre Estuary SSSI/ Morecambe Bay and Duddon Estuary SPA/Morecambe Bay Ramsar	Saltmarsh(1)	Pioneer, low-mid, mid-upper saltmarshes	10	20	18.5(2)
Fleetwood Railway Branch Line Trunnah to Burn Naze BHS	Neutral and acid grassland	Non-Mediterranean dry acid and neutral closed grassland	6	10	17.4

Note:

(1) The only habitat identified within 200 m of the affected road network is saltmarsh, as determined using the Priority Habitat Inventory.

(2) The assessment point (refer to Table 1*) is mainly over water and APIS does not define a background deposition rate. The maximum from any adjacent grid square has been used.*

Table 15: Acid Deposition Critical Loads

Site	Species/ Habitat Type	Acidity Class	Critical Load Function (keq/ha/yr)			Maximum Background (keq/ha/yr)	
			CLminN	CLmaxN	CLmaxS	N	S
Morecambe Bay and Duddon Estuary SPA/Morecambe Bay Ramsar	Saltmarsh[(1)]	Not sensitive	-	-	-	-	-
Fleetwood Railway Branch Line Trunnah to Burn Naze BHS	Acid grassland	Acid grassland	0.438	4.498	4.06	1.24	0.18

Note:

[(1)] The only habitat identified within 200 m of the affected road network is saltmarsh, as determined using the Priority Habitat Inventory. This habitat is not sensitive to the effects of acid deposition.

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Appendix 8.5: Operational Phase Dust Assessment Methodology

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Document approval

	Name	Signature	Position	Date
Prepared by:	Stuart Nock		Senior Environmental Consultant	16/07/2024
Checked by:	Rosalind Flavell		Lead Environmental Consultant	16/07/2024

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Contents

1 Introduction

This Appendix presents the methodology for the assessment of the potential impact of trace pollutants contained within dust generated by the operational phase of the Hillhouse Incinerator Bottom Ash (IBA) Facility (the Proposed Development).

The vast majority of the mass of IBA is inert material, such that ash dust would be of similar composition to mineral dust[1]. However, some contaminants from the waste fuel and the combustion process would be present in trace quantities.

An analysis of the potential quantities of contaminants in the IBA and the impact of fugitive emissions has been undertaken and is presented in section Table 2. It is not possible to fully quantify the airborne concentrations of dust that would occur during the operational phase of the Proposed Development. The concentration of dust has been conservatively estimated based on the Institute of Air Quality Management (IAQM) document 'Guidance on the assessment of mineral dust impacts for planning' (May 2016).

[1] Forteza R. et al, (2004), Characterization of bottom ash in municipal solid waste incinerators for its use in road base, Waste Management Volume 24, Issue 9, 2004, Pages 899-909

2 Assessment

The IAQM guidance states that the annual mean process contribution of dust from mineral sites is unlikely to exceed 15 µg/m³, which includes the very dustiest processes. Table A5-1 of the guidance states that the average daily background levels at opencast coal sites compared to control sites are 2 µg/m³ higher, i.e. the process contribution is 2 µg/m³.

The Proposed Development has effective, tangible control measures such as dampening of IBA stockpiles, storage within a three-sided building, and materials handling being undertaken within an enclosed building. As such, the Proposed Development is anticipated to be significantly less dusty than an opencast coal mine. A dust process contribution of 1 µg/m³ has been used. This is the maximum anticipated concentration at any point and does not account for the effective tangible control measures in place, the potential dispersion and location of receptors. The closest high-sensitivity receptors lie approximately 35 m from the Site boundary, but well over 100 m from the main dust-generating activities such as unloading, processing, and stockpiling of IBA and IBAA. Therefore, this is a conservative estimate of the dust process contribution due to operational phase activities.

Table 1 summarises indicative measured mass of relevant pollutants in IBA, as provided by the operator of an IBA processing facility.

Table 1: Typical Composition of IBA

Component	Unit	Average	Minimum	Maximum
Total Organic Carbon	%	1.4	0.00	3.2
Total cadmium	mg/kg	12.1	0.00	190
Total mercury	mg/kg	0.5	0.02	7.9
Total chromium	mg/kg	145	0.00	580
Total copper	mg/kg	1,357	4.00	5,700
Total lead	mg/kg	1,306	0.00	6,800
Total nickel	mg/kg	84.8	0.00	340
Thallium	mg/kg	27.0	10.0	63.0
Manganese	mg/kg	1,446	230	16,000
Arsenic	mg/kg	11.7	2.00	45.0
Antimony	mg/kg	81.2	0.00	760
Cobalt	mg/kg	17.0	6.00	41.0
Vanadium	mg/kg	45.1	10.0	120
Zinc	mg/kg	2,688	3.60	13,000
Tin	mg/kg	121	23.0	220
Dioxin/Furan (Total)	ng/kg	523	0.00	2,500
Dioxin/Furan (ITEQ)	ng/kg	9.4	0.00	55.0

The maximum and average mass fractions have been factored for a process contribution of dust of 1 µg/m³ and the results compared to the relevant annual mean air quality assessment level (AQAL). For some pollutants only a daily mean AQAL is defined; for these pollutants the 1 µg/m³ dust process contribution has also been applied on the basis that 1 µg/m is a highly conservative estimate of the annual mean process contribution, and likely to also be an over-estimate of the maximum daily mean process contribution at any nearby receptor location.

The results are presented in Table 2. Any impacts that exceed 0.5% of the annual mean or 10% of the daily mean AQAL are highlighted and require further consideration (in accordance with IAQM guidance, refer to Chapter 8 [Air Quality]).

Table 2: Impact of Fugitive Emissions of IBA

Component	Mass in IBA		Mass unit	AQAL	Averaging period	Conc. unit	Average Impact		Max Impact	
	Average	Max					Conc.	% AQAL	Conc.	% AQAL
Total Organic Carbon	1.4	3.2	%	5(1)	Annual mean	µg/m³	0.01	0.28%	0.03	**0.64%**
Total cadmium	12.1	190	mg/kg	5	Annual mean	ng/m³	0.01	0.24%	0.19	**3.80%**
Total mercury	0.5	7.9	mg/kg	60	Daily mean	ng/m³	<0.01	<0.01%	0.01	0.01%
Total chromium	145	580	mg/kg	2,000	Daily mean	ng/m³	0.15	0.01%	0.58	0.03%
Total copper	1,357	5,700	mg/kg	50	Daily mean	ng/m³	1.36	2.71%	5.70	**11.40%**
Total lead	1,306	6,800	mg/kg	250	Annual mean	ng/m³	1.31	**0.52%**	6.80	**2.72%**
Total nickel	84.8	340	mg/kg	20	Annual mean	ng/m³	0.08	0.42%	0.34	**1.70%**
Thallium	27.0	63.0	mg/kg	N/A	-	ng/m³	0.03	-	0.06	-
Manganese	1,446	16,000	mg/kg	150	Annual mean	ng/m³	1.45	**0.96%**	16.0	**10.67%**
Arsenic	11.7	45.0	mg/kg	6	Annual mean	ng/m³	0.01	0.20%	0.05	**0.75%**
Antimony	81.2	760	mg/kg	5,000	Annual mean	ng/m³	0.08	<0.01%	0.76	0.02%
Cobalt	17.0	41.0	mg/kg	N/A	-	ng/m³	0.02	-	0.04	-
Vanadium	45.1	120	mg/kg	1,000	Daily mean	ng/m³	0.05	<0.01%	0.12	0.01%
Zinc	2,689	13,000	mg/kg	50,000	Annual mean	ng/m³	2.69	0.01%	13.0	0.03%
Tin	121	220	mg/kg	N/A	-	ng/m³	0.12	-	0.22	-
Dioxin/Furan (Total)	530	2,500	ng/kg	N/A	-	fg/m³	0.53	-	2.50	-
Dioxin/Furan (I-TEQ)(2)	9.4	55.0	ng/kg	N/A	-	fg TEQ/m³	0.01	-	0.06	-

Note:

(1) There is no AQAL for total organic carbon; AQAL for benzene used in accordance with EA Guidance "Air Emissions Risk Assessment for your Environmental Permit".

(2) Individual species of dioxins and furans are assigned a toxic equivalence (TEQ). The sum of dioxin species as fg TEQ/m³ accounts for the toxicity of each species.

As shown, concentrations of TOC (as benzene), cadmium, copper, lead, nickel, manganese and arsenic cannot immediately be screened out when assuming the maximum concentration of each pollutant in the IBA. However, when taking the average, only lead and manganese impacts cannot be screened out. In addition, there is no AQAL for dioxins and furans; due to the potential for these pollutants to accumulate in the environment, consideration has been given to the impact of dioxins and furans.

2.1 Further assessment – dioxins and furans

A detailed assessment of the intake of dioxins and furans requires dispersion modelling and data regarding the speciation of dioxins and furans. Such a study is beyond the scope of this assessment. As an initial screening assessment, the predicted concentration as a result of fugitive dust emissions has been compared to typical background levels across the UK.

Across the most recent five years of monitoring data available on the UK Air website[2] (2012 – 2016), the total annual mean concentration of dioxins and furans ranged from 0.01 to 32.99 fg TEQ/m³. Therefore, the worst-case concentration of 0.06 fg TEQ/m³ is 6 times higher than the lowest monitored background concentration, recorded at Auchencorth Moss in Scotland, but is only 0.2% of the highest monitored background concentration, recorded at Manchester Law Courts. Furthermore, the average monitored concentration in IBA is less than 20% of the maximum. On this basis no significant effects are predicted as a result of dioxins and furans contained in fugitive dust emissions.

2.2 Further assessment against AQALs

Taking the maximum concentrations of each pollutant in IBA, concentrations of TOC (as benzene), cadmium, copper, lead, nickel, manganese and arsenic cannot be screened out. Taking the average concentrations in IBA, only lead and manganese cannot be screened out. A search of UK-wide air quality monitoring networks has been undertaken using the UK Air website to obtain the maximum background concentration of these pollutants for 2023 at any monitoring location[3]. The background concentration for each pollutant has been added to the process contribution to determine the potential total concentration, as shown in Table 3 and Table 4.

Table 3: Further Assessment Against AQALs – Maximum Concentration in IBA

Pollutant	Background		Process Contribution		Total Concentration	
	ng/m³	% AQAL	ng/m³	% AQAL	ng/m³	% AQAL
Benzene	0.89	17.8%	0.03	0.64%	0.92	18.4%
Cadmium	0.51	10.2%	0.19	3.80%	0.70	14.0%
Copper (daily mean)	58.0	116.0%	5.70	11.4%	63.7	127.4%
Lead	20.0	8.00%	6.80	2.72%	26.8	10.7%
Nickel	12.0	60.0%	0.34	1.70%	12.3	61.7%
Manganese	71.0	47.3%	16.0	10.7%	87.0	58.0%
Arsenic	0.89	14.8%	0.05	0.75%	0.94	15.6%

[2] https://uk-air.defra.gov.uk/

[3] Excluding Sheffield Tinsley and Swansea Coedgwilym which are close to significant sources of heavy metals and would not be representative of baseline concentrations close to the Proposed Development.

Table 4: Further Assessment Against AQALs – Average Concentration in IBA

Pollutant	Background		Process Contribution		Total Concentration	
	ng/m³	% AQAL	ng/m³	% AQAL	ng/m³	% AQAL
Lead	20.0	8.00%	1.31	0.52%	21.31	8.5%
Manganese	71.0	47.3%	1.45	0.96%	72.45	48.3%

As shown, the total concentration would remain well below the AQAL for all pollutants, except for copper for which the assumed baseline concentration already exceeds the AQAL.

When considering the impacts using the IAQM impact descriptors (refer to Chapter 8 [Air Quality]) and assuming the maximum concentration in IBA from the measured dataset, all impacts are described as 'negligible' except for copper and manganese, which are described as 'slight adverse' and 'moderate adverse' respectively. Note that for copper, as its AQAL is for a short-term daily averaging period, the 'slight adverse' impact is assessed without reference to the total concentration.

Assuming the trace pollutant concentrations are the maximum from the measured dataset is highly likely to over-predict the impacts. Taking the concentrations as the average from the measured dataset, the impact on concentrations of benzene, cadmium, copper, nickel, and arsenic can be screened out as 'negligible' irrespective of the total concentration. The impact on concentrations of lead and manganese are described as 'negligible' as the impact is less than 1% of the AQAL and the total concentration is below 75% of the AQAL.

Therefore, no significant effects are expected due to trace pollutants contained in dust emissions generated by operational phase activities.

3 Summary

An analysis of the potential impact of trace pollutants contained within fugitive dust emissions from the operational phase of the Proposed Development has been undertaken, based on measured trace pollutant concentrations in IBA and a conservative estimate of the concentration of total dust emitted by operational phase activities.

This assessment has shown that the impacts will be ‘negligible’ if it is assumed that the pollutant concentrations in IBA are the average from measured data. As such, no significant effects on air quality are predicted due to trace pollutants contained within operational phase dust emissions.

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Contaminated Land
Air Quality
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Partnership No: OC 300776

PROPOSED HILLHOUSE IBA PROCESSING FACILITY, HILLHOUSE ENTERPRISE ZONE, THORNTON-CLEVELEYS

PHASE 1 GEO-ENVIRONMENTAL ASSESSMENT

For: Axis P.E.D & Fortis IBA Limited

July 2024

R3217-R01-v4

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HILLHOUSE IBA PROCESSING FACILITY, HILLHOUSE ENTERPRISE ZONE, THORNTON-CLEVELEYS

PHASE 1 GEO-ENVIRONMENTAL ASSESSMENT

CONTENTS

DRAWINGS

APPENDICES

1. Introduction

1.1. General

1.1.1. Axis P.E.D (Axis) on behalf of Fortis IBA Ltd, has instructed Smith Grant LLP (SGP) to undertake a Phase 1 geo-environmental desk study for a detailed planning application for an incinerator bottom ash (IBA) processing facility on a parcel of land (the "Site") located off South Road within the Hillhouse Enterprise Zone in Thornton-Cleveleys, Lancashire, FY5 4QD.

1.1.2. The assessment has been undertaken to determine any potential constraints with regards to ground conditions and contamination that may impact the proposed future use of the Site.

1.2. Scope of Objectives of the Report

1.2.1. This following report describes the Phase 1 Geo-Environmental Assessment undertaken by SGP in accordance with the brief agreed with Axis. The assessment has been prepared with reference to the Planning Practice Guidance provided in relation to land affected by contamination[1] and land stability[2] under the National Planning Policy Framework (NPPF)[3].

1.2.2. The assessment has comprised a review of third-party information on the environmental setting of the site and the site's previous and current uses with respect to potential risks to the environment or human health, and a site inspection. This report contains a qualitative risk assessment, and where appropriate makes recommendations for further investigation and remedial actions appropriate to the proposed future use of the Site.

1.2.3. SGP is an environmental consultancy specialising in the risk assessment and remediation of contaminated and derelict land.

[1] Planning Practice Guidance (PPG): Land Affected by Contamination, issued 12 June 2014, last updated 22 July 2019, www.gov.uk
[2] Planning Practice Guidance (PPG): Land Stability, issued 6 March 2014, last updated 22 July 2019, www.gov.uk
[3] National Planning Policy Framework (NPPF), issued 27 March 2012, last updated 19 December 2023.

2. Planning and Legislative Context

2.1. National Planning Policy and Guidance

2.1.1. The NPPF 2023 sets out the Government's planning policies for England and how these are expected to be applied. The Framework provides some general guidance to local authorities on taking land condition into account in planning policies and decisions. Paragraph 180 of the Framework states:

'Planning policies and decisions should contribute to and enhance the natural and local environment by […]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality; and,

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

2.1.2. The Framework further states in paragraph 189 in relation to Ground Conditions and Pollution that:

'Planning policies and decisions should ensure that:

a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation measures including land remediation (as well as potential impacts on the natural environment arising from that remediation);

b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and,

c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.

2.1.3. Paragraph 190 of the NPPF is also applicable

'Where a site is affected by land contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner'

2.1.4. Further guidance is provided in the Planning Practice Guidance on Land Affected by Contamination[1] which provides guiding principles on how planning can deal with land affected by contamination. The guidance sets out when contamination may be present, the role of planning when dealing with land which may be contaminated, what a contamination risk assessment may contain and how to determine unacceptable risk. The guidance states that where there is a reason to believe contamination could be an issue, proportionate but sufficient site investigation information should be prepared by a competent person to determine the existing or otherwise of contamination.

2.1.5. Further guidance is also provided in the Planning Practice Guidance on Land Stability[2] which provides guiding principles on how planning can deal with land stability. The effects of land instability may result in landslides, subsidence or ground heave. Failing to deal with land instability could cause harm to human health, local property and associated infrastructure, and the wider environment. Land stability issues occur in different circumstances for different reasons and vary in their predictability and in their effect on development. The guidance sets out steps to be taken when land instability is suspected to be an issue for a planning application, what a land stability risk assessment should cover with measures to be taken to mitigate the risk of subsidence. The guidance also sets out the role of the Coal Authority in the planning system to prevent land instability.

2.2. Local Planning Policy and Guidance

2.2.1. Lancashire County Council is the determining authority. The Development Plan for the Site is made up of the Joint Lancashire Minerals and Waste Development Framework Core Strategy Development Plan Document, the Joint Lancashire Minerals and Waste Local Plan – Site Allocation and Development Management Policies – Part One and the Adopted Wyre Local Plan (2011-2031) (incorporating partial update of 2022).

2.2.2. Policy CS9 of the Joint Lancashire Minerals and Waste Development Framework Core Strategy Development Plan Document[4] relates to Achieving Sustainable Waste Management and requires that:

> *(i) Natural resources including water, air, soil and biodiversity are protected from contamination in the vicinity of waste facilities and opportunities are taken to enhance them.*

2.2.3. Development Policy DM2 of the Joint Lancashire Minerals and Waste Local Plan (September 2013) – Site Allocation and Development Management Policies – Part One aims to ensure that environmental impacts are minimised and mitigated for.

[4] Lancashire County Council, (February 2009) ' Joint Lancashire Minerals and Waste Development Framework Core Strategy DPD. Management our Waste and Natural Resources'.

2.2.4. Wyre Council adopted their Local Plan[5] on 26th January 2023. This incorporates a partial update from 2022 and sets out the Council's overall vision, strategic objectives, spatial strategy and strategic planning policies. Policy CDMP 1 Environmental Protection states:

1.Development will be permitted where in isolation or in conjunction with other planned or committed developments it can be demonstrated that the development:

a) Will be compatible with adjacent existing uses or uses proposed in this plan and it would not lead to significant adverse effects on health, amenity, safety and the operation of surrounding uses and for occupants or users of the development itself, with reference to noise, vibration, odour, light, dust, other pollution or nuisance, Applications will be required to be accompanied, where appropriate by relevant impact assessments and mitigation proposals;

b) In the case of previously developed, other potentially contaminated or unstable land, a land remediation scheme can be secured which will ensure that the land is remediated to a standard which provides a safe environment for occupants and users and does not displace contamination;

c) (i) Will not give rise to a deterioration of air quality in a defined Air Quality Management Area or result in the declaration of a new AQMA. Where appropriate an air quality impact assessment will be required to support development proposals

(ii) Where development will result in, or contribute to, a deterioration in air quality, permission will only be granted where any such harm caused is significantly and demonstrably outweighed by other planning considerations and appropriate mitigation measures are provided to minimise any such harm.

2. Proposals for the development of hazardous installations/pipelines, modifications to existing sites, or development in the vicinity of hazardous installations or pipelines, will be permitted where it has been demonstrated that the amount, type and location of hazardous substances would not pose unacceptable health and/or safety risks.

2.2.5. The Wyre Local Plan includes the Site as part of Site SA4 of the Hillhouse Technology Enterprise Zone, Thornton. The Plan states that the Site is expected to be fully developed within the plan period (which extends to 2031). Several key development considerations are specified, of which no. 6 relates to contamination:

6. The site is previously developed and there is the potential for ground and water contamination. A desk study will be required followed, if necessary, by more detailed site investigation.

[5] Wyre Local Plan (2011-2031) adopted 26 January 2023

2.3. Legislation

2.3.1. Land contamination can harm human health, groundwaters, surface waters, soils, ecosystems and property. As such it is controlled, either directly or indirectly, through a range of legislation, including, but not limited to:

- Part IIA of the Environmental Protection Act 1990: establishes a system for identifying and remediating statutorily defined 'contaminated land'; and focuses on addressing contaminated land that meets the specific legal definition and cannot be dealt with via other means, including planning;

- Water Environment Regulations 2017: replaces previous legislation and outlines duties of regulators in relation to characterisation and classification of water bodies, environmental permitting, abstraction and impoundment of water;

- Environmental Permitting Regulations 2016: impose provisions to prevent ground and water contamination from operations requiring an Environmental Permit to operate and implement controls for operations relating to the treatment or handling of contaminated soils.

2.3.2. Similarly, when dealing with land that may be unstable, the planning system works alongside several other regimes including Building Regulations and the Coal Authority's responsibility for public safety risks arising from past coal mining activities.

2.4. National Best Practice and Guidance

2.4.1. The Environment Agency (EA) Land Contamination: Risk Management Guidance[6] provides an overarching framework for the assessment and investigation of land contamination. It replaces the previous Contaminated Land Report 11: Model Procedures for the Management of Contaminated Land 2004.

2.4.2. It is designed to be used in a range of regulatory and management contexts such as voluntary remediation, planning, assessing liabilities or under the Part 2A contaminated land regime. The guidance sets out a phased approach to the assessment of land contamination and specifies requirements for reports produced as part of the process, including Preliminary Risk Assessments (PRAs) and Generic and Detailed Quantitative Risk Assessments (GQRAs and DQRAs).

2.4.3. The EA Guidance is supported by, and cross-refers to, an extensive range of additional statutory and non-statutory guidance relating to aspects such as site investigations, protection of groundwater, understanding and managing asbestos, definition of waste and the specific investigation and assessment procedures under Part IIA. Where necessary, such guidance is referred to in the following report.

3. Scope of Assessment and Sources of Information

3.1. Scope of Assessment

3.1.1. In undertaking this assessment SGP has carried out the following activities:

- Visit to view the existing Site and its setting;
- review of comprehensive historical mapping and aerial photography information;
- review of comprehensive environmental setting information (geology, hydrology, hydrogeology, industrial land uses, mineral excavation / extraction, landfilling / waste management activities);
- review of information provided by regulatory authorities and former Site occupier;
- review of information relating to potential unexploded ordnance (UXO);
- review of development proposals;
- development of preliminary conceptual site model (CSM) with regards to ground contamination; and,
- provision of recommendations for further investigations and mitigation, where deemed necessary.

3.1.2. The information has been used to determine i) the potential for any ground contamination to be present on or near the Site due to historical and current land uses and ii) the potential for any such contamination to pose a constraint to the proposed use of the Site and / or impact the surrounding environment. The information has been used to inform the risk assessment and determine any further work and/or investigations that may be required to identify any remedial requirements to ensure the Site is suitable for the proposed development with regards to ground contamination.

3.1.3. Information has also been obtained on general expected ground conditions at the Site and stability / physical ground conditions where these may constrain the planned development are included where relevant.

3.1.4. Similarly, structural building, asbestos or ecological surveys have not been carried out, although reference is made to relevant information and SGP observations were deemed relevant and applicable.

3.2. Sources of Information

3.2.1. The baseline data has been obtained through a desk top study and Site visit.

3.2.2. The principal sources of information consulted in the preparation of this report include:

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[6] Land Contamination: Risk Management, issued 8th October 2020, last updated 20th July 2023, www.gov.uk

Table 3.1: Information Sources

Date and reference	Author and source	Purpose and information content
Topography, geology, hydrogeology and hydrology		
http://mapapps.bgs.ac.uk [Accessed December 2023]	British Geological Survey (BGS).	distribution of geological units at surface including drift and artificial deposits, faults and mineral outcrops, borehole logs.
https://www.ordnancesurvey.co.uk/osmaps/ [Accessed December 2023]	Ordnance Survey (OS), Explorer Map, 1: 10,000	general mapping information including structures, boundaries, ground features, water features etc.
Historical data		
Satellite imagery	Various	recent historical features
Groundsure Report Historical Mapping (ref:GS-B8Q-KZT-IFI-F2A); December 2023 (provided in Appendix B)	Groundsure	historical mapping at 1:2,500, 1: 10,000 and 1: 10,560 scales from 1888 onwards.
Information Review		
Groundsure Report Datasheet (ref:GS-A1G-516-6R9-KPQ); December 2023 (provided in Appendix B)	Groundsure	hydrological, waste, hazardous substances, geological, land uses, and natural stability hazards based on historical data and geological records.
BRE 211	Public Health England	guidance for the installation of radon protection measures.
https://magic.defra.gov.uk/MagicMap [Accessed December 2023]	Defra	web-based interactive map containing information on nature conservation areas, aquifer designations, source protection and nitrate vulnerable zones.
www.zeticauxo.com (provided in Appendix C)	Zetica	unexploded bomb risk mapping
PVC Plant – An Introduction (ref: RWG/JML8th September 1993)	ICI Chemicals and Polymers Limited	Details operations undertaken onsite when under operation as PVC9 Plant
'Corvic 9' – Induction Course Handouts No. 3 to 7 ref: VIN9/STM/IND,1 (24th November 1987)	Author not specified.	Details processes and location of processes completed on site
Control Mechanism to prevent potential water pollution of Royles Brook during Demolition activity on ex Vinnolit plant at Hillhouse Business Park. (Date: unknown)	Author not specified.	Details pollution prevention into Royles Brook during proposed site demolition.
Incinerator Bottom Ash (IBA) Processing Facility – Hillhouse. Surface Water Collection, Reuse and Drainage Strategy. Draft (May 2024)	Fortis IBA Limited	Details draft proposals for reuse of rainwater and drainage strategy.
Drawing; 'ALL DRAINS 08'	Addison Project Plc	Shows routes and outfalls for surface water to Royles Brook
European Vinyls Corporation (UK) Ltd. PVC9 Plant. Environmental Protection Act 1990. Variation Notice and Introductory Note. Ref:	Environment Agency	Permitted industrial operations at the Site from 1st April 2003 until being superseded by permit below.

Date and reference	Author and source	Purpose and information content
Variation Notice Number BT9771. Authorisation Number: AP7563		
Environmental Permit: TP3833GG. Operator: Vinnolit Hillhouse Ltd. For: PVC9 Plant (2nd September 2008)	Environment Agency	Permitted industrial operations at the Site since September 2008.

3.3. Site Inspection

3.3.1. An inspection of the Site and the immediate surrounding area was undertaken by an SGP consultant on 14th December 2023. A second visit was made on 26th January 2024 to inspect an additional area to be incorporated into the planning application as requested by the Client. The Consultant was accompanied around Site by the Operations/SHE Manager of Thorntons Facilities Management Limited who provides management of facilities (site services and security etc.) for the Site and surrounding chemical works.

3.3.2. A photographic record of salient features is provided in Appendix A.

3.4. Data from Regulatory Sources

3.4.1. The Environment Team of Wyre Borough Council were contacted on 5th December 2023 to ascertain if they held any environmental information pertaining to the Site. They responded confirming they did not have any information in additional to what we were already in possession of and referred us to the planning portal for any information regarding planning applications.

4. Site Location and Development Proposals

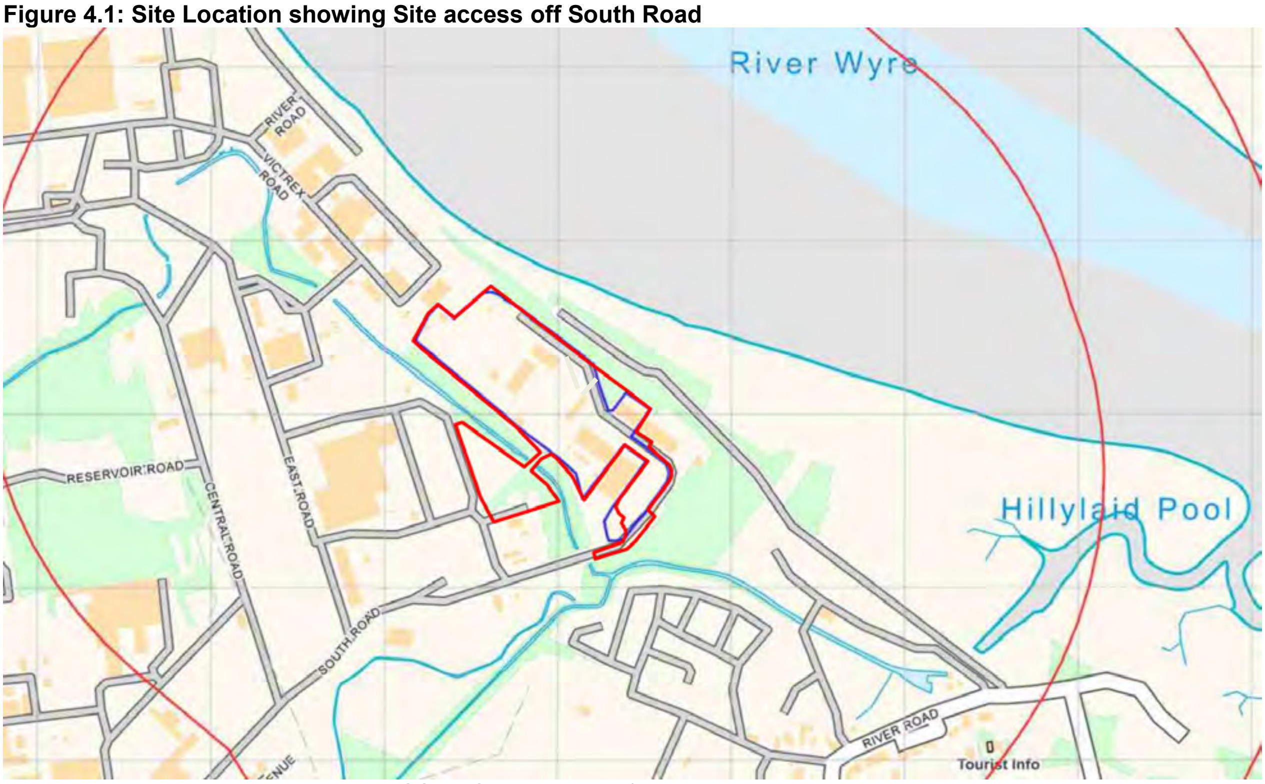
4.1. Site Details and Location

4.1.1. The Site is located within the Hillhouse Technology Enterprise Park (also referred to as the Hillhouse Industrial Park and Hillhouse Technology Enterprise Zone), at approximately 1.8km to the north-east of the town of Thornton-Cleveleys. The Site boundary includes the main plot area (which is devoid of buildings) together with an existing office building located in the east-northeast, across the Site access road (connecting to South Road) which is understood to have also contained small laboratories, Part of the Site extends to land located beyond the southern bank of the Royles Brook which includes the former VCM off-loading area to the southwest and some foundations for buildings and associated infrastructure which are understood to never have been built. This building is attached to workshops and an engineering facility 'Karpa Engineering' that are located off Site and currently used by the engineering firm located directly next door. Site access is shown below in Figure 4.1.

Table 4.1: Site Details

Address	Hillhouse proposed IBA Processing Facility, South Road, Hillhouse Technology Enterprise Zone, Thornton-Cleveleys, Lancashire. FY5 4QD
National Grid Reference	335053 443354
Local Authority	Wyre Council
Site Areas	Total: 3.79 hectares (ha) of which ~ 2.7ha is main former processing and storage area
Current Use of Site	Previously developed land which is currently unused other than an existing office building. The southern boundary of the section of the Site to the southwest of Royles Brook is partially used for material storage by a crane hire business.
Proposed Use	Proposed Incinerator Bottom Ash Processing Facility (further details are provided in 4.2 below)

Figure 4.1: Site Location showing Site access off South Road



Reproduced from Groundsure report (ref: GS-B8Q-KZT-IFI-F2A) with boundary amended.

4.2. Proposed Development

4.2.1. It is understood the facility will include an incinerator bottom ash (IBA) processing facility which will accept 350,000 tonnes per annum (tpa) of IBA (the majority is to be sourced from the Lostock Energy from Waste Facility near Northwich). It is envisaged that 10% of the unprocessed IBA arriving on site will be water with the remaining 315,000 tpa, following screening and maturation, would be exported off Site (10% metals as separated out from the IBA during processing on Site, 90% as IBA for use in aggregate manufacturing).

4.2.2. The proposed development for the Site as shown a layout[7] shown as appended within Drawings section) will comprise:

1. Officing and welfare (in southeastern area of Site);
2. Processing Plant (on area of Site to south of Royles Brook);
3. Stockyard building; and,
4. Metal storage building with adjacent aboveground fuel tank (circa 20,000 l), Adblue Tank (with capacity circa 2,000 l) and wheel wash with associated tank.

4.2.3. To support the above, the following infrastructure will be required on Site:

- Weighbridge;
- Laboratory

- Rainwater holding tanks x 3 (*possibly more*);
- hoppers, screeners and conveyors within processing building
- Metal bays;
- Aboveground fuel tank (containing diesel of c. 20,000 l) bunded to accommodate 110% capacity of tank;
- Aboveground additive tank (containing Ad-Blue tank of c, 2,000 l), bunded to accommodate 110% capacity of tank;
- wheel wash with associated aboveground tank to collect and recirculate washings;
- Petrol interceptor (to be installed within the car parking area adjacent to the officing proposed in the southeast);
- Footpath over Royles Brook;
- Vehicle turning areas.

4.2.4. The existing 1970s single storey office building located in the northeast (which also previously housed the small laboratories of the main Site) area will be demolished.

4.2.5. Six buildings are proposed, as follows:

- Building with office and proposed welfare facilities adjacent to proposed weighbridge;
- Building at Site entrance housing welfare on ground floor with offices above;
- Building at Plant Area with laboratory to ground floor and offices and welfare on the first floor.
- Processing building;
- Stockpile Storage Shed; and,
- Metals storage shed containing bays to store metal.

4.2.6. All of the proposed buildings housing officing/welfare and/or laboratories will be constructed as modular portacabin / container cabin style which will be raised off the ground on concrete plinths.

4.2.7. Access to the Site is at the southern extent of the Site, via South Road. The existing access road within the Site, running along the northeastern boundary of the Site, would be retained. Slight modifications to the Site access are proposed.

4.2.8. Rainwater will be harvested from building rooves to be reused for damping down and washing down. Overflow runoff, and runoff from the car park/office area (i.e. the main site entrance), will be directed to Royles Brook with the flow attenuated to reduce peak storm flows. The wheel wash will recirculate water via its designated tank but will be topped up as necessary.

[7] To be updated with the Axis planning drawing site layout once available

4.2.9. Surface water runoff from the southern part of the Site external area will be pumped to an above ground storage tank. No overflow for discharge to Royles Brook is proposed as this water will be potentially contaminated. This water is to be reused with any excess water exported off site for treatment.

4.2.10. As for much of the Hillhouse Business Park, the Site is currently in ownership by Le Fylde Estates (previously known as NPL Group) which took ownership in 2003 from ICI Plc. Thorntons Facilities Management Ltd currently manages the Site. The Site would be leased by the Applicant for the purpose of the development proposal.

5. Development History and Current Status

5.1. Historical Development

5.1.1. A summary of significant features, developments and land uses shown on available historical Ordnance Survey maps is provided in Tables 5.1 and 5.2 below. The maps are available from 1848. Copies of selected maps and aerial imagery are provided in Drawings D01-D06.

5.1.2. Only key features of interest are summarised below; for full details reference should be made to the complete set of historical mapping, as provided by Groundsure Insights (provided in Appendix B). Where key features have been observed their distance to the closest part of the respective Site is made.

5.2. Adequacy of Historical Information

5.2.1. Whilst there are some gaps in the historical map coverage (particularly with reference to historical mapping post 1992), it is considered that the available mapping provides adequate coverage of the Site and immediate surroundings to inform the assessment of potential ground conditions and contamination status of the Site.

Table 5.1: Summary of Development History (On site)				
Feature	**Area**	**Date shown present on Historical Mapping *(mapping scale)***	**Date no longer shown on Historical Mapping *(mapping scale)***	**Details**
Embankment with track. Salt marshland directly beyond	On Site (along northeast boundary)	1848 (1:10,560)	1967/68 (1:10,560)	Shown within the northeastern quarter of the Site with groynes shown jutting into the river Wyre from 1891. *It is possible this is an error in the accuracy of the placement of the Site boundary on early OS mapping.* *(refer to drawing D01)*
Holme Pool (later known as the Royles Brook)	just at the southeastern corner of the Site)	1848 (1:10,560)	Still present	Stream which just encroaches into the southeastern corner of the Site which forms part of the Site access from the existing South Road and is built over this watercourse which flows under the road within a culvert.
Potential pit / embankment	On Site (within central-northern area of Site)	1967 (1:2,500)	1981 (1:2:500)	There is an excavation the other side of the railway. It is potentially a small pit but may possibly exist as an embankment for the existing railway. (refer to Drawing D03)
Mound/embankment	On Site (within NW area of Site)	1960 (1:1,250)	1980 (1:1,250)	An elongated mound which appears to extend off-site to the northwest encourages onto the northwestern Site corner. It is considered most likely that this forms part of the embankment created for the railway line.
Railway	On Site: Along northern and eastern boundaries	1960 (1:2,500)	1976 (1:2,500)	The single-track railway has been laid from its terminus at the ammonia soda works located 400m to north/northwest. A second railway track follows the same alignment but is located just beyond the Site boundary. Railway is developed sometime between 1951-1960. (refer to drawing D02 and D03)
Mound of sand and gravel	On the southwest section of the Site, along the southwest embankment of Royles Brook)	1960 (1:2,500)	1973 (1:10,000)	Mound shown in an elongated shape along the western bank of Royles Brook (potentially associated with dredging of the Royles Brook watercourse).

Extensive industrial development	On Site	1980 (1:10,000)	Still shown on Mapping in 2023 (1:10,000)	Site was developed at some point between 1976 and 1980. The development has comprised several tanks (details within next row) and four main buildings plus a series of smaller, potentially ancillary buildings; • Two buildings of a rectangular configuration and one square building all of which are located within the central area of the Site. • One smaller building straddling the NW Site border; • One building within the southeast, straddling the border. • One rectangular building in the eastern site corner which appears to be linked via a walkway or similar to the building located off site and directly to the east. • Four small square buildings located within the southern site corner. *Refer to Drawing D05 and D06* There are several roads and areas of hardstanding located within the southeastern two-thirds of the Site and the access road from the southeast is shown. The site configuration does not appear to have changed since its initial development. The land to the southwest of Royles Brook comprises the VCM off-loading area where tankers delivered vinyl chloride to Site which was then pumped across the Brook via a gantry. This included multiple tanks, a control room, and a bunded portion of the road. Another small building is located to the south of the VCM off-loading area but is removed from mapping by 1994 along with the majority of the VCM off-loading area. An area of constructed foundations is present in the southeast corner but according to the site representative, it was never developed further. A circular concrete pad of unknown use is present in the southeast

				which is shown on mapping from 1976 and is still present as of 2024. *Although not shown on mapping, all aboveground features (other than office block in the eastern corner of the Site) were demolished between 2021 and 2022. It is understood that gravel from the demolished buildings was used to backfill any excavations made. All belowground foundations, drainage and other utilities are still present.*
Tanks	On Site	1976 (1:1,250)	Still shown on Mapping of 2023 (1:10,000)	One octagonal tank of approximately 15m in diameter within the north-northwest. Four oblong shaped tanks in north all within a bund. Two small circular tanks which appears to be bunded, located within the northern site corner. A series of tanks (the total number is unclear) located straddling the northwestern site border. Ten tanks shown along the SW site border. Tanks of varying sizes, mainly circular. Three circular tanks located within the central part of the site arranged on a SW-NE alignment. Three small circular bunded tanks and one square tank located within the NE/central area of the site. One square shaped tank within the south-central area of the site which appears to be located within a bund. Two large circular tanks and eight smaller tanks are located in the VCM off-loading area. According to OS mapping, the tanks do not appear to have changed configuration. Tanks shown on historical mapping will all be aboveground.
South Road	On Site	1981 (1:2,500)	Still Present (identified during Site walkover)	This has been built over the Hillylaid Pool where the stream flows within a small, culverted section.

Note: Dates refer to dates provided on OS mapping; actual dates may differ (*mapping limited to 1890-2003 for the 1:2,500 scale and 18:48 to 2023 for the 1:10,560 or 10:10,000 scale).*

Table 5.2: Summary of Development History (Off site)				
Feature	**Area *(approximate distance from site)***	**Date shown present on Historical Mapping *(mapping scale)***	**Date no longer shown on Historical Mapping *(mapping scale)***	**Comments**
Chemical Works (Corvic 5+6) Indicated as 'Works' from 1967/68	Immediate SW/W of the Site	1951 (1:10,560)	2001-2010 (1:10,000)	With several buildings, railways and sidings, tanks, reservoirs and access roads. Increases in size and building/infrastructure density by 1967/68. Several of the buildings appear to have been removed between 2001 and 2010.
Storage building / water deluge tank (now occupied by a crane hire business)	Immediate south of southwest section of the Site	1976 (1:1,250)	Present	This building first appears on mapping in 1976. The former water deluge system tank is not visible on mapping but can be seen on satellite imagery from 2000 to 2022. Satellite imagery shows the storage building being reclad with new metal sheeting in 2015.
Bicycle shed	40m S of southwest section of the Site	1976 (1:1,250)	Present	During the Site inspection, this bicycle shed was constructed of brick walls with an asbestos cement sheeting roof.
Former switch house	40m S of southwest section of the Site	1979-1980 (1:1,250)	Present	A brick building that formerly stored the switch house equipment to provide power to the site.
River Wyre with associated marshlands/mudflats	50m Along NE site boundary	1848 (1:2,500)	Present	Flowing to north/northwest. From mapping of 1891, groynes are shown jutting into the River Wyre and the Salt flats appear to have increased in size by 1967/1968.
Holme Pool (later known as Royles Brook which confluences with the	50m at closest point to site to W/SW	1848 (1:2,500)	Present	Flowing south/south-eastwards Other than a small section which traverses the Site boundary

Hillylaid Pool (just beyond the southern corner of the Site)				(culverted under the existing South Road), the Hillylaid Pool is located off Site.
Large pool (of Holme Pool watercourse)	40m to NW	1848 (1:10,560)	1891 (1:10,560)	Shown occupying part of fields by 1891.
Hillylaid Pool (stream)	50m S & SE	1848 (1:10,560)	Present	By 1981, an additional drain has been constructed close to the southeastern bank of the stream. This is also named as the Hillylaid Pool.
Hillhouse Farm	400m SW	1891 (1:10,560)	1951 (1:10,560)	No longer shown by 1951 when the chemical works is shown as built occupying the same (& more extensive) footprint.
Ammonia Soda Works	500m to NW	1910 (1:10,560)	1967/68 (1:10,560)	Increases in size by 1910 with railway sidings and railway (one of which crosses the Site)
Gas Works	600m to WNW	1910 (1:10,560)	1930/31 (1:10,560)	Small in size. Site features are not evident.
Two small unnamed buildings	NE Within 5m of boundary	1967/68 (1:10,560)	1981 (1:10,000)	Presumed to be associated with the railway.
Drain	W 60m (potentially also on Site)	1967/68 (1:10,560)	1981 (1:2,500)	Assumed to flow SE.
Refuse tip	SE 430m	1967/68 (1:10,560)	1981 (1:10,000)	Shown as a park on mapping of 1981
Caravan park	60m SE	1981 (1:10,000)	Present	Site is no longer named on mapping of 2023 but shows the same configuration
Village of Stanah (originally named 'Steyna')	*SE 500m*	1848 (1:10,560)	Present	The village becomes further developed by 1930/31.
Village of Trunnah (named as Thornton by 1910)	*1km to SW*	1848 (1:10,560)	Present	Expands in size by 1967/68

5.3. Historical Site Operations

5.3.1. The Site was known as PVC 9 Plant (originally known as CORVIC 9) and processes involved the mixing and polymerisation of liquid vinyl chloride monomer (VCM) to produce polyvinyl chloride (PVC). The VCM was delivered by tanker via the VCM off-loading area located in the southwest of the Site and then pumped across the Brook in aboveground pipes and gantries to the main Site.

5.3.2. It is understood that industrial operations on Site commenced in the late 1970s and continued until 2020. The Site was initially operated by ICI Chemicals Limited and then in 1995 this transferred to European Vinyls (UK) Limited. Ineos Vinyls UK Ltd took over operations in around 2007 with Vinnoilit Hillhouse Limited taking over in around 2008.

5.3.3. Granular PVC powder was produced and milled with four main types of PVC being produced on Site (referred to as: P72/578, MP7151, MP7154 and MP7155). PVC pastes were also produced which were stored off Site although for a short time during operations, it is understood that they were used as feedstock.

5.3.4. A basic summary of the processes previously undertaken on Site included:

- **Pre-Seed – and seed** stages involving the introduction of various additives to the VCM stock feed.
- **Mixing:** Depending upon the type of PVC produced, there was then a stage involving a mixing vessel.
- **Autoclave Cycle:** The polymerisation of the VCM was then undertaken within an autoclave using immense heat and pressure in a series of thirty distinct stages.
- **Stripping:** The latex product was then sprayed under steam within the stripping vessel using a centrifuge to remove VCM as part of the ‘stripping process’. The VCM gas is then sent to the VCM gas holder.
- **Drying:** The product was then dried.
- **Cleaning:** Routine cleaning of the autoclaves and other tanks was undertaken to prevent buildup of residues.
- **Recirculation of biproducts:** Unreacted VCM in addition to residual PVC was used in future processing, and VC gas was liquified and reused within processing thereafter.
- **Aqueous Discharge:** Process water was sent to the effluent treatment tank for treatment and further stripping processes before it was discharged to a settling lagoon and then to the adjacent discharge point to the Royles Brook and River Wyre. The settling lagoon was no longer used from around 2003 and was located off Site.
- **Solid Wastes:** Were collected, temporarily stored and then sent off Site to landfill.

5.4. <u>Historical Site Buildings and Other Infrastructure</u>

5.4.1. Buildings and Infrastructure associated with the heavy industrial operations performed on Site included:

- Additive Building (four storeys high) and adjacent additive Stock Tank Farm;
- Six autoclave vessels (plant equivalent of five storeys in height);

- Vinyl Chloride Reception and Recovery Plant;
- Mixing vessel and homogeniser;
- Stripper vessel;
- 17MW gas turbine and 12MW burner to be used on standby (for electricity and hot air-drying operations);
- Two 12 MW steam boilers for generation of steam and for heating autoclaves;
- Three cooling towers for discharge of water vapour;
- Demineralisation water plant (for polymerisation process);
- Dryer, mills and packing building (of five storeys in height);
- Effluent treatment plant and adjacent below ground pits (comprising solids removal and pH control of final effluent discharges to River Wyre) - there is no fuel interceptor on Site;
- Vents treatment – of emissions to air;
- Storage: raw materials, finished product, waste;
- Electrical transformers;
- Single storey control room;
- Single storey building containing workshops, offices and laboratories; and,
- VCM off-loading area in the north which included a small control room, spillage drains, two large VCM storage tanks, and eight smaller tanks.

5.4.2. The section of the Site located to the southwest of Royles Brook comprised of a small building, a set of four aboveground tanks, a circular concrete pad of unknown use, and an area of unused foundations. The tanks and building were removed by 1994 but the foundations remained. According to the Site representative during the walkover, the foundations were constructed in the 1970s in preparation for further development but were not utilised and have remained in-situ to present day.

5.4.3. The buildings were generally of a steel frame and steel cladding construction and infrastructure was connected via a series of overhead pipe bridges;

5.4.4. The operations extended outside the Site boundary whereby the oil and fuel store, gas pump house, workshops and engineering building, polymer paste store fire water tank, and Romney Hut were all located off site. There was also an aboveground pipeline which carried liquid PVC monomer (VCM) to the Site from the VC4 Plant.

5.5. <u>Chemicals and polymers used, generated and stored during the former processing on Site</u>

- Additive Building and Additive Stock Tank Farm:
- Ammonium persulphate (initiator);
- Aqueous Ammonia (initiator);

- Ammonium myristate (initiator);
- Ascorbic acid (activator within autoclave);
- Sodium sulphite (activator);
- Emulsifiers (e.g. Nansa 1395 or Empicol);
- De-foamers (e.g. Bevaloid 66241 and Nalfloc 66160);
- Heat stabilisers (e.g. sodium Bicarbonate, sodium thiosulphate, sodium carbonate);
- Synperonic NP5 (viscosity depressant).
- Three 200m^3 aboveground latex hold tanks.
- Two aboveground bunded tanks containing Empimin OT (contains ethanol).
- Aboveground tank containing Lauroyl Peroxide (highly flammable).
- Vinyl Chloride Reception and Recovery Plant: contains 2 x 80m^3 bunded aboveground tanks holding VCM and recovered VCM containing Topanol (an inhibitor).
- Autoclave vessels using heat and steam, plus K methyl styrene used as a reaction stopper.
- Mixing vessel and homogeniser: using VCM and flaked solid lauroyl peroxide with an emulsifier alongside demineralised water.
- During the autoclave cycle, demineralised water, copper sulphate nitrogen gas, ammonia and ammonium per sulphate are added with ascorbic acid and/or sodium sulphate used as an activator. VCM gas is produced as a waste and the radioactive source is checked continually. Antifoam is added is the level is too high. Solid VC 'pebbles' generated within the autoclave processing are removed and cooling water is sent to the cooling towers.
- During the autoclave tank cleaning process, a build-up suppressant solution (anticipated as the Synperonic NPS or Empimin O.T.) is added.
- The stripper vessel sprays latex using steam to remove the VCM. The VCM gas is then sent to the VCM gas holder.
- The electrical transformers will have used hydraulic oils although in light of the ban of use of polychlorinated biphenyls (PCBs) in the UK in 1980, it is unlikely that the electrical transformers will have contained PCBs when they were commissioned.
- Oils and small volumes of chemicals (e.g. glycols and transformer fluids etc.) will have been used during the maintenance of plant and machinery although the oil stores were located off Site.
- It is understood that mercury was not used as a catalyst within the processing on the Site but this occurred on other areas of the Hillhouse Site up until 1993.

5.5.1. The location of the former processes and storage areas is shown on the Site features Plan (See Drawing D07).

5.5.2. It appears that there was little change to the plant following its original construction although it is noted on the planning portal that planning was granted for the construction a wash structure and container filling building on 6th April 1983 the construction of two chemical storage tanks along southern boundary in 1990 (90/01527) and for a 46m high chimney gas turbine exhaust stack and external plant equipment in 1997[8].

5.5.3. Additionally, in January 2003, planning was granted to European Vinyls (UK) Ltd for the construction of a single storey dewatering building within the northern corner of the Site. Conditions were provided in association with the requirement for investigation and assessment of contamination within this area following a phased approach. This included the provision of a desk study, followed by an intrusive investigation, and remediation with validation as required. The planning permission was granted. However, the associated documentation is not available on the planning portal.

5.6. Generated Wastes

5.6.1. The process generated a total of 454.2 tonnes (t) of aqueous discharges within 430,000 tonnes (m^3) of water per year. Aqueous discharge included 2.5t free ammonia, 0.22t chromates, 0.25t lauroyl peroxide, 0.2t sodium hydroxide, 1t lubricating oils, 0.93t methyl styrene 6.8t active matter surfactant plus 431.1t VC and 6.8t VCM to plant drains. An effluent treatment and dewatering plant was located in the northeast of the Site which had an associated underground chambered pit. The infrastructure associated with this treatment plant has been decommissioned in 2020 alongside the infilling of the underground chambered pit. It is understood that this decommissioning operation was not validated for establishing the presence of residual contamination.

5.6.2. Various atmospheric emissions included: VCM gas, PVC, methane, carbon dioxide, nitrogen, nitrous oxides (NOx), sulphur dioxide (SOx), carbon monoxide, chlorine gas, ammonia gas, water vapour and active matter surfactant.

5.6.3. Annual wastes to landfill from the process included PVC and VCM process wastes, active matter surfactant together with packaging and general wastes.

5.7. Permitted Site Activities

5.7.1. According to available information the first authorised permit for the Site operations was recorded as AP7563. This was authorised for European Vinyls (UK) Limited in February 1995 under the Environmental Protection Act 1990. The permit was subsequently varied three times thereafter (in 1998, 1999 and 2003), the latest variation was reference: BT9771.

5.7.2. Ineos Vinyls UK Ltd had a Part A(1) industrial installation permit ref: EPR/BU5534IQ) which was issued on 22/01/2007 to produce polymers and plastic materials on Site. This permit was later recorded as superseded where permit ref: EPR/TP3833GG initially authorised under the

[8] Planning reference: 97/00731

Pollution Prevention and Control (England and Wales) Regulations 2000 was issued for the same industrial processes to Vinnolit Hillhouse Ltd (Vinnolit) on 2nd September 2008. Under Environmental Permitting (England and Wales) Regulations 2010, the permit for Vinnolit was issued on 04/11/21 and recorded as effective on 08/11/23 but specified as having been surrendered.

5.7.3. The permit was granted to Vinnolit on the premise that monitoring of emissions as required by the Environment Agency was undertaken. The monitoring requirements are detailed within Schedule 4 and those for discharge to water are summarised as follows:

Table 5.3: Monitoring of Point Source Emissions to Water (other than to sewer)

Receiving water	Contaminant	Discharge Limit	Reference Period	Monitoring Frequency
River Wyre	VCM[9] (from effluent plant and storm water	100mg/l (1mg/l annually)	Spot sample	Weekly
	Chemical Oxygen Demand	250mg/l annually	Flow weighted composite sample	Monthly & quarterly (using differing methods of analysis)
	Suspended solids	No limit set (30mg/l annually)	Flow weighted composite sample	Quarterly
	Mercury	0.05mg/l (0.1kg annually)	Compliance based on mass balance calculation	Annually
	Temperature	40 degrees Celsius (maximum)	Maximum 10minute (rolling average)	Continuous
	pH	Min: 5 Max 10	24hr flow proportional sample	Weekly (continuous within process effluent)
	Flow	No limit set	Monthly average	Continuous
Royles Brook	Uncontaminated storm water from main plant areas No parameters set	No limit set	N/A	N/A

5.7.4. It is noted that discharge limits to the River Wyre were previously higher for certain chemical parameters under the previous environmental permit. It was also previously a requirement that dichloroethane was monitored with an associated limits of: MAC[10] 5 mg/l and 2mg/l as AA[11]. Maximum concentrations of parameters within water were specified in association with release from the settling lagoon. This settling lagoon was located off Site. The results of monitoring undertaken have not been provided for review.

5.7.5. In addition to the above, compliance with the permit also included monitoring of emissions of PCM and particulates to air.

[9] chloroethylene
[10] Maximum admissible concentration
[11] Annual average

5.7.6. In January 2005, planning permission was granted[12] for the use and storage of hazardous substances at the Site which related to the storage and processing of VCM.

5.7.7. The Groundsure reports the Site as being a permitted under The Control of Major Accidents and Hazards (COMAH) Regulations as a lower tier operator. The licence holder is reported as Victrex Manufacturing Limited and hence it is considered this may reflect operations that are occurring by the operator located directly to the west/northwest.

5.8. Pollution Prevention

5.8.1. From available information, the following pollution prevention plan has been adopted whilst the Site was in operation under the agreement of the EA.

- Placement of a penstock valve at the end of Royles Brook (150m downstream of Site discharge point) prior to its confluence with the Hillylaid Pool which can stop water flow if necessary.
- Monitoring of pH at the penstock with an alarm if the pH falls below pH 5 or over pH 10.
- Checking the pH system together with the clarity of water every morning and recording findings.

5.9. Site Demolition

5.9.1. It is understood that Vinnolit undertook Site decommissioning, which occurred between 2019 and 2020 where all plant equipment was decontaminated and left in-situ. The clean surface water was then diverted to the Royles Brook (under EA agreement). No effluent was released following decontamination operations.

5.9.2. Removal of the aboveground infrastructure and demolition of the Site buildings to slab level occurred thereafter between 1st October 2020 and 8th July 2021. Under approval of planning permission 20/00945/DEM made by Vinnolit. The demolition area extended to an area of industrial plant to the southwest and west, located outside of the current Site boundary and the demolition methodology (Planning Methodology V2, dated 9th February 2021 included the following aspects:

- Services isolation;
- Effluent pit protection *(commissioning prior to demolition and reinstatement following demolition completion*);
- Protection of Royles Brook (as per section 5.9.4) *(commissioning prior to demolition and reinstatement following demolition completion);*
- Removal of minor containment walls;

[12] Planning reference: 04/01410/HAZ

- Demolition asbestos survey;
- Removal of pipe bridges and gantries;
- Demolition of:
  - Cooling towers, VC storage, stripping vessel, gas holder, additives building, control room, dryer building, Romney Hut, workshops/offices and labs. PPS warehouse, East Stores and fire water provision; and,
- Final report confirming demolition undertaken (*this has not been made available for review but it is understood that there are individual records kept by Thornton Facilities Management Ltd for each building and plant regarding the decontamination and demolition undertaken*.

- It is understood that the investigation, assessment and remediation (with associated validation) of soils and shallow groundwater was not undertaken as part of the decommissioning and demolition works.

5.9.3. The EA commented upon the planning application (dated 29th October 2020) to demolish the Site where they recommended the following was adhered to:

Land contamination: risk management and good practice
We recommend that developers should:

1. Follow the risk management framework provided in 'Land contamination: risk management' when dealing with land affected by contamination

2. Refer to our Guiding principles for land contamination for the type of information that we require in order to assess risks to controlled waters from the site – the local authority can advise on risk to other receptors, such as human health;

3. Consider using the National Quality Mark Scheme for Land Contamination Management which involves the use of competent persons to ensure that land contamination risks are appropriately managed

4. Refer to the contaminated land pages on gov.uk for more information.

5.9.4. Natural England was consulted on the proposed demolition of the Site whereby in addition to the recommendation of a Habitats Regulation Assessment, they requested that a consideration of the water quality impacts were undertaken in addition to an assessment of dust, debris and water run-off impacts on the ecologically designated Sites.

5.9.5. The Environmental Permit held by Vinnolit (ref: EPR/TP3833GG) includes requirements for the closure and decommissioning whereby a Site Closure Plan is required in order to minimise any pollution risk on closure and decommissioning.

5.9.6. A brief document detailing the pollution control measures to be undertaken during decommissioning on Site has been provided for review which in summary includes:

- Closure of the discharge point from Site to the Royles Brook to be closed;
- Testing of water build-up for pH (with pH 6-8 being of normal range) and undertaking a visual check for any white residue and/or oil prior to allowing the surface water to discharge to the Royles Brook;
- Dealing with any exceedances during sampling within the controlled area of the demolition plot.
- Erecting fencing along the westerly Site boundary to capture any windblown debris during demolition.

5.10. Historical Development Summary

5.10.1. The Site is undeveloped agricultural (or possible marshland associated with the adjacent salt/mud flats). A railway connected to the offsite Ammonia soda works is shown upon an embankment from 1960 and which is no longer shown by 1976. By 1981, the Site is developed by industrial buildings and associated infrastructure (tanks, access roads etc.) which appear to be connected with industrial land directly to the northwest and southeast. The VCM off-loading area was removed in the early 1990s and there were several small additions to the main plant during its operation until the decommissioning of aboveground infrastructure in 2019-20.

5.10.2. The wider surrounding area was once agricultural and marshland on the banks of the river Wyre but becomes gradually industrialised by various chemical works and associated infrastructure from mid 1900s to 1980s.

5.11. Present Land Condition

5.11.1. A summary of existing significant features, recent activities and land uses shown on contemporaneous aerial photography, Site inspections and anecdotal evidence is provided in Table 5.4 below.

Table 5.4: Present Land Condition

Site Description	The Site is a recently demolished PVC powder production facility leaving only former below ground building foundations, an infilled effluent pit, drainage and a small number of other services (water main and electricity) plus a one-storey office building (which previously also used to contain laboratories) built in the 1970s in the east of the Site which will be demolished. Outside of the concrete building slabs, hardcore is present across the Site surface, the origin of which, is uncertain but may be from crushing of former buildings and other brick built or concrete structures. The area to the southwest of Royles Brook comprised of the former VCM off-loading area and open land. It contained a small control building (no longer in use), concrete pads, and relict drainage in the north. Along the southern boundary, an area of unused foundations was present. These were set 1m below ground level, with four small concrete towers rising 2m from the floor. A circular concrete pad was present in the southeast corner, raised approximately 1m above ground level. The rest of the area was overgrown with brambles.
Topography of Site & Immediate Site surroundings	The Site lies flat and is approximately 3m below the level of an embankment that a bridleway and the Wyre Way long distance walking route runs along to the immediate northeast. The Wyre River and associated estuary and saltmarshes are located directly beyond the embankment and associated bridleway/footpath. The Royles Brook to which flows between the main site and the area of the site in the south is at approximately 2m below the Site level and both banks are overgrown with thick scrub and brambles. The access road to the Site lies to the southeast with an oil store and fence backing onto vegetated land. A strip of open land overlying a live water main and electric service (approximately 1m bgl) backing onto Royles Bank lies to the southwest of the Site. An 11kv switch house and fence line back onto the Victrex operating plant located offsite to the northwest. Three remaining businesses exist to the east/southeast/south. Karpa Engineering Solutions (industrial machinery manufacturer) lies to the immediate east and the Site surrounds Express Trade Frames (window frame manufacturer) in the southeast. Daly Cranes lies to the immediate south of the southwest section of the site. This is a crane hire business which has been present since 2021. Several mobile cranes were present along with some materials such as old fences were stored along the southern boundary of the southwest section of the Site. The former Vinnolit 11kV switch house lies 50m to the south of the southwest section of the Site along with a bike shed constructed in the 1950s with an asbestos roof. Victrex Manufacturing Limited operates the Site located immediately to the northwest. This is recorded to manufacture organic materials and plastic materials (Polyaryletherketone polymers) and is permitted under: EPR/ EPR/BU5640IA and associated permit number: QP3338DB. According to the Groundsure report, this Site has been permitted since 2006 although it is possible that the Site was active under a former permit prior to this.
Access	Access to the Site from the southeast via South Road.

Boundaries	The Site is bounded to the northeast by a 7m embankment covered with vegetation of shrubbery and brambles. To the southeast the Site is bounded by two existing businesses and the access road. The site is divided in two by Royles Brook. The southwest section of the site is bounded to the west by a road onto open land and by Daly Cranes to the south.
Services / Wayleaves	A network of surface water drains underly the Site which take surface water and discharge it to the Royles Brook at two locations; one south and one to the southeast. There is one live water main running along the southwest boundary and through the southeast of the Site, linking to a still live fire hydrant in the centre of the Site. This water main then carries on across the access track over Royles Brook and crosses the southwest section of the Site from the east to the southwest corner to another live fire hydrant and continues westwards. Live electric cables runs along the southwest boundary, cutting into the Site in the southeast, providing power to the existing businesses off-site. A small substation and 11kv switch house are located 15m and 50m to the south of the southwest section of the Site. A septic tank is located adjacent to the office building which acts as a cess pit for capture of foul discharge before it is uplifted and tankered off site. A live belowground ethylbenzene pipe of 100mm in diameter padded with nitrogen gas runs from the southeast along the road before cutting northeast past the office building. It is understood that this is associated with the adjacent industry and runs from Saltwick at around 17km away. A 27-bar high pressure gas main is located to the east of the Site with the pipeline running beneath the bridleway and footpath to the northeast. There are two live watermains which serve the Site. Redundant lampposts remain on Site (which are not live).
Rights of Way	The Site is accessed from South Road and the proposed development will provide slight amendments to the road to ensure the priority for access between this Site and the adjacent site is clear to drivers. No other rights of way cross the Site. A public bridleway/footpath bounds the Site to the northeast which runs along the top of the low cliffs adjacent to the saltmarshes of the Wyre Estuary.
Structures	There are two buildings currently on Site, both of which are understood to have been constructed in 1970s. This includes a one storey corrugated metal clad building known as the VCM off-loading control room (a small metal clad building) present in the southwest of the Site and a one storey office building in the northeast. The office has an adjacent septic tank which was installed in 2015. There are no other aboveground structures present. It is expected that there are belowground relict foundations, pits (associated with the effluent treatment plant and the spillage collection point of the VCM off-loading area), drainage pipelines and service lines underlying the hardstanding on Site. The office building is to be demolished as part of ground preparation works.

Drainage	The Site is covered in a mix of hardstanding and crushed aggregate (understood to have been derived from the demolition of former buildings) and the drainage is directed through a below ground surface water drainage system and infiltration through any soft ground. A plan of the drains has been provided although which shows that surface water is directed towards the Royles Brook at two locations located upstream of a penstock where water flow can be controlled. There are several former licensed water discharges to Controlled Waters registered on the Site, all of which have now been revoked. This comprised discharge of treated sewage, cooling water and process effluent plus 'emergency discharges' to the Wyre Estuary. The effluent was treated on Site within the treatment plant and pits located in the northern corner of the Site. The effluent plant has been decommissioned and demolished to ground slab and the below ground pits have since been infilled. The Site is also recorded as having List 1 Dangerous Substances discharge (relating to mercury) with the receiving watercourse as Wyre Estuary and registered to Ineos Vinyls (UK) Limited. However, mercury was not used on the Corvic 9 Site within processes.
Surfaces / Vegetation	The Site was surfaced with a mix of hardstanding and gravel (likely demolition rubble). Vegetation was present on the northeast, southwest, and southeast boundaries It was also present in the south of the southwest section of the Site. Thick brambles were present along both embankments of Royles Brook.

Figure 5.1. Satellite Imagery of Site

Source: Groundsure, 2023 ref: GS-A1G-516-6R9-KPQ. Red line shows approximate boundary for proposed development. Capture 08/2022.

6. Site Characterisation

6.1. The physical setting of the Site has been derived from the review of information detailed in Section 2. Key details are summarised below; for full details reference should be made to the supporting information provided in Appendix B.

Table 6.1: Environmental Setting

Setting and Topography	The Site lies within the eastern/southeastern corner of the Hillhouse Enterprise Zone and is accessed from the terminus of South Road. To the north and west the Site is tree lined alongside the banks of the Royles Brook with a mixed industrial usage followed by a residential suburb of Thornton Cleveleys beyond. The southwest section of the Site is bounded by open land to the west and a crane hire business to the south. Beyond the eastern tip of the Site is an office block and a series of smaller industrial buildings. The remainder of the eastern Site boundary is lined with a 50m wide band of established trees that the Wyre Way (footpath and bridleway) cuts through. The River Wyre and mudflats/salt marshes of the tidal Wyre Estuary are located directly beyond. There is a large warehouse building directly to the southeast and beyond South Road is an open grassed area with the Royles Brook flowing through. A holiday caravan park is located thereafter with the Wyre Estuary Country Park beyond. The village of Stanah and the outskirts of Thornton-Cleveleys merging into one large predominantly residential area to the south. The Site is currently located at an elevation of between 5m and 10m Above Ordnance Datum (AOD) as shown on contemporary OS mapping. The mudflats of the Wyre Estuary are around 5m AOD.
Geology / Ground Conditions	BGS, historical OS mapping and Site observations indicate the potential ground conditions to be: <u>Made ground</u>: BGS mapping reports the presence of made ground (artificial deposit) across all but the southern quarter of the Site. However, in light of the previous industrial use and presence of hardstanding site-wide, made ground is anticipated across the whole Site. The thickness of made ground is not currently known. <u>Superficial Deposits</u>: BGS mapping shows the entire Site to be underlain by Tidal Flat Deposits – Clay and silt. The thickness of superficial deposits is not known. <u>Bedrock:</u> BGS mapping shows the northwestern two-thirds of the Site to be underlain by the Preesall Halite Member comprising Mudstone and Halite stone with the southeastern area comprising bedrock of Kirkham Mudstone Member. <u>Faults</u>: - No faults are mapped crossing the Site. The closest fault is located at 466m to the southeast. There is an axial plane (geo-syncline) located at 95m to the northwest. <u>BGS Records</u> There are several BGS boreholes records shown within the immediate vicinity of the Site to

	the northwest, north, northeast and southeast. All of which are confidential and hence unavailable to view. The closest available BGS borehole records are at 250m to the southwest. Record SD34SW193 reports made ground to 0.2m underlain by silty clay and clayey silt to 4.1m and boulder clay to base at 14.5m bgl. An adjacent borehole (SD34SW194) drilled to 25m bgl reports 4.0m of soft mottled brown-grey clay and clayey silt with organic matter followed by soft becoming firm red brown sandy boulder clay with gravel to 14.4m which is followed by hard red and green clay containing gypsum crystals below 17.3m bgl. Groundwater was encountered at 2.3m bgl within the underlying Tidal Flat Deposits.
Natural Ground Stability	The Site is in an area where ground dissolution of soluble rocks is high (where the Preesall Halite Member is recorded) and negligible where the Kirkham Mudstone is present. The recorded risk of shrink swell clays and landslides is low. Risks from compressible ground and running sands are very low across most of the Site but recorded as ‘moderate’ both within the southern third and northern tip.
Hydrology and Flooding	The Royles Brook separates the Site into two areas with an access track joining the two sections. The Royles Brook also crossed the southeastern part of the Site which forms part of the existing South Road. The brook flows under this road within a small section of culvert. The brook flows south-eastwards where it confluences with the Hillylaid Pool which flows north to discharge into the River Wyre. The Wyre Estuary is located at 50m beyond the full length of the northeastern Site boundary. The Site benefits from flood defences constructed along the bank of the River Wyre and as such, the Groundsure report states that the Site is at low risk from river and coastal flooding It is understood that the flow of the Royles Brook and Hillyliad Pool is controlled when necessary, via a pumping station at Stanah. The Site is located within Flood Zone 3. The Site is mainly at risk of surface water flooding of between 0.3 and 1.0m on a 1:1,000-year flood return period. There is a small area within the north/central area which is classed as at 1 in 30 yr flood return period of being affected by flooding of between 0.3 and 1.0m depth.
Hydrogeology / Groundwater	The aquifer designations of the underlying geological units are: <u>Superficial Deposits</u>: Tidal Flat Deposits- Clay and Silt: Unproductive aquifer of mixed intergranular flow and very low to low permeability. <u>Bedrock:</u> Preesall Halite Member – Unproductive aquifer Kirkham Mudstone Member – Secondary B aquifer The permeability on Site is recorded as predominantly via fracture flow and low. Groundwater vulnerability is recorded as low. The Site is not located in any Source Protection Zones.
Excavation /	Surface ground workings are recorded on Site in the form of a former pit which is identified

Mining	on historical mapping of 1968. It is unclear whether this has been infilled (and was not observed during the walkover). No further details are available. The Site is not located within an area of historical coal mining. A mound has been identified along the edge of Royles Brook in 1967. However, it is removed from mapping in the 1970s. It is considered this is associated to be silts, sands and gravel related to dredging of the watercourse.
Landfill / Waste Disposal	The Groundsure report shows that there are no landfills on Site. Two historical landfills are located within 500m of the Site. This includes: • Historical waste Site: 250m to northwest (beyond Royles Brook); and, • Former household waste landfill, licensed December 1960 to December 1970 located 430m to southeast (now forming part of the Wyre Country Park). Recorded to Stanah House Farm. No further details have been made available. A screening request for a thermal treatment facility has been lodged in March 2023 for a Site located 240m northwest, the outcome of which is currently unknown.
Pollution Incidents	The Groundsure reports that there are no recorded pollution incidents on Site. Two incidents have occurred within 250m of the Site as follows: • 46m N: Significant (Category 2) impact to water reported 01/01/2005. Pollution description was ‘other pollutant’. Incident reference: 285281. No further details are available. • 59m NW: Significant impact to land and minor (Category 3) impact to water reported on 28/8/2018 which involved release of acids and alkalis. Incident reference: 1647147. No further details are available. It is possible that the two above incidents may be associated with release of pollution from the effluent discharge chambers which discharge to the river Wyre. It is understood that the Site used to discharge treated effluent from this location in addition to a number of other chemicals works within the immediate vicinity. The Polluter in this instance is unknown although it is not anticipated that this pollution incident will have significantly impacted the Site.
Neighbouring Land use / Nearby Contaminative Activities	The Site itself is located within a large industrial area specialising in the manufacture of various chemicals and polymers. Some industrial areas are no longer operational. Karpa Engineering works is located directly east, a PVC window frame manufacturer is located directly to the southeast, and a crane hire business is located to the south of the southwest section of the Site
Radon	The Site lies within an area where between <1% of homes are estimated to be at or above the Radon Action Level and therefore the installation of radon protection measures will not be necessary within new buildings.
UXO Risk	The UXO risk map identifies the Site as located within an area of Low Risk. A copy of the UXO risk map is provided in Appendix C.

Nature Conservation	At around 50m the north/northeast of the Site lies the River Wyre and Wyre Estuary which is designated as a SSSI[13], RAMSAR[14], and SPA[15]. The Site is also within part of land designated as Priority Habitat Network[16] (Zone 1 and Zone 2), a SSSI impact risk zone and Marine Conservation Zone. No invasive weeds, such as Japanese Knotweed or Himalayan Balsam were observed during the Site visit, although a formal survey has not been undertaken by SGP and not all parts of the Site were inspected.

[13] Site of Special Scientific Interest
[14] Ramsar site for the conservation of wetland and peat bogs
[15] Special Protection Area
[16] Relates to the potential for expansion of existing habitat.

7. Preliminary Conceptual Site Model

7.1. Methodology

7.1.1. Information from the desk study has been used to identify the likely source-pathway-target relationships that may exist at the Site during and following the proposed development. Principal factors that may determine potential sources of contaminants at the Site, receptor vulnerability and potential pathways have been identified and each assessed in turn to derive a Conceptual Site Model (CSM).

7.2. On-Site Contamination Sources

Previous Industrial Operations

7.2.1. There is the potential for leaks and spillages of substances to have occurred to ground and shallow groundwater during the 40yrs operation of the Site as a plastics powder manufacturer. Such contaminants could include:

- dissolved and solid PVC, PCM and latex;
- Volatile organic compounds (VOCs) in both liquid and vapour form;
- Chlorinated solvents (liquid and vapour form);
- Acids and alkalis;
- Ammonia and ammonium;
- Sulphates;
- Sodium, fluoride, chloride;
- Chlorine (gas);
- Petroleum hydrocarbons and oils,
- Heavy metals including copper, cadmium, mercury;

7.2.2. In addition to the above, there could be physicochemical changes to ground and groundwater including change in parameters such as pH, chemical oxygen demand (COD), electrical conductivity, redox potential and temperature.

7.2.3. There is the potential for point sources to be located around the Site specifically within the former processing, raw materials and processed materials storage areas plus the former effluent treatment plant and VCM off-loading area. The condition of the drains underlying the Site is unknown and if pipes are damaged, this could give rise to release of contaminants to the surrounding ground and shallow groundwater. It is, however, understood that the pipework in-situ between the former effluent treatment plant on Site to the outfall to the River Wyre was renewed shortly before the whole Site was decommissioned.

7.2.4. According to the Groundsure report, there have been no pollution incidents reported on or to have affected the Site.

Made Ground

7.2.5. Artificial and made ground are mapped by the BGS in the northeast / north of the Site but it is anticipated to be to present at relatively shallow depth across Site. The earth bund along the western and northwestern Site boundary and the southern boundary of the southwest section of the Site is anticipated to contain made ground and/or reworked natural material. Site surface water drainage is in-situ alongside a small number of live services. Below ground infrastructure is still present underlying the ground slabs of former buildings. The source and form of made ground will give rise to the presence and nature of contaminants within. Within an urban environment, made ground can typically contain varying concentrations of metals and metalloids, asbestos, polyaromatic hydrocarbons (PAHs), possible petroleum hydrocarbons and, if significantly thick deposits are present, potentially ground gases (principally of carbon dioxide and methane).

7.2.6. A mound of material was identified on Site along the southwest bank of Royles Brook in 1967 but is removed from mapping by the 1970s. It is assumed to be related to dredging of the watercourse but cannot be confirmed.

Former Railway Line & Associated Embankments

7.2.7. Former railway sidings and a railway line were previously located upon an embankment across the northern and southeastern boundaries before crossing Royles Brook into the southwest of the Site. Contaminants typical of such facilities include heavy metals, metalloids, PAHs, asbestos, phenols, heavy end hydrocarbons. It is possible that when the railway was dismantled, the embankment may have remained to be used as a Site flood defence or may have been spread across the Site.

7.2.8. There is consideration that a small unspecified pit is located within the north of the Site as shown on 1968 OS mapping. However, upon closer inspection, it is considered that this appears to show a pit based on the presence of surrounding railway embankments. Nevertheless, this may have been ‘infilled’ with surrounding material when the embankments were dismantled although this assumption cannot currently be confirmed.

7.2.9. Similarly, there is indication of a material mound encroaching onto the northwestern Site area from 1960 until 1980 which extends offsite to the northwest. It is considered this is likely to be associated with the embankment for the Railway and later the Site bund which was observed during the Site inspection.

Natural Sources of Ground Gas

7.2.10. Salt marshes and tidal flat deposits underlying the Site could contain peat and organic content which could generate natural ground gases. Regardless of the tidal nature of groundwater coupled with a high-water table, they are only likely to generate relatively low gas volumes[17]. The mobilisation of ground gas is expected to be impeded by the groundwater saturation and the presence of a predominant low permeability matrix of silt and clay. The generation potential would increase if the tidal flat deposits and organic materials contained within were to be dewatered as part of development proposals. Although it cannot currently be discounted, significant thicknesses of natural peat deposits are considered unlikely in association with the tidal flat deposits on Site. Of the two available logs at 250m from the Site, one contained organic matter within the clay and silt to a depth of 4.0m bgl and the other did not.

7.2.11. The whole Site lies within an area where <1% of homes are estimated to be at or above the Radon Action Level hence there is no need for the provision of radon protection within new buildings.

7.3. Off-Site Sources

Heavy Industry

7.3.1. Extensive industrial works have occurred to the northwest, west and southwest and east of the Site with the development of an ammonia soda works and gas works around 1910 and the ICI Chemicals plant in the 1950s. This increased industrial land usage has led to the development of infrastructure including road links and historical railway sidings. Much of the Site is still operating as heavy industry. It is, however noted that the Royles Brook cuts across between the centre of the two proposed development areas which could impede the migration of some of the contaminant pathways which rely in the migration of perched and shallow groundwater plus direct run-off.

Historical Landfills

7.3.2. The Groundsure report states there is a historical domestic landfill present at around 430m southeast of the Site which accepted wastes between approximately 1960 and 1970. This has now been developed as part of a country park. There are no waste exemptions recorded within 250m of the Site.

7.3.3. Settling lagoons were formerly located within the wider Site area all of which, have since been infilled with what is understood to be inert materials sourced from demolition of former buildings and infrastructure. The closest was located at 400m to the northwest on land which is now operated by Victrex.

7.4. Potential Receptors

7.4.1. The proposed development for the Site is an incinerator Bottom Ash Processing facility which, through provision of draft design details will comprise a processing building with hoppers, screeners and conveyors, a stockpile shed, three buildings housing office, welfare with one also forming a laboratory. Ancillary infrastructure including a weighbridge, rainwater holding tanks, fuel tanks, wheel wash and tank, and various areas of hardstanding. The existing Site access and road will also be retained.

7.4.2. No foundation or service designs have been provided but is assumed the building and large infrastructure will have foundations which will be piled or excavated into the ground and there is likely to be new below ground service connections and potentially pits.

7.4.3. It is assumed that the operational areas of the Site will likely be surfaced with compacted aggregate and / or hardstanding. It is not anticipated that there will be any soft landscaping developed on Site although final design details have yet to be confirmed.

7.4.4. The proposed industrial use of the Site is considered as low sensitivity with respect to human health.

7.4.5. The principal vulnerable receptors with respect to potential exposure to any soil contamination that may be present for the proposed use will be:

- Construction workers who may be exposed to contaminants during preparatory and construction / and maintenance worker who may be involved in future refurbishment works;
- Future Site users and Site visitors;
- Adjacent Site neighbours;
- Proposed buildings / structures;
- Controlled waters: Surface waters including Royles Brook, Hillylaid Pool and Wyre Estuary/River Wyre); groundwater within underlying aquifers (Tidal Flat Deposits as an unproductive and impermeable aquifer with the underlying Preesall Halite Member and Kirkham Mudstone Member as unproductive and Secondary B aquifers, respectively; and,
- Vegetation and Ecological receptors including the nearby designated SSSI/Ramsar, SPA and marine conservation zone of the Wyre estuary and associated saltmarshes.

[17] Ground gas handbook (2009)

7.5. Preliminary Conceptual Site Model (CSM)

7.5.1. The preliminary CSM has been derived for the Site using the information described above, describing the potential contamination sources, pathways and receptors and is summarised below in Table 7.1.

Table 7.1: Preliminary Conceptual Site Model

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
1. humans – construction workers	Possible contaminants (various – as detailed within the sections above) associated with: Previous industrial operation of the Site, Made Ground on Site, and former railway infrastructure	Dermal contact / ingestion / inhalation – short term exposure	**Low to Moderate -** There is potential for contaminants to be present from leaks and spills to ground from the previous heavy industrial operations on Site which spanned over 40 yrs. Significant deposits of made ground may be present where it has been mapped (north and northeast plus within the earth bund along the western Site boundary and southern boundary of the southwest section of the Site, together with infilling of an area in the north which is listed as an unspecified pit. Shallow made ground is anticipated across the remainder of the Site. The chemical nature and matrix of the made ground is unknown but it is anticipated that it may include materials from the former railway embankments.	Site investigation and contamination assessment is required comprising both targeted and non-targeted elements within soil shallow groundwater (plus VOCs and ground gases) where building and infrastructure is to be developed and the ground is to be otherwise disturbed.
	Potential volatile vapours associated with previous industrial operations using VOCs and made ground	Build up within enclosed and confined spaces	**Low to Moderate -** The previous industrial Site operations used VOCs within their processes. This could be present within soils and shallow groundwater under former processing, waste, and storage areas.	Site investigation is required to investigate the nature of the ground, made ground and shallow groundwater across the Site and appropriately characterise any made and/or potentially contaminated ground should it be encountered

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
	Ground gases (principally carbon dioxide and methane) associated with underlying made ground and natural tidal flat deposits. Deposits of peat /other highly organic material may be present within the tidal flat deposits. The nature of the made ground across the Site is unknown.	(including trenches and other excavations, and during piling works etc.)	The Site infrastructure has been decommissioned and the aboveground structures removed although contamination investigation and removal of belowground infrastructure was not undertaken. The compounds used, however, were generally highly volatile and are not expected to persist within soils or groundwater for long periods of time. The presence of largely cohesive silts and clays together with a high-water table will retard significant ground gas migration.	during the groundworks phase. Site investigation to be caried out in advance of where piling and excavations are to be completed including ground gas and VOC monitoring as required. Piling risk assessment to be undertaken with implementation of recommended mitigation. Depending upon the outcome of the site investigation and contamination assessment, vapour and gas monitors with alarms and RPE are to be used by ground /construction and maintenance workers as a precaution prior to entering any below ground structures / enclosed/confined spaces. Gas alarms to be used during piling.

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
2. humans – future Site visitors / workers Future users of enclosed spaces including: Confined spaces. Office/welfare buildings to be modular build on concrete plinths. Processing building, stockpile shed and metal shed. Future Site users of Plant within both internal and external areas of the Site.	Possible contaminants (various – as detailed within the sections above) associated with: Previous industrial operation of the Site, Made Ground on Site, and former Railway infrastructure.	dermal contact / ingestion / inhalation	**Low -** The proposed development will likely include permanent areas of hardstanding cover or compacted aggregate within the operational areas of the Site. This is considered sufficient to break the pollutant-receptor linkage for direct contact pathways to non-volatile contaminants within the ground. One small area of verge along side a proposed footpath is proposed. The bunds bounding the Site comprise soil which are vegetated will not be disturbed during groundworks..	Where soils and backfill materials are to be reused on Site, they should be chemically analysed to ensure they are suitable for reuse. The gravel spread across the site (derived from the demolition of former site buildings) may need testing if not completed previously. Subject to confirmation from Site investigation and contamination assessment, the areas of soft landscaping at the site entrance should comprise a minimum thickness of 350mm of clean and validated soils to break the pollutant pathway if significant contamination is identified during the Site Investigation. Site investigation to be caried out in advance of where piling excavations and belowground confined spaces are to be completed including ground gas and VOC monitoring as required. Piling risk assessment to be undertaken with implementation of recommended mitigation.

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
	ground gas (asphyxiant gases: carbon dioxide)	accumulation within voids, confined spaces and service runs to toxic concentrations	**Low** – The nearest historical landfill lies 430m to the east which accepted domestic waste between the 1960s and 1970s. The presence of largely cohesive tidal flat deposits will, however, retard significant ground gas migration and deposits are anticipated to be over 50yrs old where active gassing is expected to have declined. Although it is not confirmed on Site, there is the potential for deposits of peat in conjunction with the tidal flat deposits which could give rise to low volume ground gas generation. The proposed buildings to provide officing, welfare facilities and a laboratory will be constructed as a containerised portacabin style building located on concrete plinths aboveground. The large processing building and stockpile sheds will have large doors and is understood will not include any smaller rooms within them. The potential for build-up of ground gases and VOCs within proposed buildings is therefore very low.	No further action required unless the proposed building design changes.

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
	VOC vapours from soil / groundwater sources		**Low –** It is possible that leaks and spills of products containing VOCs may have occurred within soils and groundwater from the bulk chemical storage and previous heavy industrial operations occurring on Site. The volatile compounds used, however, were highly volatile and are not expected to persist within soils or groundwater. Moreover, the proposed officing, welfare and laboratory will be constructed as modular units and the main processing building and sheds will be large and tall, with large roller doors and without smaller rooms within hence will automatically provide good ventilation thus limiting the potential for vapour and gas build up.	

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
3. humans – adjacent Site users Workers at adjacent industrial works are Present. Residential receptors are located within 200m of the Site and there is a caravan park at 60m to the southeast. There is a public bridleway and long distance walking route directly to the northeastern Site boundary .	Possible contaminants (various – as detailed within the sections above) associated with: Previous industrial operation of the Site, Made Ground on Site, and former Railway infrastructure	windblown / dermal contact / ingestion / inhalation	**Low to Moderate –** residential sites are located down prevailing wind of the Site	<u>During groundworks and construction:</u> Dust suppression techniques to be used during construction works to limit dust generation. Good housekeeping to be employed. CEMP to be produced.

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
4. property / services	Flammable ground gas (methane) & VOCs	accumulation within voids, confined spaces and service runs to flammable concentrations	**Low** – Although it is not confirmed on Site, there is the potential for deposits of peat in conjunction with the tidal flat deposits which could give rise to low volume ground gas generation. The nature of made ground and potential for its gassing across the Site is not known. The nearest historical landfill lies at 430m from the Site which was filled by household wastes during 1960 to 1970. The presence of largely cohesive tidal flat deposits will, however, retard significant ground gas migration and deposits are anticipated to be over 50yrs old where active gassing is expected to have declined.	Site investigation to be carried out in advance of where piling is to be completed including ground gas and VOC monitoring as required. Piling risk assessment to be undertaken with implementation of recommended mitigation.
	pH, sulphate, chloride	chemical attack of buried concrete and plastic materials	**Moderate to High –** Soils containing elevated sulphate are anticipated based on the previous usage of the Site, the shallow depth to brackish groundwater anticipated and also due to Preesall Halite member where gypsum crystals have been reported within wider historical Site investigation.	Inclusion of pH, sulphate and chloride testing of foundation bearing strata, both underlying buildings and where other belowground concrete is to be laid. Where piling is proposed, a piling risk assessment is required where piles are anticipated to breach the tidal flat deposits and be founded into Preesall Halite Member (Unproductive aquifer) or Kirkham Mudstone Member (Secondary B aquifer)
	Hydrocarbons/VOCs/SVOCs/phenol. amines	Attack on plastic pipes	**Moderate** - Nature of contaminants within the ground from previous industry and nature of made ground is unknown but the usage of and persistence of hydrocarbons which could potentially degrade polymers is expected to be moderate.	Further works will be SI to confirm ground conditions / presence of contaminants. A water pipeline risk assessment may be required, the requirement of which, would be dependent upon the need for water supply pipes and the contaminants identified during the SI.

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
5. vegetation / landscaping	leachable metals / metalloids may be present within made ground / natural soils	plant uptake	**Low** – One small area of verge proposed alongside a footpath The bunds bounding the Site comprise soil which are vegetated and will not be disturbed during groundworks.	The strips of soft landscaping proposed at the Site entrance should comprise a minimum thickness of 350mm of clean and validated soils to ensure the soils are uncontaminated and suitable as a growing medium for the vegetation planting proposed.
6. ecosystems / protected species & habitats Wyre Estuary SSSI, SPA and Ramsar to the immediate north – Site is located within SSSI impact risk zone and forms part of priority habitat	Silty and otherwise contaminated run off generated during construction. Windblown Dust Potential effluent and other contaminants generated from proposed Site operation.	windblown / dermal contact / ingestion / inhalation	**Moderate –** The nature of made ground and residual contamination from the previous industrial usage on the Site is currently unknown. The potential for mobilisation into surface water during ground disturbance works and which could enter the ecosystems is also unknown.	Completion of a site investigation to ascertain the presence of contamination to establish whether there was contamination which could be remobilised during groundworks. Preparation of remediation strategy as required. <u>During groundworks and construction:</u> CEMP to be prepared, approved and implemented on Site to include plans for emergency pollution response. An ecology assessment has been completed to inform the planning application A shadow Habitat Risk Assessment (HRA) is being produced. Approval from Natural England and the Environment Agency for the proposed development will be required. <u>During operation & construction:</u> An EA Environmental permit application will be made alongside the planning application to facilitate Site operation.

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
7. surface waters Royles Brook which passes though the centre of the Site in between the processing and stockpile areas. Hillylaid Pool and River Wyre/Wyre Estuary are within 25m of the Site.	leachable contaminants (as detailed within the sections above) associated with: Previous industrial operation of the Site, Made Ground on Site, and former railway infrastructure	migration via shallow groundwater / surface water run-off.	**Moderate** – The nature, leachability and mobilisation potential of soils and shallow groundwater on Site has yet to be determined.	<u>During groundworks and construction:</u> Investigate the nature of the ground, made ground and shallow groundwater across the Site and appropriately characterise any made and/or potentially contaminated ground should it be encountered during the groundworks phase. Ensure any silty and/or otherwise contaminated runoff generated during construction phase is properly managed and does not impact on nearby surface watercourses nor groundwater. Monitoring and sampling of surface water during construction and groundworks may be required. CEMP to be prepared, approved, and implemented on Site. <u>During operation:</u> Ensure surface water and foul water is managed appropriately, the drainage design is approved by regulators and relevant environmental and discharge permits are in place.

Receptor	Source / Contaminant	Pathway / Exposure	Potential Significance of Identified Pollutant Linkage (in absence of mitigation)	Further Works
8. groundwater – Tidal Flat Deposits – Non-productive Aquifer Bedrock: Preesall Halite Member – Unproductive aquifer Kirkham Mudstone Member – Secondary B aquifer	leachable contaminants (as detailed within the sections above) associated with: Previous industrial operation of the Site, Made Ground on Site, and former railway infrastructure	migration via saturated zone	**Low -**The nature and leachability of soils and shallow groundwater on Site has yet to be determined. The underlying superficial aquifer is classed as non-productive as is the majority of the bedrock underlying the Site. The presence of cohesive tidal flat deposits is likely to significantly limit any vertical migration of any mobile/leachable contaminants into the underlying aquifers There are no groundwater, surface water or potable water abstractions registered within 2km of the Site.	Investigate the nature of the ground, made ground and shallow groundwater across the Site and appropriately characterise any made and/or potentially contaminated ground should it be encountered during the groundworks phase. Piling risk assessment to be undertaken to ensure contaminant pathways to aquifers are not created. A more intensive and detailed contamination assessment of the Site may be required should a contaminant baseline of the full Site be necessary (e.g. to support environmental permitting or for due diligence purposes).

7.6. Human Health Risk Assessment

Construction Workers

7.6.1. The potential for significant contamination to be present that may pose an acute risk to construction workers during the development is considered low to moderate.

7.6.2. An intrusive investigation is required where piling for building and infrastructure is to be developed and ground is to be otherwise disturbed to inform the risk to groundworkers and to determine whether soils and backfill materials are suitable for reuse on Site or to determine possible routes for off-site disposal. Piling risk assessment to be undertaken with implementation of associated proposed mitigation.

7.6.3. It is anticipated that personal protective equipment (PPE), respiratory protective equipment (RPE) will be required for Site users to wear as a matter of course and gas alarms should be used if entering any enclosed or confined spaces. A construction environmental management plan (CEMP) will ensure that the Site is appropriately managed during the groundworks and construction phases with good housekeeping and the potential for pollution incidents is minimised. The ground investigation and associated contamination risk assessment should confirm suitable precautions during the groundworks and construction phases to suitably protect personnel from the presence of significant contaminant concentrations.

7.6.4. The soil bunds surrounding the Site will not be disturbed during groundworks and hence t it is not considered that these present a significant risk to construction workers and Site neighbours.

Future Site Users

7.6.5. The long-term risks to future Site users are considered as low based on the likely contaminants present and the development proposals.

7.6.6. There is potential that small leaks and spills to ground may have occurred during the previous heavy industrial operations on Site which spanned a period of over 40 yrs. Contaminants may also be contained within deposits of made ground across the Site. Building foundations and various below ground infrastructure are still present.

7.6.7. The proposed buildings, hardstanding and hardcore within the operational areas of the Site are anticipated to provide suitable protection to future Site users from direct contact pathways with non-volatile contaminated soils and shallow groundwater across most of the Site. The source of the hardcore is anticipated to be from crushing of demolition materials derived from former buildings that had been stripped of asbestos prior to demolition and it is expected that materials management will have been employed to determine its suitability for reuse. However, if the material has not been previously chemically analysed then it would be pertinent to test this material (particularly for the presence of asbestos).

7.6.8. There is soft landscaping proposed at the Site entrance. Soils being used to create this area must be chemically analysed to ensure they are uncontaminated and do not present a risk to future Site users. They should also be a minimum of 350mm in thickness to break the potential pathway between the soils and perched groundwater below.

7.6.9. The risk from vapours (VOCs and SVOCs) and ground gases should be investigated where piling is recommended and deep excavations are warranted. This is for the purposes of establishing potential risks to construction workers, and maintenance workers entering confined spaces during the operational phase of the development). As officing will be designed as modular build/portacabins elevated aboveground and the processing and stockyard buildings will be large with no smaller enclosed rooms, the requirement for ground and vapour monitoring and ground gas risk assessment for future Site users occupying the buildings is not considered to be warranted. A piling risk assessment may recommend that ground gas and/or VOC monitoring is undertaken either in advance or during piling works.

7.6.10. An intrusive investigation is required within shallow soils where building and infrastructure is to be developed and ground is to be otherwise disturbed to inform the risk to future Site users.

7.7. Adjacent Site Users and Ecological Receptors

7.7.1. The Site surroundings comprise both residential and industrial land uses and there is a public bridleway and the Wyre Way long distance walking route directly along the northeastern Site boundary. The Wyre Estuary and its associated salt/mudflats is designated of national ecological importance. It is therefore imperative that the site groundworks and construction phases are managed appropriately by means of an approved CEMP. It is expected that Site measures will include dust and litter suppression measures, good housekeeping, and management of runoff to prevent generation of silty and otherwise contaminated water.

7.8. Property Risk Assessment

7.8.1. A belowground water main is present on Site which is understood to have previously served the industrial works. However, should the development require installation of additional (and belowground) water supply pipes then the potential for chemical attack on construction materials (polymers) is possible given the potential for hydrocarbon, volatile and polymerising contaminants within the ground which could in turn degrade and permeate through water supply pipes. This should therefore be investigated at invert depth and along the proposed pipe alignment.

7.8.2. Soils and shallow groundwater containing high levels of sulphate, chloride plus an alkaline pH could present the potential for aggressive conditions to certain classes of concrete. Ground conditions should be confirmed in tandem with a geotechnically based intrusive assessment.

7.8.3. A piling risk assessment will be undertaken where piling is proposed to ensure the environment is suitably protected during and following piling operations.

7.9. Controlled Waters Risk Assessment

7.9.1. The Royles Brook transects the two processing areas of the Site and is in close proximity to the Hillylaid Pool and Wyre Estuary hence will need protection and mitigation implemented during both construction and operation.

7.9.2. Depth to groundwater is anticipated to be shallow (it was encountered at 2.3m bgl within a borehole located within the vicinity where made ground is absent) and may be in direct continuity with the overlying perched made ground. The superficial Tidal Flat Deposits are a nonproductive aquifer owing to very low permeability and brackish water is likely to predominate). The groundwater within these superficial deposits is expected to be tidal. Leaching rates of made ground soils and the potential for remobilisation of contaminants are anticipated. Some protection to groundwater will be afforded by placement of further hardstanding and the overlying largely cohesive superficial deposits.

7.10. Other Considerations

Materials Management

7.10.1. Where material is to be disturbed and reused on Site or sent for offsite treatment or disposal, then representative sampling of and chemical analysis of the material will need to be undertaken by a suitably competent specialist. Suitable materials management (such as materials management plan using DoWCoP[18] or registration of waste exemptions will need to be implemented to ensure reuse of materials on Site and imported to Site are suitable for use. This will apply to made ground, potentially impacted ground, dredging silts anticipated present mounded bankside of the Royles Book, back fill materials and also naturally derived strata.

Ground Stability – Natural Hazards

7.10.2. The Site is in an area where risks from compressible ground and running sands are moderate, risks from landslides, shrinking and swelling clays, and collapsible ground, are very low to negligible; and risks associated with ground dissolution is recorded as high over the northern two thirds of the Site (where the Preesall Halite Member is located) and negligible over the remainder of the area. There is the potential of peat and/or other compressible highly organic material within the Tidal Flat Deposits which also should be considered as a potential ground stability risk during construction.

[18] Definition of Waste Code of Practice

Overhead Powerlines and Other Site Services.

7.10.3. No dig exclusion zones in conjunction with a site investigation and development construction may be imposed in conjunction with services that cross or are near to the Site, including, for example, the belowground ethylbenzene pipeline, water main, electricity cable and high-pressure gas main which runs under the bridleway/footpath along the northern boundary.

Site Due Diligence

7.10.4. It is recommended that Site investigation is undertaken where buildings are proposed, and other ground disturbance is going to be required which could have the potential to create further migratory contaminant pathways.

7.10.5. The new Site operator (Fortis IBA Ltd) will be leasing the Site. An environmental permitting application will be twin tracked alongside planning application.

UXO

7.10.6. The UXO risk map identifies the Site as being located within an area of low risk for consideration of potential unexploded ordnance. The associated assessment and mapping is provided in Appendix C.

8. Conclusions and Recommendations

8.1. Conclusions

Historical Site Operations

8.1.1. The Site is part of the Hillhouse Business Park and was developed in 1980 as a plant that processes organic chemicals and manufactures and mills plastic powder products.

8.1.2. The Site was initially the Corvic 9 or PVC9 plant which was owned and operated by ICI Plc which became Industrial operations on Site commenced in 1980 and continued until 2020. The Site was initially operated by ICI Chemicals Limited and then by European Vinyls (UK) Limited. This then became Ineos Vinyls UK Ltd and latterly, Vinnoilit Hillhouse Limited.

8.1.3. Parts of the Site surroundings were developed much earlier, some from around 1910. The area has therefore a long history of chemical manufacturing and associated processes. Similar polymer production and processes currently occur on the chemicals plant located directly to the north.

8.1.4. When operations ceased in 2020, the aboveground Site infrastructure associated with materials processing, storage and waste was decontaminated and removed. It is understood that the fabric of some of the buildings (that was not entirely made of steel) was crushed and some of the resultant aggregate was spread across this Site.

Contaminants of Potential Significance

8.1.5. Made ground has been mapped within the north and northwest Site area and is anticipated across the Site underlying remaining ground slabs. The nature of the made ground is unknown although could contain material from the former railway sidings and embankments in addition to other sources. Crushed aggregate spread across the Site is understood to have been sourced from the former buildings although it is not known whether any chemical analysis of it was undertaken. As large-scale chemical storage (bulk feedstock) and chemical processes took place on Site, there is a moderate (low to moderate) potential that contamination associated with the site’s former use to be present.

8.1.6. Ground workers are anticipated to be at potential risk of contamination within soils and perched groundwater, plus from the potential for build-up of volatiles and ground gas within confined spaces (deep excavations etc.) and during piling works.

8.1.7. It is considered that future Site users will be afforded some protection from non-volatile contaminants within soils owing to the presence of proposed hardstanding and site crush. The nature of the crush is not currently known which may need sampling and analysis as will the nature of the underlying Soils (particularly for volatile and semi-volatile contaminants).

8.1.8. The risks to future site users from build-up of gases and volatiles within proposed buildings is considered as low owing to the current design of the buildings with welfare and offices being a modular build on stuts aboveground and the large buildings with large doors proposed for processing and stockpiling activities. There is, however, the potential that future site maintenance workers could enter confined spaces belowground.

8.1.9. The Site is directly adjacent to the Wyre Estuary which is designated as an important ecological area (being a SSSI, SPA, Ramsar and marine wetland conservation zone. It will be important to ensure that this is protected during the groundworks, construction and Site operation.

8.2. Recommendations

8.2.1. An intrusive investigation is recommended targeting the area around the proposed buildings and infrastructure as well as any proposed below ground (service connections routes) plus where any other ground disturbance is going to be required which could have the potential to create further migratory contaminant pathways.

8.2.2. The investigation should also include the installation of monitoring wells and a short vapour and ground and gas monitoring programme to assess the risks from ground gas from underlying peat, organic deposits and vapours where piling and deep excavations are to be undertaken to assess the risks to construction workers and future maintenance workers entering confined spaces set belowground.

8.2.3. This should be followed by the sampling of soils and shallow groundwater with assessment against suitable threshold criteria for the proposed development. This is turn may lead to the requirement of detailed quantitative risk assessment and remediation being required if corresponding threshold contaminant criteria are exceeded. The existing soil bunds will only need sampling and chemically analysing if they are to be disturbed during groundworks, which is understood to not be the case.

8.2.4. It is understood that the Site investigation is currently underway and is being completed with a geotechnical investigation to inform the structural design / bearing capacity of the soils. This will be reported separately.

8.2.5. During the groundworks and construction phases, a Construction Environmental Management Plan (CEMP) should be prepared, approved and implemented to manage the potential risks to the environment from the construction phase.

8.2.6. A Piling risk assessment is required where piling is proposed to assess whether any mitigation is required to prevent the mobilisation of contaminants.

8.2.7. A water pipeline risk assessment is proposed where new belowground water supply pipes are to be laid as part of the development.

8.2.8. Materials management on Site may be required where materials are proposed for reuse or there is the requirement to import soils and other fill materials to the Site. This should involve chemical validation to ensure the soils and backfill materials are suitable.

8.3. Concluding Statement

8.3.1. With appropriate intrusive Site investigation and assessment plus the development, implementation and verification of mitigation measures, it is considered that significant adverse effects will not be caused on the health of Site users or users of neighbouring areas, controlled waters or the surrounding habitats of ecological importance.

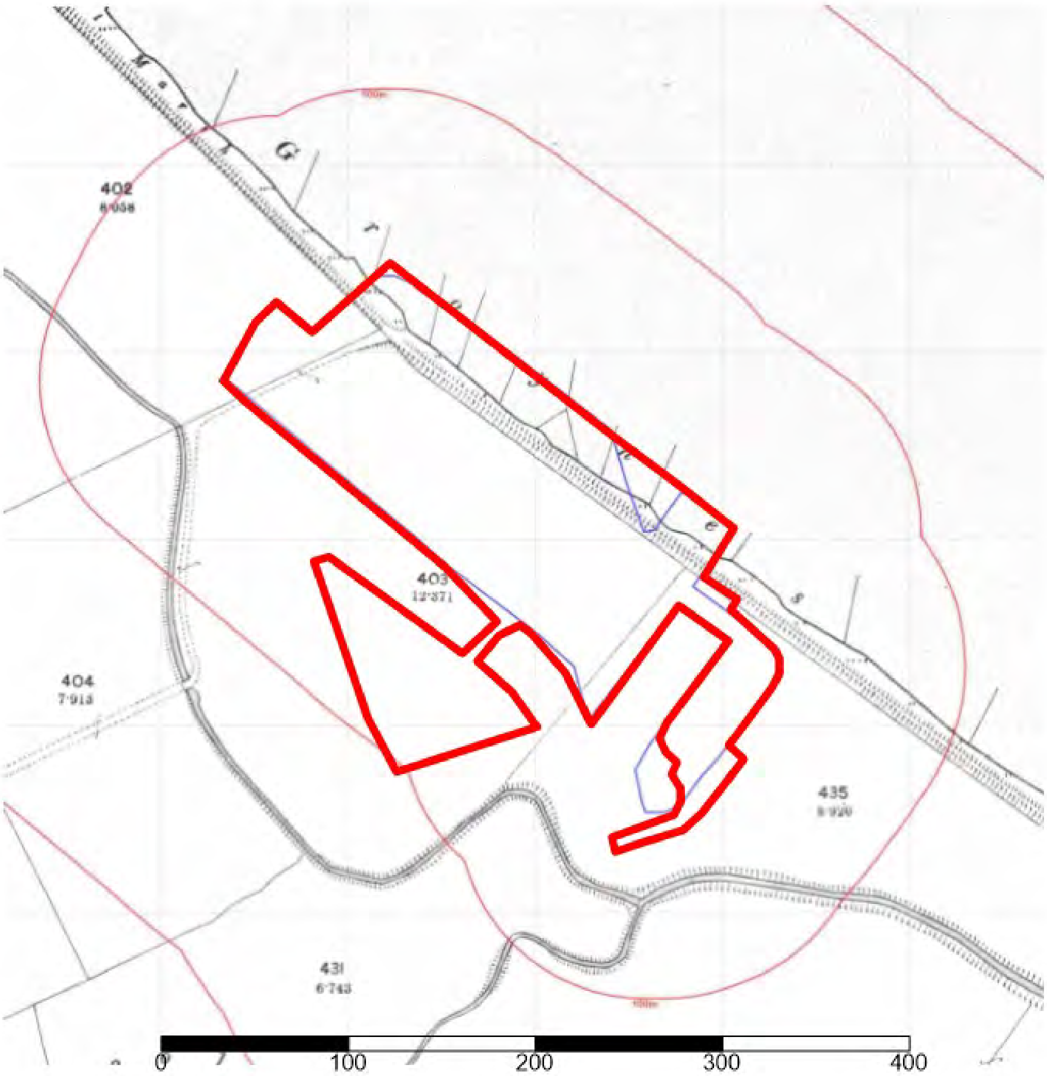
8.3.2. Regarding the requirements of planning policy, it would appear that there is nothing to preclude the Site being brought forward for the proposals and it being placed into operation.

8.4. Limitations

8.4.1. This report has been prepared by SGP for the sole and exclusive use of Axis P.E.D Ltd and Fortis IBA Ltd. Reasonable skill, care and diligence has been exercised, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context.

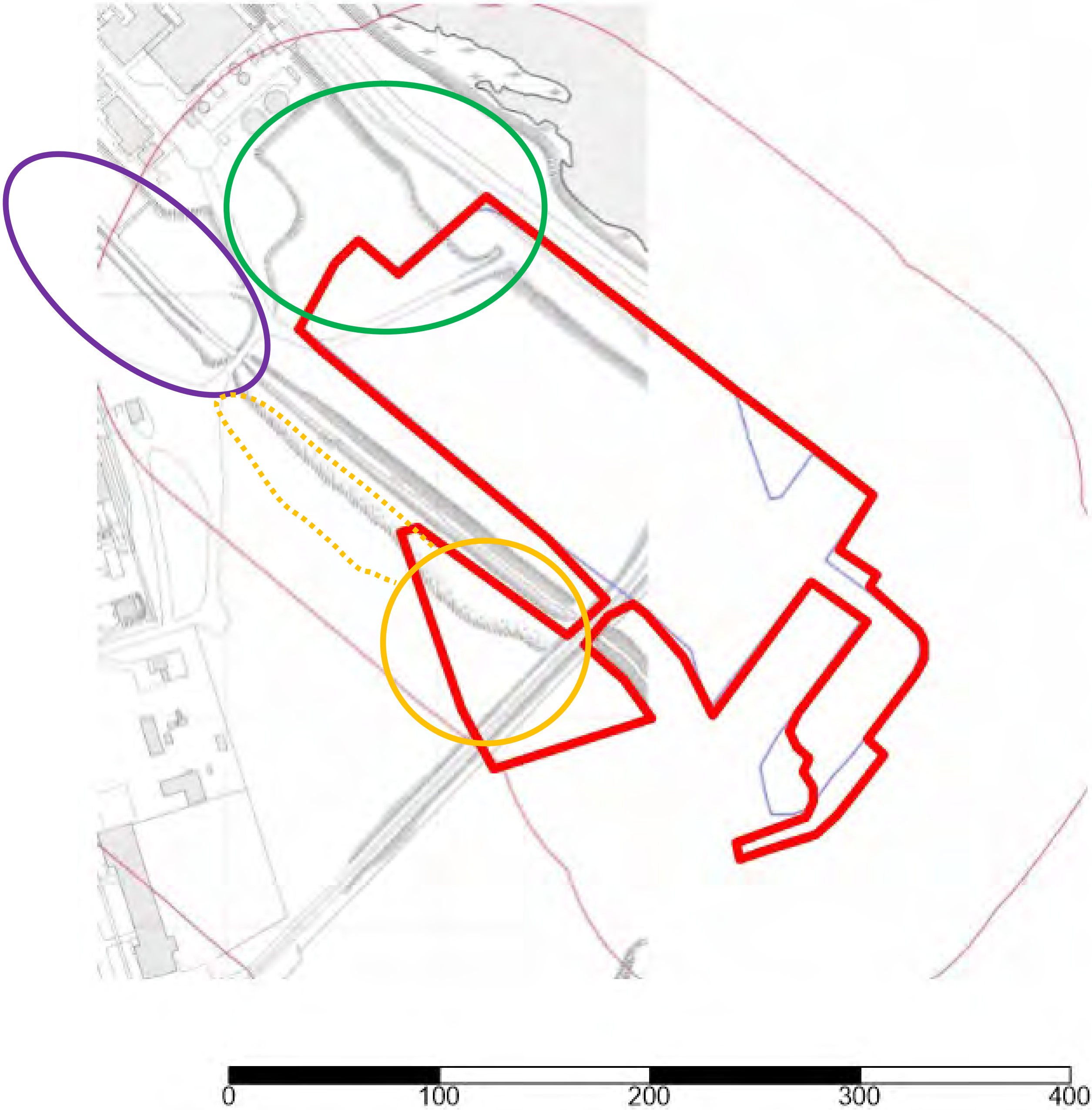
8.4.2. SGP reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines and responses by the statutory and regulatory authorities.

DRAWINGS



D01: Historical Map – 1890 (1:2,500 scale)

Showing Site boundary suspected to be slightly incorrect as crosses Wyre Estuary to NE. Embankment (suspected as flood defenses) shown to NE.



D02: Historical Map – 1960 (1:1,250 scale)

Showing railway tracks crossing Site (located upon embankment) leading from the Ammonia Soda Works to the Northwest. Royles Brook shown within a cutting to west and southwest with sand and gravel material (suspected as dredging from the stream) located on the opposite bank (circled in orange) which extends off Site to the northwest along the southern bank of the Royles Brook (shown as dashed orange line). Sand and gravel deposits on Site circled in green which extend off site to the northwest. Pit/cutting circled in purple located close to the western Site boundary.

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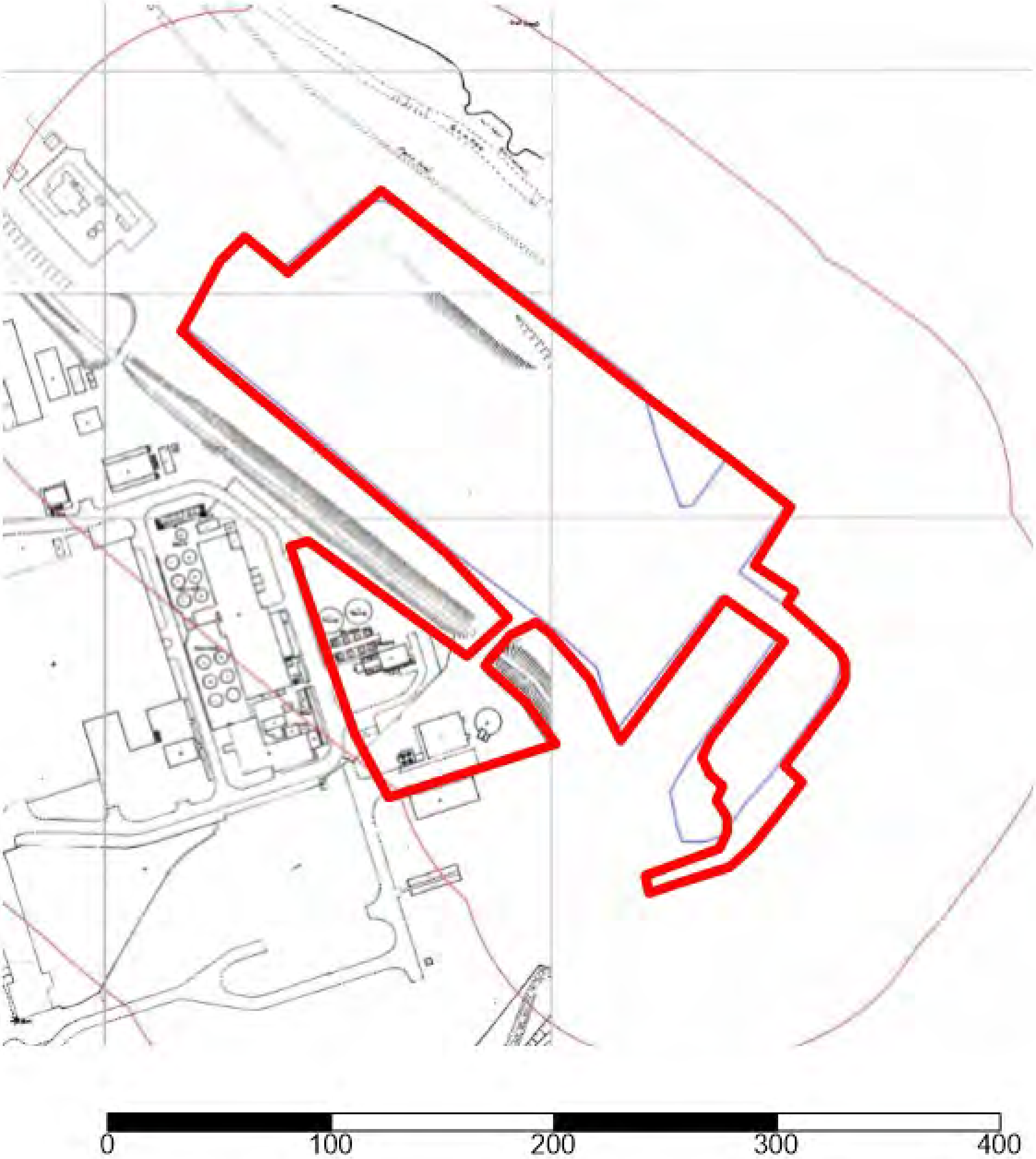
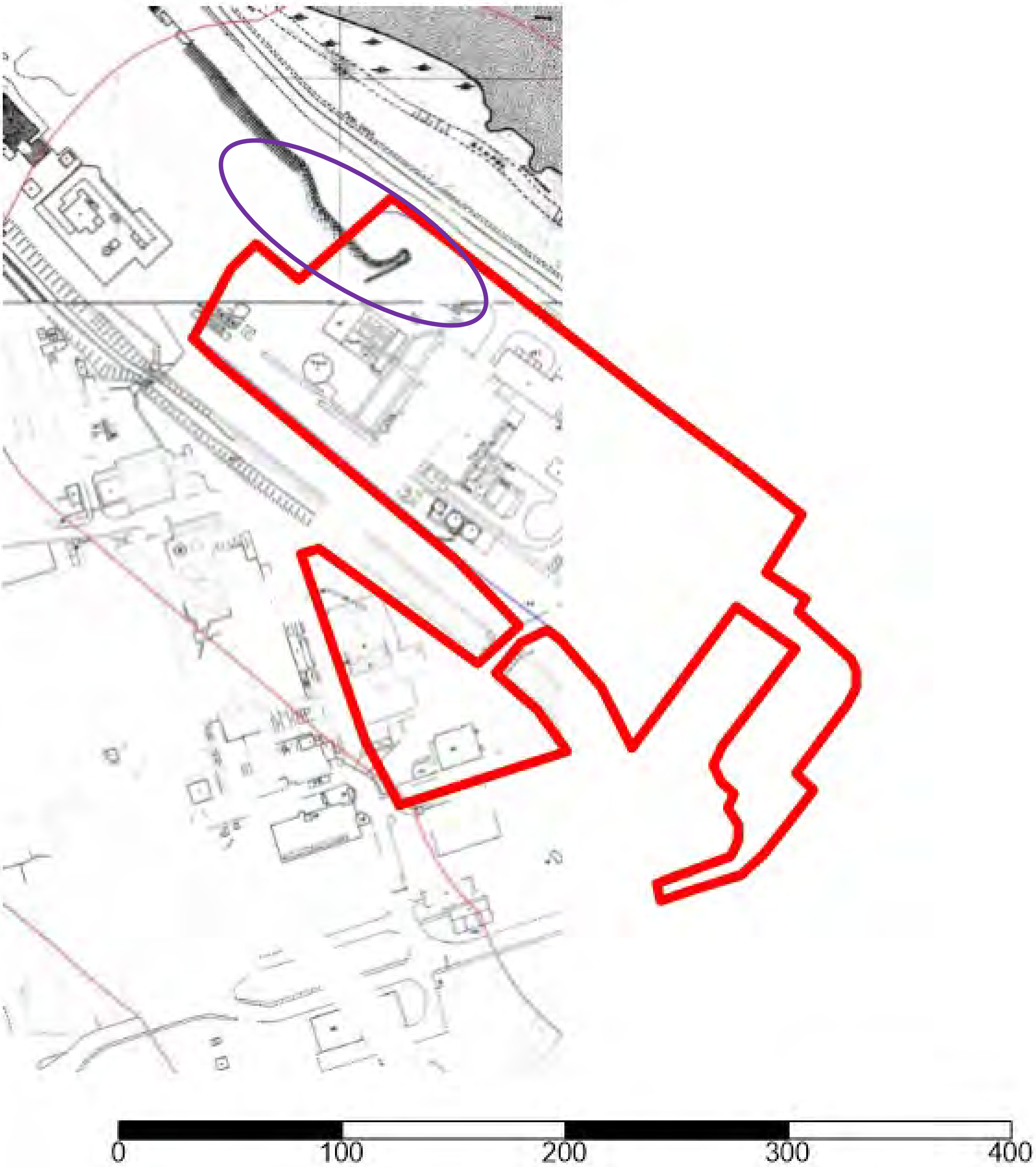
D03: Historical Map – 1967-68 (1:10,560 scale)

Showing outline of Site boundary in red, the location of a potential unspecified pit/convergence of railway embankments along northeastern Site boundary as circled in orange, drain – potentially from Site circled in green, sand & gravel material (suspected dredging s from Royles Brook in pink, and increase in saltmarsh and mudflats in Wyre Estuary circled in purple.



D04: Historical Map – 1976 (1:10,560 scale)

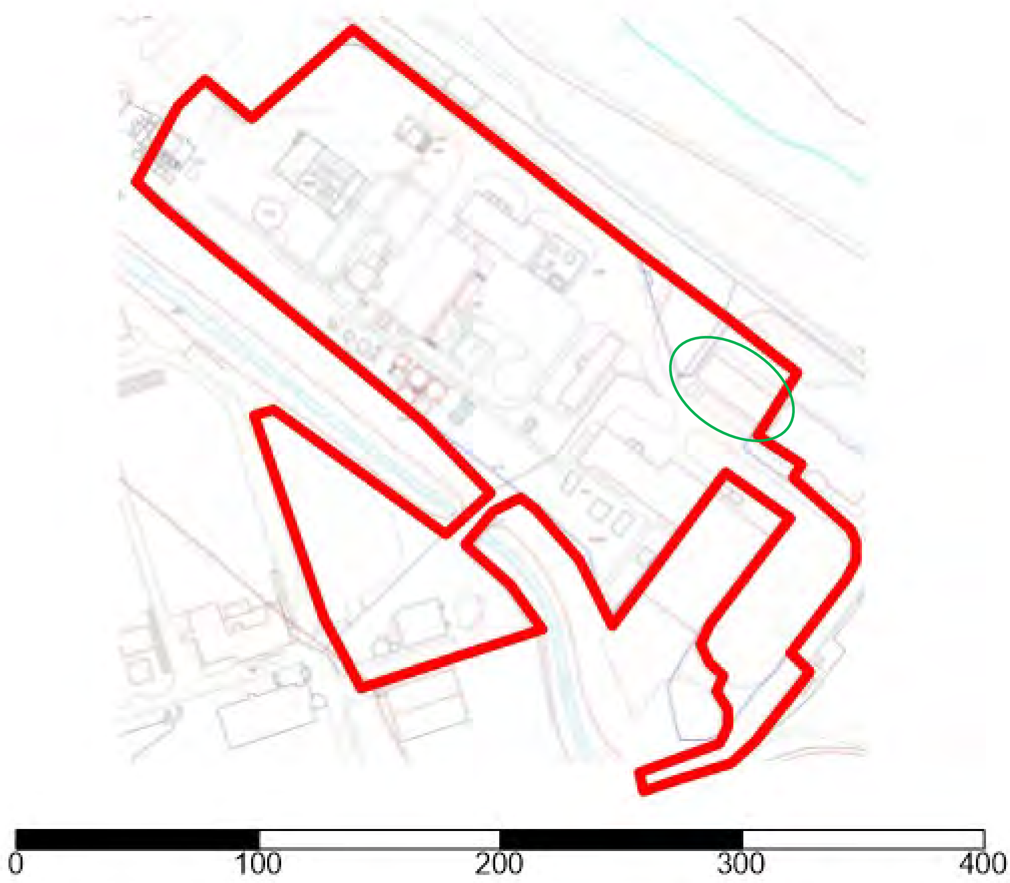
Showing outline of Site boundary in red. Southern portion of site to south of Royles Brook has become developed.



Drawing D05 – Historical Mapping dated 1979/1980

(1:1,250 scale)

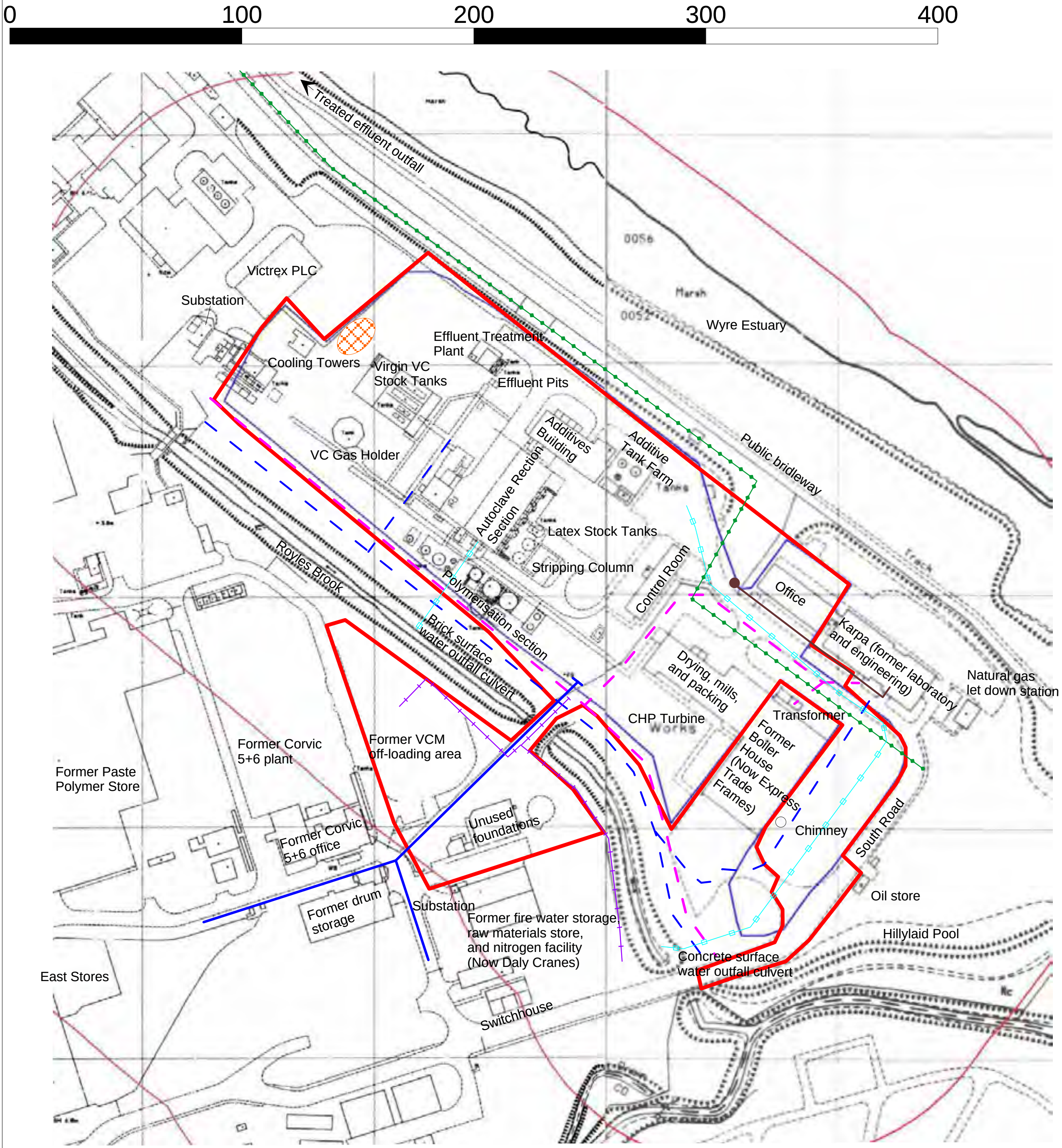
Area to NW is undeveloped (surveyed 1979) and main central area (surveyed 1980) is shown as developed. The main Site boundary is outlined in red, an area of material deposition (potentially a bund) which is in the North and extends beyond the Site is circled in purple.



Drawing D06 – Historical Mapping dated 2003

(1:1,250 scale)

Showing Site as fully developed. Building circled in green is to be retained within proposed development.



Key

- Surface water drainage culverts
- Live water main (300mm)
- Live electric (11kv)
- Live Ethylene pipeline (100mm)
- Septic tank+connection
- Live water main (150mm)
- Relict water deluge system
- Site boundary
- Soil bund

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Project: Hillhouse IBA	
Drawing: Site Features Plan	
Drawn by: MJ	Checked: LS
Date: 03.07.24	Report No: R01
Job No: R3217	Drg No: D07-v7

APPENDIX A

Photographic Log

R3217-Hillhouse IBA 14.12.23	
1.  14.12.23 – View westwards	2.  14.12.23 – View towards northeast boundary
3.  14.12.23 – View southwards	4.  14.12.23 – Gravel site surface
5.  14.12.23 – Concrete pad for near autoclave area	6.  14.12.23 – Concrete pad near control room

7.

14.12.23 – View southwards across hardstanding in centre of site

8.

14.12.23 – Relict hardstanding with iron baseplates

9.

14.12.23 – Concrete pad near stripping column

10.

14.12.23 – Surface water drain access point near area of former mineralised water tanks

11.

14.12.23 – Concrete pad in northwest of site

12.

14.12.23 – Location of former vinyl chloride gas holder

13.  14.12.23 – Hardstanding pathway along southwest boundary	14.  14.12.23 – View south towards Royles Brook
15.  14.12.23 – Concrete pad for former cooling towers just off northwest boundary	16.  14.12.23 – 11kv switch house off northwest boundary
17.  14.12.23 – Live water main crossing Royles Brook	18.  14.12.23 – Northwest view of Royles Brook

19.

14.12.23 – Southeast view of Royles Brook

20.

14.12.23 – Bunded material to prevent spillages from vinyl chloride tanks

21.

14.12.23 – Former location of virgin vinyl chloride tanks

22.

14.12.23 – Former location of effluent treatment plant

23.

14.12.23 – View southeast from effluent treatment plant

23.

14.12.23 – Former location of effluent stirring tanks

<table>
<tr><td>24.

14.12.23 – Live fire hydrant located in the centre of site</td><td>25.

14.12.23 – View of treated water outfall pipes (off-site)</td></tr>
<tr><td>26.

14.12.23 – Location of former mineralised water tank</td><td>27.

14.12.23 – Location of former latex tanks / autoclaves</td></tr>
<tr><td>28.

14.12.23 – Location of septic tank</td><td>29.

14.12.23 – Historical water / gas pipes</td></tr>
</table>

30.

14.12.23 – Ethylbenzene nitrogen gauge

31.

14.12.23 – Office building to remain

32.

14.12.23 – Parking area/road to the rear of office building (off-Site)

33.

14.12.23 – Former high pressure gas main connection point (off-site)

34.

14.12.23 – View of existing business - Express Trade Frames (former boiler house)

35.

14.12.23 – View of access road and land to the southeast of Express Trade Frames (On-Site)

36.

14.12.23 – Access road and off-site oil store

37.

14.12.23 – Location of former chimney stack

38.

14.12.23 – View of material storage for express trade frames

39.

14.12.23 – Relict powerline pole located close to northern bank of Royles Brook.

40.

14.12.23 – Location of former control room

41.

14.12.23 – Ethylbenzene pipeline marker post

42.

14.12.23 – Overgrown area leading to Royles Brook (photo looking south)

43.

14.12.23 – Sluice gate on the southeast end of Royles Brook (off-site)

45.

14.12.23 – Live water main off south boundary

46.

14.12.23 – Crossing point over Royles Brook for larger vehicles

47.

14.12.23 – View across overgrown area around Royles Brook

48.

14.12.23 – Oil storage hut (off-site)

49.  14.12.23 – Cabin at vinyl chloride drop off point	50.  14.12.23 – Vinyl chloride drop off point (off-site)
51.  14.12.23 – Wyre River to the northeast (off-site)	52.  14.12.23 – Outfall drainage point (off-site)
53.  14.12.23 – Former Vinnolit discharge point (off-site)	54.  14.12.23 – Bridleway to the northeast of site (off-site)

55.

14.12.23 – View onto Wyre River to the northeast (off-site)

56.

14.12.23 – View of access road and off-site parking area

57.

14.12.23 – View north along South Road (looking north). Area to northwest of road is on-Site

58.

14.12.23 – View of access road/South Road (partly on-Site)

59.

14.12.23 – View of access road leading to Express Trade Frames (off-Site)

60.

14.12.23 – View south of ethylbenzene pipes across habitat area in the north of the Site

R3217-Additional Visit (south of Royles Brook)

1.

26.01.24 – VCM off-loading control room (west side)

2.

26.01.24 - VCM off-loading control room (south side)

3.

26.01.24 – View north towards Royles Brook

4.

26.01.24 - VCM off-loading control room (east side)

5.

26.01.24 -

6.

26.01.24 – View of tanker off-loading area

7.  26.01.24 – Former spill drainage area (now used for surface water drainage)	8.  26.01.24 – View of former pipework path towards main Site
9.  26.01.24 – View of bunded portion of road where tankers would off-load VCM	10.  26.01.24 – Former spillage drainage pathway (now surface water drainage)
11.  26.01.24 – Former VCM storage tank concrete pad	12.  26.01.24 – Concrete pad in the south (unknown use)

13.

26.01.24 – Former path in south of additional area 1

14.

26.01.24 – Concrete pads in southeast

15.

26.01.24 – View along access track towards main Site.

16.

26.01.24 - View across former access across Royles Brook towards main Site

17.

26.01.24 – Services access point in road

18.

26.01.24 – Fire hydrant point connected to live water main

19.

26.01.24 – View south across VCM off-loading area

20.

26.01.24 – View east across VCM off-loading area

21.

26.01.24 – View south from northern boundary

22.

26.01.24 – View of unused foundation area on southern boundary

23.

26.01.24 - View of unused foundation area on southern boundary

24.

26.01.24 - View of unused foundation area on southern boundary

25.

26.01.24 – Old fences stored on southern boundary (off-site)

26.

26.01.24 - View of unused foundation area on southern boundary

27.

26.04.24 – View of southern boundary

28.

26.01.24 – Daly Cranes repair shop to the south (off-site)

29.

26.01.24 – Daley Cranes (off-site)

30.

26.01.24 – Small substation powering Daly Cranes (off-site)

31.

26.01.24 – old bike shed located to the south (off-site)

32.

26.01.24 – West side of switch house to the south (off-site)

33.

26.01.24 – View of circular concrete pad in west

34.

26.01.24 – View of debris and soil bund on southern boundary of additional area 2

35.

26.01.24 – View east across concrete pad

36.

26.01.24 - View north across concrete pad

37.

26.01.24 – View south across concrete pad

38.

26.01.24 – View south from material bund on southern boundary

39.

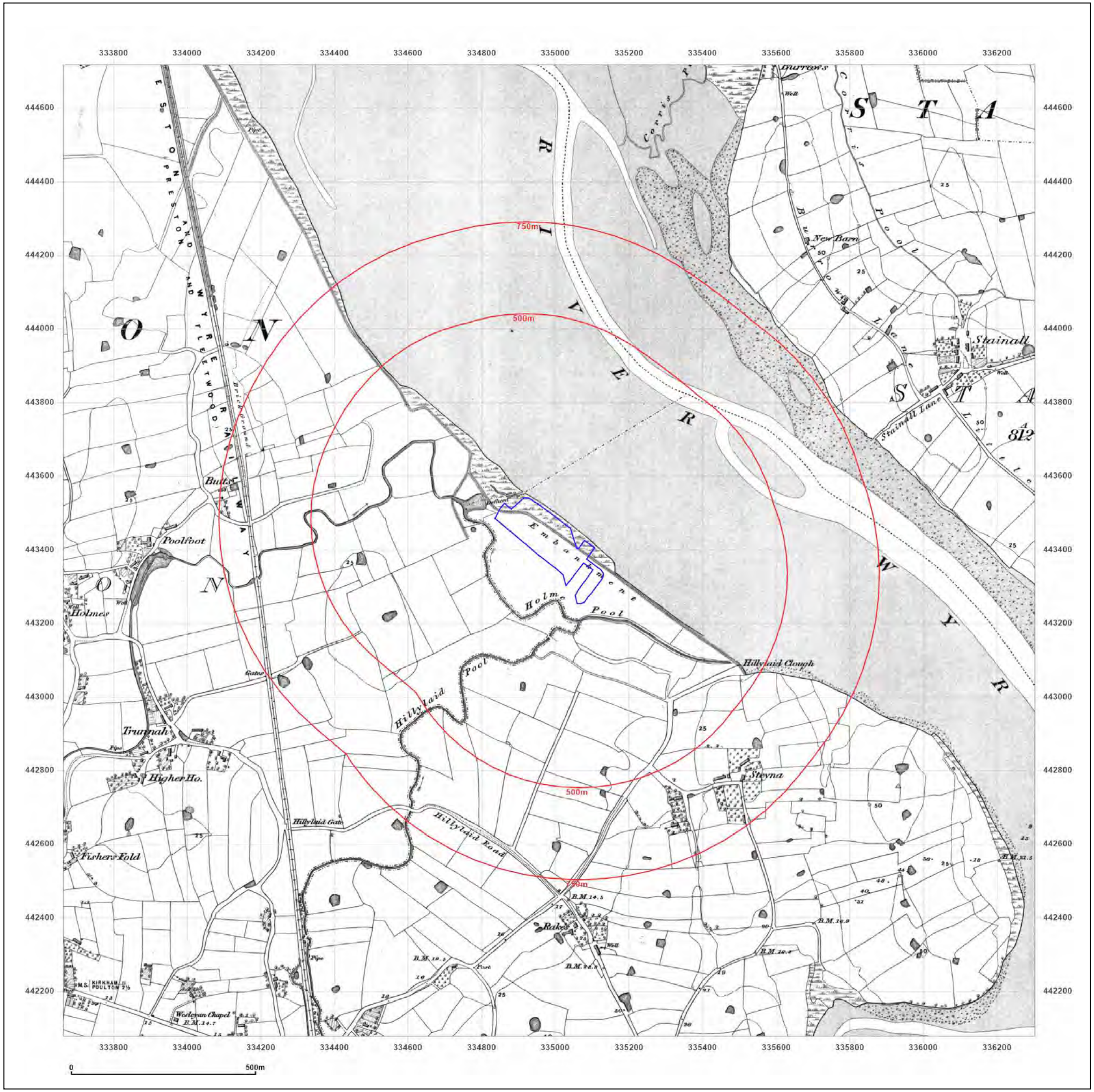
26.01.24 – View northwest from concrete pad

40.

26.01.24 – View towards Royle Brook from just off-site to the south

APPENDIX B

Groundsure Report
(Including Historical Maps)



Groundsure INSIGHTS

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334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: County Series

Map date: **1848**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised N/A
Edition 1848
Copyright N/A
Levelled N/A

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Map legend available at:
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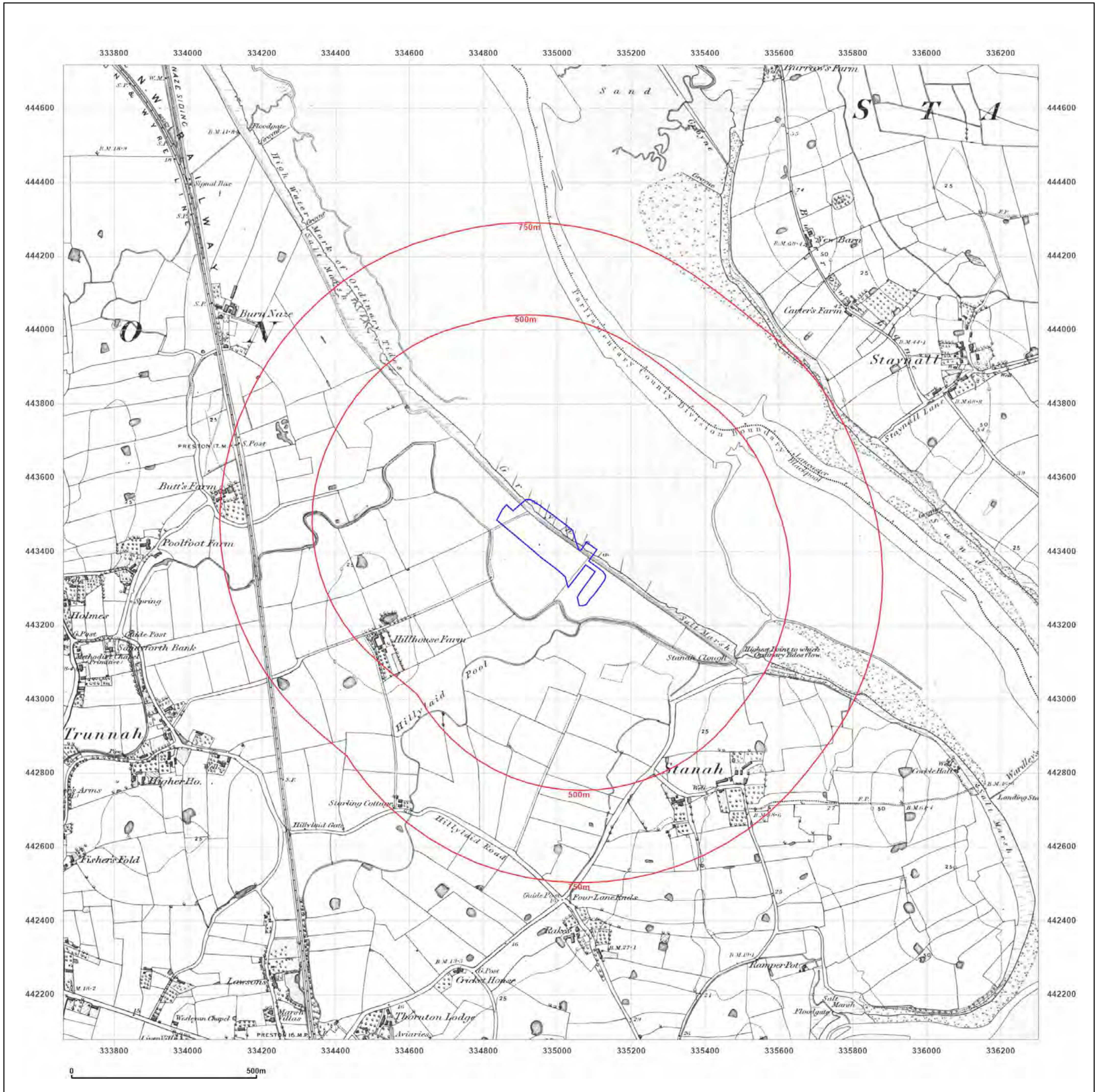

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84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: County Series

Map date: **1891**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

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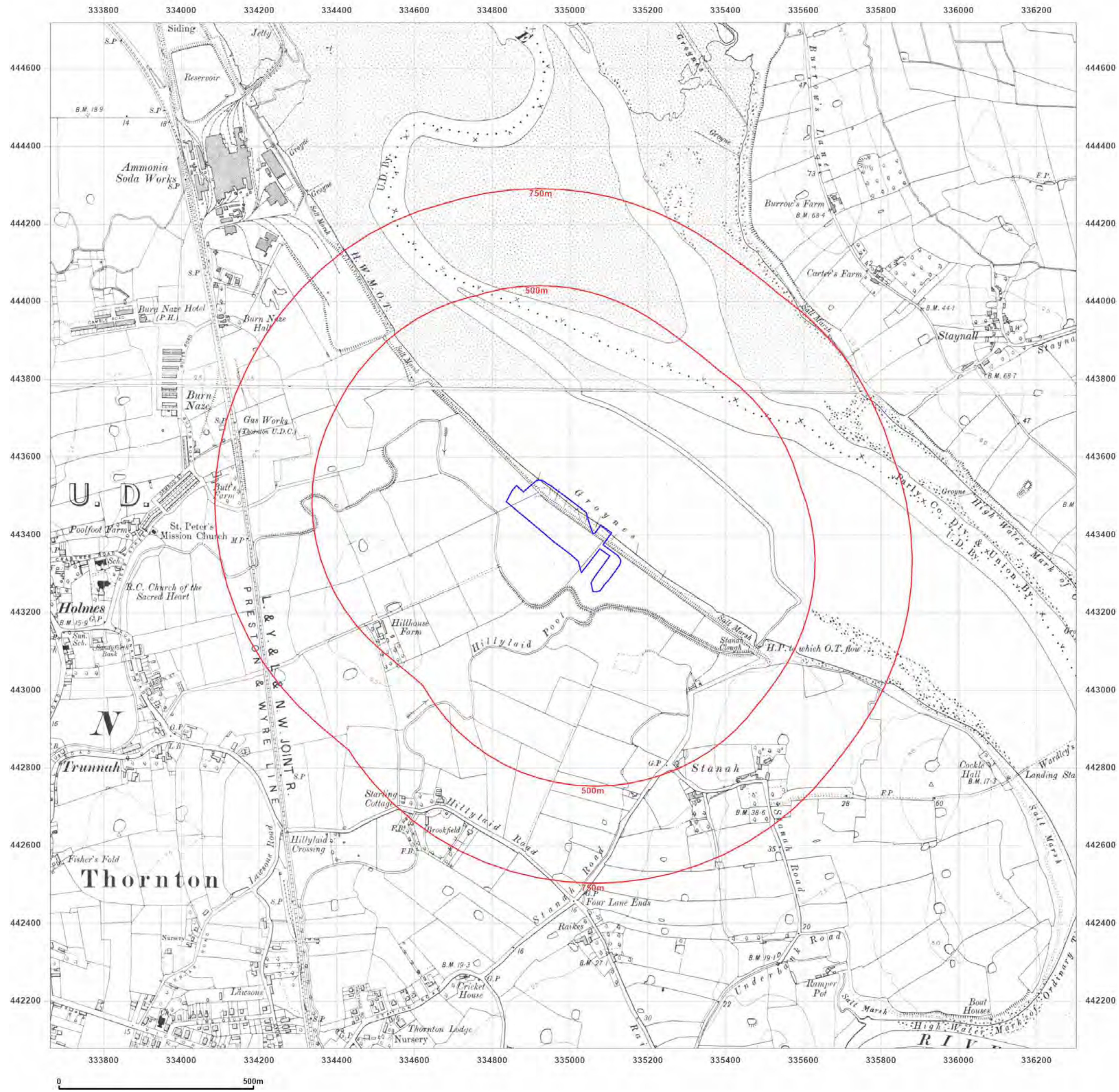

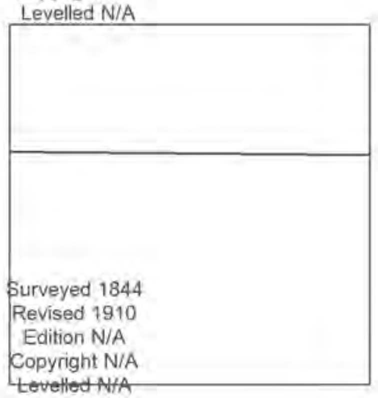

Groundsure INSIGHTS

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Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: County Series

Map date: **1910**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1845
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

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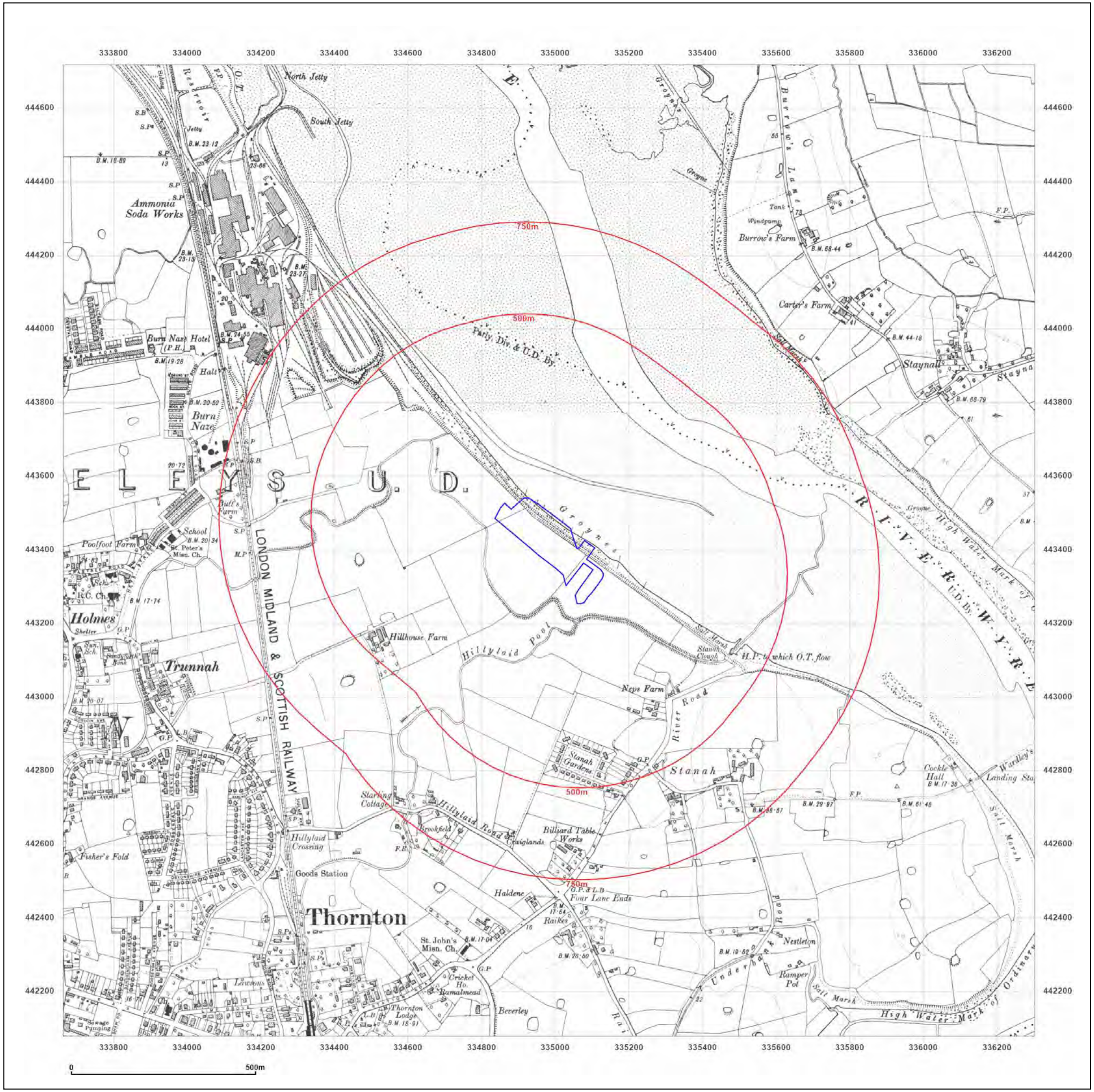

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Client Ref: R3217-Hillhouse_IBA
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Grid Ref: 334982, 443397

Map Name: County Series

Map date: **1930-1931**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1845
Revised 1930
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1931
Edition N/A
Copyright N/A
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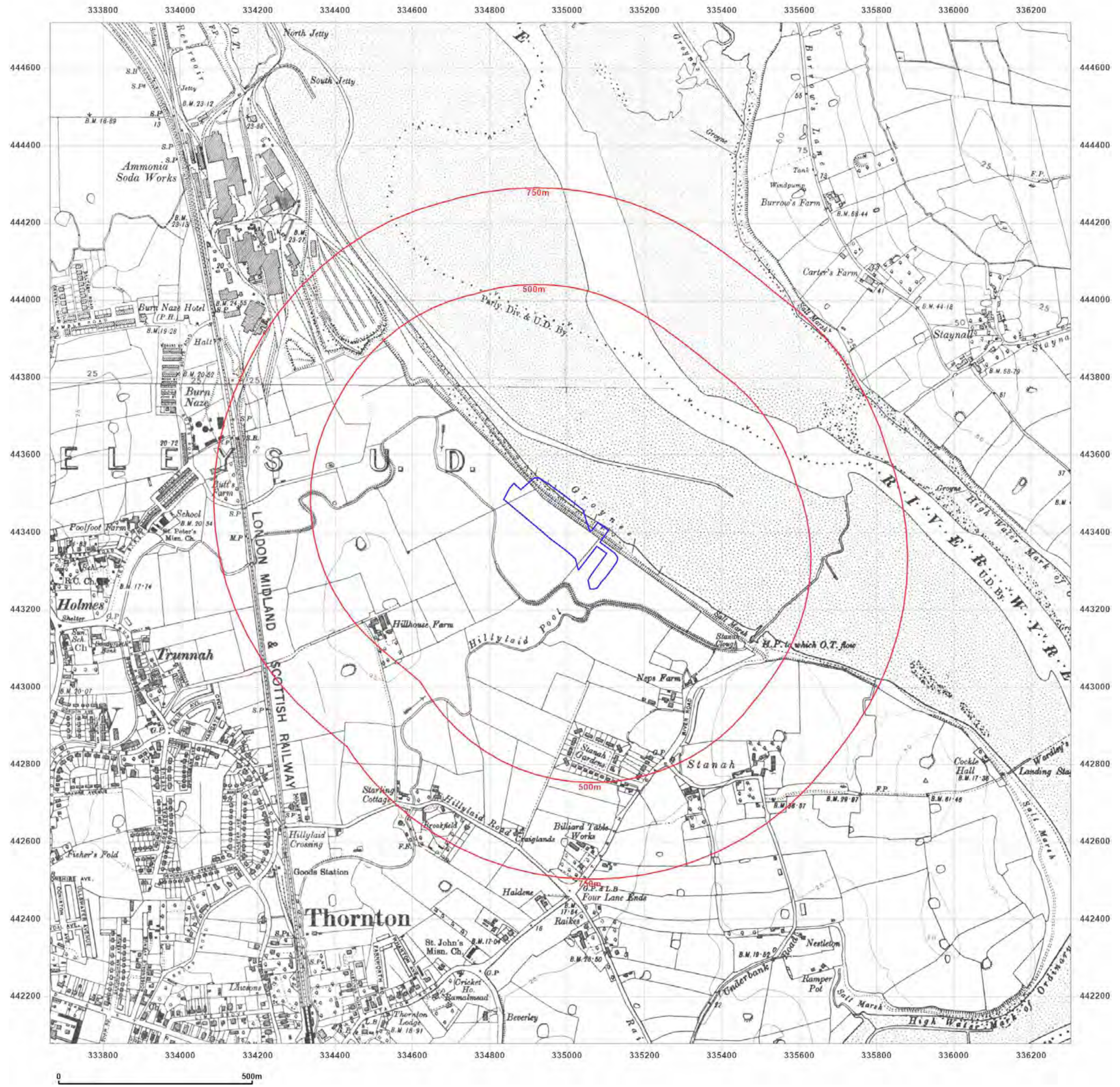

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84771532

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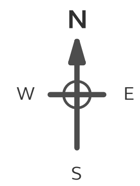
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

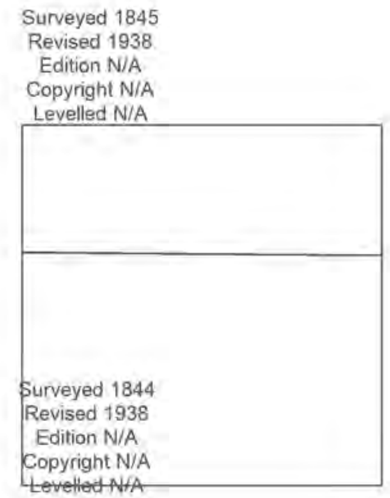
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560





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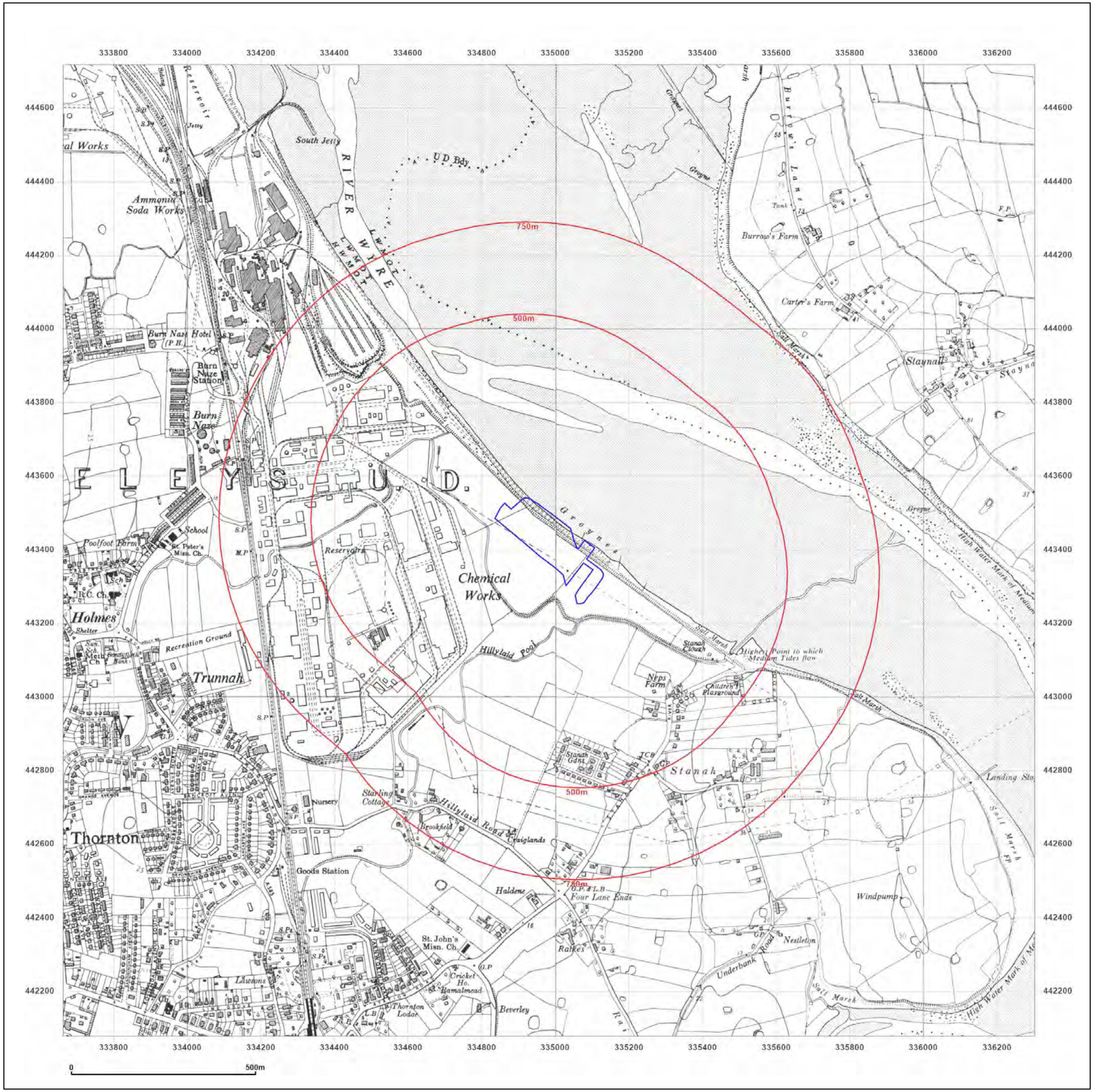

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84771532

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Report Ref:	GS-B8Q-KZT-IFI-F2A
Grid Ref:	334982, 443397

Map Name:	Provisional
Map date:	**1951**
Scale:	1:10,560
Printed at:	1:10,560

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Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A

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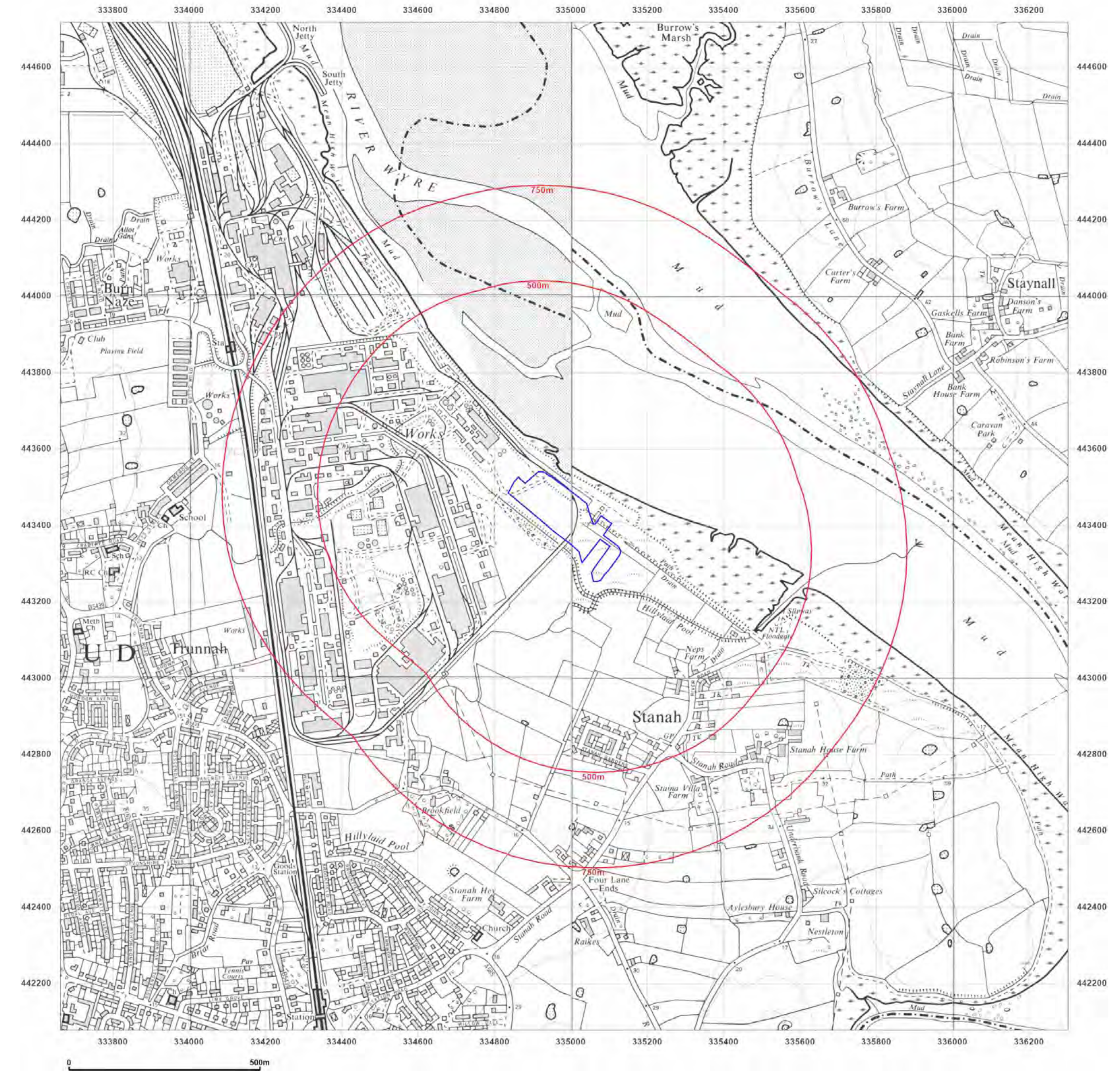

Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54 84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: Provisional

Map date: **1967-1968**

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1967 Revised 1967 Edition N/A Copyright N/A Levelled N/A	Surveyed 1968 Revised 1968 Edition N/A Copyright N/A Levelled N/A

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Site Details:

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84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1973**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1973
Revised 1973
Edition N/A
Copyright N/A
Levelled N/A

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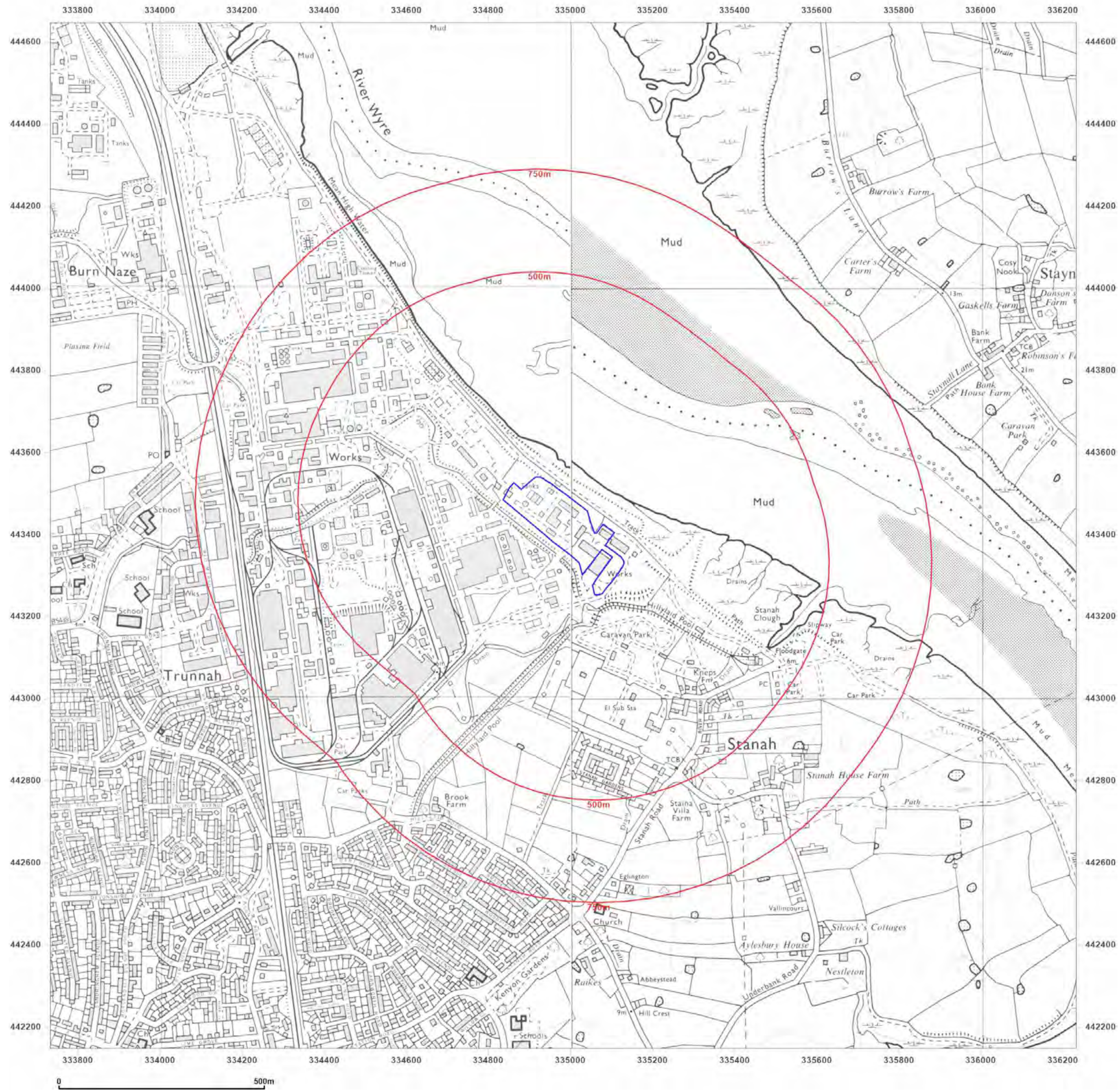

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Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1981-1985**

Scale: 1:10,000

Printed at: 1:10,000

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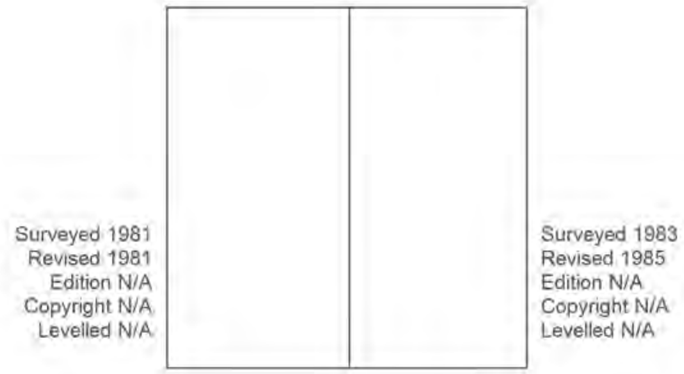

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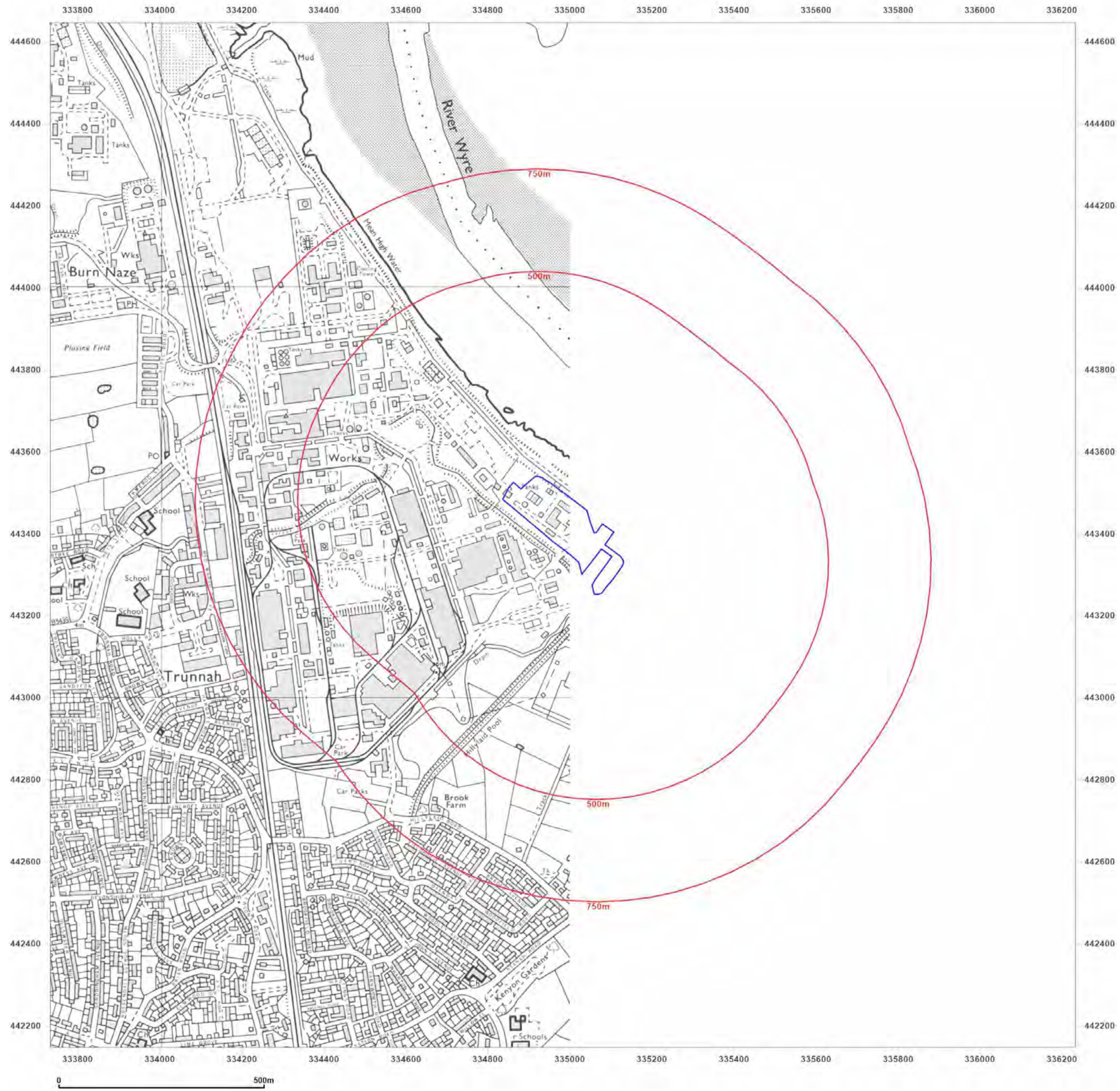

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84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1981
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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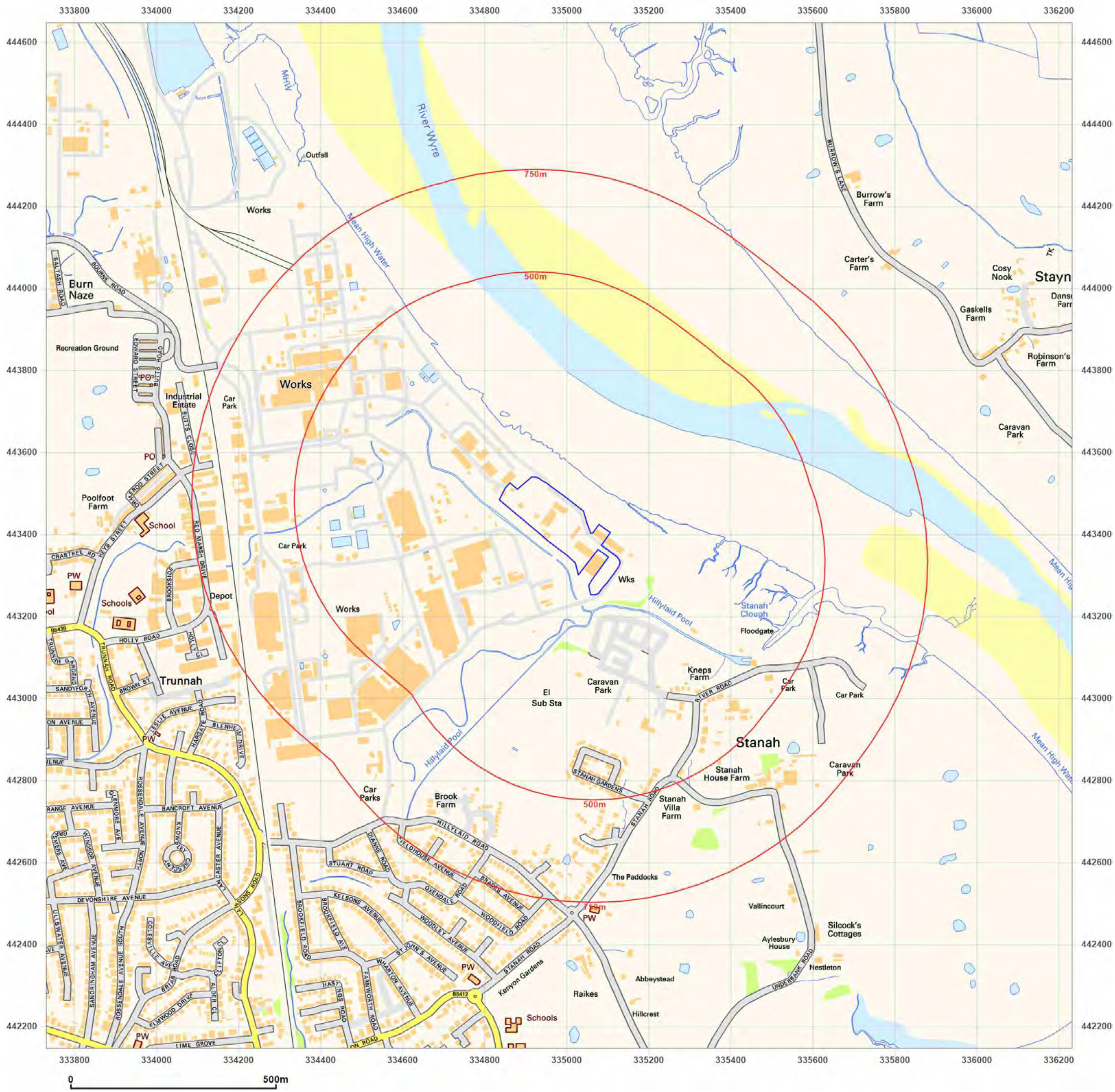

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Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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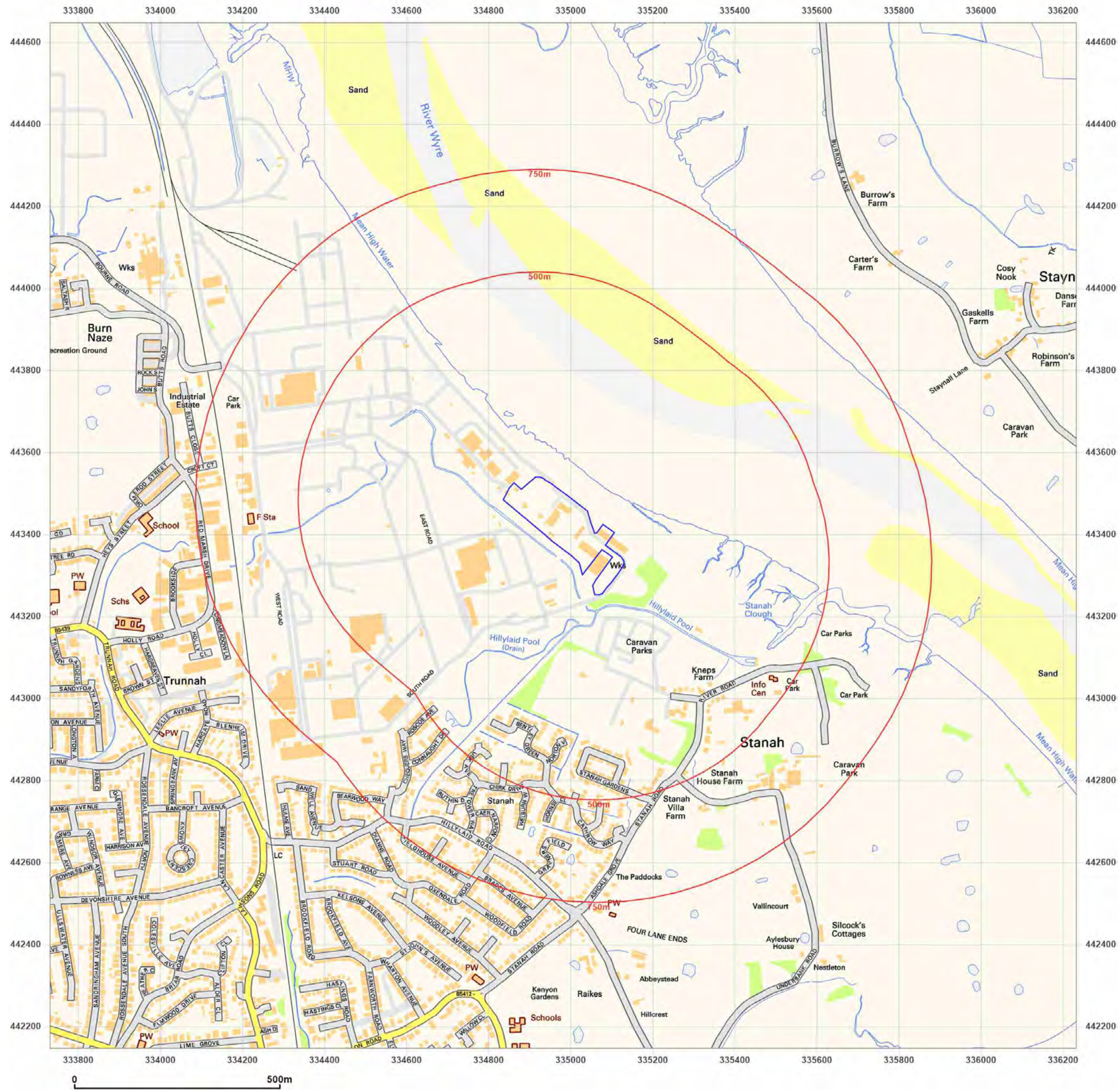

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84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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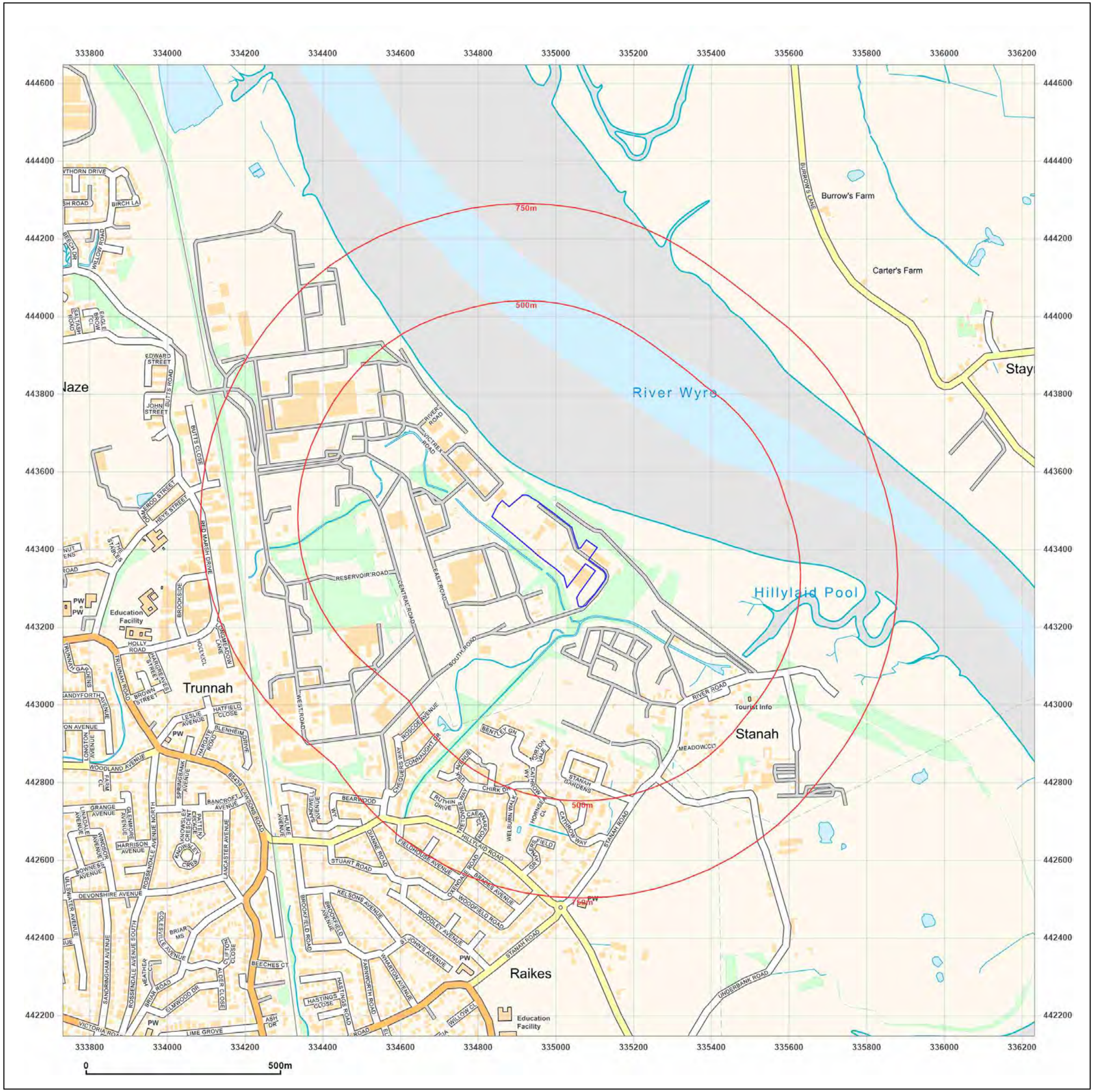

Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54 84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **2023**

Scale: 1:10,000

Printed at: 1:10,000

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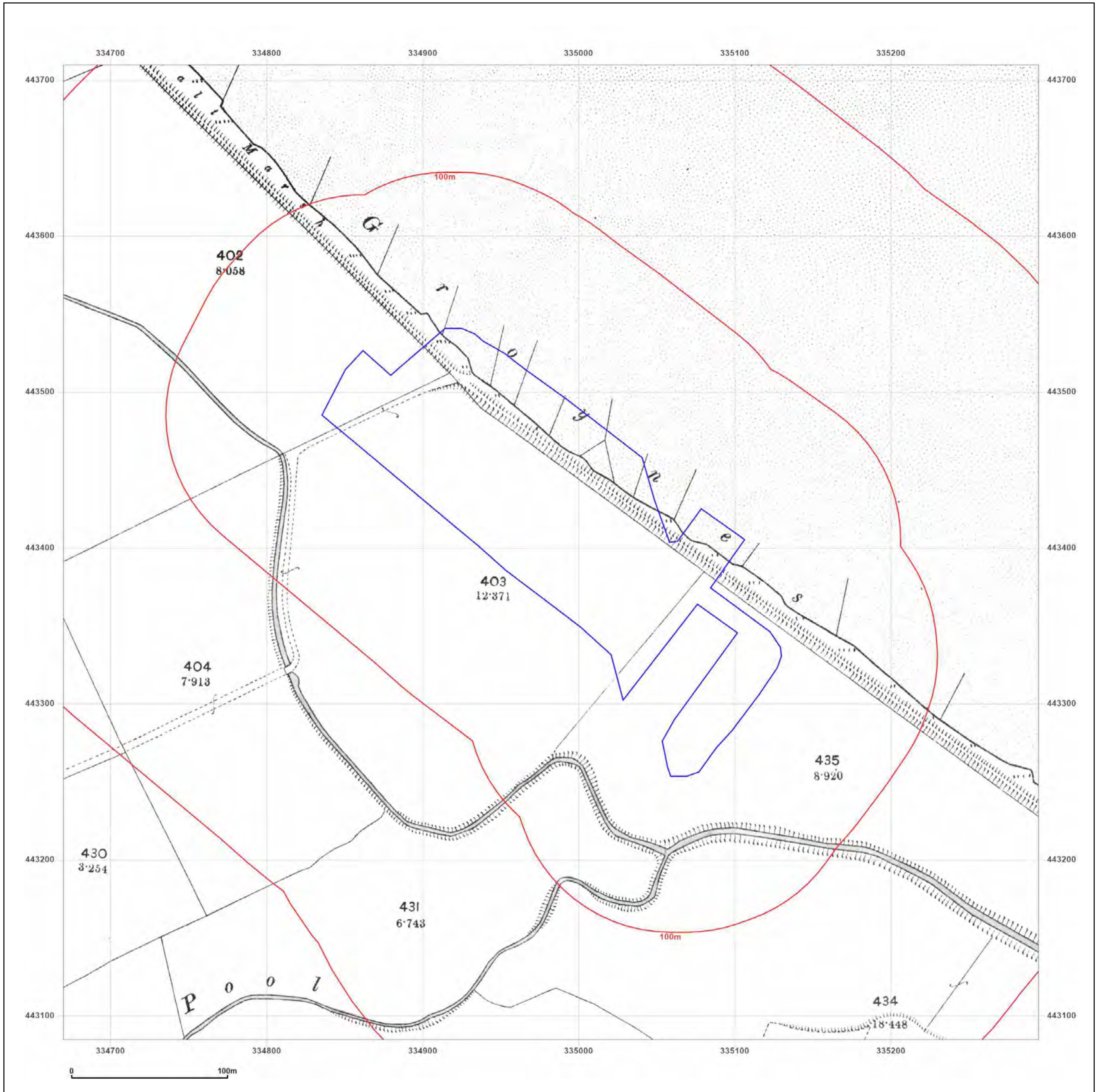

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84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: County Series

Map date: 1890

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1890
Revised 1890
Edition N/A
Copyright N/A
Levelled N/A

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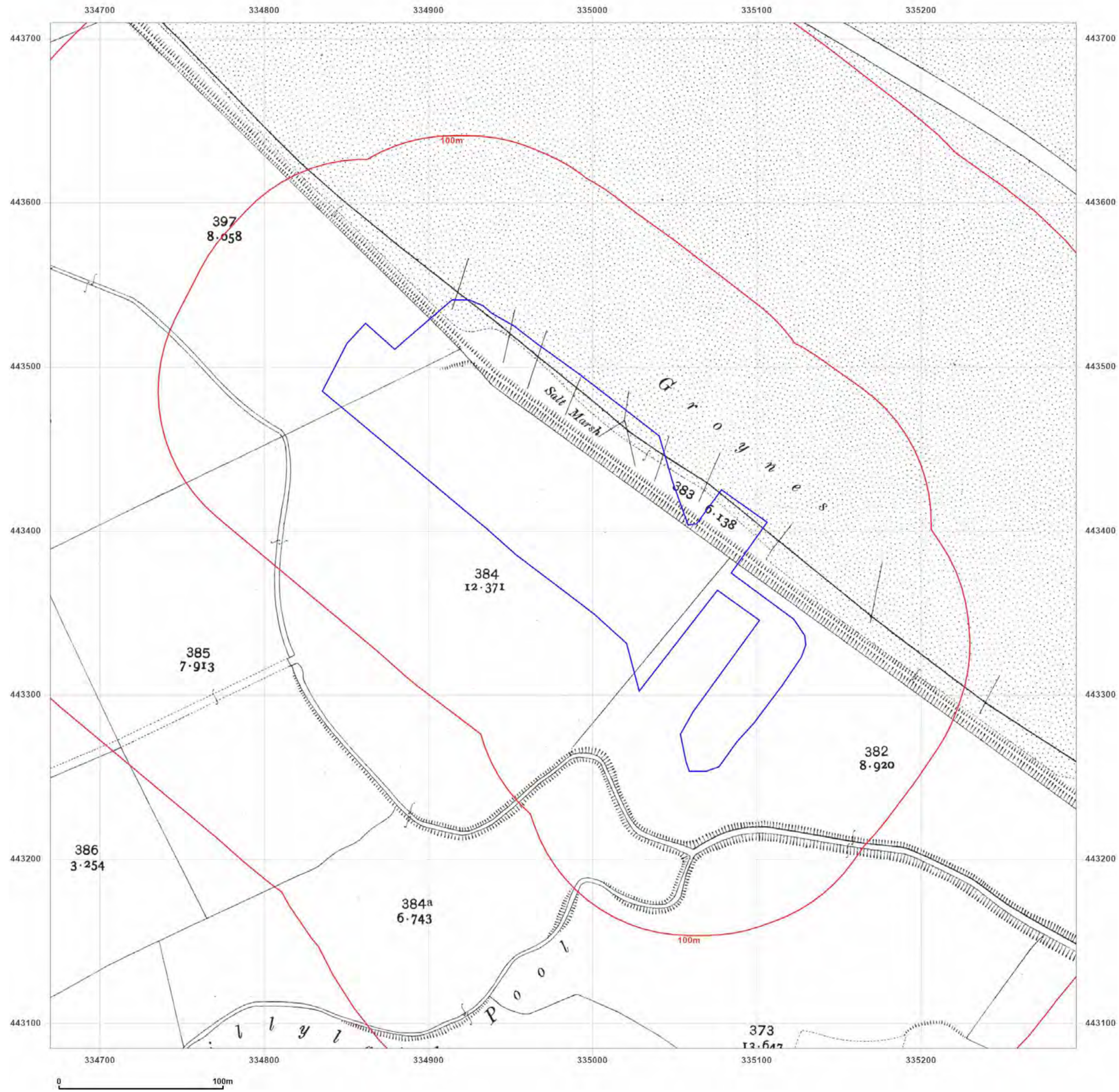

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Grid Ref: 334982, 443397

Map Name: County Series

Map date: 1912

Scale: 1:2,500

Printed at: 1:2,500

Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

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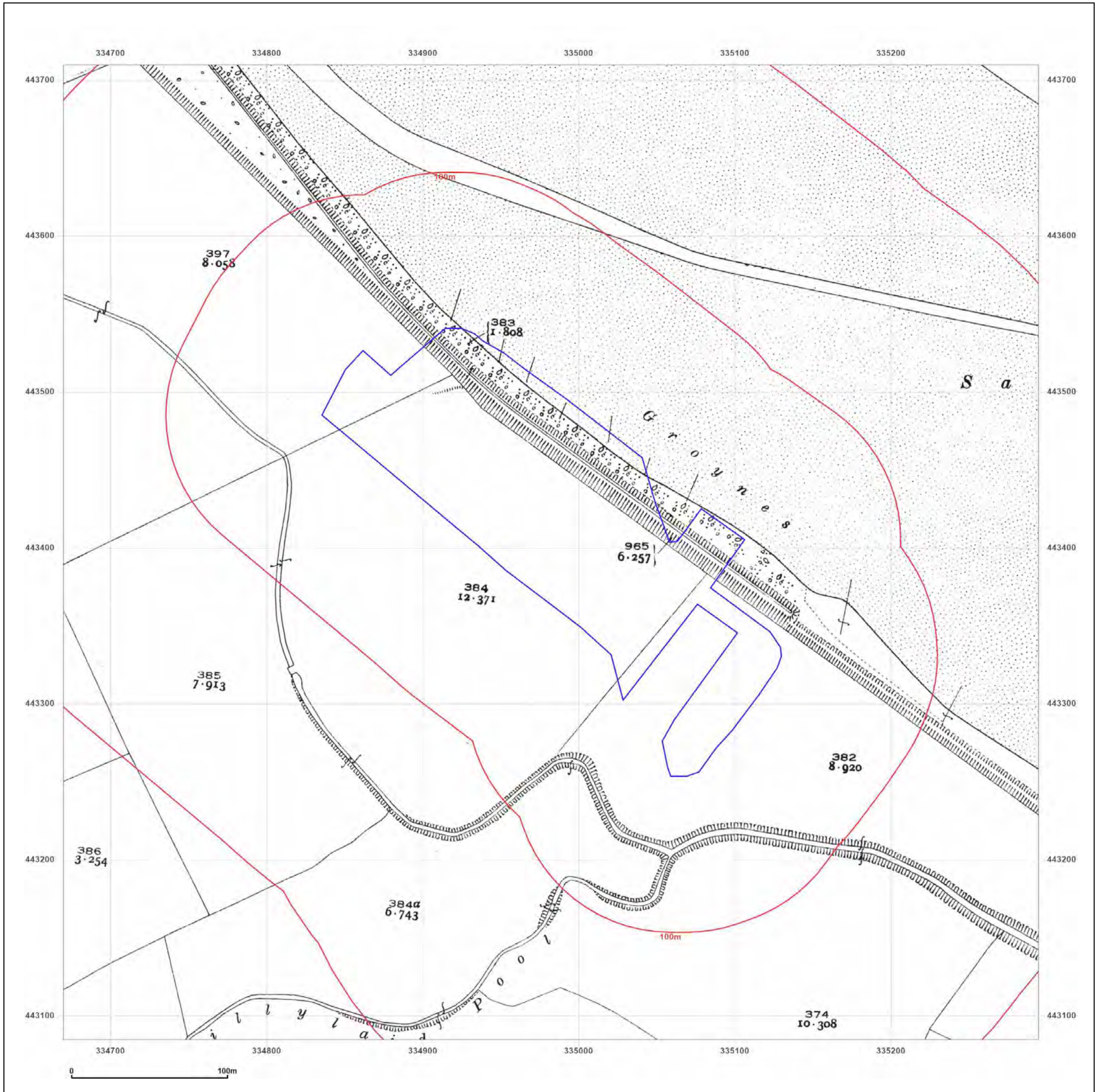

Groundsure INSIGHTS

Site Details:

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Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

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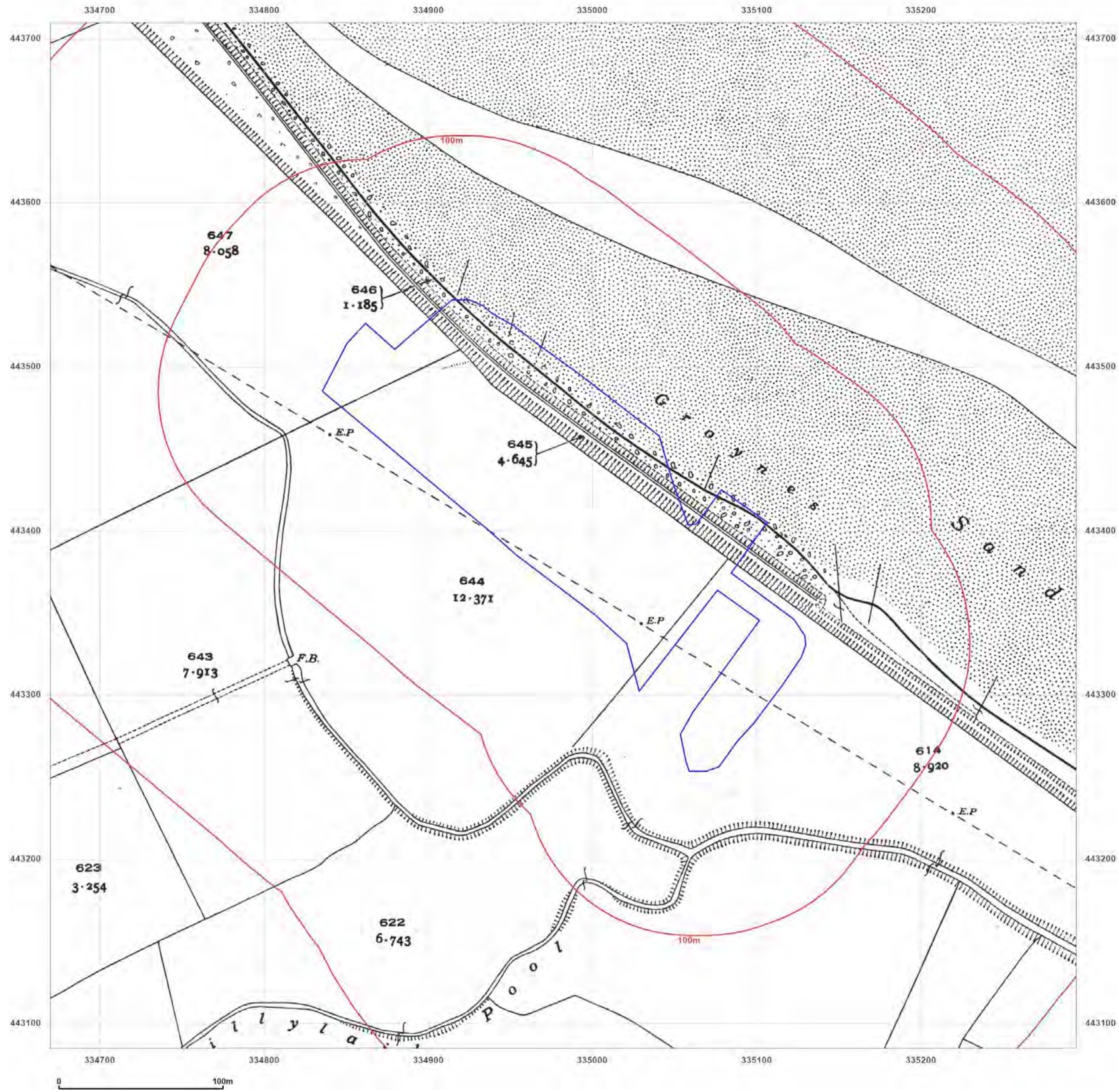

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Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: County Series

Map date: 1939

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1939
Revised 1939
Edition N/A
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Levelled N/A

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Map legend available at:
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Groundsure INSIGHTS

Site Details:

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84771532

Client Ref: R3217-Hillhouse_IBA
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Grid Ref: 334982, 443397

Map Name: National Grid

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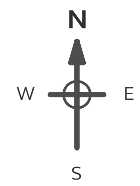

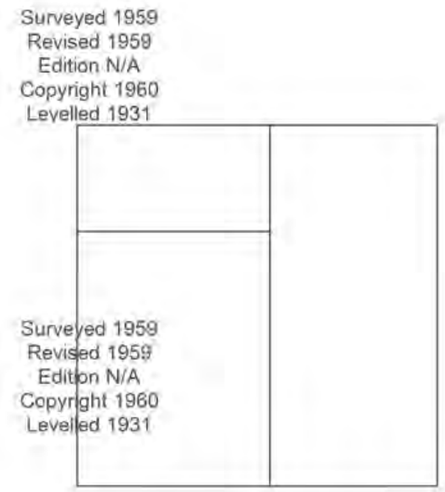

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Production date: 01 December 2023

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Groundsure INSIGHTS

Site Details:

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84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1965**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1965
Revised 1965
Edition N/A
Copyright 1967
Levelled 1960

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Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54 84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

N W E S

Surveyed N/A
Revised N/A
Edition N/A
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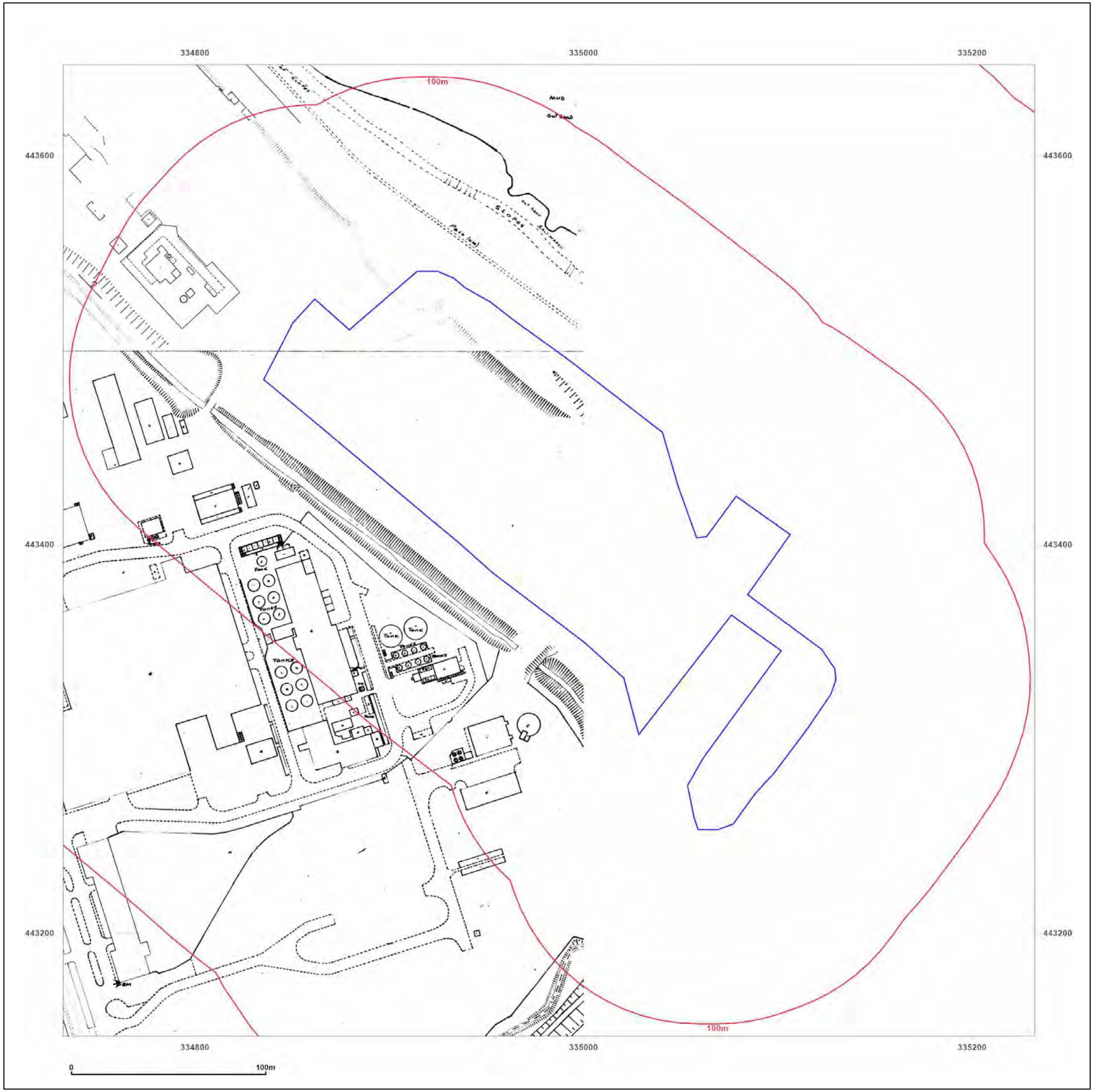
Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

334982.9920421878,443421.54
84771532

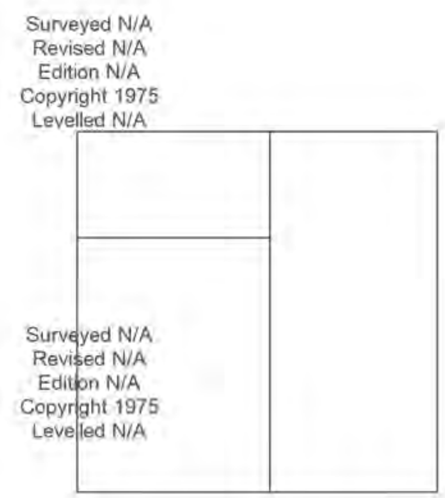
Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1976**

Scale: 1:1,250

Printed at: 1:2,000



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Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

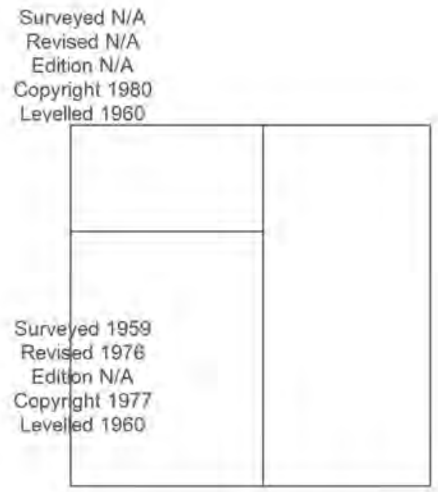
Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1977-1980**

Scale: 1:1,250

Printed at: 1:2,000



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Production date: 01 December 2023

Map legend available at:
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Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

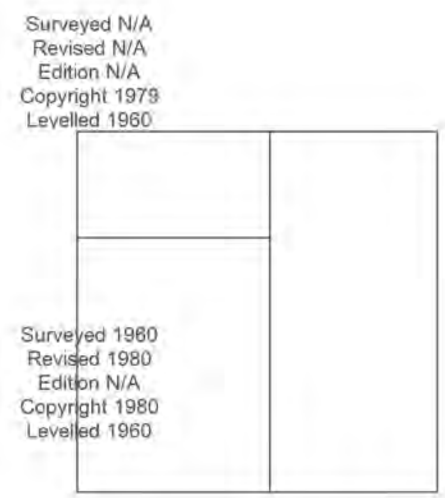
Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1979-1980**

Scale: 1:1,250

Printed at: 1:2,000



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Production date: 01 December 2023

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Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1980**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1980
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Production date: 01 December 2023

Map legend available at:
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Site Details:

334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1981**

Scale: 1:2,500

Printed at: 1:2,500

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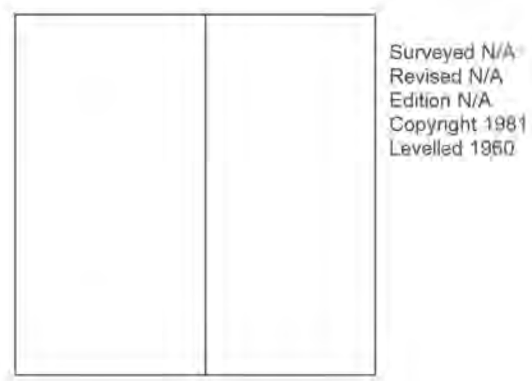

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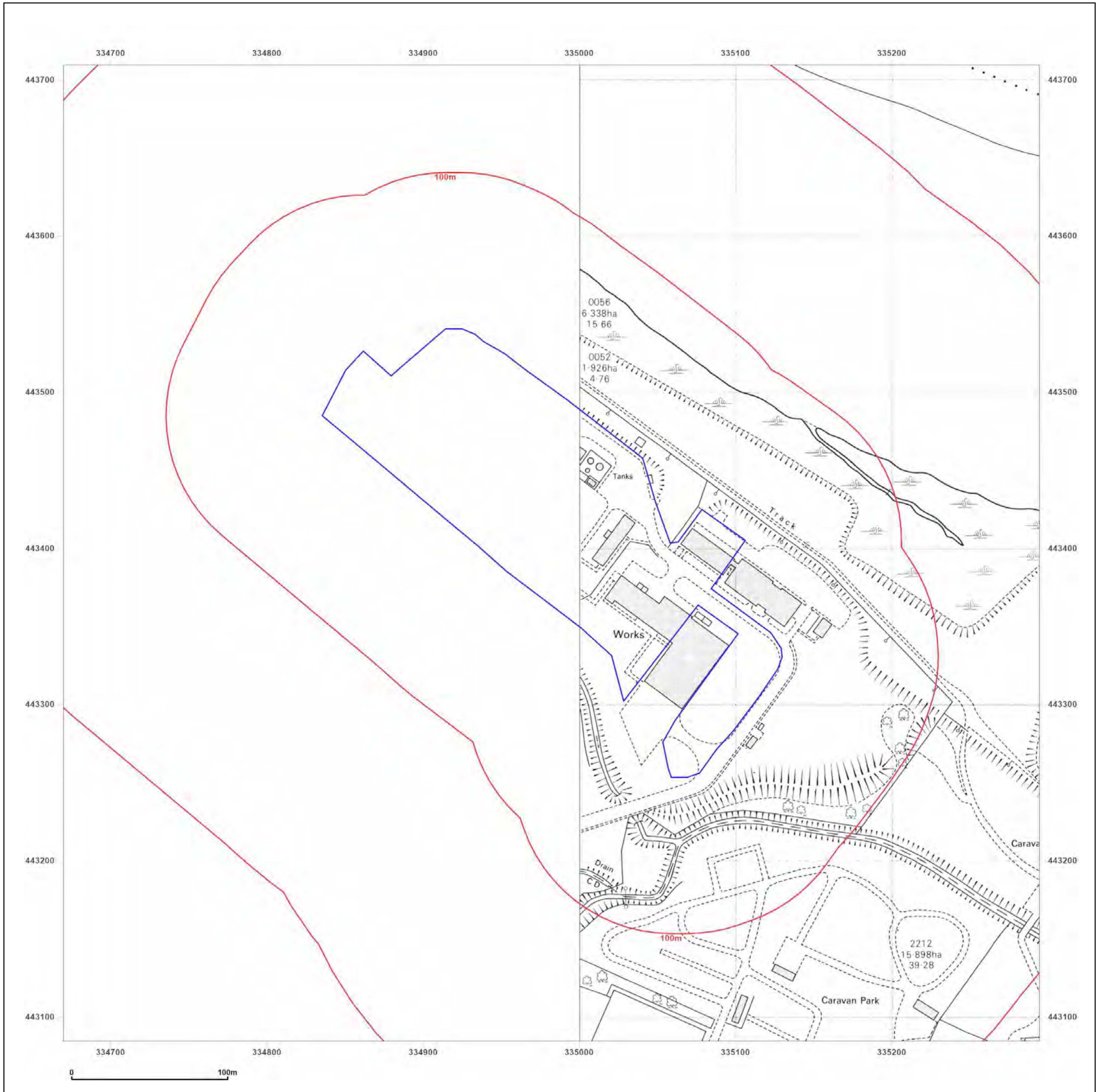
Production date: 01 December 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1985**

Scale: 1:2,500

Printed at: 1:2,500

N W E S

Surveyed 1965
Revised 1985
Edition N/A
Copyright 1986
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Production date: 01 December 2023

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Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

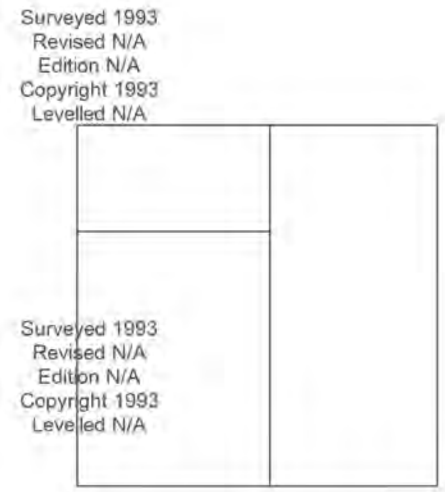
Map Name: National Grid

Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



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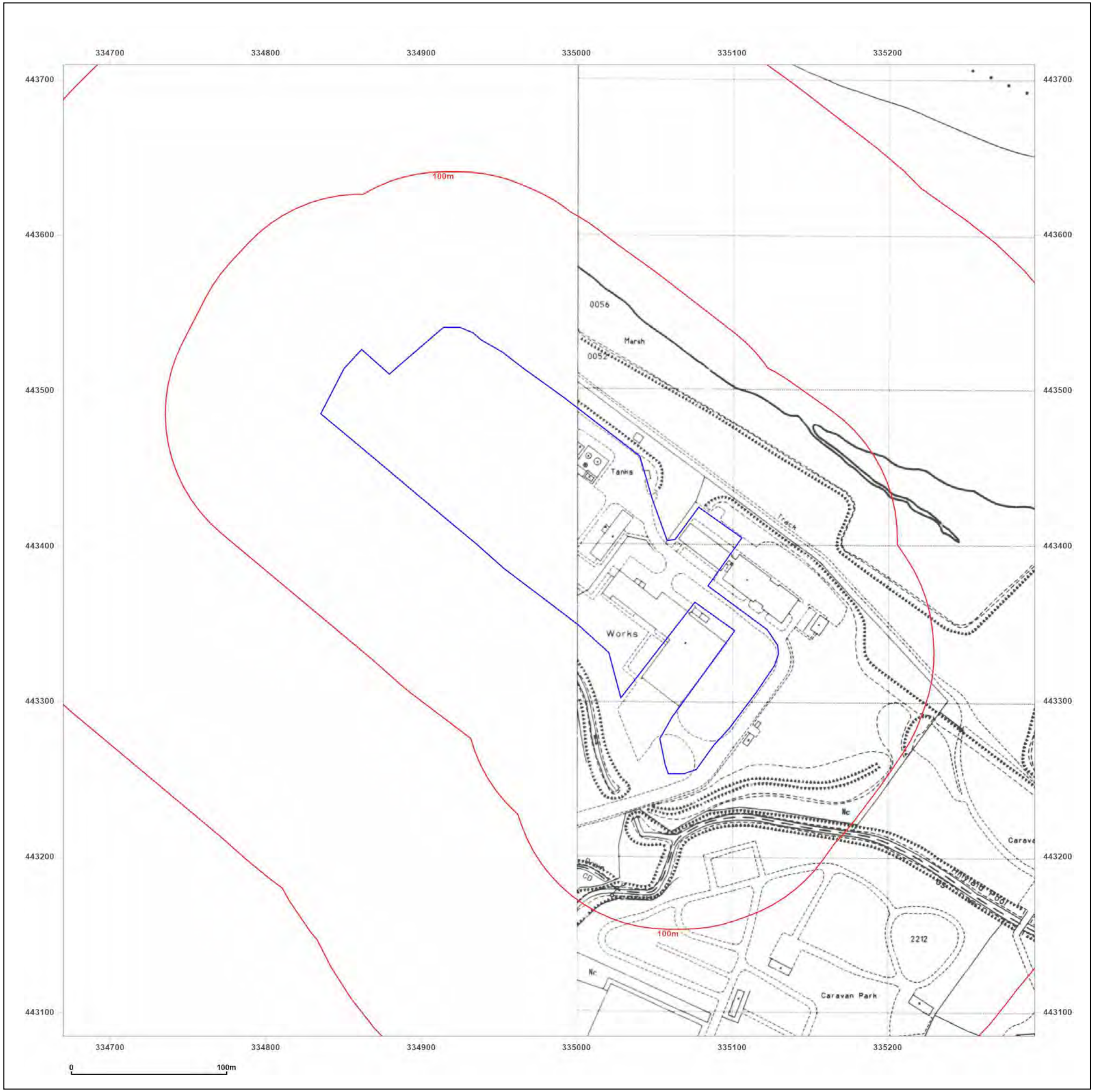
W: www.groundsure.com

Production date: 01 December 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.5484771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

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Production date: 01 December 2023

Map legend available at:
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Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

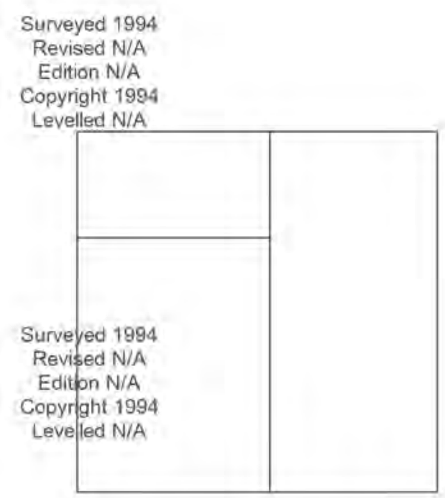
Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



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Production date: 01 December 2023

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Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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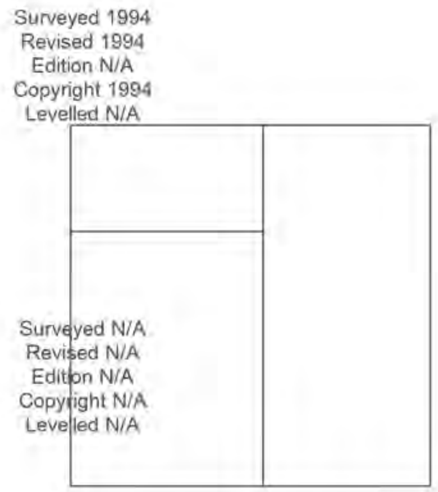

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Production date: 01 December 2023

Map legend available at:
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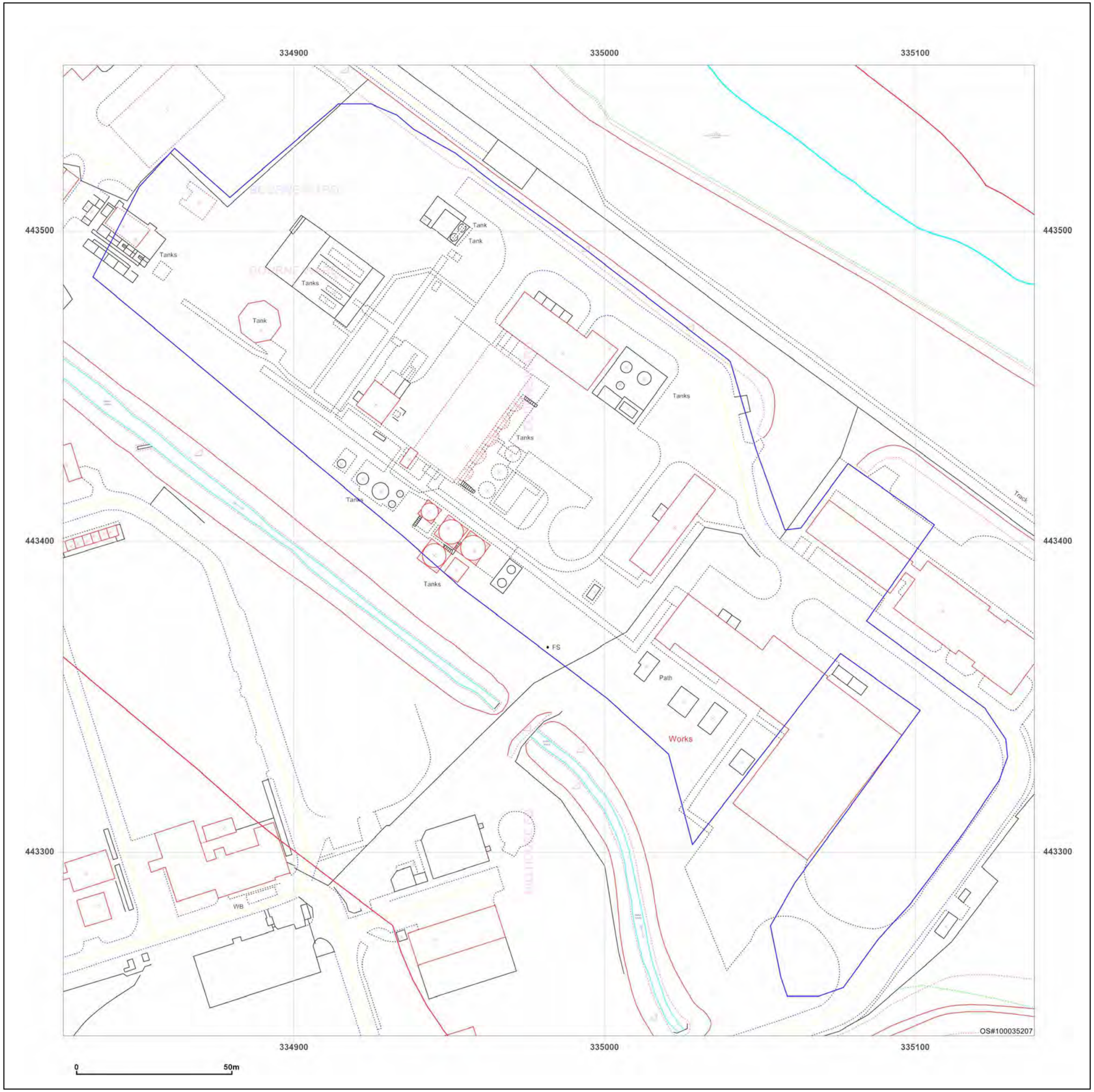

Groundsure INSIGHTS

Site Details:

334982.9920421878,443421.54
84771532

Client Ref: R3217-Hillhouse_IBA
Report Ref: GS-B8Q-KZT-IFI-F2A
Grid Ref: 334982, 443397

Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
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Production date: 01 December 2023

Map legend available at:
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Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

334982.9920421878,443421.5484771532,

Order Details

Date: 01/12/2023

Your ref: R3217-Hillhouse_IBA

Our Ref: GS-A1G-516-6R9-KPQ

Site Details

Location: 335053 443354

Area: 3.04 ha

Authority: Wyre Council ↗

Summary of findings p. 2 >

Aerial image p. 9 >

OS MasterMap site plan p.14 >

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01273 257 755

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Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	12	4	11	37	-
18 >	1.2 >	Historical tanks >	23	4	49	71	-
24 >	1.3 >	Historical energy features >	0	0	1	2	-
24	1.4	Historical petrol stations	0	0	0	0	-
24	1.5	Historical garages	0	0	0	0	-
25	1.6	Historical military land	0	0	0	0	-
Page	**Section**	**Past land use - un-grouped >**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
26 >	2.1 >	Historical industrial land uses >	18	6	21	69	-
31 >	2.2 >	Historical tanks >	32	8	79	147	-
40 >	2.3 >	Historical energy features >	0	0	1	3	-
41	2.4	Historical petrol stations	0	0	0	0	-
41	2.5	Historical garages	0	0	0	0	-
Page	**Section**	**Waste and landfill >**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
42	3.1	Active or recent landfill	0	0	0	0	-
42	3.2	Historical landfill (BGS records)	0	0	0	0	-
43	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
43 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	0	1	-
43 >	3.5 >	Historical waste sites >	0	0	1	0	-
44	3.6	Licensed waste sites	0	0	0	0	-
44 >	3.7 >	Waste exemptions >	0	0	0	12	-
Page	**Section**	**Current industrial land use >**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
46 >	4.1 >	Recent industrial land uses >	38	5	17	-	-
50	4.2	Current or recent petrol stations	0	0	0	0	-
50	4.3	Electricity cables	0	0	0	0	-
50	4.4	Gas pipelines	0	0	0	0	-
50	4.5	Sites determined as Contaminated Land	0	0	0	0	-

85 >	6.2 >	Surface water features >	0	3	4	-	-
85 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
86 >	6.4 >	WFD Surface water bodies >	0	1	1	-	-
86	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
87 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
88	7.2	Historical Flood Events	0	0	0	-	-
88 >	7.3 >	Flood Defences >	0	0	1	-	-
88 >	7.4 >	Areas Benefiting from Flood Defences >	1	0	0	-	-
89	7.5	Flood Storage Areas	0	0	0	-	-
90 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
91 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
92 >	8.1 >	Surface water flooding >	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding >					
94 >	9.1 >	Groundwater flooding >	Negligible (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
95 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	1	0	3	12
96 >	10.2 >	Conserved wetland sites (Ramsar sites) >	0	1	0	3	8
101	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
101 >	10.4 >	Special Protection Areas (SPA) >	0	2	0	4	12
106	10.5	National Nature Reserves (NNR)	0	0	0	0	0
106	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
106	10.7	Designated Ancient Woodland	0	0	0	0	0
106	10.8	Biosphere Reserves	0	0	0	0	0
107	10.9	Forest Parks	0	0	0	0	0
107 >	10.10 >	Marine Conservation Zones >	0	0	2	2	21
108 >	10.11 >	Green Belt >	0	0	0	0	2
108	10.12	Proposed Ramsar sites	0	0	0	0	0

109	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
109	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
109	10.15	Nitrate Sensitive Areas	0	0	0	0	0
109	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
110 >	10.17 >	SSSI Impact Risk Zones >	2	-	-	-	-
111 >	10.18 >	SSSI Units >	0	1	0	4	16
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
119	11.1	World Heritage Sites	0	0	0	-	-
119	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
119	11.3	National Parks	0	0	0	-	-
119	11.4	Listed Buildings	0	0	0	-	-
120	11.5	Conservation Areas	0	0	0	-	-
120	11.6	Scheduled Ancient Monuments	0	0	0	-	-
120	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
121 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
122	12.2	Open Access Land	0	0	0	-	-
122	12.3	Tree Felling Licences	0	0	0	-	-
122	12.4	Environmental Stewardship Schemes	0	0	0	-	-
122	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
123 >	13.1 >	Priority Habitat Inventory >	0	2	5	-	-
124 >	13.2 >	Habitat Networks >	2	6	6	-	-
125	13.3	Open Mosaic Habitat	0	0	0	-	-
125	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
126 >	14.1 >	10k Availability >	Identified (within 500m)				
127 >	14.2 >	Artificial and made ground (10k) >	2	0	0	1	-
128 >	14.3 >	Superficial geology (10k) >	3	0	0	1	-

154 >	18.6 >	Non-coal mining >	0	0	0	0	1
154	18.7	JPB mining areas	None (within 0m)				
154	18.8	The Coal Authority non-coal mining	0	0	0	0	-
155	18.9	Researched mining	0	0	0	0	-
155	18.10	Mining record office plans	0	0	0	0	-
155	18.11	BGS mine plans	0	0	0	0	-
155	18.12	Coal mining	None (within 0m)				
156	18.13	Brine areas	None (within 0m)				
156	18.14	Gypsum areas	None (within 0m)				
156	18.15	Tin mining	None (within 0m)				
156	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
157	19.1	Natural cavities	0	0	0	0	-
157	19.2	Mining cavities	0	0	0	0	0
157	19.3	Reported recent incidents	0	0	0	0	-
157	19.4	Historical incidents	0	0	0	0	-
158	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
159 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
161 >	21.1 >	BGS Estimated Background Soil Chemistry >	8	5	-	-	-
162	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
162	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects >	On site	0-50m	50-250m	250-500m	500-2000m
163	22.1	Underground railways (London)	0	0	0	-	-
163	22.2	Underground railways (Non-London)	0	0	0	-	-
164	22.3	Railway tunnels	0	0	0	-	-
164 >	22.4 >	Historical railway and tunnel features >	4	0	12	-	-
165	22.5	Royal Mail tunnels	0	0	0	-	-

165	22.6	Historical railways	0	0	0	-	-
165	22.7	Railways	0	0	0	-	-
165	22.8	Crossrail 1	0	0	0	0	-
165	22.9	Crossrail 2	0	0	0	0	-
166	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 10/08/2022

Site Area: 3.04ha

Recent site history - 2019 aerial photograph

Capture Date: 22/04/2019

Site Area: 3.04ha

Recent site history - 2018 aerial photograph

Capture Date: 05/09/2018

Site Area: 3.04ha

Recent site history - 2013 aerial photograph

Capture Date: 19/07/2013

Site Area: 3.04ha

Recent site history - 2000 aerial photograph

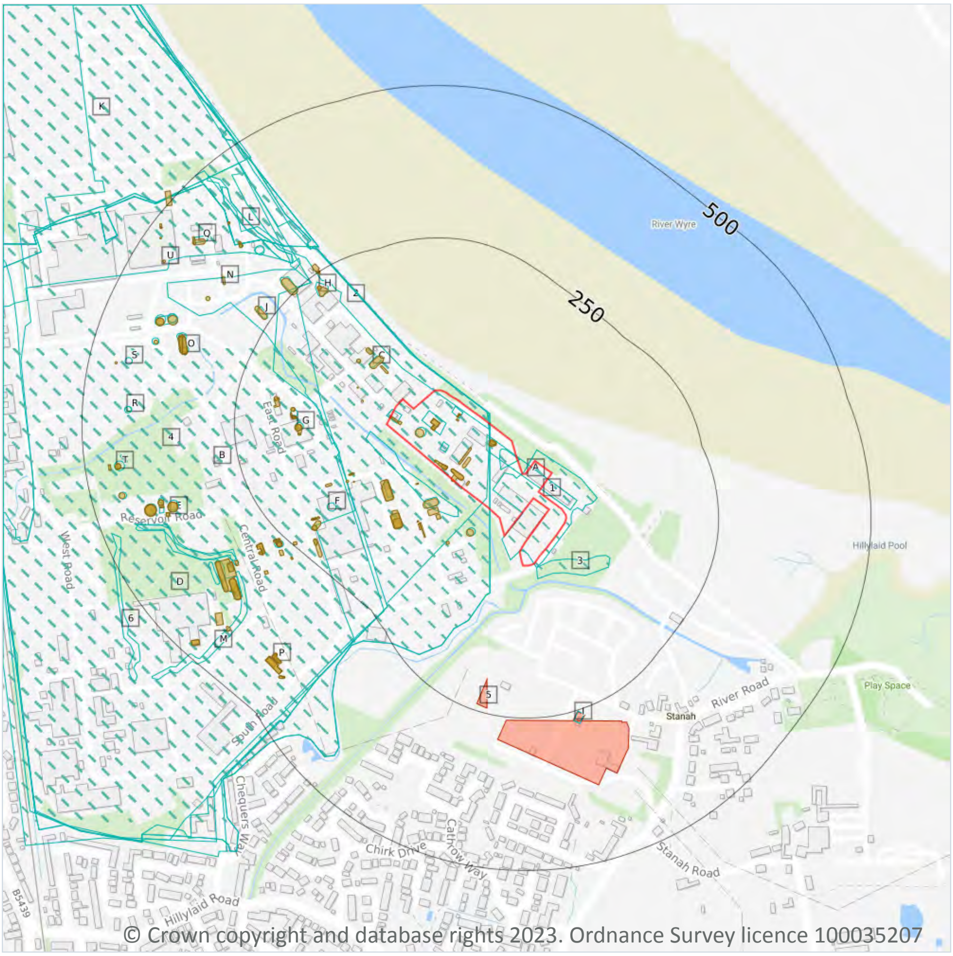
Capture Date: 05/04/2000

Site Area: 3.04ha

OS MasterMap site plan

Site Area: 3.04ha

1 Past land use



Site Outline
Search buffers in metres (m)
Historical industrial land uses
Historical tanks
Historical energy features

1.1 Historical industrial land uses

Records within 500m	64

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on page 15 >

ID	Location	Land use	Dates present	Group ID
1	On site	Unspecified Works	1985	678573

ID	Location	Land use	Dates present	Group ID
2	**On site**	**Railway Sidings**	**1973**	**714213**
A	**On site**	**Railway Sidings**	**1951**	**641435**
A	**On site**	**Unspecified Pit**	**1968**	**688600**
A	**On site**	**Unspecified Tanks**	**1981 - 1992**	**714651**
A	**On site**	**Unspecified Tanks**	**1981 - 1992**	**726363**
A	**On site**	**Unspecified Tanks**	**1981 - 1992**	**727213**
A	**On site**	**Unspecified Tanks**	**1981 - 1992**	**787313**
A	**On site**	**Unspecified Tanks**	**1981 - 1992**	**788022**
B	**On site**	**Unspecified Works**	**1967**	**716375**
B	**On site**	**Unspecified Works**	**1973 - 1981**	**729518**
B	**On site**	**Unspecified Works**	**1992**	**746126**
3	7m SE	Unspecified Heap	1985	649452
A	26m W	Refuse Heap	1967	676879
A	39m SW	Unspecified Tanks	1981 - 1992	751240
A	41m S	Unspecified Tank	1981 - 1992	694819
C	71m NW	Unspecified Tanks	1967 - 1973	763973
A	72m W	Unspecified Tanks	1981 - 1992	749014
D	89m W	Railway Sidings	1973 - 1981	697482
4	90m W	Railway Sidings	1951 - 1967	698470
E	90m W	Chemical Works	1951	682676
A	104m SW	Unspecified Tanks	1981 - 1992	742475
G	137m W	Unspecified Tank	1981 - 1992	702019
G	147m W	Unspecified Tank	1967 - 1973	771286
F	155m W	Unspecified Tank	1967 - 1973	707907
H	214m NW	Unspecified Tanks	1967 - 1973	713245
H	250m NW	Unspecified Tanks	1967 - 1973	752240
I	252m S	Electricity Substation	1985	686415
J	256m NW	Unspecified Tanks	1967 - 1992	789517

ID	Location	Land use	Dates present	Group ID
F	258m W	Unspecified Tank	1967 - 1973	770548
F	260m W	Unspecified Tank	1992	742152
K	286m NW	Railway Sidings	1938	738290
K	286m NW	Ammonia Soda Works	1930 - 1938	757831
K	286m NW	Railway Sidings	1930	775128
L	288m NW	Unspecified Ground Workings	1973	734208
L	288m NW	Unspecified Ground Workings	1981 - 1992	777538
L	317m NW	Unspecified Heap	1930 - 1938	748322
D	325m W	Unspecified Ground Workings	1967	696442
D	330m W	Unspecified Ground Workings	1981 - 1992	755081
L	331m NW	Unspecified Tank	1967 - 1973	767586
L	333m NW	Unspecified Tank	1981 - 1992	728267
M	342m SW	Unspecified Ground Workings	1967	646142
O	347m W	Unspecified Tank	1967 - 1992	788469
F	350m SW	Unspecified Tanks	1967 - 1992	738506
O	358m NW	Unspecified Tank	1967 - 1973	713686
O	364m NW	Unspecified Tank	1951	775226
F	366m W	Unspecified Tanks	1951	666073
E	366m W	Unspecified Tank	1967 - 1992	712875
O	382m NW	Unspecified Tanks	1973	666069
O	385m NW	Unspecified Tank	1981 - 1992	730697
O	385m NW	Unspecified Tank	1967	764137
E	386m W	Unspecified Tank	1967 - 1973	787334
E	390m W	Unspecified Tanks	1992	666070
O	397m W	Unspecified Tank	1967	673314
O	401m NW	Unspecified Tank	1981 - 1992	744362
E	402m W	Unspecified Tank	1967 - 1992	703668
Q	412m NW	Unspecified Tanks	1967 - 1973	716149

ID	Location	Land use	Dates present	Group ID
R	419m W	Unspecified Tank	1967 - 1973	695680
R	420m W	Unspecified Tank	1992	714437
S	430m W	Chimney	1967	684453
T	435m W	Unspecified Tank	1973 - 1992	736039
T	442m W	Unspecified Tank	1973 - 1992	789844
K	468m NW	Ammonia Soda Works	1951	694922
6	474m W	Unspecified Ground Workings	1967	646140

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	147

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Tanks**	**1994**	**86567**
A	**On site**	**Tanks**	**1980 - 1994**	**99134**
A	**On site**	**Unspecified Tank**	**1994**	**80288**
A	**On site**	**Unspecified Tank**	**1980**	**80289**
A	**On site**	**Tanks**	**1994**	**86563**
A	**On site**	**Tanks**	**1994**	**86564**
A	**On site**	**Tanks**	**1994**	**86565**
A	**On site**	**Tanks**	**1980**	**88930**
A	**On site**	**Tanks**	**1994**	**89508**
A	**On site**	**Tanks**	**1980**	**89643**
A	**On site**	**Tanks**	**1994**	**92041**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Tanks**	**1980**	**92721**
A	**On site**	**Tanks**	**1980**	**93895**
A	**On site**	**Tanks**	**1985**	**95270**
A	**On site**	**Tanks**	**1994**	**95834**
A	**On site**	**Tanks**	**1980**	**96668**
A	**On site**	**Tanks**	**1981**	**97055**
A	**On site**	**Tanks**	**1980**	**99749**
A	**On site**	**Tanks**	**1994**	**100649**
A	**On site**	**Tanks**	**1994**	**100650**
A	**On site**	**Tanks**	**1993**	**101492**
A	**On site**	**Tanks**	**1980**	**103158**
A	**On site**	**Unspecified Tank**	**1980 - 1994**	**103198**
A	41m W	Tanks	1980	102351
A	41m SW	Tanks	1977 - 1980	92354
A	45m S	Unspecified Tank	1980	90572
C	49m NW	Tanks	1994	86566
A	50m SW	Tanks	1977 - 1980	94479
C	51m NW	Unspecified Tank	1979 - 1980	94507
A	57m SW	Tanks	1977 - 1980	90051
C	68m NW	Tanks	1960 - 1965	90731
C	69m NW	Unspecified Tank	1979 - 1980	100067
A	69m W	Tanks	1980	96585
A	70m W	Tanks	1977	98882
A	83m S	Tanks	1977	86562
A	87m SW	Tanks	1994	86544
A	87m SW	Tanks	1980	96990
A	89m SW	Tanks	1977	95055
A	90m SW	Tanks	1977	86543

ID	Location	Land use	Dates present	Group ID
C	90m NW	Tanks	1960 - 1965	93872
C	93m NW	Unspecified Tank	1960 - 1965	102763
F	95m W	Tanks	1977 - 1980	95228
F	97m W	Tanks	1994	90739
A	97m SW	Tanks	1980	89983
A	100m SW	Tanks	1977	96705
A	104m SW	Tanks	1980	96959
F	106m W	Unspecified Tank	1980	98563
F	111m W	Unspecified Tank	1994	80294
F	133m W	Tanks	1960 - 1965	103233
G	139m W	Tanks	1980	100167
G	140m W	Tanks	1977 - 1994	92825
G	143m W	Tanks	1977 - 1994	99625
G	148m W	Tanks	1980	89956
G	150m W	Tanks	1994	93995
G	150m W	Tanks	1977	95514
G	152m W	Tanks	1994	86568
G	153m W	Unspecified Tank	1979 - 1980	98472
G	154m W	Tanks	1977	88586
G	156m W	Tanks	1994	88592
G	178m W	Tanks	1994	86569
G	180m W	Unspecified Tank	1960 - 1980	99937
F	188m W	Tanks	1977 - 1980	89996
F	188m W	Unspecified Tank	1994	80295
F	192m W	Tanks	1977 - 1980	99186
F	192m W	Unspecified Tank	1965	80296
F	192m W	Tanks	1960 - 1994	91300
F	202m W	Tanks	1980	103149

ID	Location	Land use	Dates present	Group ID
H	213m NW	Tanks	1960 - 1965	93633
F	218m SW	Tanks	1980	90577
F	220m SW	Tanks	1977	92597
H	225m NW	Unspecified Tank	1960	80293
F	242m SW	Tanks	1980	88758
H	246m NW	Tanks	1960 - 1965	89560
H	247m NW	Tanks	1980 - 1994	98695
H	249m NW	Tanks	1994	92131
H	249m NW	Unspecified Tank	1979	80292
J	257m NW	Tanks	1960 - 1980	88781
F	257m W	Tanks	1980 - 1994	91556
F	258m W	Tanks	1977	100647
F	260m W	Unspecified Tank	1960 - 1965	97351
F	261m W	Tanks	1977	92412
F	266m SW	Unspecified Tank	1980 - 1994	99961
F	268m SW	Tanks	1980 - 1994	90810
F	283m W	Tanks	1994	94929
F	283m W	Tanks	1980	103965
F	310m SW	Tanks	1977 - 1994	101142
F	331m W	Unspecified Tank	1980 - 1994	98265
F	340m W	Tanks	1980	101155
F	340m W	Tanks	1994	91209
N	345m NW	Tanks	1979 - 1980	100955
O	347m W	Unspecified Tank	1979 - 1980	95275
O	348m W	Tanks	1965	94446
O	349m W	Tanks	1960	99935
N	352m NW	Unspecified Tank	1960 - 1965	100206
O	355m W	Tanks	1979 - 1988	91743

ID	Location	Land use	Dates present	Group ID
O	355m W	Tanks	1960 - 1970	95408
F	355m W	Tanks	1960 - 1994	102711
F	356m SW	Tanks	1960 - 1965	98181
F	356m SW	Tanks	1977 - 1994	92291
L	363m NW	Unspecified Tank	1960	80290
L	363m NW	Tanks	1965	86571
E	368m W	Unspecified Tank	1965 - 1994	100691
E	368m W	Unspecified Tank	1960 - 1970	103049
L	369m NW	Unspecified Tank	1960	80291
O	382m NW	Unspecified Tank	1960 - 1979	94434
E	385m W	Unspecified Tank	1970 - 1994	101042
E	385m W	Unspecified Tank	1980	92009
E	387m W	Tanks	1965	91157
E	388m W	Unspecified Tank	1960 - 1970	103029
E	390m W	Tanks	1960	92812
O	399m W	Unspecified Tank	1960 - 1965	100721
O	402m NW	Unspecified Tank	1970 - 1988	98470
O	402m NW	Unspecified Tank	1994	89580
E	403m W	Unspecified Tank	1980	93861
E	403m W	Unspecified Tank	1960 - 1970	89220
E	403m W	Unspecified Tank	1965 - 1994	95240
L	404m NW	Unspecified Tank	1960 - 1965	103004
P	404m SW	Tanks	1960 - 1980	94012
P	404m SW	Tanks	1994	88832
P	404m SW	Tanks	1977 - 1980	98026
M	411m SW	Tanks	1977 - 1994	98310
Q	413m NW	Tanks	1960 - 1965	92304
P	415m SW	Tanks	1980	94570

ID	Location	Land use	Dates present	Group ID
P	415m SW	Tanks	1980	97142
P	415m SW	Tanks	1977 - 1994	103558
M	420m SW	Tanks	1977 - 1994	89512
Q	423m NW	Tanks	1979 - 1980	91088
P	424m SW	Unspecified Tank	1980	80297
P	425m SW	Tanks	1980 - 1994	101604
P	426m SW	Tanks	1977	103087
T	441m W	Unspecified Tank	1980	100036
T	442m W	Unspecified Tank	1970 - 1994	100893
T	445m W	Unspecified Tank	1970 - 1994	94746
U	447m NW	Unspecified Tank	1960 - 1988	91577
S	454m W	Unspecified Tank	1970 - 1979	96836
T	458m W	Unspecified Tank	1970 - 1994	93389
M	469m SW	Tanks	1980	101687
M	469m SW	Tanks	1994	89072
U	473m NW	Unspecified Tank	1979 - 1988	91597
U	483m NW	Unspecified Tank	1988	94390
U	483m NW	Unspecified Tank	1983	95988
U	483m NW	Unspecified Tank	1983	96108
U	483m NW	Unspecified Tank	1979	98515
U	483m NW	Unspecified Tank	1994	101933
U	483m NW	Tanks	1960 - 1965	88863
U	483m NW	Unspecified Tank	1970	98917
U	494m NW	Tanks	1970	86572

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m **3**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
5	196m S	Electricity Substation	1994	44439
I	252m S	Electricity Substation	1985 - 1993	58711
I	254m S	Electricity Substation	1993	47082

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m **0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m **0**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

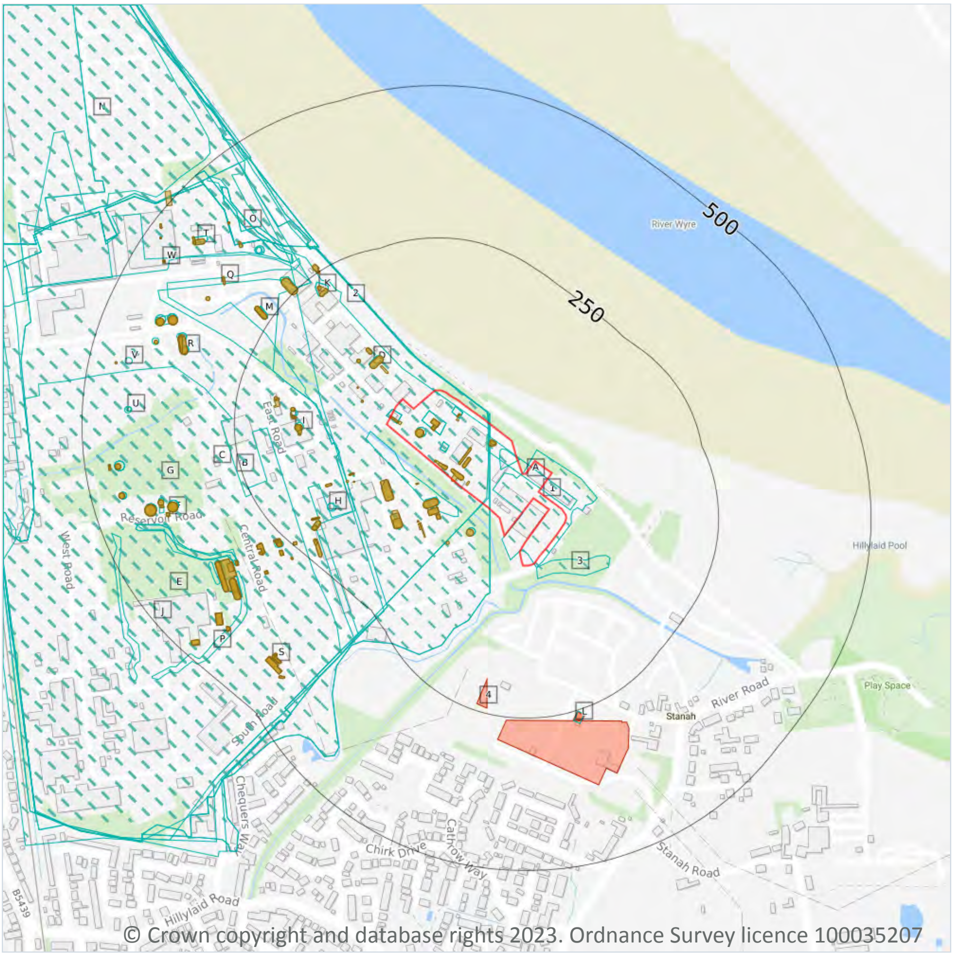
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline
Search buffers in metres (m)
Historical industrial land uses
Historical tanks
Historical energy features

2.1 Historical industrial land uses

Records within 500m	114

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on page 26 >

ID	Location	Land Use	Date	Group ID
1	On site	Unspecified Works	1985	678573
2	On site	Railway Sidings	1973	714213
A	On site	Railway Sidings	1951	641435

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Pit**	**1968**	**688600**
A	**On site**	**Unspecified Tanks**	**1992**	**714651**
A	**On site**	**Unspecified Tanks**	**1992**	**726363**
A	**On site**	**Unspecified Tanks**	**1992**	**788022**
A	**On site**	**Unspecified Tanks**	**1992**	**727213**
A	**On site**	**Unspecified Tanks**	**1992**	**787313**
A	**On site**	**Unspecified Tanks**	**1981**	**727213**
A	**On site**	**Unspecified Tanks**	**1981**	**714651**
A	**On site**	**Unspecified Tanks**	**1981**	**726363**
A	**On site**	**Unspecified Tanks**	**1981**	**787313**
A	**On site**	**Unspecified Tanks**	**1981**	**788022**
B	**On site**	**Unspecified Works**	**1992**	**746126**
B	**On site**	**Unspecified Works**	**1981**	**729518**
C	**On site**	**Unspecified Works**	**1967**	**716375**
C	**On site**	**Unspecified Works**	**1973**	**729518**
3	7m SE	Unspecified Heap	1985	649452
A	26m W	Refuse Heap	1967	676879
A	39m SW	Unspecified Tanks	1992	751240
A	39m SW	Unspecified Tanks	1981	751240
A	41m S	Unspecified Tank	1992	694819
A	41m S	Unspecified Tank	1981	694819
D	71m NW	Unspecified Tanks	1967	763973
D	71m NW	Unspecified Tanks	1973	763973
A	72m W	Unspecified Tanks	1992	749014
A	72m W	Unspecified Tanks	1981	749014
E	89m W	Railway Sidings	1973	697482
F	90m W	Chemical Works	1951	682676
G	90m W	Railway Sidings	1951	698470

ID	Location	Land Use	Date	Group ID
G	91m W	Railway Sidings	1967	698470
A	104m SW	Unspecified Tanks	1992	742475
A	104m SW	Unspecified Tanks	1981	742475
I	137m W	Unspecified Tank	1992	702019
I	137m W	Unspecified Tank	1981	702019
I	147m W	Unspecified Tank	1973	771286
I	149m W	Unspecified Tank	1967	771286
H	155m W	Unspecified Tank	1973	707907
H	157m W	Unspecified Tank	1967	707907
J	189m W	Railway Sidings	1981	697482
K	214m NW	Unspecified Tanks	1967	713245
K	214m NW	Unspecified Tanks	1973	713245
K	250m NW	Unspecified Tanks	1967	752240
K	250m NW	Unspecified Tanks	1973	752240
L	252m S	Electricity Substation	1985	686415
M	256m NW	Unspecified Tanks	1992	789517
M	256m NW	Unspecified Tanks	1981	789517
M	256m NW	Unspecified Tanks	1967	789517
M	256m NW	Unspecified Tanks	1973	789517
H	258m W	Unspecified Tank	1973	770548
H	259m W	Unspecified Tank	1967	770548
H	260m W	Unspecified Tank	1992	742152
N	286m NW	Ammonia Soda Works	1938	757831
N	286m NW	Railway Sidings	1938	738290
N	286m NW	Ammonia Soda Works	1930	757831
N	286m NW	Railway Sidings	1930	775128
O	288m NW	Unspecified Ground Workings	1992	777538
O	288m NW	Unspecified Ground Workings	1981	777538

ID	Location	Land Use	Date	Group ID
O	288m NW	Unspecified Ground Workings	1973	734208
O	317m NW	Unspecified Heap	1938	748322
O	317m NW	Unspecified Heap	1930	748322
E	325m W	Unspecified Ground Workings	1967	696442
E	330m W	Unspecified Ground Workings	1992	755081
E	330m W	Unspecified Ground Workings	1981	755081
O	331m NW	Unspecified Tank	1973	767586
O	333m NW	Unspecified Tank	1981	728267
O	334m NW	Unspecified Tank	1992	728267
O	336m NW	Unspecified Tank	1967	767586
P	342m SW	Unspecified Ground Workings	1967	646142
R	347m W	Unspecified Tank	1992	788469
R	347m W	Unspecified Tank	1981	788469
R	347m W	Unspecified Tank	1967	788469
R	347m W	Unspecified Tank	1973	788469
H	350m SW	Unspecified Tanks	1992	738506
H	350m SW	Unspecified Tanks	1981	738506
H	354m W	Unspecified Tanks	1967	738506
H	354m W	Unspecified Tanks	1973	738506
R	358m NW	Unspecified Tank	1967	713686
R	358m NW	Unspecified Tank	1973	713686
R	364m NW	Unspecified Tank	1951	775226
H	366m W	Unspecified Tanks	1951	666073
F	366m W	Unspecified Tank	1992	712875
F	366m W	Unspecified Tank	1981	712875
F	366m W	Unspecified Tank	1967	712875
F	366m W	Unspecified Tank	1973	712875
R	382m NW	Unspecified Tanks	1973	666069

ID	Location	Land Use	Date	Group ID
R	385m NW	Unspecified Tank	1992	730697
R	385m NW	Unspecified Tank	1981	730697
R	385m NW	Unspecified Tank	1967	764137
F	386m W	Unspecified Tank	1967	787334
F	386m W	Unspecified Tank	1973	787334
F	390m W	Unspecified Tanks	1992	666070
R	397m W	Unspecified Tank	1967	673314
R	401m NW	Unspecified Tank	1992	744362
R	401m NW	Unspecified Tank	1981	744362
F	402m W	Unspecified Tank	1992	703668
F	402m W	Unspecified Tank	1981	703668
F	402m W	Unspecified Tank	1967	703668
F	402m W	Unspecified Tank	1973	703668
T	412m NW	Unspecified Tanks	1967	716149
T	412m NW	Unspecified Tanks	1973	716149
U	419m W	Unspecified Tank	1973	695680
U	420m W	Unspecified Tank	1992	714437
U	420m W	Unspecified Tank	1967	695680
V	430m W	Chimney	1967	684453
G	435m W	Unspecified Tank	1992	736039
G	435m W	Unspecified Tank	1981	736039
G	435m W	Unspecified Tank	1973	736039
G	442m W	Unspecified Tank	1992	789844
G	442m W	Unspecified Tank	1981	789844
G	442m W	Unspecified Tank	1973	789844
N	468m NW	Ammonia Soda Works	1951	694922
J	474m W	Unspecified Ground Workings	1967	646140

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	266

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on page 26 >

ID	Location	Land Use	Date	Group ID
A	On site	Tanks	1994	86564
A	On site	Tanks	1985	95270
A	On site	Tanks	1981	97055
A	On site	Tanks	1980	99749
A	On site	Unspecified Tank	1980	103198
A	On site	Tanks	1980	93895
A	On site	Tanks	1980	89643
A	On site	Tanks	1980	103158
A	On site	Tanks	1980	99134
A	On site	Tanks	1980	92721
A	On site	Tanks	1980	96668
A	On site	Tanks	1980	93895
A	On site	Tanks	1980	89643
A	On site	Tanks	1980	92721
A	On site	Tanks	1980	99134
A	On site	Tanks	1980	88930
A	On site	Tanks	1980	96668
A	On site	Tanks	1980	103158
A	On site	Unspecified Tank	1980	103198
A	On site	Unspecified Tank	1980	80289
A	On site	Tanks	1993	101492
A	On site	Unspecified Tank	1994	80288
A	On site	Tanks	1994	100650

ID	Location	Land Use	Date	Group ID
A	**On site**	**Tanks**	**1994**	**99134**
A	**On site**	**Tanks**	**1994**	**86563**
A	**On site**	**Tanks**	**1994**	**86565**
A	**On site**	**Tanks**	**1994**	**89508**
A	**On site**	**Tanks**	**1994**	**86567**
A	**On site**	**Unspecified Tank**	**1994**	**103198**
A	**On site**	**Tanks**	**1994**	**92041**
A	**On site**	**Tanks**	**1994**	**95834**
A	**On site**	**Tanks**	**1994**	**100649**
A	41m W	Tanks	1980	102351
A	41m W	Tanks	1980	102351
A	41m SW	Tanks	1980	92354
A	41m SW	Tanks	1980	92354
A	42m SW	Tanks	1977	92354
A	45m S	Unspecified Tank	1980	90572
A	45m S	Unspecified Tank	1980	90572
D	49m NW	Tanks	1994	86566
A	50m SW	Tanks	1980	94479
A	50m SW	Tanks	1980	94479
A	51m SW	Tanks	1977	94479
D	51m NW	Unspecified Tank	1979	94507
D	51m NW	Unspecified Tank	1980	94507
A	57m SW	Tanks	1980	90051
A	57m SW	Tanks	1980	90051
A	57m SW	Tanks	1977	90051
D	68m NW	Tanks	1965	90731
D	68m NW	Tanks	1960	90731
D	69m NW	Unspecified Tank	1979	100067

ID	Location	Land Use	Date	Group ID
D	69m NW	Unspecified Tank	1980	100067
A	69m W	Tanks	1980	96585
A	69m W	Tanks	1980	96585
A	70m W	Tanks	1977	98882
A	83m S	Tanks	1977	86562
A	87m SW	Tanks	1994	86544
A	87m SW	Tanks	1980	96990
A	87m SW	Tanks	1980	96990
A	89m SW	Tanks	1977	95055
A	90m SW	Tanks	1977	86543
D	90m NW	Tanks	1965	93872
D	91m NW	Tanks	1960	93872
D	93m NW	Unspecified Tank	1965	102763
D	93m NW	Unspecified Tank	1960	102763
H	95m W	Tanks	1980	95228
H	95m W	Tanks	1980	95228
H	97m W	Tanks	1977	95228
H	97m W	Tanks	1994	90739
A	97m SW	Tanks	1980	89983
A	100m SW	Tanks	1977	96705
A	104m SW	Tanks	1980	96959
H	106m W	Unspecified Tank	1980	98563
H	106m W	Unspecified Tank	1980	98563
H	111m W	Unspecified Tank	1994	80294
H	133m W	Tanks	1965	103233
H	133m W	Tanks	1960	103233
I	139m W	Tanks	1980	100167
I	139m W	Tanks	1980	100167

ID	Location	Land Use	Date	Group ID
I	140m W	Tanks	1994	92825
I	140m W	Tanks	1977	92825
I	143m W	Tanks	1977	99625
I	143m W	Tanks	1994	99625
I	148m W	Tanks	1980	89956
I	148m W	Tanks	1980	89956
I	150m W	Tanks	1994	93995
I	150m W	Tanks	1977	95514
I	152m W	Tanks	1994	86568
I	153m W	Unspecified Tank	1979	98472
I	153m W	Unspecified Tank	1980	98472
I	154m W	Tanks	1977	88586
I	156m W	Tanks	1994	88592
I	178m W	Tanks	1994	86569
I	180m W	Unspecified Tank	1980	99937
I	185m W	Unspecified Tank	1965	99937
I	185m W	Unspecified Tank	1960	99937
H	188m W	Tanks	1980	89996
H	188m W	Tanks	1980	89996
H	188m W	Unspecified Tank	1994	80295
H	189m W	Tanks	1977	89996
H	192m W	Tanks	1980	99186
H	192m W	Unspecified Tank	1965	80296
H	192m W	Tanks	1994	91300
H	192m W	Tanks	1960	91300
H	193m W	Tanks	1977	99186
H	202m W	Tanks	1980	103149
K	213m NW	Tanks	1965	93633

ID	Location	Land Use	Date	Group ID
K	214m NW	Tanks	1960	93633
H	218m SW	Tanks	1980	90577
H	218m SW	Tanks	1980	90577
H	220m SW	Tanks	1977	92597
K	225m NW	Unspecified Tank	1960	80293
H	242m SW	Tanks	1980	88758
H	242m SW	Tanks	1980	88758
K	246m NW	Tanks	1965	89560
K	246m NW	Tanks	1960	89560
K	247m NW	Tanks	1980	98695
K	249m NW	Tanks	1994	92131
K	249m NW	Unspecified Tank	1979	80292
K	252m NW	Tanks	1994	98695
M	257m NW	Tanks	1960	88781
H	257m W	Tanks	1994	91556
H	257m W	Tanks	1980	91556
H	257m W	Tanks	1980	91556
M	257m NW	Tanks	1965	88781
M	257m NW	Tanks	1979	88781
M	257m NW	Tanks	1980	88781
H	258m W	Tanks	1977	100647
H	260m W	Unspecified Tank	1965	97351
H	261m W	Unspecified Tank	1960	97351
H	261m W	Tanks	1977	92412
H	266m SW	Unspecified Tank	1980	99961
H	266m SW	Unspecified Tank	1980	99961
H	267m SW	Unspecified Tank	1994	99961
H	268m SW	Tanks	1980	90810

ID	Location	Land Use	Date	Group ID
H	268m SW	Tanks	1980	90810
H	269m SW	Tanks	1994	90810
H	283m W	Tanks	1994	94929
H	283m W	Tanks	1980	103965
H	283m W	Tanks	1980	103965
H	310m SW	Tanks	1980	101142
H	310m SW	Tanks	1980	101142
H	310m SW	Tanks	1994	101142
H	311m SW	Tanks	1977	101142
H	331m W	Unspecified Tank	1980	98265
H	331m W	Unspecified Tank	1980	98265
H	332m W	Unspecified Tank	1994	98265
H	340m W	Tanks	1980	101155
H	340m W	Tanks	1980	101155
H	340m W	Tanks	1994	91209
Q	345m NW	Tanks	1979	100955
Q	345m NW	Tanks	1980	100955
R	347m W	Unspecified Tank	1979	95275
R	347m W	Unspecified Tank	1980	95275
R	348m W	Tanks	1965	94446
R	349m W	Tanks	1960	99935
Q	352m NW	Unspecified Tank	1960	100206
Q	352m NW	Unspecified Tank	1965	100206
R	355m W	Tanks	1979	91743
R	355m W	Tanks	1983	91743
R	355m W	Tanks	1983	91743
R	355m W	Tanks	1988	91743
R	355m W	Tanks	1960	95408

ID	Location	Land Use	Date	Group ID
R	355m W	Tanks	1970	95408
H	355m W	Tanks	1965	102711
H	356m W	Tanks	1994	102711
H	356m SW	Tanks	1965	98181
H	356m W	Tanks	1960	102711
H	356m W	Tanks	1977	102711
H	356m SW	Tanks	1994	92291
H	356m SW	Tanks	1960	98181
H	356m SW	Tanks	1977	92291
O	363m NW	Unspecified Tank	1960	80290
O	363m NW	Tanks	1965	86571
F	368m W	Unspecified Tank	1994	100691
F	368m W	Unspecified Tank	1960	103049
F	368m W	Unspecified Tank	1970	103049
F	368m W	Unspecified Tank	1965	100691
F	369m W	Unspecified Tank	1980	100691
O	369m NW	Unspecified Tank	1960	80291
R	382m NW	Unspecified Tank	1979	94434
R	383m NW	Unspecified Tank	1960	94434
R	383m NW	Unspecified Tank	1970	94434
R	383m NW	Unspecified Tank	1965	94434
F	385m W	Unspecified Tank	1994	101042
F	385m W	Unspecified Tank	1970	101042
F	385m W	Unspecified Tank	1980	92009
F	387m W	Tanks	1965	91157
F	388m W	Unspecified Tank	1960	103029
F	388m W	Unspecified Tank	1970	103029
F	390m W	Tanks	1960	92812

ID	Location	Land Use	Date	Group ID
R	399m W	Unspecified Tank	1960	100721
R	399m W	Unspecified Tank	1965	100721
R	402m NW	Unspecified Tank	1979	98470
R	402m NW	Unspecified Tank	1983	98470
R	402m NW	Unspecified Tank	1983	98470
R	402m NW	Unspecified Tank	1988	98470
R	402m NW	Unspecified Tank	1994	89580
R	402m NW	Unspecified Tank	1970	98470
F	403m W	Unspecified Tank	1980	93861
F	403m W	Unspecified Tank	1960	89220
F	403m W	Unspecified Tank	1970	89220
F	403m W	Unspecified Tank	1994	95240
F	403m W	Unspecified Tank	1965	95240
O	404m NW	Unspecified Tank	1960	103004
S	404m SW	Tanks	1980	94012
S	404m SW	Tanks	1994	88832
S	404m SW	Tanks	1980	98026
O	405m NW	Unspecified Tank	1965	103004
S	405m SW	Tanks	1977	98026
S	409m SW	Tanks	1965	94012
S	410m SW	Tanks	1960	94012
P	411m SW	Tanks	1980	98310
P	411m SW	Tanks	1980	98310
P	411m SW	Tanks	1994	98310
P	412m SW	Tanks	1977	98310
T	413m NW	Tanks	1960	92304
T	413m NW	Tanks	1965	92304
S	415m SW	Tanks	1980	94570

ID	Location	Land Use	Date	Group ID
S	415m SW	Tanks	1980	97142
S	415m SW	Tanks	1994	103558
S	416m SW	Tanks	1977	103558
P	420m SW	Tanks	1980	89512
P	420m SW	Tanks	1980	89512
P	421m SW	Tanks	1994	89512
P	421m SW	Tanks	1977	89512
T	423m NW	Tanks	1979	91088
T	423m NW	Tanks	1980	91088
S	424m SW	Unspecified Tank	1980	80297
S	425m SW	Tanks	1980	101604
S	426m SW	Tanks	1994	101604
S	426m SW	Tanks	1977	103087
G	441m W	Unspecified Tank	1980	100036
G	442m W	Unspecified Tank	1970	100893
G	442m W	Unspecified Tank	1994	100893
G	445m W	Unspecified Tank	1980	94746
G	446m W	Unspecified Tank	1994	94746
G	446m W	Unspecified Tank	1970	94746
W	447m NW	Unspecified Tank	1960	91577
W	447m NW	Unspecified Tank	1970	91577
W	447m NW	Unspecified Tank	1979	91577
W	447m NW	Unspecified Tank	1983	91577
W	447m NW	Unspecified Tank	1983	91577
W	447m NW	Unspecified Tank	1988	91577
W	448m NW	Unspecified Tank	1965	91577
V	454m W	Unspecified Tank	1979	96836
V	454m W	Unspecified Tank	1970	96836

ID	Location	Land Use	Date	Group ID
G	458m W	Unspecified Tank	1980	93389
G	459m W	Unspecified Tank	1970	93389
G	459m W	Unspecified Tank	1994	93389
P	469m SW	Tanks	1980	101687
P	469m SW	Tanks	1980	101687
P	469m SW	Tanks	1994	89072
W	473m NW	Unspecified Tank	1979	91597
W	473m NW	Unspecified Tank	1983	91597
W	473m NW	Unspecified Tank	1983	91597
W	473m NW	Unspecified Tank	1988	91597
W	483m NW	Unspecified Tank	1979	98515
W	483m NW	Unspecified Tank	1983	96108
W	483m NW	Unspecified Tank	1983	95988
W	483m NW	Unspecified Tank	1988	94390
W	483m NW	Unspecified Tank	1994	101933
W	483m NW	Tanks	1960	88863
W	483m NW	Unspecified Tank	1970	98917
W	484m NW	Tanks	1965	88863
W	494m NW	Tanks	1970	86572

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**4**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on page 26 >

ID	Location	Land Use	Date	Group ID
4	196m S	Electricity Substation	1994	44439

ID	Location	Land Use	Date	Group ID
L	252m S	Electricity Substation	1993	58711
L	253m S	Electricity Substation	1985	58711
L	254m S	Electricity Substation	1993	47082

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

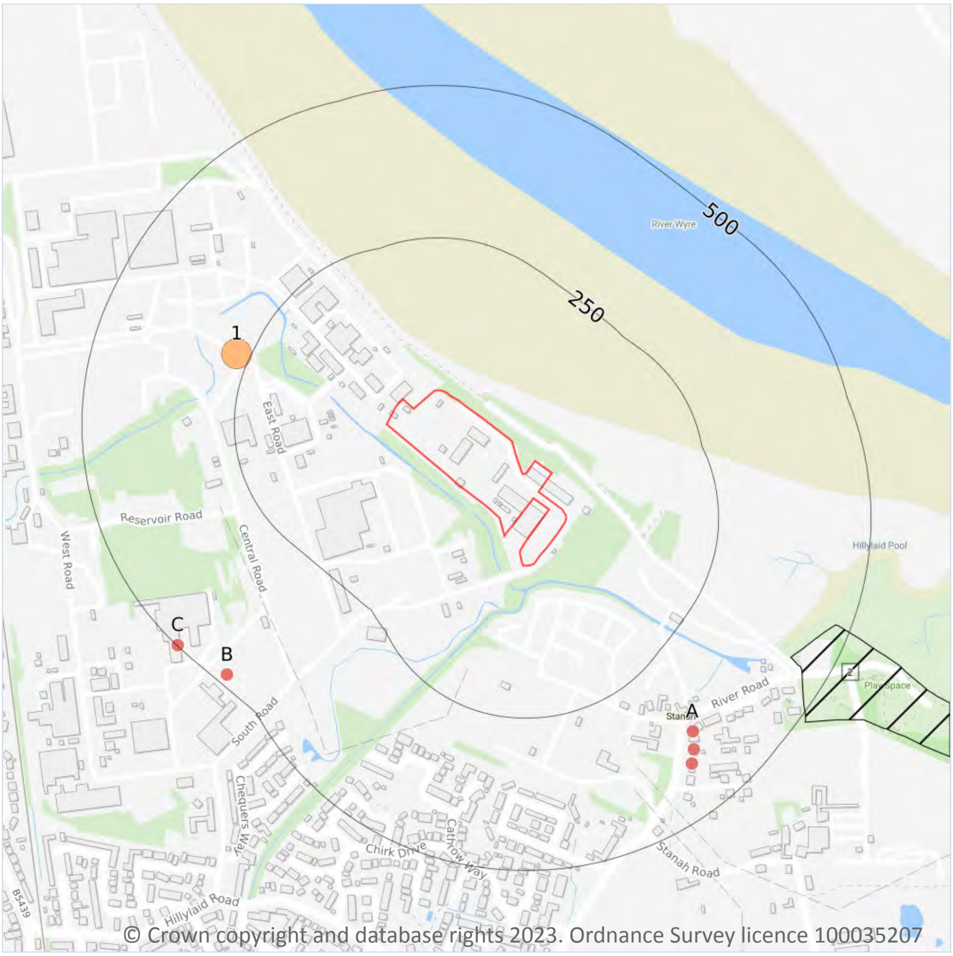
2.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline
Search buffers in metres (m)
Historical landfill (EA/NRW)
Historical waste sites
Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	**0**

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	**1**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on page 42 >

ID	Location	Details		
2	431m SE	Site Address: Stanah House Farm, River Road, Thornton, Lancashire Licence Holder Address: -	Waste Licence: - Site Reference: K1/02/019 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: Wyre Borough Council First Recorded 31/12/1960 Last Recorded: 31/12/1970

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	**1**

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on page 42 >

ID	Location	Address	Further Details	Date
1	247m NW	Site Address: Hillhouse International Works, East Road, Thornton Cleveleys, Lancashire, FY5, N.WEST	Type of Site: Advanced Thermal Treatment Facility Planning application reference: SCR/2023/0004 Description: Scheme comprises screening opinion request for a proposed small-scale advanced thermal treatment facility. Data source: Historic Planning Application Data Type: Point	01/03/2023

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	**0**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	**12**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

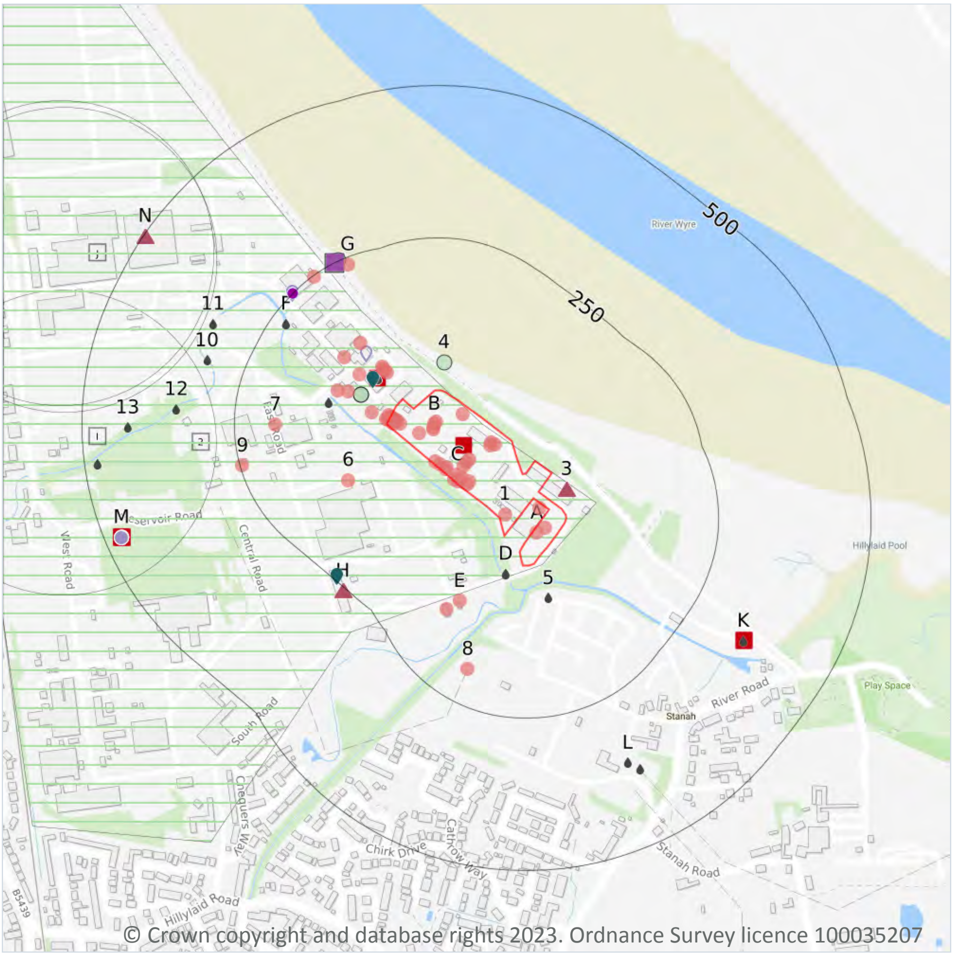
Features are displayed on the Waste and landfill map on page 42 >

ID	Location	Site	Reference	Category	Sub-Category	Description
A	378m SE	STANNAH PUMPING STATION, RIVER ROAD, OFF STANNAH ROAD, THORNTON CLEVELEYS, FY5 5LR	WEX156853	Storing waste exemption	Not on a Farm	Storage of waste in a secure place
A	378m SE	STANNAH PUMPING STATION, RIVER ROAD, OFF STANNAH ROAD, THORNTON CLEVELEYS, FY5 5LR	WEX156853	Storing waste exemption	Not on a Farm	Storage of waste in secure containers
A	402m SE	16, RIVER ROAD, THORNTON-CLEVELEYS, FY5 5LR	WEX099791	Using waste exemption	Not on a farm	Use of depolluted end-of-life vehicles for vehicle parts
A	402m SE	16, RIVER ROAD, THORNTON-CLEVELEYS, FY5 5LR	WEX242409	Using waste exemption	Not on a farm	Use of depolluted end-of-life vehicles for vehicle parts
A	418m SE	STANNAH PUMPING STATION, RIVER ROAD, OFF STANNAH ROAD, THORNTON CLEVELEYS, FY5 5LR	WEX294951	Storing waste exemption	Not on a Farm	Storage of waste in secure containers
A	418m SE	STANNAH PUMPING STATION, RIVER ROAD, OFF STANNAH ROAD, THORNTON CLEVELEYS, FY5 5LR	WEX294951	Storing waste exemption	Not on a Farm	Storage of waste in a secure place

ID	Location	Site	Reference	Category	Sub-Category	Description
B	484m SW	Hillhouse Industrial Site Fleetwood Road North THORNTON-CLEVELEYS Lancashire FY5 4QD	EPR/KF0309NU/A001	Treating waste exemption	Non-Agricultural Waste Only	Dewatering using flocculants
B	484m SW	Hillhouse Industrial Site Fleetwood Road North THORNTON-CLEVELEYS Lancashire FY5 4QD	EPR/KF0309NU/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
B	484m SW	Hillhouse Industrial Site Fleetwood Road North THORNTON-CLEVELEYS Lancashire FY5 4QD	EPR/KF0309NU/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste to manufacture finished goods
C	499m SW	HILLHOUSE BUSINESS PARK FLEETWOOD ROAD NORTH LANCASHIRE FY5 4QD	EPR/EH0110RH/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in secure containers
C	499m SW	HILLHOUSE BUSINESS PARK FLEETWOOD ROAD NORTH LANCASHIRE FY5 4QD	EPR/EH0110RH/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
C	499m SW	HILLHOUSE BUSINESS PARK FLEETWOOD ROAD NORTH LANCASHIRE FY5 4QD	EPR/EH0110RH/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline
Search buffers in metres (m)

- Recent industrial land uses
- Control of Major Accident Hazards
- Hazardous substance storage/usage
- Historical licensed industrial activities
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Radioactive Substance Authorisations
- Licensed Discharges to controlled waters
- Pollutant release to surface waters
- List 1 Dangerous Substances
- List 2 Dangerous Substances
- Pollution Incidents (EA/NRW)
- Pollution inventory substances
- Pollution inventory waste transfers

4.1 Recent industrial land uses

Records within 250m	60

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Company	Address	Activity	Category
1	On site	Works	Lancashire, FY5	Unspecified Works Or Factories	Industrial Features
A	On site	Chimney	Lancashire, FY5	Chimneys	Industrial Features
A	On site	Business Park	Lancashire, FY5	Business Parks and Industrial Estates	Industrial Features

ID	Location	Company	Address	Activity	Category
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	On site	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features

ID	Location	Company	Address	Activity	Category
B	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
B	2m NW	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features

ID	Location	Company	Address	Activity	Category
B	3m NW	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	6m NW	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
A	8m SE	Electricity Sub Stations	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
B	32m NW	Electricity Sub Stations	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
B	50m NW	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	55m NW	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	59m NW	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	64m NW	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	80m NW	Electricity Sub Stations	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
B	82m NW	Chimney	Lancashire, FY5	Chimneys	Industrial Features
B	97m NW	Electricity Sub Stations	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
6	111m W	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
B	116m NW	Works	Lancashire, FY5	Unspecified Works Or Factories	Industrial Features
B	118m NW	Electricity Sub Stations	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
E	119m S	Mast	Lancashire, FY5	Telecommunications Features	Infrastructure and Facilities
E	144m S	Electricity Sub Station	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
7	183m W	Electricity Sub Stations	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
8	192m S	Pylon	Lancashire, FY5	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
G	239m NW	Outfall	Lancashire, FY5	Waste Storage, Processing and Disposal	Infrastructure and Facilities
9	246m W	Electricity Sub Stations	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
G	247m NW	Electricity Sub Station	Lancashire, FY5	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	**0**

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	**0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	**4**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Company	Address	Operational status	Tier
2	**On site**	**Victrex Manufacturing Limited**	**Victrex Manufacturing Limited, Thornton Cleveleys, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD**	**Current COMAH Site**	**COMAH Lower Tier Operator**
I	280m W	Victrex Manufacturing Limited	Victrex Manufacturing Limited, Thornton Cleveleys, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD	Current COMAH Site	COMAH Lower Tier Operator
J	343m NW	AGC Chemicals Europe Limited	AGC Chemicals Europe Limited, Hillhouse, PO Box 4, York House, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD	Current COMAH Site	COMAH Lower Tier Operator
J	353m NW	Victrex Manufacturing Limited	Victrex Manufacturing Limited, Thornton Cleveleys, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD	Current COMAH Site	COMAH Lower Tier Operator

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	**5**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Details	
3	30m E	Application reference number: No Details Application status: Approved Application date: No Details Address: Vinnolit Hillhouse Limited, Vinnolit Hillhouse, Bourne Road, Thornton Cleveleys, Blackpool, Wyre Borough Council, England, FY5 4QD	Details: No Details Enforcement: No Details Date of enforcement: No Details Comment: No Details
H	255m SW	Application reference number: DHSC 2 5792/45882 Application status: Historical Consent Application date: 19/10/1992 Address: Vinnolit pka European Vinyls Corporation (UK) Ltd, PVC 9 Hillhouse International, Thornton Cleveleys, Lancs, FY5 4QD	Details: Vinyl Chloride (250 tonnes) Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
H	255m SW	Application reference number: 04/01410/HAZ Application status: Historical Consent Application date: 22/11/2004 Address: Zeneca Resins, PVC 9 Plant, Hillhouse International Site, Fleetwood Road, North Thornton-Cleveleys, FY5 4QD	Details: Vinyl Chloride Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
N	497m NW	Application reference number: 13/00555/HAZ Application status: Historical Consent Application date: 26/07/2013 Address: Victrex Manufacturing Ltd, Hillhouse International, Fleetwood Road North, Thornton Cleveleys, Lancashire, FY5 4QD	Details: Hazardous Substances Consent application for removal of condition imposed on previous application 11/00338/HAZ associated with the manufacture of polyaryletherketone polymers Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
N	497m NW	Application reference number: 11/00338/HAZ Application status: Approved Application date: 09/05/2011 Address: Victrex Manufacturing Limited, Hillhouse Technology Centre, Thornton Cleveleys, Blackpool, Wyre Borough Council, England, FY5 4QD	Details: Application for Hazardous Substances Consent associated with the manufacture of Polyaryletherketone polymers Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	**4**

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Details	
M	473m W	Operator: Astrazeneca UK Ltd Address: Zeneca Resins Ltd, Hillhouse International, Thornton-cleveleys, Lancashire, FY5 4ZR Process: Manufacture And Use Of Organic Chemicals Permit Number: AK4125	Original Permit Number: IPCAIRAPP Date Approved: 31-3-1995 Effective Date: 1-5-1995 Status: Superseded By Variation
M	473m W	Operator: Imperial Chemical Industries Plc Address: PO Box 4, York House, Hillhouse International, Thornton-cleveleys, Blackpool, FY5 4QD Process: Gasification And Associated Processes Permit Number: AM4720	Original Permit Number: IPCAIRAPP Date Approved: 12-4-1995 Effective Date: 1-5-1995 Status: Superseded By Variation
M	473m W	Operator: Imperial Chemical Industries Plc Address: PO Box 4, York House, Hillhouse International, Thornton-cleveleys, Blackpool, FY5 4QD Process: Gasification And Associated Processes Permit Number: AU3626	Original Permit Number: IPCMINVAR Date Approved: 21-12-1995 Effective Date: 29-12-1995 Status: Revoked
M	473m W	Operator: Astrazeneca UK Ltd Address: Zeneca Resins Ltd, Hillhouse International, Thornton-cleveleys, Lancashire, FY5 4ZR Process: Manufacture And Use Of Organic Chemicals Permit Number: BC6560	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	10

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Details	
C	**On site**	**Operator: INEOS VINYLS UK LIMITED** **Installation Name: PVC9 Plant** **Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS** **Permit Number: BU5534IQ** **Original Permit Number: BU5534IQ**	**EPR Reference: EPR/BU5534IQ** **Issue Date: 22/01/2007** **Effective Date: 22/01/2007** **Last date noted as effective: 08/11/2023** **Status: Superseded**

ID	Location	Details	
C	**On site**	**Operator: VINNOLIT HILLHOUSE LIMITED** **Installation Name: Vinnolit Hillhouse Ltd - EPR/TP3833GG** **Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS** **Permit Number: TP3833GG** **Original Permit Number: TP3833GG**	**EPR Reference: EPR/TP3833GG** **Issue Date: 04/11/2021** **Effective Date: 04/11/2021** **Last date noted as effective: 08/11/2023** **Status: Surrendered**
C	**On site**	**Operator: Vinnolit Hillhouse Ltd** **Installation Name: Vinnolit Hillhouse Ltd - EPR/TP3833GG** **Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS** **Permit Number: EP3109MW** **Original Permit Number: TP3833GG**	**EPR Reference: -** **Issue Date: -** **Effective Date: 04/11/2021** **Last date noted as effective: 21/03/2023** **Status: Surrender Effective**
B	95m NW	Operator: Victrex Manufacturing Limited Installation Name: Victrex Polymer Production Hillhouse EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EA/EPR/BU5640IA/V002 Issue Date: 03/11/2006 Effective Date: 03/11/2006 Last date noted as effective: 21/03/2023 Status: Superceded
B	95m NW	Operator: Victrex Manufacturing Limited Installation Name: Victrex Polymer Production Hillhouse EPR/BU5640IA Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EA/EPR/BU5640IA/V002 Issue Date: 03/11/2006 Effective Date: 03/11/2006 Last date noted as effective: 21/03/2023 Status: Superceded
B	95m NW	Operator: Victrex Manufacturing Limited Installation Name: Victrex Polymer Production Hillhouse EPR/BU5640IA Process: RECOVERY OF WASTE; BY DISTILLATION OF OIL/ORGANIC SOLVENT Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EA/EPR/BU5640IA/V002 Issue Date: 03/11/2006 Effective Date: 03/11/2006 Last date noted as effective: 21/03/2023 Status: Superceded
G	251m NW	Operator: VICTREX MANUFACTURING LIMITED Installation Name: Hillhouse International- Victrex Manufacturing Limited EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EPR/BU5640IA Issue Date: 21/11/2016 Effective Date: 21/11/2016 Last date noted as effective: 08/11/2023 Status: Effective

ID	Location	Details	
G	251m NW	Operator: VICTREX MANUFACTURING LIMITED Installation Name: Hillhouse International- Victrex Manufacturing Limited EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EPR/BU5640IA Issue Date: 21/11/2016 Effective Date: 21/11/2016 Last date noted as effective: 08/11/2023 Status: Effective
G	251m NW	Operator: Victrex Manufacturing Limited Installation Name: Hillhouse International- Victrex Manufacturing Limited EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: QP3338DB Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 21/11/2016 Effective Date: 21/11/2016 Last date noted as effective: 21/03/2023 Status: Effective
G	251m NW	Operator: Victrex Manufacturing Limited Installation Name: Hillhouse International- Victrex Manufacturing Limited EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: QP3338DB Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 21/11/2016 Effective Date: 21/11/2016 Last date noted as effective: 21/03/2023 Status: Effective

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	3

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Address	Details	
B	59m NW	BOC Ltd, Hillhouse International Limited, Thornton Cleveleys, FY5 4QD	Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
B	59m NW	Victrex Manufacturing Ltd, Hillhouse International, Po Box 4, Thornton-Cleveleys, Lancashire, FY5 4QD	Process: Chemical & Acid Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

ID	Location	Address	Details	
H	244m SW	Ineos Vinyls, Hillhouse Internationa, Po Box 4. Thornton-Cleveleys, Lancashire, FY5 4QD	Process: Chemical & Acid Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**2**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Address	Details	
M	473m W	Ici Chemicals And Polymers Ltd, Hillhouse Site, Thornton-cleveleys, Lancashire, FY5 4QD	Operator: Ici Chemicals And Polymers Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AC9076 Date of approval: 31/03/1991	Effective from: 31/03/1991 Last date of update: 01/01/2015 Status: Revoked/cancelled
M	473m W	Ici Chemicals And Polymers Ltd, Hillhouse Site, Thornton-cleveleys, Lancashire, FY5 4QD	Operator: Ici Chemicals And Polymers Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AC9084 Date of approval: 31/03/1991	Effective from: 31/03/1991 Last date of update: 01/01/2015 Status: Revoked/cancelled

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	**47**

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Address	Details	
D	31m S	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 017290086 Permit Version: 2 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/09/1993 Revocation Date: 03/06/1996
D	31m S	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 017290086 Permit Version: 3 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 04/06/1996 Revocation Date: 23/07/1996
D	31m S	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 017290086 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 18/08/1979 Revocation Date: 06/09/1993
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 017290033 Permit Version: 10 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/06/1996 Revocation Date: 02/09/1996
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 10 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/06/1996 Revocation Date: 02/09/1996
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 6 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 08/02/1994
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 017290033 Permit Version: 9 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/03/1996 Revocation Date: 06/06/1996
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996

ID	Location	Address	Details	
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 11 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 03/09/1996 Revocation Date: 20/01/1999
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996
B	53m NW	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 017290033 Permit Version: 12 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 21/01/1999 Effective Date: 21/01/1999 Revocation Date: 17/03/2004
B	53m NW	ROYLES BROOK OUTFALL NO 47, HILLHOUSE INTERNATIONAL, THORTON CLEVELEYS, FLEETWOOD, LANCASHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 017290385 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: SURRENDERED UNDER EPR 2010 Issue date: 21/01/1999 Effective Date: 21/01/1999 Revocation Date: 31/08/2017
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 9 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/03/1996 Revocation Date: 06/06/1996
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 017290033 Permit Version: 6 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 08/02/1994

ID	Location	Address	Details	
B	53m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 017290033 Permit Version: 11 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 03/09/1996 Revocation Date: 20/01/1999
5	61m SE	INGOL GOLF CENTRE SWO, TENTERTON HALL, INGOL, PRESTON, LANCASHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 017190205 Permit Version: 1 Receiving Water: TRIB SAVICK BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 13/08/1986 Revocation Date: 01/11/1994
B	101m W	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
F	225m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996
F	225m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 2 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1982 Revocation Date: 08/09/1983
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 1 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1980 Revocation Date: 31/12/1981

ID	Location	Address	Details	
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 5 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1993 Revocation Date: 07/06/1993
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 3 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/09/1983 Revocation Date: 17/01/1988
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 017290034 Permit Version: 1 Receiving Water: RIVER WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 18/08/1979 Revocation Date: 07/06/1993
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 6 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 08/02/1994
G	249m NW	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Permit Number: 017290033 Permit Version: 12 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 21/01/1999 Effective Date: 21/01/1999 Revocation Date: 17/03/2004
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 017290034 Permit Version: 2 Receiving Water: RIVER WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 03/08/1993
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995

ID	Location	Address	Details	
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 4 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 18/01/1988 Revocation Date: 08/02/1993
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 9 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/03/1996 Revocation Date: 06/06/1996
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 10 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/06/1996 Revocation Date: 02/09/1996
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 11 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 03/09/1996 Revocation Date: 20/01/1999
G	249m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996
G	249m NW	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Permit Number: 017290033 Permit Version: 13 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 18/03/2004 Effective Date: 18/03/2004 Revocation Date: 30/07/2008
G	249m NW	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 017290033 Permit Version: 12 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 21/01/1999 Effective Date: 21/01/1999 Revocation Date: 17/03/2004

ID	Location	Address	Details	
G	249m NW	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE (CONTAM SURFACE WATER, NOT WASTE SIT Permit Number: 017290033 Permit Version: 14 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/07/2008 Effective Date: 31/07/2008 Revocation Date: -
10	313m W	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
11	329m NW	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
12	346m W	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
K	351m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290100 Permit Version: 1 Receiving Water: HILLYLAID POOL-OLD COURSE	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
L	360m SE	PRESTON DOCK ESTATE, PRESTON, LANCASHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 017190217 Permit Version: 1 Receiving Water: RIVER RIBBLE	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/12/1986 Revocation Date: 01/07/1991
L	378m SE	PRESTON DOCK ESTATE, PRESTON, LANCASHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 017190217 Permit Version: 1 Receiving Water: RIVER RIBBLE	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/12/1986 Revocation Date: 01/07/1991

ID	Location	Address	Details	
13	425m W	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
I	478m W	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
I	479m W	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**4**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Address	Details	
G	249m NW	THORNTON FACILITIES MANAGEMENT LTD, ICI HILLHOUSE, THORNTON, BLACKPOOL, LANCASHIRE	Permit Number: 017290033 Permit Version: 12 Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Sewage disposal works - other	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Catchment: - Approval Date: 21/01/1999
G	249m NW	THORNTON FACILITIES MANAGEMENT LTD, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Permit Number: 017290033 Permit Version: 13 Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Basic Ind. Chemicals Inorganic	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Catchment: - Approval Date: 18/03/2004

ID	Location	Address	Details	
G	249m NW	THORNTON FACILITIES MANAGEMENT LTD, ICI HILLHOUSE, THORNTON, BLACKPOOL, LANCASHIRE	Permit Number: 017290033 Permit Version: 12 Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Sewage disposal works - other	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Catchment: - Approval Date: 21/01/1999
G	249m NW	THORNTON FACILITIES MANAGEMENT LTD, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Permit Number: 017290033 Permit Version: 13 Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Basic Ind. Chemicals Organic	Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Catchment: - Approval Date: 18/03/2004

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	15

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Name	Status	Receiving Water	Authorised Substances
C	**On site**	**Ineos Vinyls Uk Limited, Pvc9 Plant, Fy5 4qd**	**Active**	**Wyre Estuary**	**Mercury (other)**
B	53m NW	Ici Hillhouse No 47	Active	Wyre Estuary	Mercury (other)
G	250m NW	Ici Hillhouse Main Outfall	Active	-	-
G	250m NW	Ici Hillhouse Main Outfall	Active	-	-
G	250m NW	Ici Hillhouse Main Outfall	Not Active	Wyre Estuary	Mercury (other)
K	351m SE	Ici Mdi Lagoon	Active	-	-

ID	Location	Name	Status	Receiving Water	Authorised Substances
K	351m SE	Ici Mdi Lagoon	Active	-	-
K	351m SE	Ici Mdi Lagoon	Active	Wyre Estuary	Carbon tetrachloride, Chloroform
M	473m W	Asahi Glass Fluoropolymers Uk, Hillhouse International	Not Active	Trd_notcons	Mercury (other)
M	473m W	European Vinyls Corporation (uk) Ltd - Treatment Plant	Not Active	Wyre Estuary, River Wyre	Carbon tetrachloride, Chloroform, 1,2-dichloroethane
M	473m W	European Vinyls Corporation (uk) Ltd - Treatment Plant	Not Active	Wyre Estuary, River Wyre	Carbon tetrachloride, Chloroform, 1,2-dichloroethane
M	473m W	Ici Chemical & Polymers	Not Active	Wyre Estuary, River Wyre	Mercury (other)
M	473m W	Asahi Glass Fluoropolymers Uk, Hillhouse International	Not Active	Trd_notcons	-
M	473m W	European Vinyls Corporation (uk) Ltd	Not Active	Wyre Estuary, River Wyre	1,2-dichloroethane
M	473m W	Ici Chemical & Polymers	Not Active	Wyre Estuary, River Wyre	-

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	**2**

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Name	Status	Receiving Water	Authorised Substances
G	250m NW	I.c.i. Chemicals & Polymers Ltd, Hillhouse Sewage/trade	Active	Wyre Estuary	Copper
G	250m NW	Ici Chemicals & Polymers, Hillhouse Main Outfall	Active	Wyre Estuary	Copper

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	**4**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on page 46 >

ID	Location	Details	
4	46m N	Incident Date: 01/01/2005 Incident Identification: 285281 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	59m NW	Incident Date: 28/08/2018 Incident Identification: 1647147 Pollutant: Inorganic Chemicals/Products Pollutant Description: Alkalis	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
B	59m NW	Incident Date: 28/08/2018 Incident Identification: 1647147 Pollutant: Inorganic Chemicals/Products Pollutant Description: Acids	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
G	252m NW	Incident Date: 14/09/2003 Incident Identification: 189693 Pollutant: Contaminated Water Pollutant Description: Chemically Contaminated Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	**5**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on page 46 >

ID:	G, Location: 251m NW, Permit: BU5640IA
Operator:	Victrex Manufacturing Limited
Activity:	ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address:	Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector	Chemicals, Sub-sector: Chemicals
Releases:	

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Wastewater	Fluorides - as F	2000kg	226769kg

ID: G, Location: 251m NW, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector: Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Controlled Waters	Fluorides - as F	2000kg	156685kg

ID: G, Location: 251m NW, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector: Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Particulate matter - PM2.5	1000kg	Below Reporting Threshold
Air	Particulate matter - total	10000kg	Below Reporting Threshold
Controlled Waters	Mercury	0.1kg	Below Reporting Threshold
Air	Sulphur oxides (SO2 and SO3) as SO2	100000kg	Below Reporting Threshold
Controlled Waters	Cadmium	1kg	Below Reporting Threshold
Wastewater	Total organic carbon (TOC)	50000kg	Below Reporting Threshold
Air	Carbon monoxide	100000kg	Below Reporting Threshold
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	Below Reporting Threshold
Air	Fluorine and inorganic fluorine compounds - as HF	1000kg	Below Reporting Threshold
Air	Non-methane volatile organic compounds (NMVOCs)	10000kg	Below Reporting Threshold
Air	Particulate matter - PM10	1000kg	Below Reporting Threshold
Controlled Waters	Phosphorus - as total P	5000kg	Below Reporting Threshold

ID: G, Location: 251m NW, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon dioxide	10000000kg	22808000kg

ID: G, Location: 251m NW, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Controlled Waters	Total organic carbon (TOC)	50000kg	50451kg

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	1

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on page 46 >

ID: G, Location: 251m NW, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D10	Incineration on Land	57.5	absolute value	07 02 13	waste plastic	No
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	118	absolute value	07 02 13	waste plastic	No
R3	Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes)	64.7	absolute value	15 01 01	paper and cardboard packaging	No
R3	Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes)	10.3	absolute value	15 01 03	wooden packaging	No
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	15.9	absolute value	15 01 06	mixed packaging	No
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	8.4	absolute value	16 03 04	inorganic wastes other than those mentioned in 16 03 03	No
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	1241.2	absolute value	16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01	No
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	10.2	absolute value	17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	No

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R3	Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes)	116.6	absolute value	20 01 38	wood other than that mentioned in 20 01 37	No
R4	Recycling/reclamation of metals and metal compounds	49.5	absolute value	20 01 40	metals	No
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	37.9	absolute value	20 03 01	mixed municipal waste	No
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	620	absolute value	20 03 04	septic tank sludge	No
D10	Incineration on Land	5.74	absolute value	07 02 04	other organic solvents, washing liquids and mother liquors	Yes
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	11	absolute value	07 02 04	other organic solvents, washing liquids and mother liquors	Yes
D10	Incineration on Land	136.4	absolute value	07 02 08	other still bottoms and reaction residues	Yes
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	93.4	absolute value	07 02 08	other still bottoms and reaction residues	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	4.5	absolute value	07 04 04	other organic solvents, washing liquids and mother liquors	Yes

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R9	Oil e-refining or other reuses of oil	7.6	absolute value	13 03 07	mineral-based non-chlorinated insulating and heat transmission oils	Yes
D10	Incineration on Land	12.4	absolute value	13 03 08	synthetic insulating and heat transmission oils	Yes
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	4	absolute value	13 03 08	synthetic insulating and heat transmission oils	Yes
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	14.3	absolute value	13 03 08	synthetic insulating and heat transmission oils	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	187.8	absolute value	13 03 08	synthetic insulating and heat transmission oils	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	177.7	absolute value	13 05 03	interceptor sludges	Yes
D10	Incineration on Land	32.1	absolute value	15 01 10	packaging containing residues of or contaminated by dangerous substances	Yes
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	4.3	absolute value	15 01 10	packaging containing residues of or contaminated by dangerous substances	Yes
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	8.9	absolute value	15 01 10	packaging containing residues of or contaminated by dangerous substances	Yes

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D10	Incineration on Land	4.9	absolute value	15 02 02	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	Yes
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	0.3	absolute value	15 02 02	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	Yes
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	0.2	absolute value	16 02 13	discarded equipment containing hazardous components (2) other than those mentioned in 16 02 09 to 16 02 12	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.2	absolute value	16 05 06	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	Yes
D10	Incineration on Land	15.2	absolute value	16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances	Yes
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	3.2	absolute value	16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.5	absolute value	16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances	Yes
D10	Incineration on Land	51.7	absolute value	16 05 08	discarded organic chemicals consisting of or containing dangerous substances	Yes

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	14.8	absolute value	16 05 08	discarded organic chemicals consisting of or containing dangerous substances	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	8.3	absolute value	16 05 08	discarded organic chemicals consisting of or containing dangerous substances	Yes

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

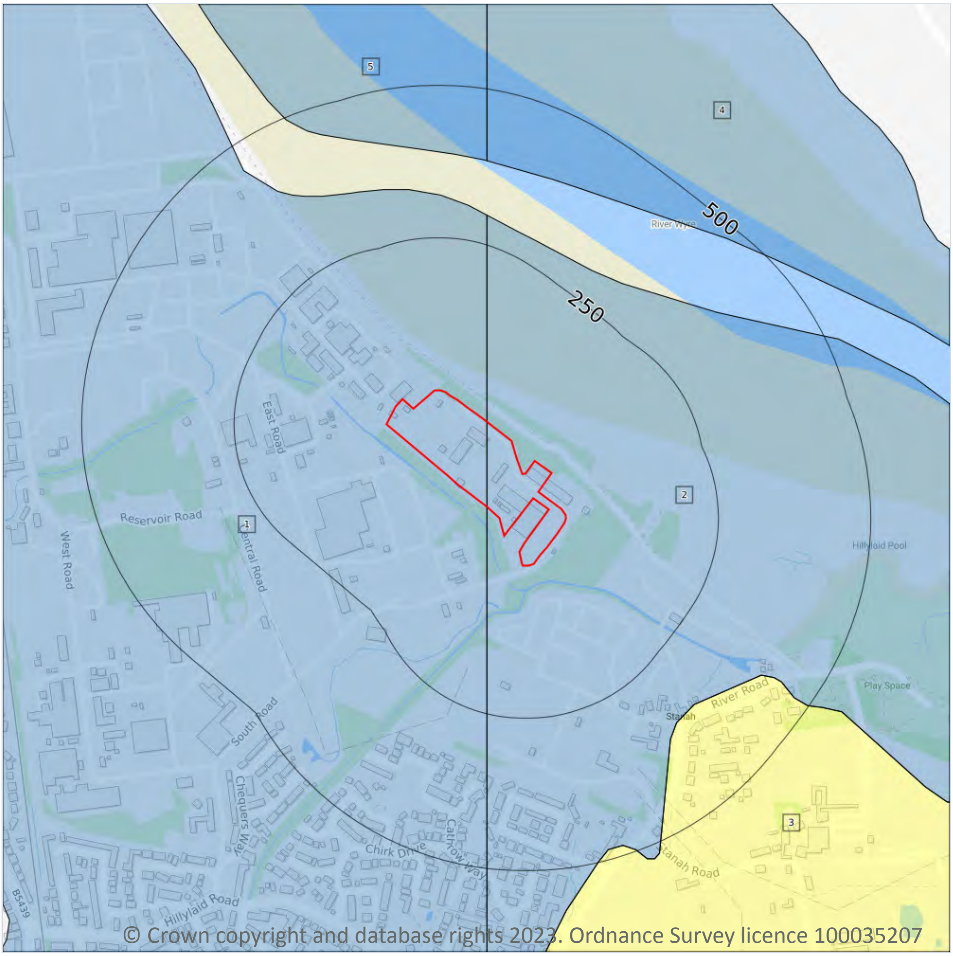
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	5

Aquifer status of groundwater held within superficial geology.

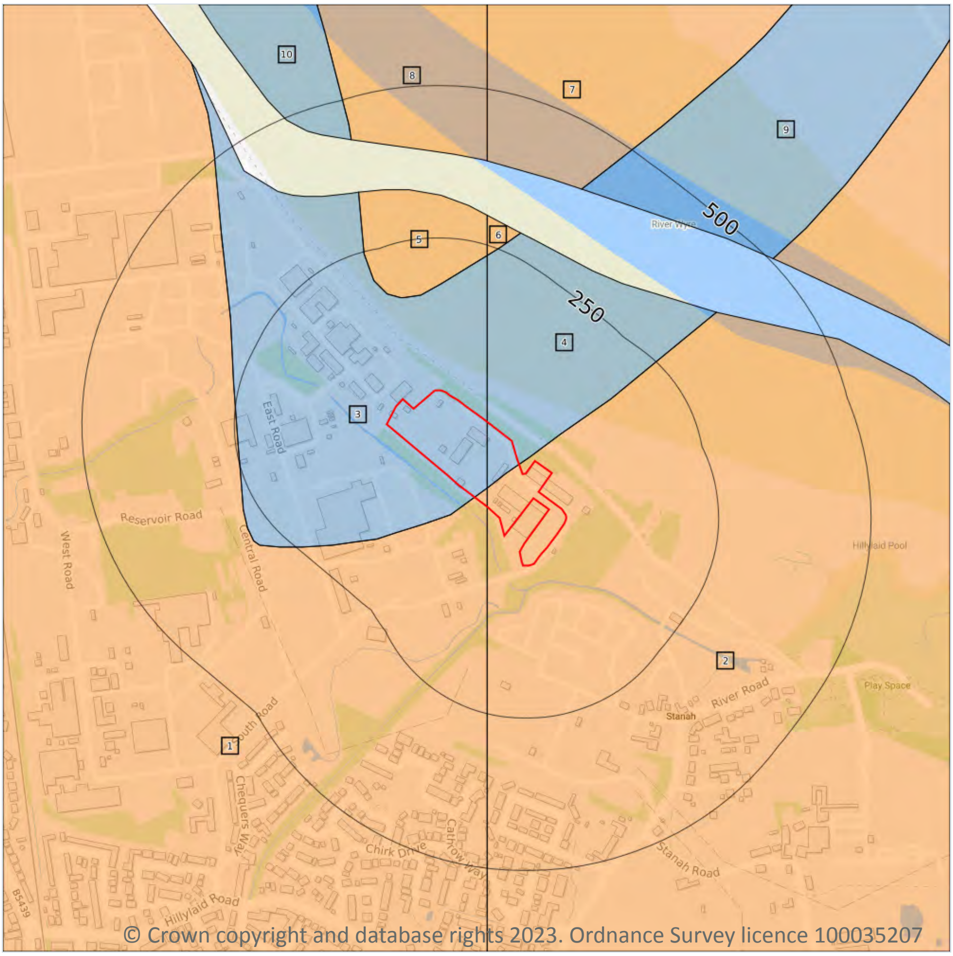
Features are displayed on the Hydrogeology map on page 74 >

ID	Location	Designation	Description
1	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

ID	Location	Designation	Description
3	349m SE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	383m N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	384m N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline
Search buffers in metres (m)

Principal
Secondary A
Secondary B
Secondary Undifferentiated
Unproductive

5.2 Bedrock aquifer

Records within 500m	10

Aquifer status of groundwater held within bedrock geology.

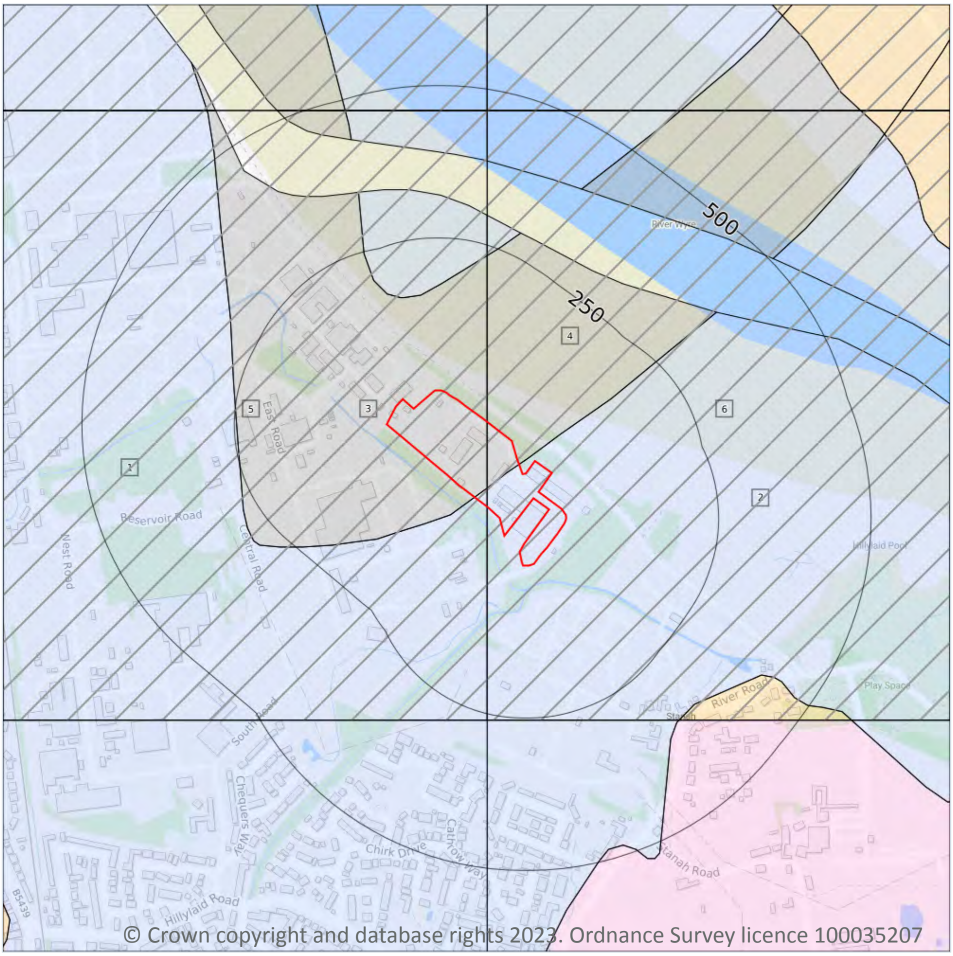
Features are displayed on the Bedrock aquifer map on page 76 >

ID	Location	Designation	Description
1	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
2	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

ID	Location	Designation	Description
3	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
4	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
5	158m N	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
6	234m N	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
7	383m N	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
8	384m N	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
9	401m N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
10	434m N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	4

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on page 78 >

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures**
2	**On site**	**Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: No Data**	**Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures**
3	**On site**	**Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures**
4	**On site**	**Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: No Data**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**2**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
5	**Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.**	**28.999999999999996%**

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
6	**Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.**	**23.0%**

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	**0**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones

5.6 Groundwater abstractions

Records within 2000m	0

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	0

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

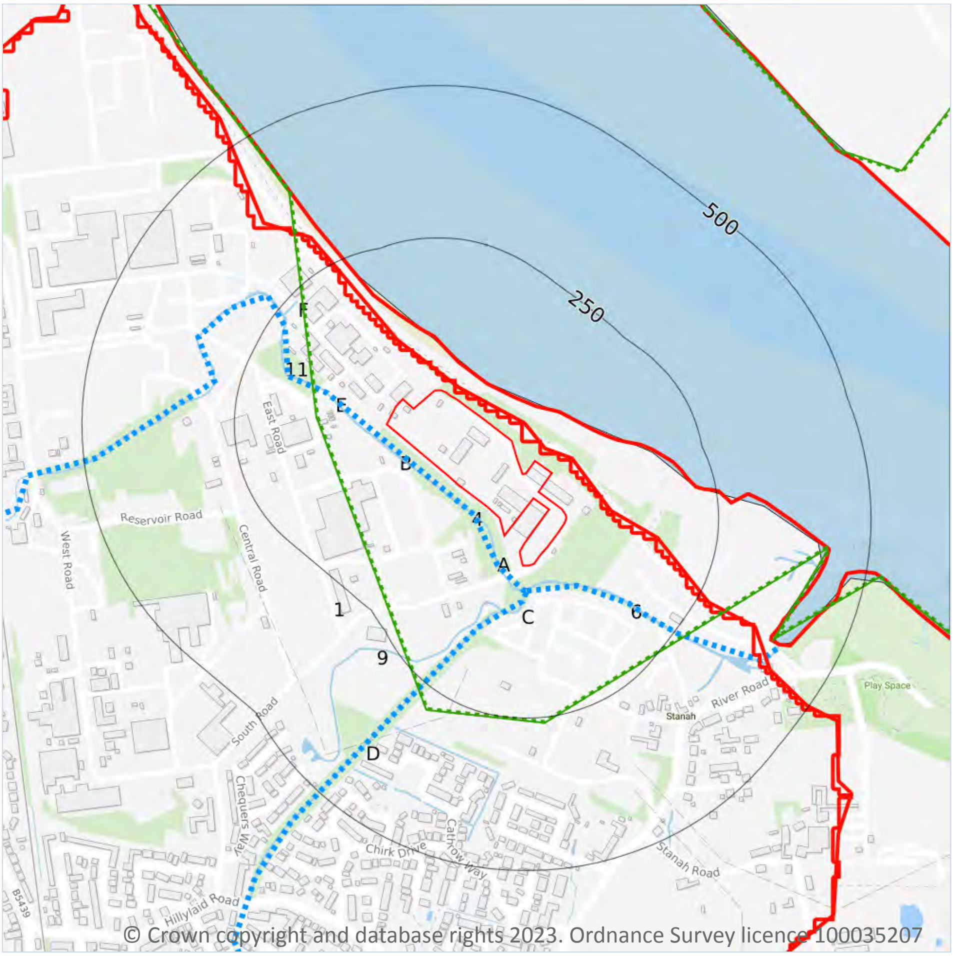
5.10 Source Protection Zones (confined aquifer)

Records within 500m	**0**

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



Site Outline
Search buffers in metres (m)
Water Network (OS MasterMap)
Surface water features (wider than 5m)
Surface water features (narrower than 5m)
WFD River, canal and surface water transfer water bodies
WFD Lake water bodies
WFD Transitional and coastal water bodies
WFD Surface water body catchments boundaries
WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	17

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on page 83 >

ID	Location	Type of water feature	Ground level	Permanence	Name
A	21m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
B	23m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
4	23m S	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
6	33m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hillylaid Pool
C	41m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hillylaid Pool
9	80m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hillylaid Pool
C	80m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Hillylaid Pool
C	82m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hillylaid Pool
D	83m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hillylaid Pool
E	96m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	98m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	103m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
11	128m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	236m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
F	236m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
F	236m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	237m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	7

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 83 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 83 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Hillylaid Pool - Main Dyke**	**GB112072066160**	**Fleetwood Peninsula Trib**	**Wyre**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified **2**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 83 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
3	21m SW	River	Hillylaid Pool - Main Dyke	GB112072066160 ↗	Moderate	Fail	Moderate	2019
7	51m N	Transi	WYRE	GB531207212200 ↗	Poor	Fail	Poor	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

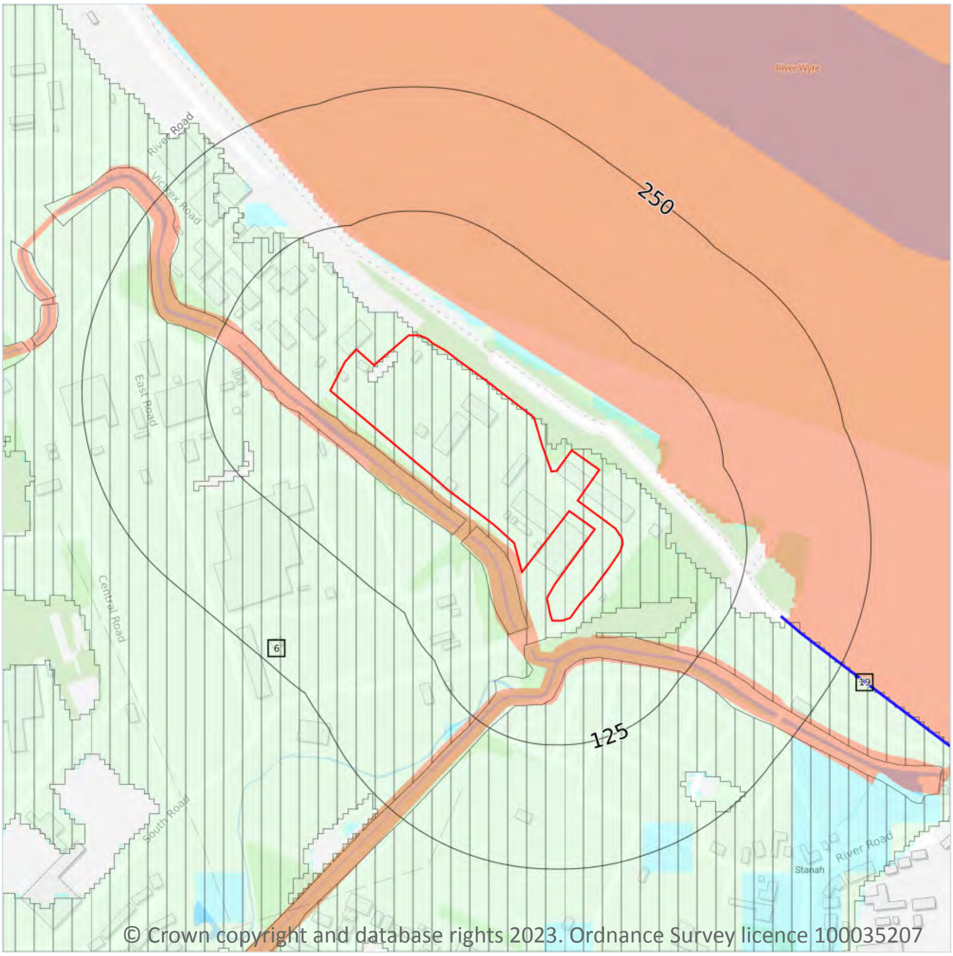
6.5 WFD Groundwater bodies

Records on site **0**

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding



Site Outline
Search buffers in metres (m)

River and coastal flooding:

High
Medium
Low
Very Low

Historical Flood Events
Areas Used for Flood Storage
Areas Benefiting from Flood Defences

Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m	24

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on page 87 >

Distance	Flood risk category
On site	**High**
0 - 50m	High

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	**1**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

Features are displayed on the River and coastal flooding map on page 87 >

ID	Location	Update
19	174m SE	08/11/2022

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	**1**

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on page 87 >

ID	Location	
6	**On site**	**Area benefiting from flood defences**

This data is sourced from the Environment Agency and Natural Resources Wales.

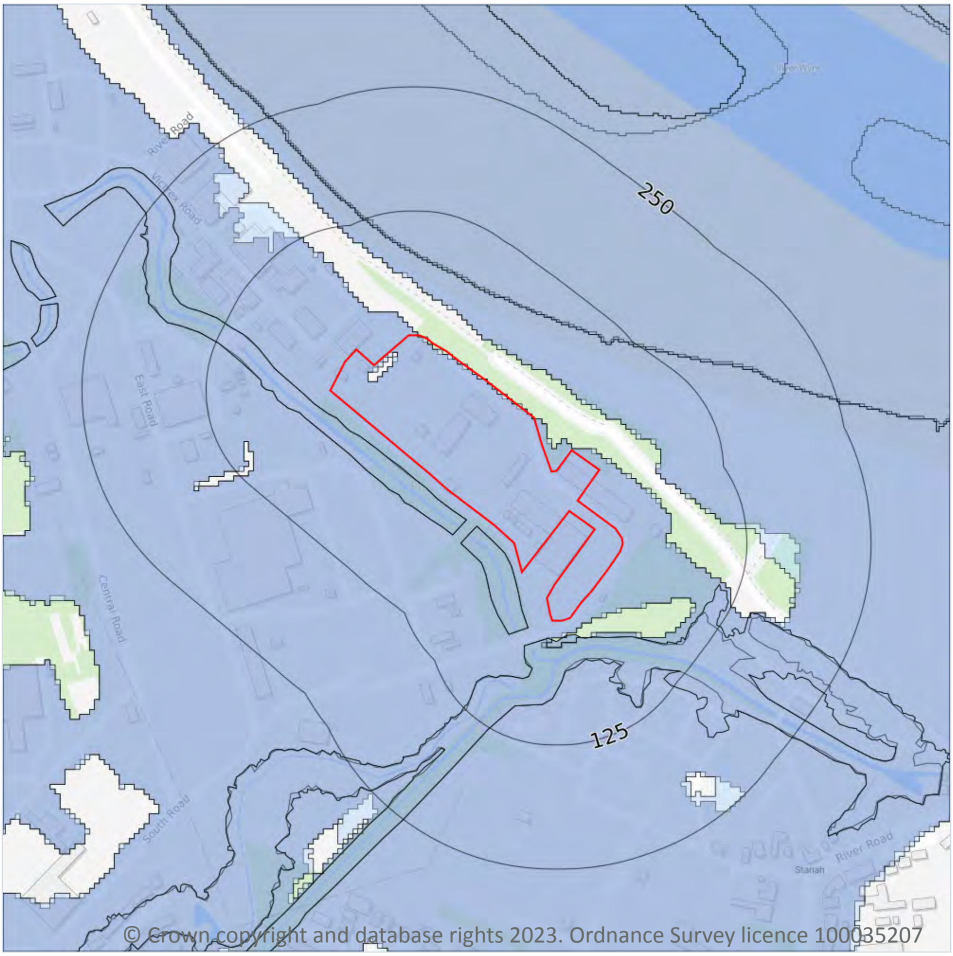
7.5 Flood Storage Areas

Records within 250m	**0**

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

Features are displayed on the River and coastal flooding map on page 87 >

Location	Type
On site	**Zone 2 - (Fluvial /Tidal Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	**1**

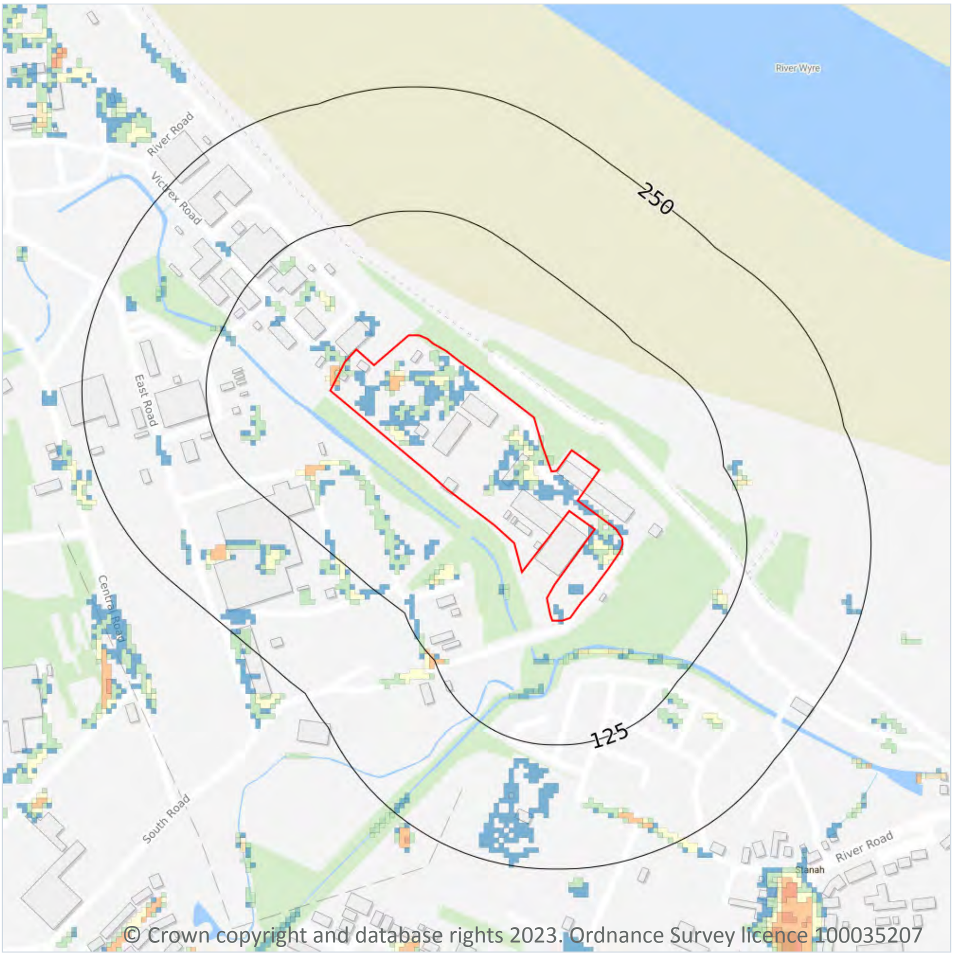
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on page 87 >

Location	Type
On site	**Zone 3 - (Fluvial Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on page 92 >

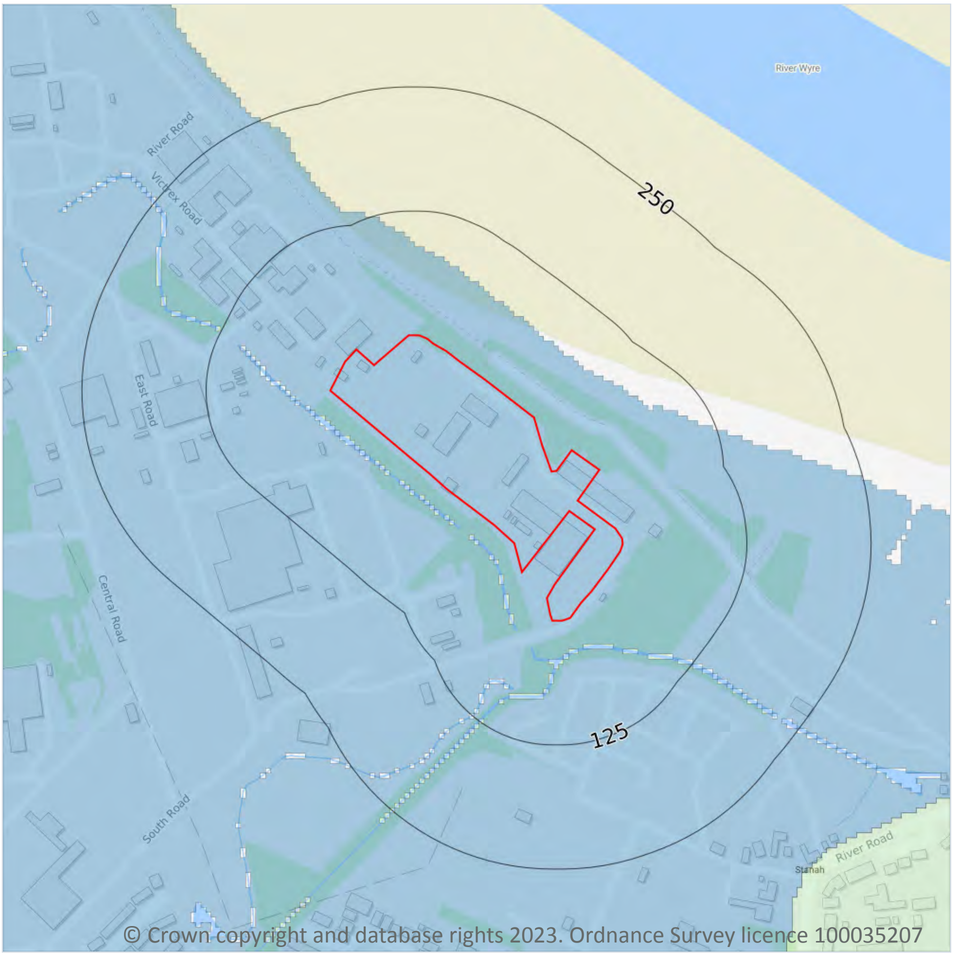
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

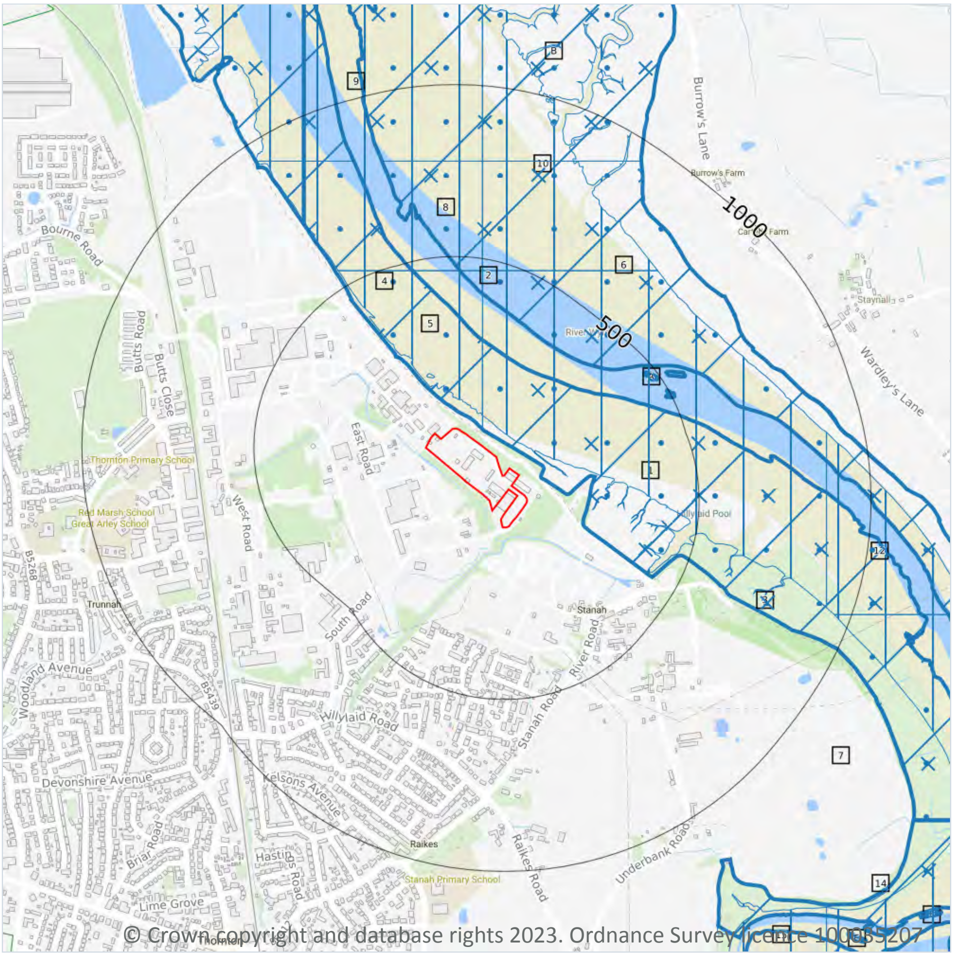
Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on page 94 >

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline
Search buffers in metres (m)
Sites of Special Scientific Interest (SSSI)
Conserved wetland sites (Ramsar sites)
Special Protection Areas (SPA)
Marine Conservation Zones
Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	16

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on page 95 >

ID	Location	Name	Data source
1	39m N	Wyre Estuary	Natural England

ID	Location	Name	Data source
B	353m NE	Wyre Estuary	Natural England
A	467m NE	Wyre Estuary	Natural England
A	484m E	Wyre Estuary	Natural England
A	522m NE	Wyre Estuary	Natural England
C	718m NW	Wyre Estuary	Natural England
14	1152m SE	Wyre Estuary	Natural England
17	1382m SE	Wyre Estuary	Natural England
E	1541m SE	Wyre Estuary	Natural England
F	1648m SE	Wyre Estuary	Natural England
-	1674m SE	Wyre Estuary	Natural England
-	1723m SE	Wyre Estuary	Natural England
-	1729m SE	Wyre Estuary	Natural England
-	1743m N	Wyre Estuary	Natural England
-	1841m SE	Wyre Estuary	Natural England
-	1853m SE	Wyre Estuary	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	12

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

Features are displayed on the Environmental designations map on page 95 >

ID	Location	Site	Details
2	38m N	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
6	352m NE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
A	467m NE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.

ID	Location	Site	Details
A	484m E	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
A	521m NE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
E	1540m SE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.

ID	Location	Site	Details
F	1647m SE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
-	1673m SE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
-	1723m SE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.

ID	Location	Site	Details
-	1728m SE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
-	1840m SE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
-	1852m SE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	**18**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

Features are displayed on the Environmental designations map on page 95 >

ID	Location	Name	Species of interest	Habitat description	Data source
3	39m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
4	40m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

ID	Location	Name	Species of interest	Habitat description	Data source
7	353m NE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
8	399m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
A	467m NE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
A	484m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

ID	Location	Name	Species of interest	Habitat description	Data source
A	522m NE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
11	778m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
B	781m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
C	826m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

ID	Location	Name	Species of interest	Habitat description	Data source
E	1542m SE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
F	1650m SE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
-	1673m SE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
-	1722m SE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

ID	Location	Name	Species of interest	Habitat description	Data source
-	1728m SE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
-	1840m SE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
-	1852m SE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
-	1967m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	25

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

Features are displayed on the Environmental designations map on page 95 >

ID	Location	Name	Status
5	69m N	Wyre-Lune	Designated
A	69m NE	Wyre-Lune	Designated
9	459m N	Wyre-Lune	Designated
10	465m N	Wyre-Lune	Designated
12	870m E	Wyre-Lune	Designated
13	953m E	Wyre-Lune	Designated
15	1252m SE	Wyre-Lune	Designated
-	1305m N	Wyre-Lune	Designated
-	1409m SE	Wyre-Lune	Designated
-	1424m N	Wyre-Lune	Designated
-	1460m N	Wyre-Lune	Designated
-	1510m N	Wyre-Lune	Designated
-	1515m N	Wyre-Lune	Designated
-	1559m SE	Wyre-Lune	Designated
-	1567m N	Wyre-Lune	Designated
-	1666m N	Wyre-Lune	Designated
-	1673m NW	Wyre-Lune	Designated
-	1704m NW	Wyre-Lune	Designated

ID	Location	Name	Status
-	1744m NW	Wyre-Lune	Designated
-	1782m NW	Wyre-Lune	Designated
-	1846m N	Wyre-Lune	Designated
-	1848m NW	Wyre-Lune	Designated
-	1874m NW	Wyre-Lune	Designated
-	1919m NW	Wyre-Lune	Designated
-	1981m N	Wyre-Lune	Designated

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	**2**

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on page 95 >

ID	Location	Name	Local Authority name
23	1658m NW	Blackpool	Wyre
25	1700m S	Blackpool	Wyre

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	**0**

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	**0**

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	**0**

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	**0**

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

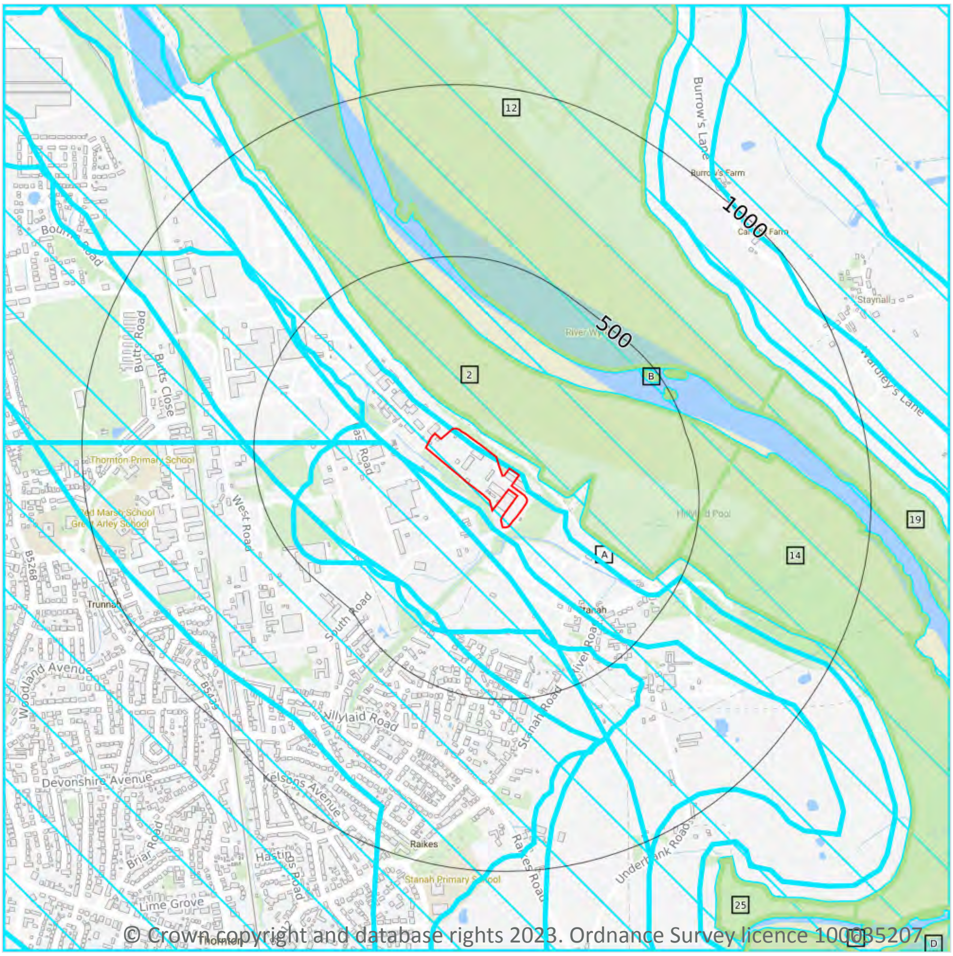
10.16 Nitrate Vulnerable Zones

Records within 2000m	**0**

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline
Search buffers in metres (m)
SSSI Impact Risk Zones

SSSI Units
Not recorded
Favourable
Unfavourable - Recovering
Unfavourable - No change
Unfavourable - Declining
Partially destroyed
Destroyed

10.17 SSSI Impact Risk Zones

Records on site	2

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on page 110 >

ID	Location	Type of developments requiring consultation
A	On site	All applications - ALL PLANNING APPLICATIONS - EXCEPT HOUSEHOLDER APPLICATIONS. Notes: New residential developments in this area should consider recreational disturbance impacts on the coastal designated sites. Please consider this issue in the HRA screening.

ID	Location	Type of developments requiring consultation
A	On site	All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha Residential - Residential development of 10 units or more. Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream. Notes: New residential developments in this area should consider recreational disturbance impacts on the coastal designated sites. Please consider this issue in the HRA screening.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m **21**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on page 110 >

ID:	2
Location:	39m N
SSSI name:	Wyre Estuary
Unit name:	Hill House International Frontage
Broad habitat:	Littoral Sediment
Condition:	Favourable

Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Black-tailed godwit, Limosa limosa islandica	Favourable	20/12/2022
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: 12
Location: 353m NE
SSSI name: Wyre Estuary
Unit name: Burrows Marsh Sssi
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Black-tailed godwit, Limosa limosa islandica	Favourable	20/12/2022
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: 14
Location: 464m SE
SSSI name: Wyre Estuary
Unit name: Stanah Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: B
Location: 467m NE
SSSI name: Wyre Estuary
Unit name: Skippool Marsh
Broad habitat: Littoral Sediment
Condition: Favourable

Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: B
Location: 484m E
SSSI name: Wyre Estuary
Unit name: Skippool Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: B
Location: 522m NE
SSSI name: Wyre Estuary
Unit name: Skippool Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: 19
Location: 722m E
SSSI name: Wyre Estuary
Unit name: Wardleys Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: 25
Location: 1152m SE
SSSI name: Wyre Estuary
Unit name: Nestleton Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: 26
Location: 1231m NW
SSSI name: Wyre Estuary
Unit name: Jameson Road Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: -
Location: 1270m N
SSSI name: Wyre Estuary
Unit name: The Heads
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Black-tailed godwit, Limosa limosa islandica	Favourable	20/12/2022

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: 30
Location: 1382m SE
SSSI name: Wyre Estuary
Unit name: Bank House Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
SM4-28 - Saltmarsh	-	-

ID: -
Location: 1455m SE
SSSI name: Wyre Estuary
Unit name: Wardley's Pool - Peg's Pool
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: C
Location: 1541m SE
SSSI name: Wyre Estuary
Unit name: Stanah Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: D
Location: 1647m SE
SSSI name: Wyre Estuary
Unit name: Wardley's Pool - Peg's Pool
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: D
Location: 1648m SE
SSSI name: Wyre Estuary
Unit name: Stanah Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: -
Location: 1674m SE
SSSI name: Wyre Estuary
Unit name: Stanah Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: -
Location: 1723m SE
SSSI name: Wyre Estuary
Unit name: Wardley's Pool - Peg's Pool
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: -
Location: 1729m SE
SSSI name: Wyre Estuary
Unit name: Wardley's Pool - Peg's Pool
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: -
Location: 1841m SE
SSSI name: Wyre Estuary
Unit name: Wardley's Pool - Peg's Pool
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: -
Location: 1853m SE
SSSI name: Wyre Estuary
Unit name: Wardley's Pool - Peg's Pool
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/09/2009

ID: -
Location: 1967m N
SSSI name: Wyre Estuary
Unit name: Barnaby Sands Sssi
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Black-tailed godwit, Limosa limosa islandica	Favourable	20/12/2022
Aggregations of non-breeding birds - Teal, Anas crecca	Favourable	20/12/2022
Aggregations of non-breeding birds - Turnstone, Arenaria interpres	Favourable	20/12/2022
SM4-28 - Saltmarsh	Favourable	01/09/2009

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

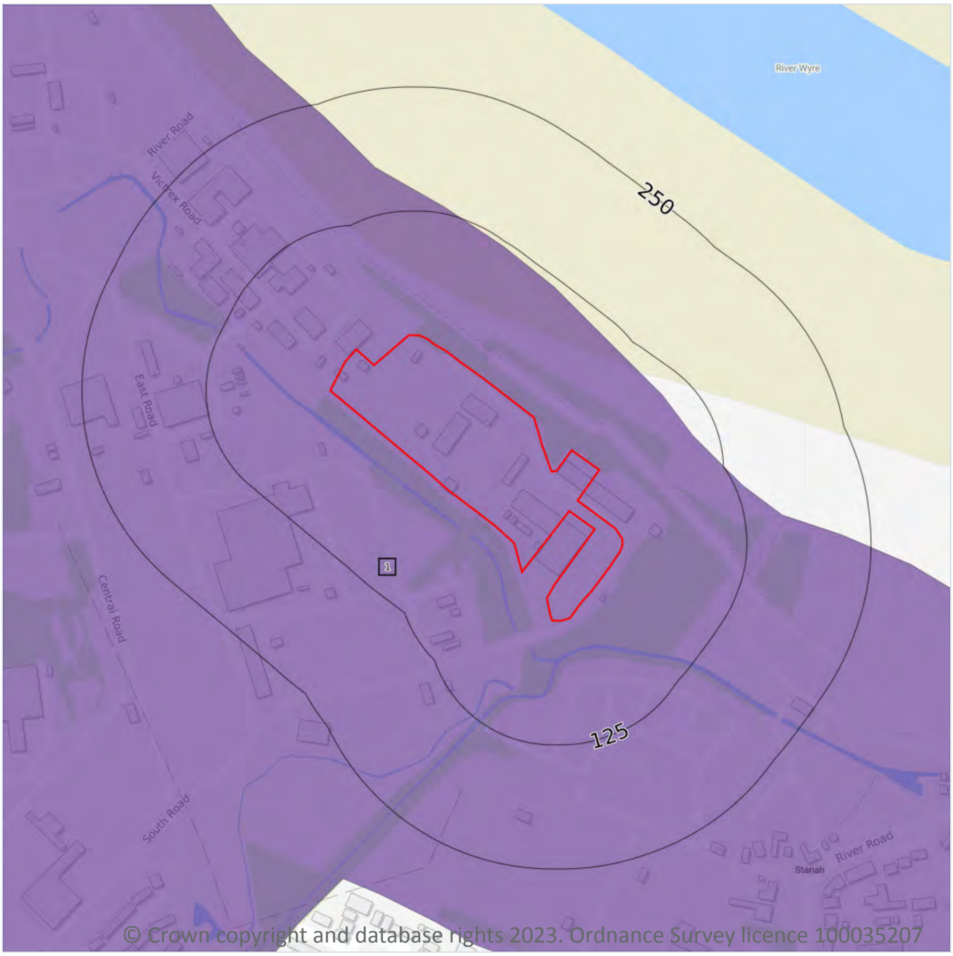
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on page 121 >

ID	Location	Classification	Description
1	**On site**	**Urban**	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

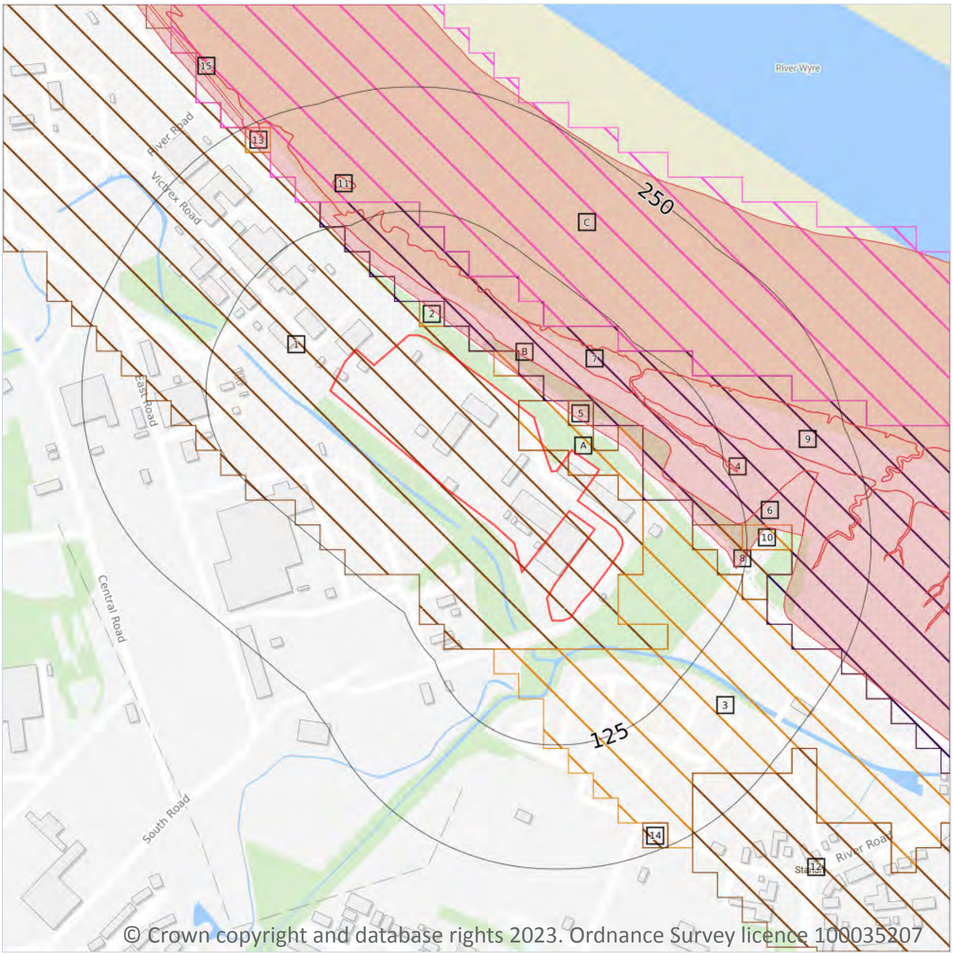
12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

Priority Habitat Inventory

Open Mosaic Habitat

Limestone Pavement Orders

Habitat Networks

Primary Habitat

Restorable Habitat

Associated Habitats

Habitat Restoration-Creation

Network Enhancement Zone 1

Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m **7**

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on page 123 >

ID	Location	Main Habitat	Other habitats
B	24m N	No main habitat but additional habitats present	Additional: SALTM (INV 50%)
6	39m N	Coastal saltmarsh	Main habitat: SALTM (INV > 50%)
C	69m N	Mudflats	Main habitat: MUDFL (INV > 50%); Additional: SALTM (ENSIS L2)

ID	Location	Main Habitat	Other habitats
7	69m NE	Coastal saltmarsh	Main habitat: MUDFL (INV > 50%); SALTM (INV > 50%)
9	85m E	Coastal saltmarsh	Main habitat: MUDFL (INV > 50%); SALTM (INV > 50%)
11	158m NW	No main habitat but additional habitats present	Additional: SALTM (ENSIS L2)
15	233m NW	No main habitat but additional habitats present	Additional: SALTM (INV 50%, ENSIS L2)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	14

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 123 >**

ID	Location	Type	Habitat
1	**On site**	**Network Enhancement Zone 2**	**Not specified**
A	**On site**	**Network Enhancement Zone 1**	**Not specified**
B	9m N	Network Enhancement Zone 1	Not specified
2	9m NW	Network Enhancement Zone 1	Not specified
3	11m SE	Network Enhancement Zone 1	Not specified
A	13m E	Network Enhancement Zone 2	Not specified
4	14m N	Primary Habitat	Saltmarsh
5	25m E	Network Enhancement Zone 2	Not specified
8	70m SE	Network Enhancement Zone 2	Not specified
C	75m N	Associated Habitats	Other associated habitats
10	120m E	Network Enhancement Zone 1	Not specified
12	199m SE	Network Enhancement Zone 2	Not specified
13	216m NW	Network Enhancement Zone 1	Not specified
14	219m SE	Network Enhancement Zone 2	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	**0**

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

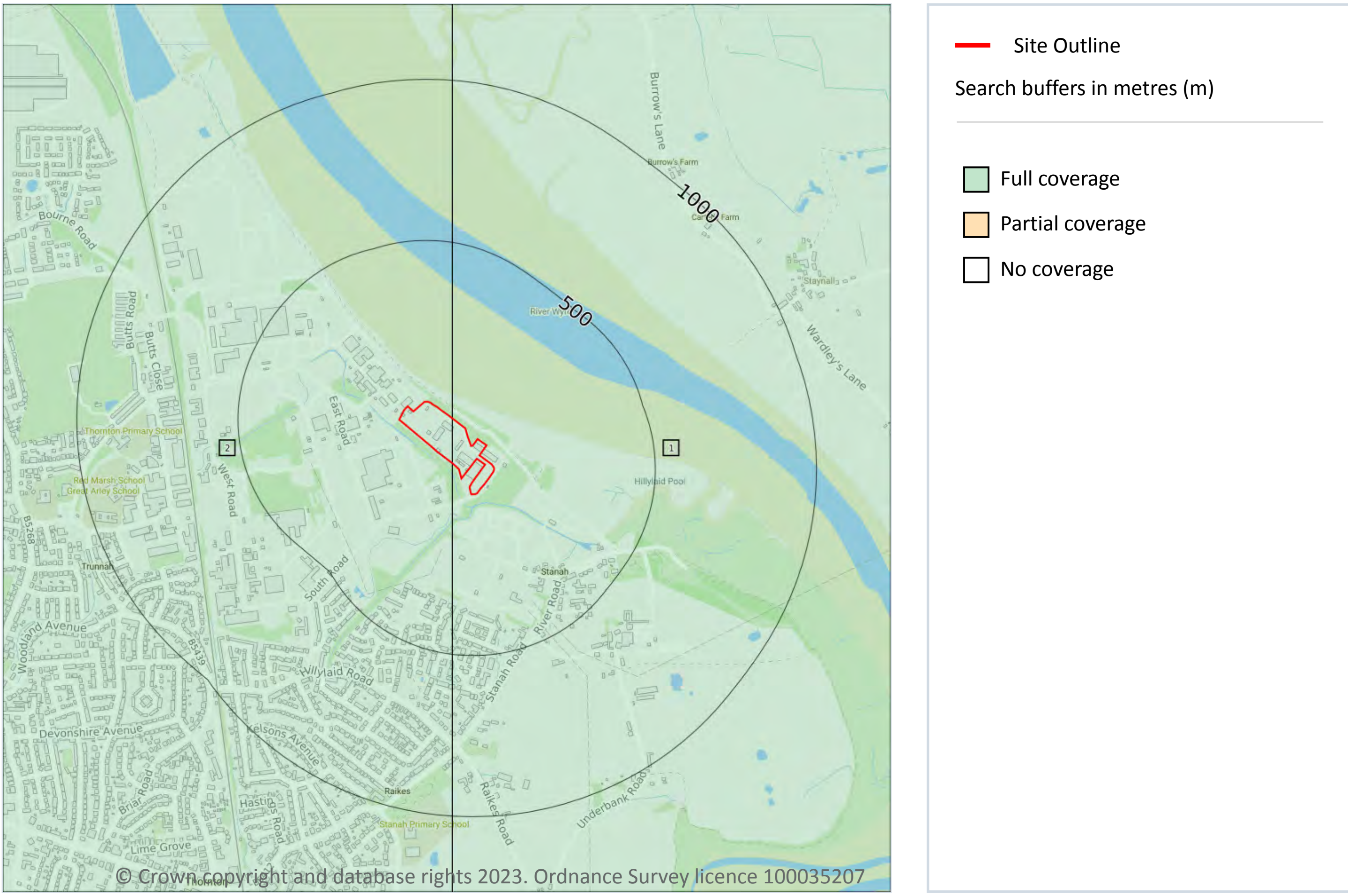
13.4 Limestone Pavement Orders

Records within 250m	**0**

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



14.1 10k Availability

Records within 500m 2

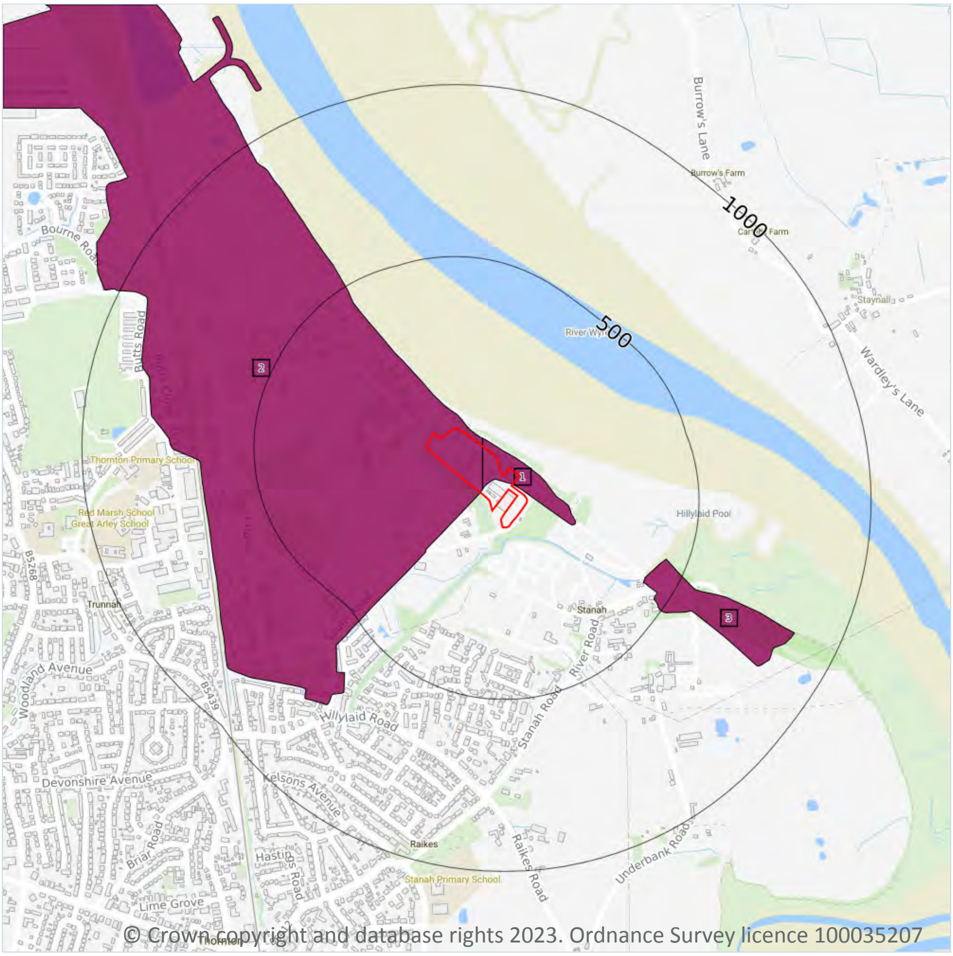
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on page 126 >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	SD34SE
2	On site	Full	Full	Full	No coverage	SD34SW

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m **3**

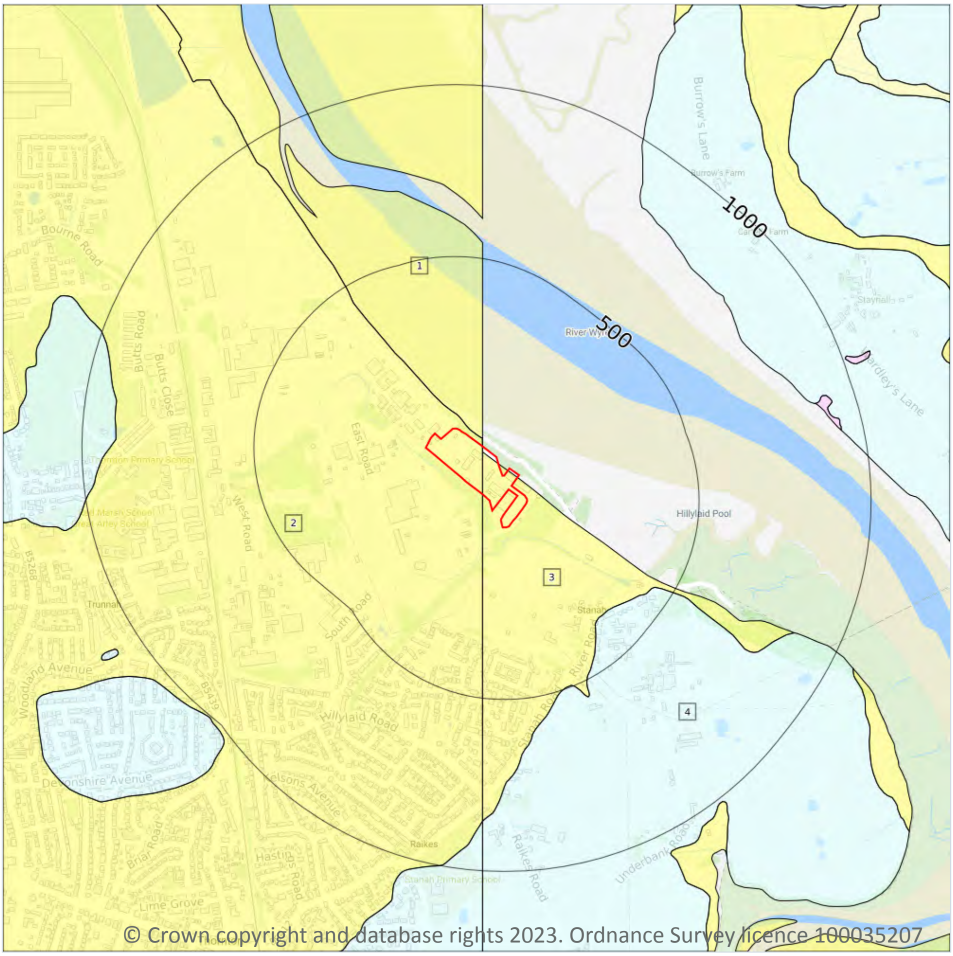
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on page 127 >

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
2	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
3	407m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m 4

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on page 128 >

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TFD-XCZ**	**Tidal Flat Deposits - Clay And Silt**	**Clay And Silt**
2	**On site**	**TFD1-XCZ**	**Tidal Flat Deposits, 1 - Clay And Silt**	**Clay And Silt**
3	**On site**	**TFD1-XCZ**	**Tidal Flat Deposits, 1 - Clay And Silt**	**Clay And Silt**
4	373m SE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton

This data is sourced from the British Geological Survey.

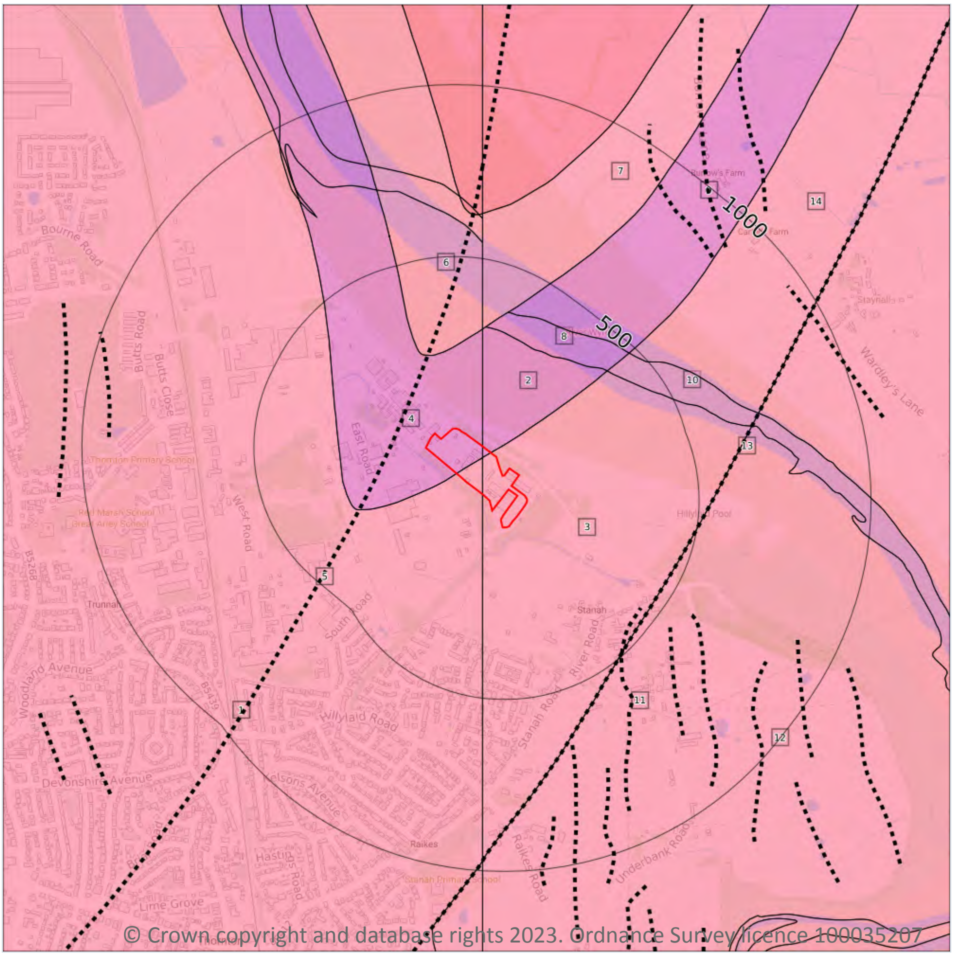
14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m **11**

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on page 130 >

ID	Location	LEX Code	Description	Rock age
1	On site	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age
2	On site	PRSA-MDHA	Preesall Halite Member - Mudstone And Halite-stone	Ladinian Age - Anisian Age
3	On site	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
4	**On site**	**PRSA-MDHA**	**Preesall Halite Member - Mudstone And Halite-stone**	**Ladinian Age - Anisian Age**
6	221m N	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age
7	299m N	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age
8	307m N	PRSA-MDHA	Preesall Halite Member - Mudstone And Halite-stone	Ladinian Age - Anisian Age
9	370m N	PRSA-MDHA	Preesall Halite Member - Mudstone And Halite-stone	Ladinian Age - Anisian Age
10	397m NE	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age
12	466m SE	SNM-MDST	Singleton Mudstone Member - Mudstone	Anisian Age - Early Triassic Epoch
14	478m NE	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	3

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on page 130 >

ID	Location	Category	Description
5	95m NW	FOLD_AXIS	Axial plane trace of major syncline
11	448m SE	LANDFORM	Drumlin, form-line at base of mound
13	466m SE	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability

Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

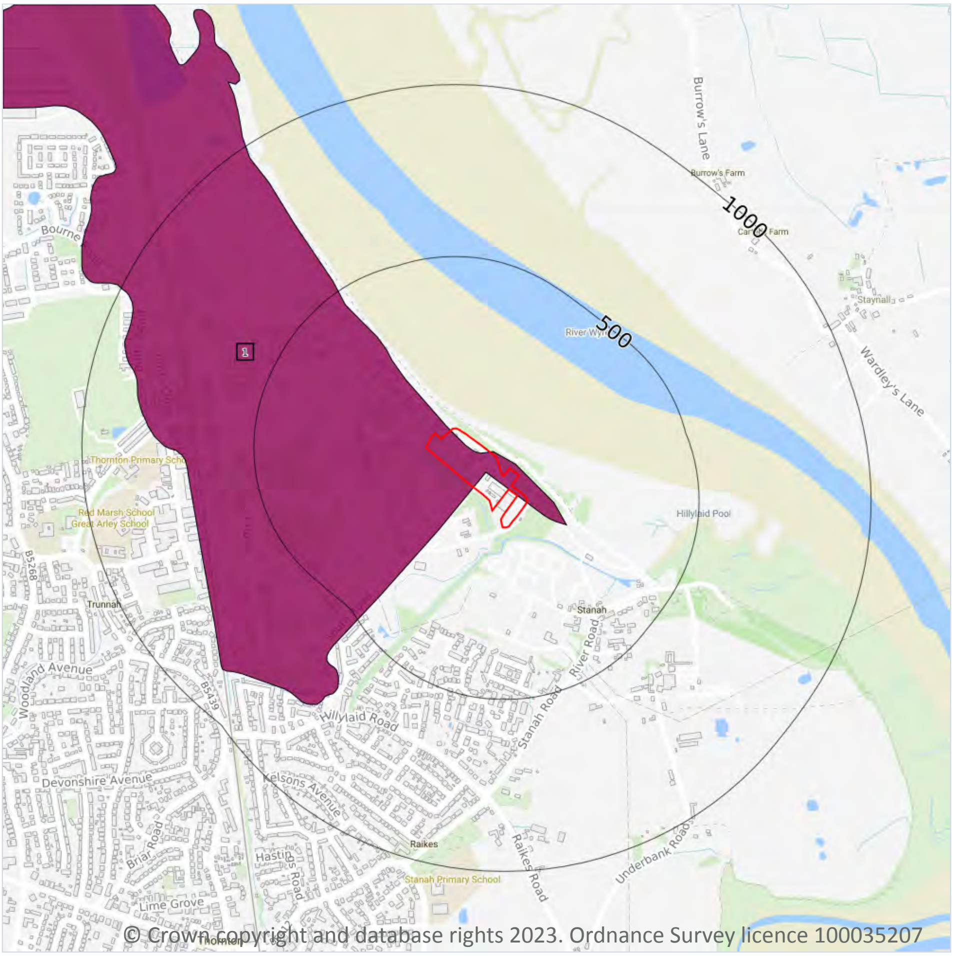
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on page 132 >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	EW066_blackpool_v4

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



Site Outline
Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	1

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on page 133 >

ID	Location	LEX Code	Description	Rock description
1	On site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

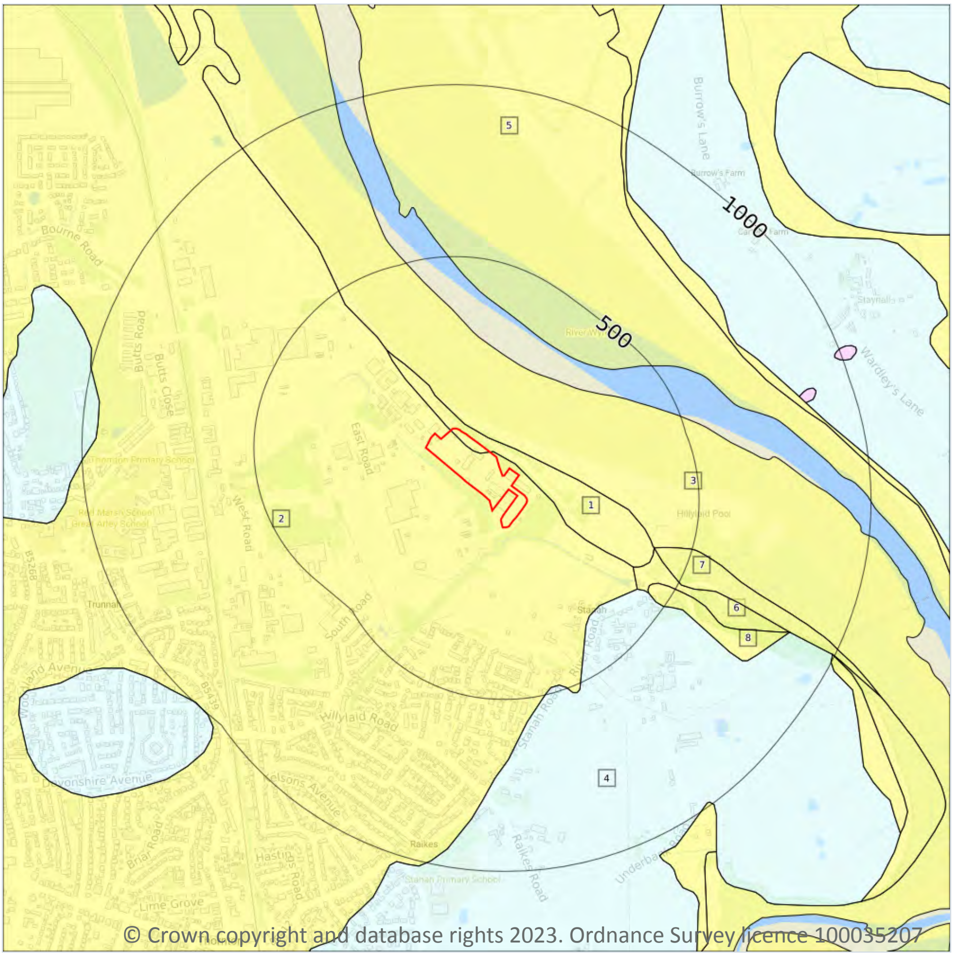
Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Very High**	**Low**
On site	**Mixed**	**Very High**	**Low**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline
Search buffers in metres (m)
Landslip (50k)
Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m 8

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on page 135 >

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TFD-XCZ**	**TIDAL FLAT DEPOSITS**	**CLAY AND SILT**
2	**On site**	**TFD1-XCZ**	**TIDAL FLAT DEPOSITS, 1**	**CLAY AND SILT**
3	22m N	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT
4	349m SE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

ID	Location	LEX Code	Description	Rock description
5	353m NE	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT
6	362m SE	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT
7	394m SE	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT
8	431m SE	TFD1-XCZ	TIDAL FLAT DEPOSITS, 1	CLAY AND SILT

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	4

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**
On site	**Mixed**	**Low**	**Very Low**
On site	**Intergranular**	**Low**	**Very Low**
On site	**Intergranular**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

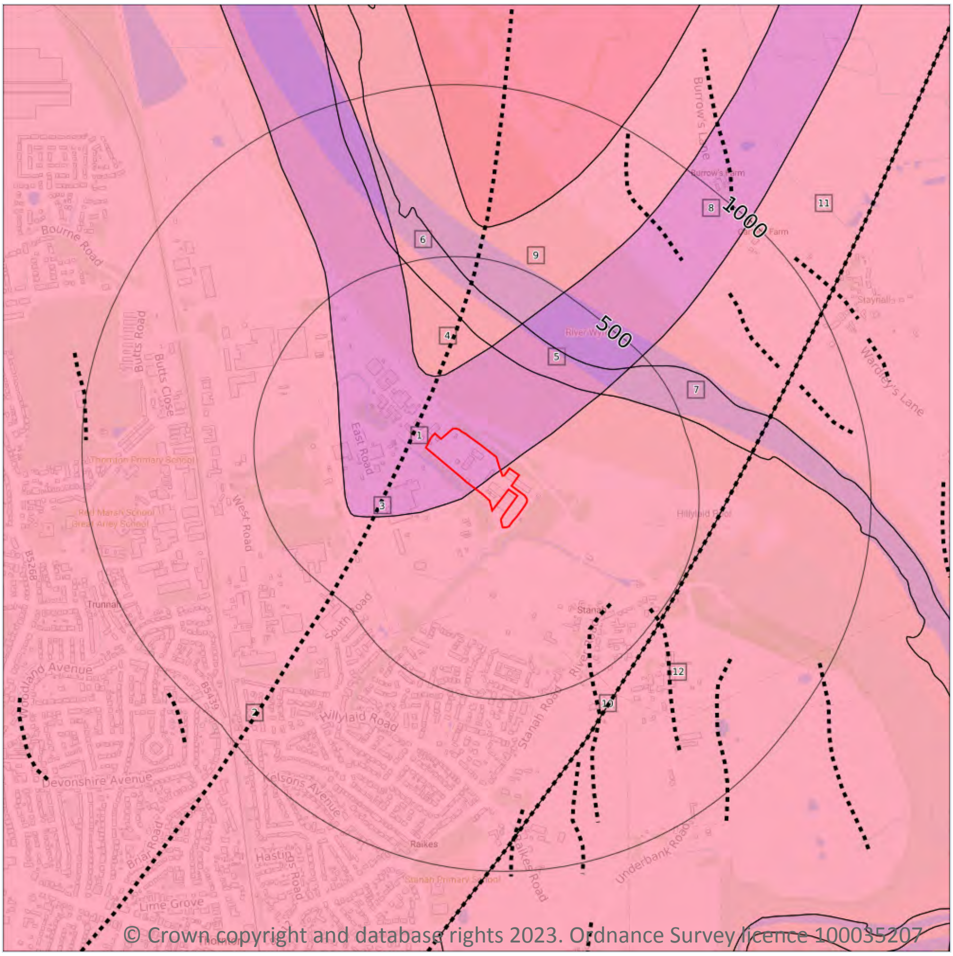
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	9

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on page 137 >

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PRSA-MDHA**	**PREESALL HALITE MEMBER - MUDSTONE AND HALITE-STONE**	**ANISIAN**
2	**On site**	**KRM-MDST**	**KIRKHAM MUDSTONE MEMBER - MUDSTONE**	**ANISIAN**
4	158m N	SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE	OLENEKIAN

ID	Location	LEX Code	Description	Rock age
5	253m N	PRSA-MDHA	PREESALL HALITE MEMBER - MUDSTONE AND HALITE-STONE	ANISIAN
6	260m N	SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE	OLENEKIAN
7	335m NE	KRM-MDST	KIRKHAM MUDSTONE MEMBER - MUDSTONE	ANISIAN
8	353m NE	PRSA-MDHA	PREESALL HALITE MEMBER - MUDSTONE AND HALITE-STONE	ANISIAN
9	358m N	SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE	OLENEKIAN
11	450m NE	KRM-MDST	KIRKHAM MUDSTONE MEMBER - MUDSTONE	ANISIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	4

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	3

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

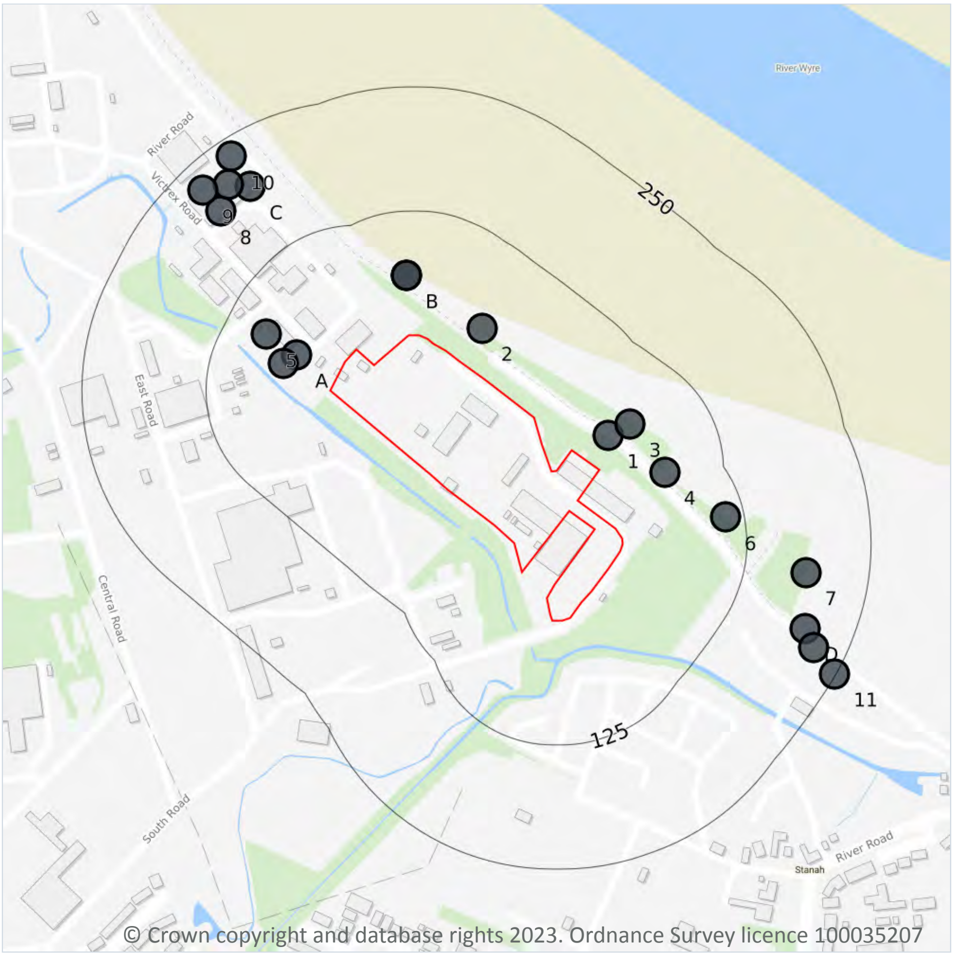
Features are displayed on the Geology 1:50,000 scale - Bedrock map on page 137 >

ID	Location	Category	Description
3	50m NW	FOLD_AXIS	Axial plane trace of major syncline

ID	Location	Category	Description
10	369m SE	LANDFORM	Drumlin, form line at base
12	471m SE	LANDFORM	Drumlin, form line at base

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	**19**

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

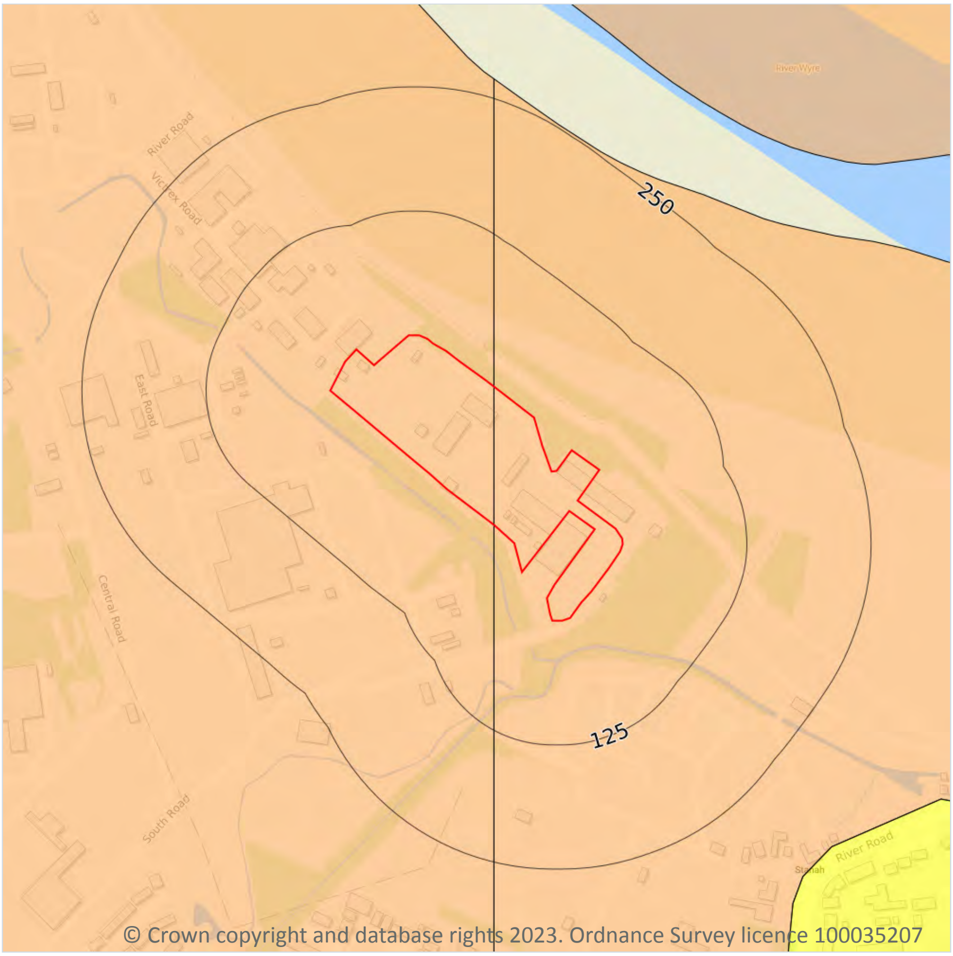
Features are displayed on the Boreholes map on page 140 >

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	33m E	335115 443440	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT 3	-	Y	N/A
2	40m N	334988 443548	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS5	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	47m NW	334801 443521	VICTREX PLC THORNTON CLEVELEYS LANCASHIRE B303	-	Y	N/A
A	55m NW	334788 443513	VICTREX PLC THORNTON CLEVELEYS LANCASHIRE B302	-	Y	N/A
3	56m E	335137 443452	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS7	-	Y	N/A
B	60m NW	334912 443601	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS4	-	Y	N/A
B	60m NW	334912 443601	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS3	-	Y	N/A
4	66m E	335172 443403	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS8	-	Y	N/A
5	83m NW	334771 443542	VICTREX PLC THORNTON CLEVELEYS LANCASHIRE B301	-	Y	N/A
6	106m E	335233 443358	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS9	-	Y	N/A
7	187m E	335314 443302	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS10	-	Y	N/A
8	195m NW	334725 443666	MELT FILTRATION PLANT VICTREX PLC THORNTON CLEVELEYS LANCS M204	-	Y	N/A
C	196m NW	334755 443691	MELT FILTRATION PLANT VICTREX PLC THORNTON CLEVELEYS LANCS M205	-	Y	N/A
D	201m SE	335313 443246	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS11	-	Y	N/A
C	210m NW	334733 443693	MELT FILTRATION PLANT VICTREX PLC THORNTON CLEVELEYS LANCS M203	-	Y	N/A
D	218m SE	335322 443227	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT WS12	-	Y	N/A
9	223m NW	334707 443687	MELT FILTRATION PLANT VICTREX PLC THORNTON CLEVELEYS LANCS M201	-	Y	N/A
10	231m NW	334736 443721	MELT FILTRATION PLANT VICTREX PLC THORNTON CLEVELEYS LANCS M202	-	Y	N/A
11	249m SE	335343 443200	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT 4	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

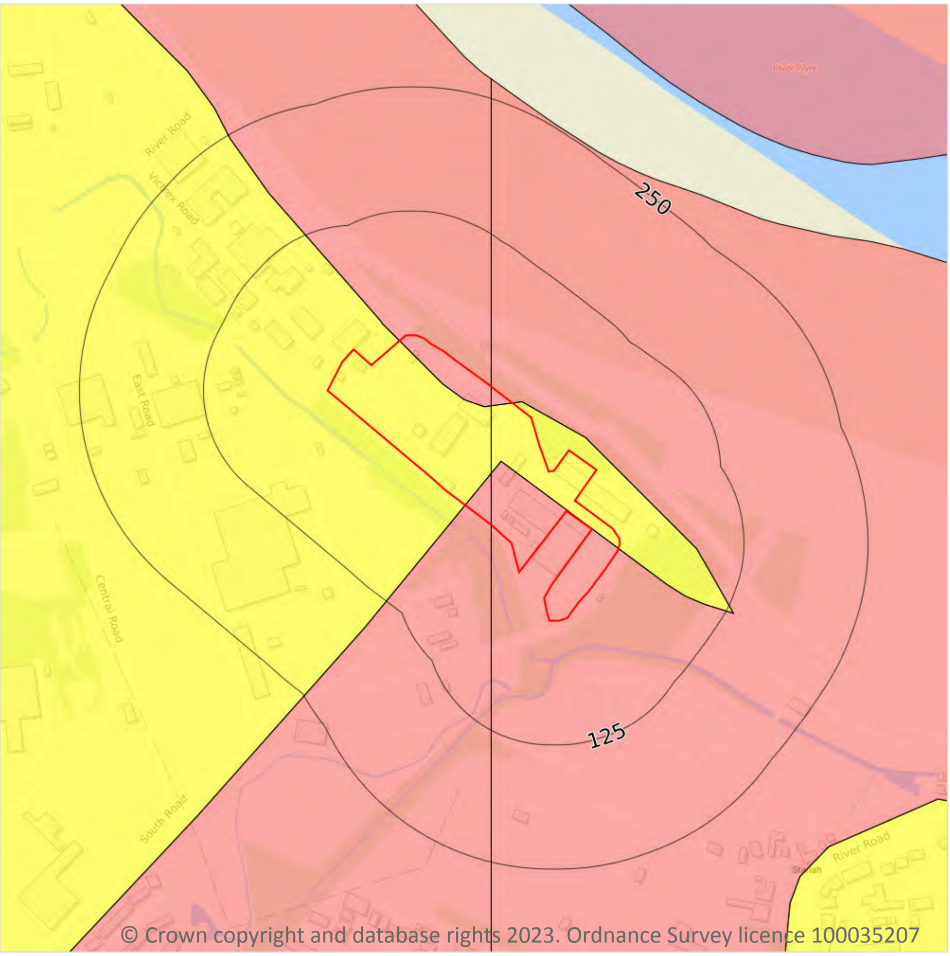
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on page 142 >

Location	Hazard rating	Details
On site	**Low**	**Ground conditions predominantly medium plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline
Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

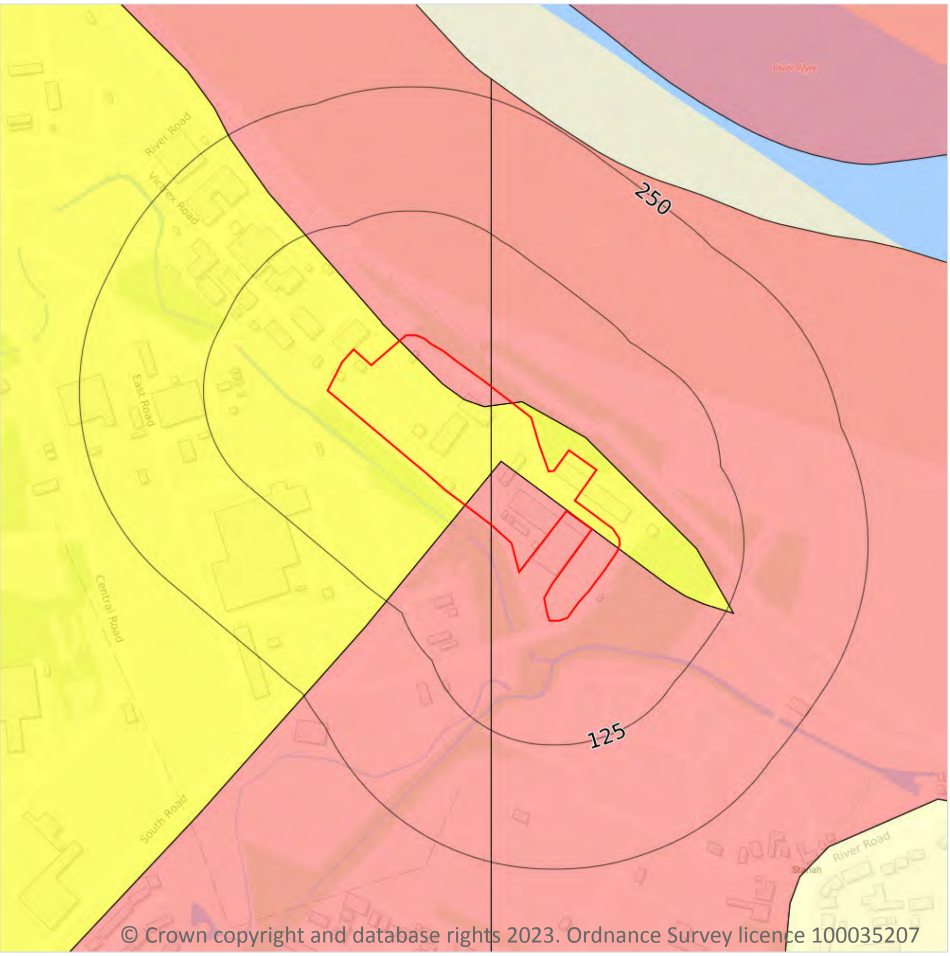
Features are displayed on the Natural ground subsidence - Running sands map on page 143 >

Location	Hazard rating	Details
On site	Very low	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

Location	Hazard rating	Details
On site	**Moderate**	**Running sand conditions are probably present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	2

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

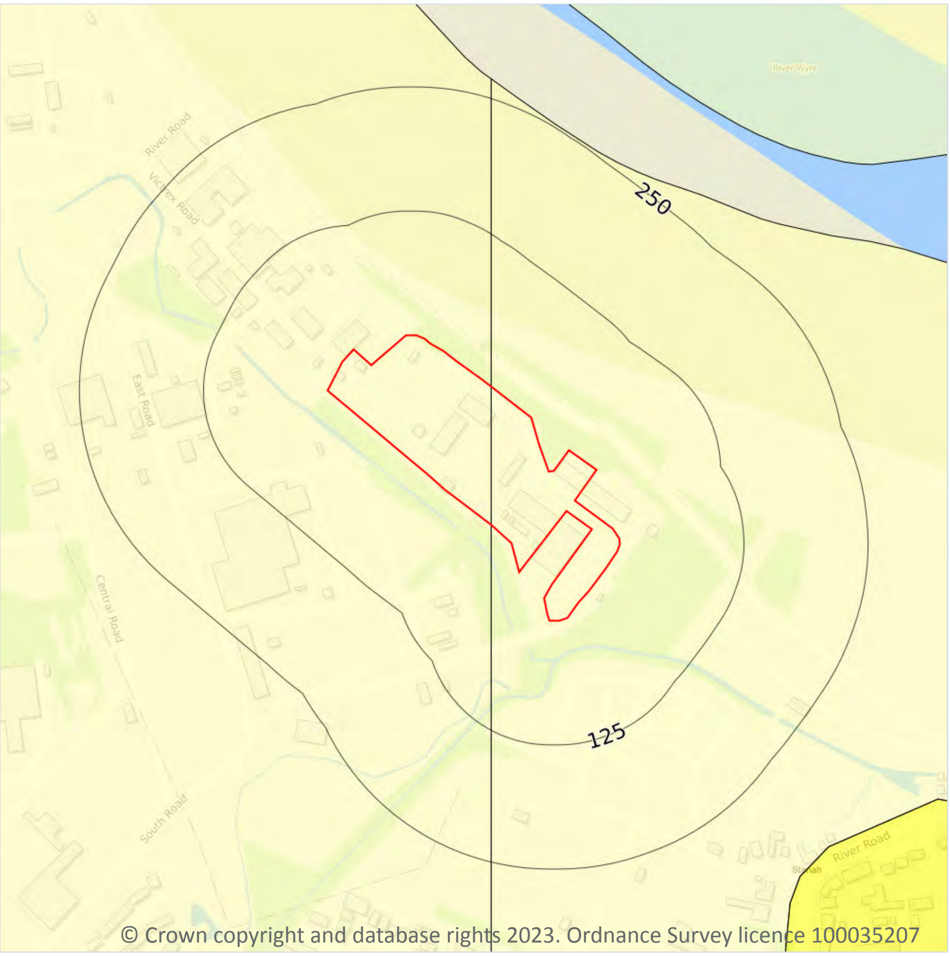
Features are displayed on the Natural ground subsidence - Compressible deposits map on page 145 >

Location	Hazard rating	Details
On site	**Very low**	**Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.**

Location	Hazard rating	Details
On site	**Moderate**	**Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline
Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

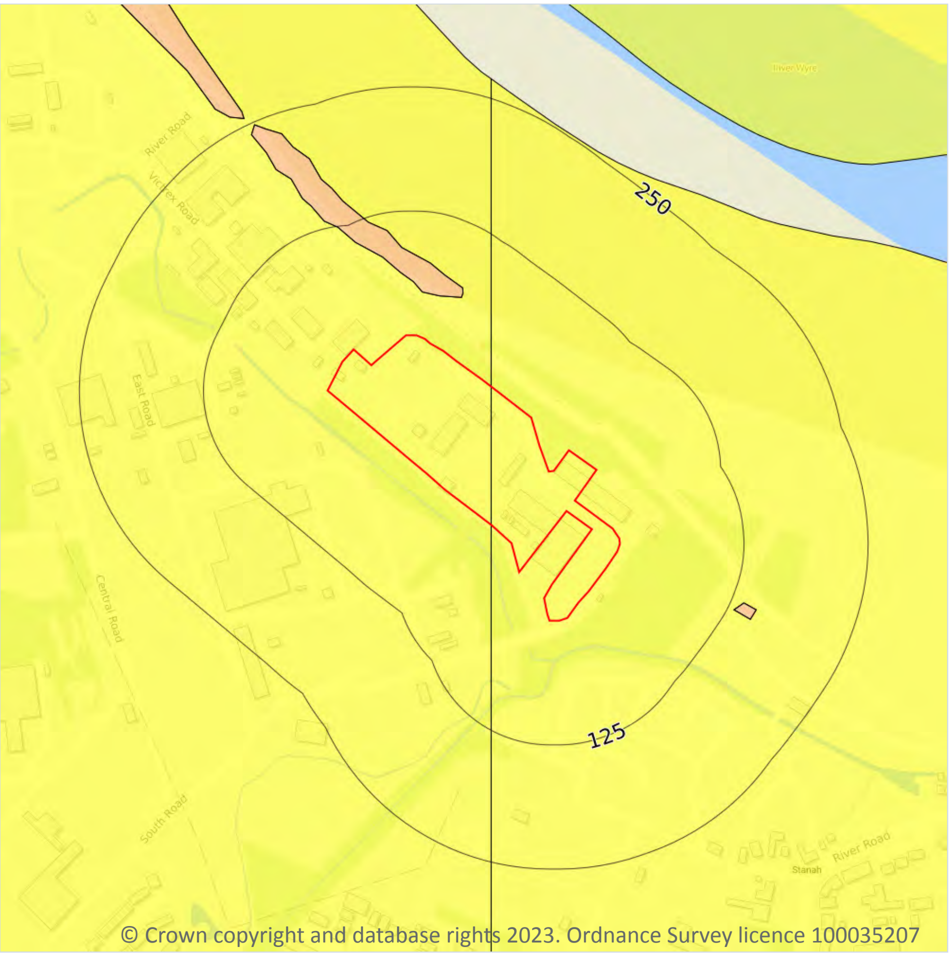
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on page 147 >

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

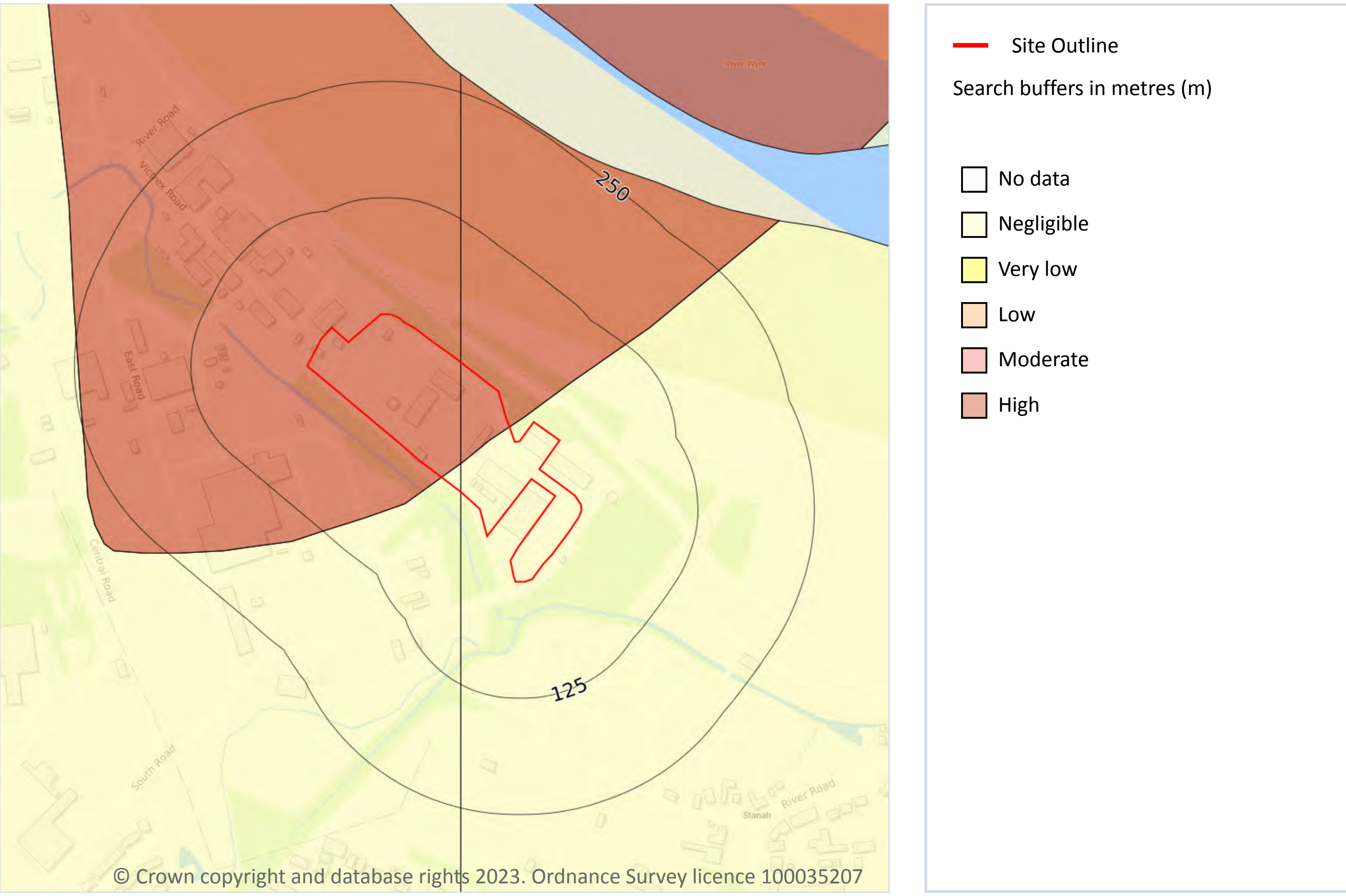
Features are displayed on the Natural ground subsidence - Landslides map on page 148 >

Location	Hazard rating	Details
On site	Very low	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

Location	Hazard rating	Details
44m N	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m	2

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

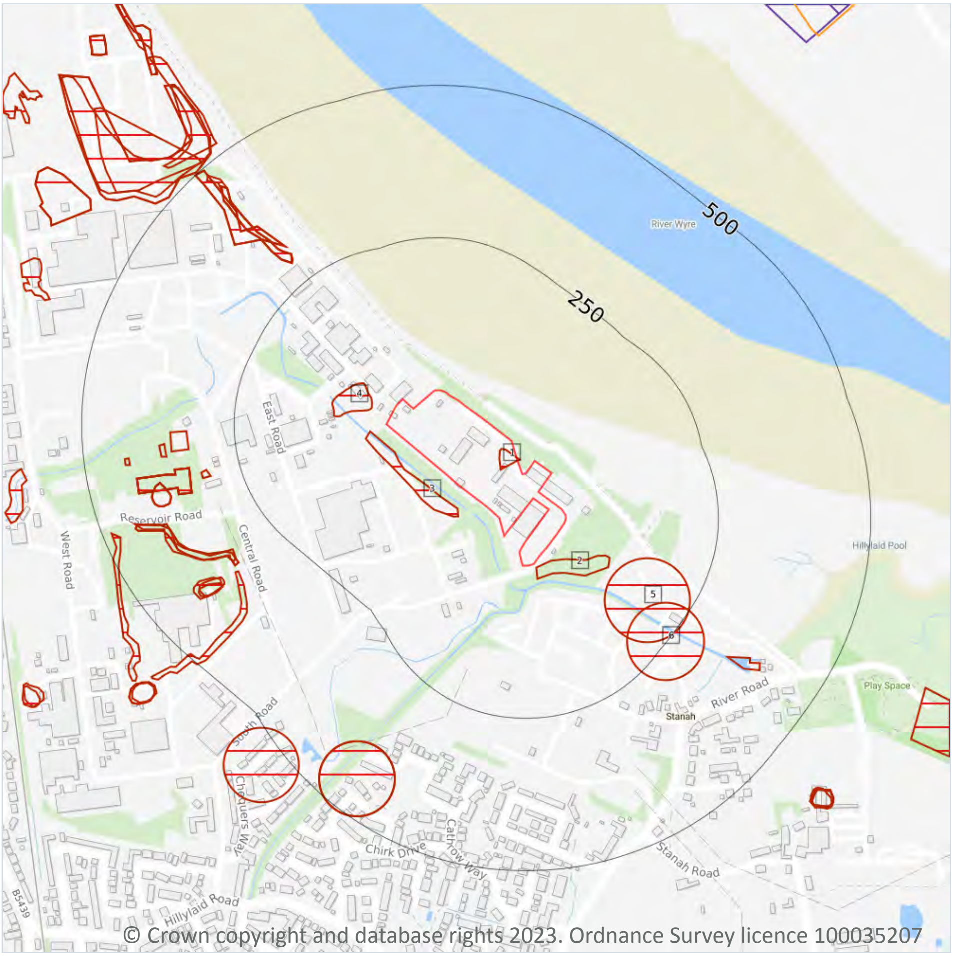
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on page 150 >

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

Location	Hazard rating	Details
On site	**High**	**Soluble rocks are present within the ground. Numerous dissolution features may be present. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline
Search buffers in metres (m)

BritPits
Surface ground workings
Underground workings
Underground mining extents
Historical mineral planning areas
TCA non-coal mining

Non Coal Mining
Sporadic underground mining of restricted extent possible
Localised small scale underground mining possible
Small scale mining possible
Underground mining known or likely within or in close proximity
Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	**6**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on page 152 >

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Unspecified Pit**	**1968**	**1:10560**
2	7m SE	Unspecified Heap	1985	1:10000
3	26m W	Refuse Heap	1967	1:10560
4	34m NW	Pond	1846	1:10560
5	114m SE	Pool	1985	1:10000
6	185m SE	Pool	1968	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**0**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	**0**

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	1

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on **page 152 >**

ID	Location	Name	Commodity	Class	Likelihood
19	834m NE	Preesall Saltfield	Salt - brine and salt	C	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	**0**

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	**0**

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	**0**

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	**0**

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	**0**

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	**0**

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	**0**

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	**0**

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	**0**

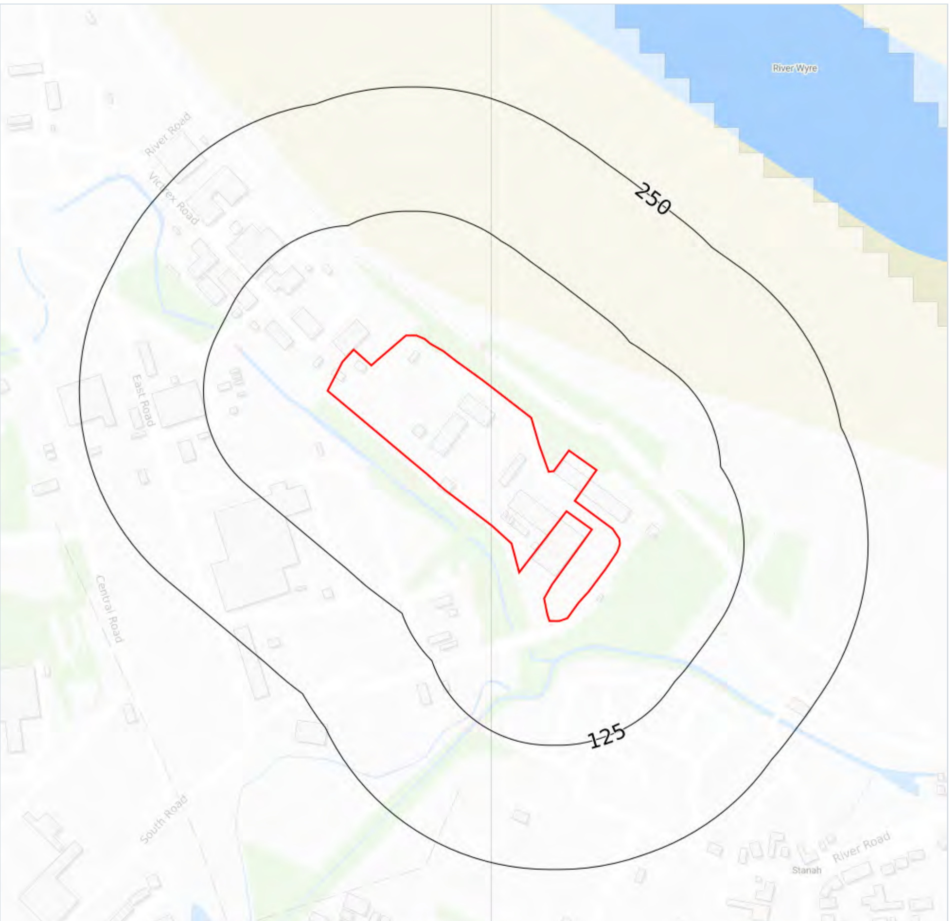
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on page 159 >

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	**13**

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
9m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
15m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
22m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
28m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
40m NE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

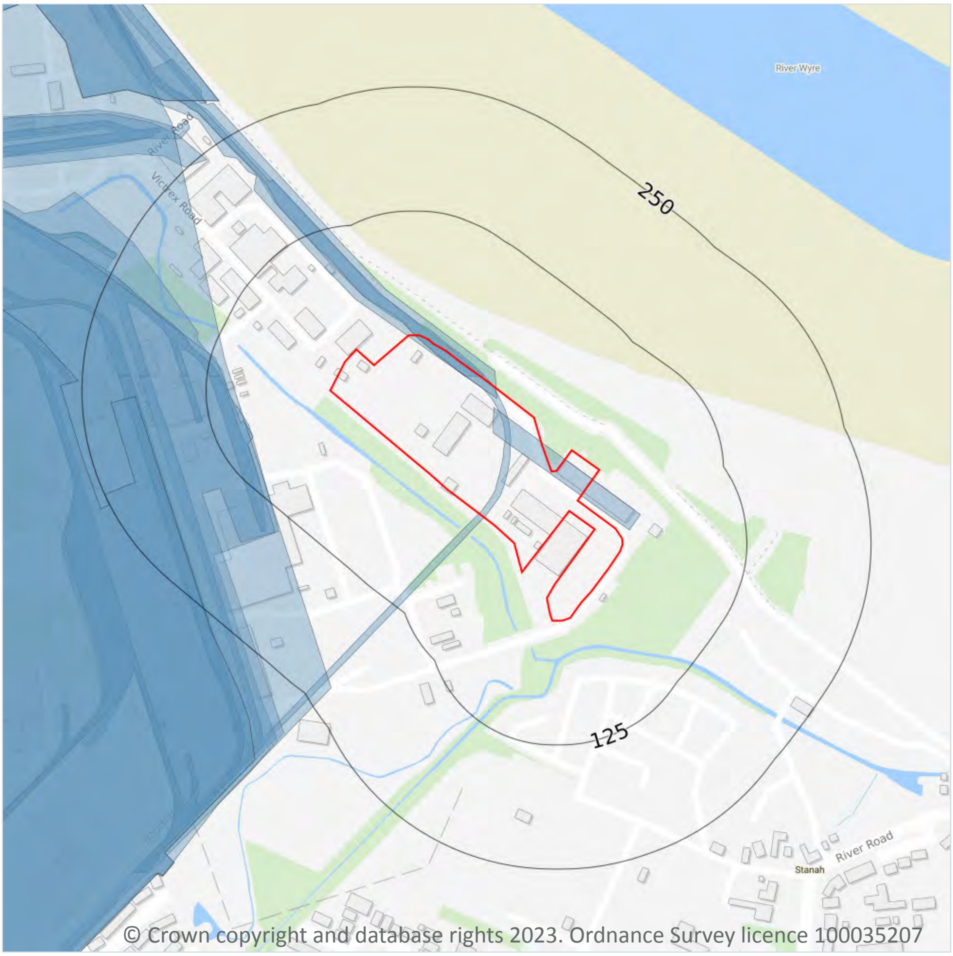
21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



Site Outline
Search buffers in metres (m)
Crossrail 1 Stations
Crossrail 1 Route
Crossrail 2 Stations
Crossrail 2 Route
Crossrail 2 Worksites
Crossrail 2 Safeguarding
Crossrail 2 Headhouses
Railway stations
Active railways
Active tunnels
Abandoned railways
Historic railways
Historic tunnels
Underground stations
Underground Lines
Royal Mail tunnels
HS2 optimised route
HS2 Stations
HS2 Depots
HS2 Surface Safeguarding
HS2 Subsurface Safeguarding

22.1 Underground railways (London)

Records within 250m	**0**

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	**0**

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	**0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	**16**

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 163 >**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1960**	**1250**
On site	**Railway Sidings**	**1965**	**2500**
On site	**Railway Sidings**	**1951**	**10560**
On site	**Railway Sidings**	**1973**	**10000**
89m W	Railway Sidings	1973	10000
90m W	Railway Sidings	1951	10560
91m W	Railway Sidings	1967	10560
99m W	Railway Sidings	1960	1250
111m W	Railway Sidings	1960	1250
132m W	Railway Sidings	1960	1250
168m W	Railway Sidings	1960	1250
187m W	Railway Sidings	1977	1250
189m W	Railway Sidings	1981	10000
192m W	Railway Sidings	1980	1250
202m W	Railway Sidings	1960	1250
202m W	Railway Sidings	1979	1250

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	**0**

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	**0**

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	**0**

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	**0**

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	**0**

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	**0**

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

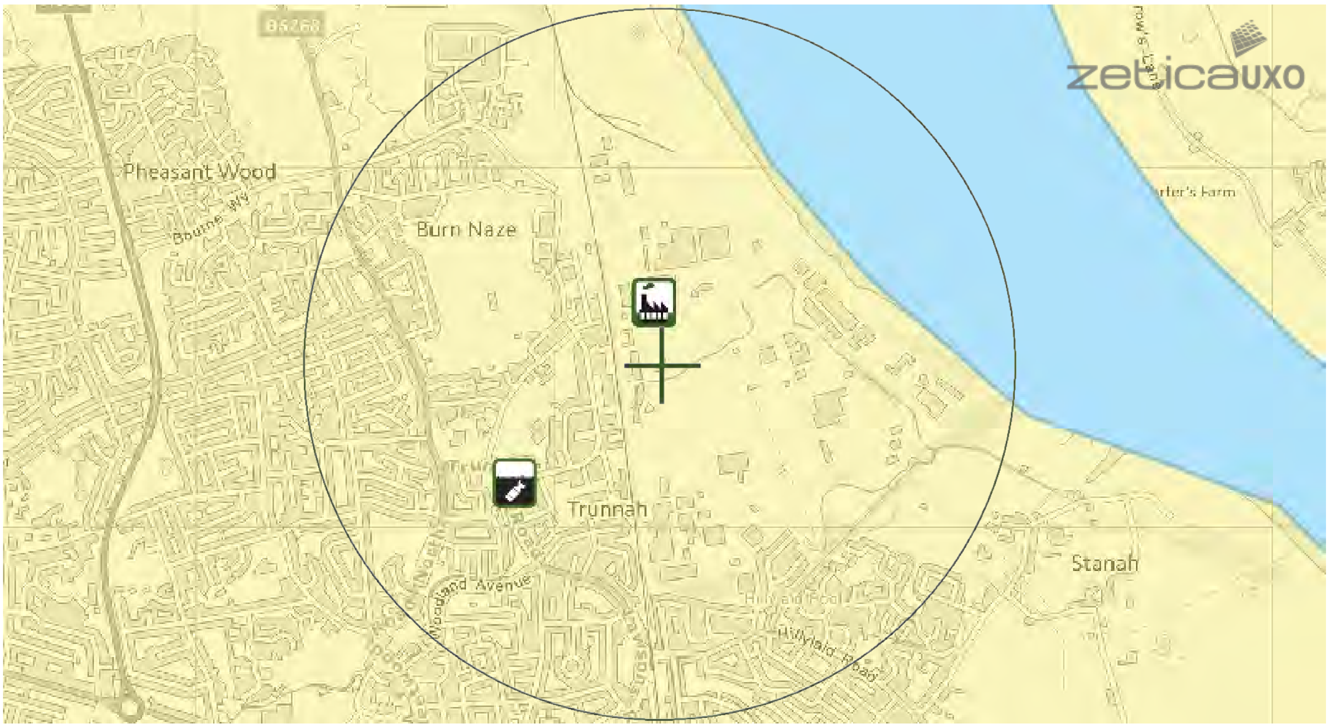
APPENDIX C

UXO Risk Screening Mapping

UNEXPLODED BOMB RISK MAP

SITE LOCATION

Location: FY5 4QD,
Map Centre: 334307,443454



LEGEND

High: Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.

Moderate: Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.

Low: Areas indicated as having 15 bombs per 1000acre or less.

miltary | industry | UXO find | transport | dock | Luftwaffe targets | utilities | Bombing decoy | other

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: **(https://zeticauxo.com/downloads-and-resources/risk-maps/)**

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

HILLHOUSE INCINERATOR BOTTOM ASH (IBA) PROCESSING FACILITY
HILLHOUSE ENTERPRISE ZONE, THRONTON-CLEVELEYS, LANCASHIRE

FLOOD RISK AND DRAINAGE ASSESSMENT

Final Report v1.5
July 2024

Weetwood Services Ltd
info@weetwood.net
www.weetwood.net

Report Title	**Hillhouse Incinerator Bottom Ash (IBA) Processing Facility** **Hillhouse Enterprise Zone, Thornton Cleveleys, Lancashire, FY5 4QD** Flood Risk and Drainage Assessment Final Report v1.5
Client	Axis PED Ltd
Date of issue	31 July 2024

Prepared by	Rebecca Murphy BSc (Hons) *Associate Director* Dan Hodson BEng (Hons) *Senior Engineer*
Checked by	Tim Brook BSc (Hons) *Technical Director*
Approved by	Kevin Tilford BSc MSc PhD MBA CEnv CWEM FCIWEM *Managing Director*

Contents

List of Tables

List of Figures

List of Appendices

1 INTRODUCTION

1.1 Purpose of Report

Weetwood Services Ltd ('Weetwood') has been instructed by Axis on behalf of Fortis IBA Ltd (part of the Raymond Brown Group) to prepare a Flood Risk and Drainage Assessment (FRDA) report to accompany a full planning application for the proposed redevelopment of land at Hillhouse Enterprise Zone, Thornton-Cleveleys, Lancashire (“the Site”) for use as an Incinerator Bottom Ash (IBA) processing facility.

The assessment has been undertaken in accordance with the requirements of the revised National Planning Policy Framework (NPPF) updated on 20 December 2023 and the Planning Practice Guidance (PPG) updated on 14 February 2024.

1.2 Structure of the Report

The report is structured as follows:

Section 1 Introduction and report structure
Section 2 Provides background information relating to the development site
Section 3 Presents national and local flood risk and drainage planning policy
Section 4 Assesses the potential risk of flooding to the development site
Section 5 Presents an illustrative surface water drainage scheme
Section 6 Presents an illustrative foul water drainage scheme
Section 7 Presents a summary of key findings and the recommendations

1.3 Relevant Documents

The assessment has been informed by the following documents:

- Local Flood Risk Management Strategy for Lancashire 2021-2027, Lancashire County Council
- Level 2 Strategic Flood Risk Assessment: Flood Risk Sequential Test Paper, Wyre Council, August 2017
- Level 2 Strategic Flood Risk Assessment, Wyre Council, October 2016
- Level 1 Strategic Flood Risk Assessment, Wyre Council, July 2016
- North West River Basin District River Basin Management Plan, Environment Agency, December 2015
- Preliminary Flood Risk Assessment, Lancashire County Council, May 2011
- North West England and North Wales Shoreline Management Plan, July 2010
- River Wyre Catchment Flood Management Plan, Environment Agency, December 2009

2 SITE DETAILS AND PROPOSED DEVELOPMENT

2.1 Site Location

The approximately 3.7 ha site is located within Hillhouse Enterprise Zone at Ordnance Survey National Grid Reference SD 349 434, as shown in **Figure 1**. The site comprises an area of circa 3.0 ha to the north of Royles Brook ("the main site") and circa 0.6 ha to the south ("the southern parcel"), with an existing access crossing of Royles Brook linking the two parcels of land.

The main site was previously owned and operated by Vinnolit (a manufacturer of PVC products) and occupied by several buildings with hardstanding and roadways. Recent works have demolished the buildings, leaving the concrete slabs, and underground services. The southern parcel comprises predominately of hardstanding, with vegetated areas and existing access crossing of Royles Brook, linking the land to the main site.

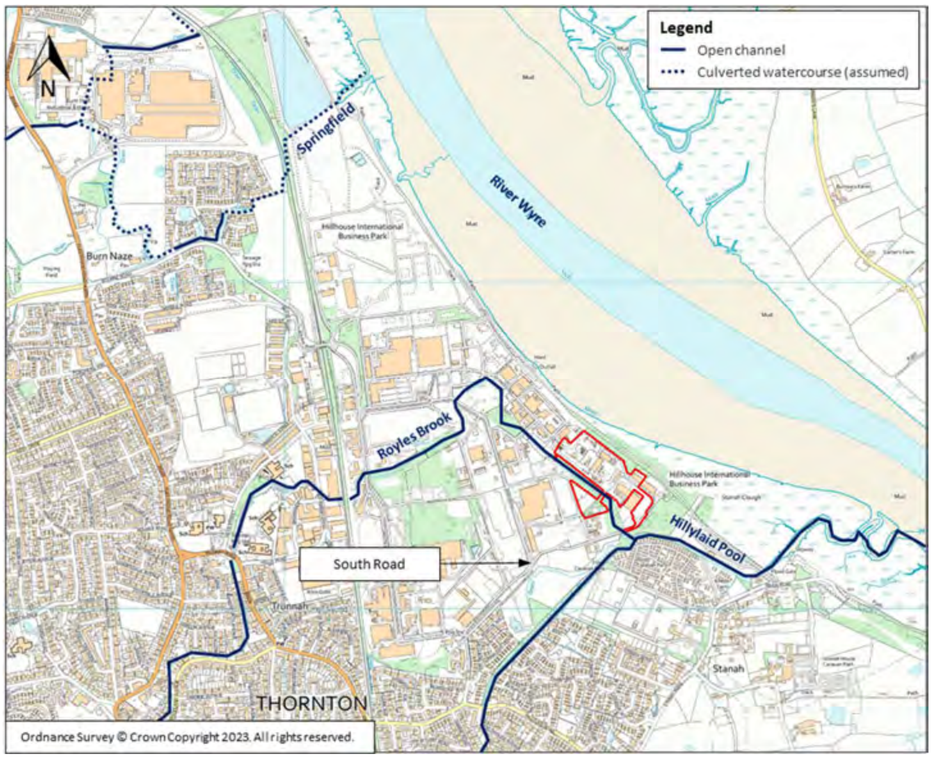


Figure 1: Site Location and Location of Surface Waterbodies

2.2 Proposed Development

The facility proposed by Fortis IBA Ltd is for processing IBA imported from energy from waste power stations. Once operational, IBA will be imported and stockpiled on the site, the IBA will be processed through the plant, separating out recoverable metals for recycling and creating incinerator bottom ash aggregate (IBAA) for reuse as a construction aggregate.

The proposed development comprises the following:

- An IBAA stockpiles shed on the main site along with associated metal bays, offices, weighbridge, car parking, fuel tanks and clean water storage tanks.
- An IBAA processing plant with yard for mobile plant circulation on the southern parcel along with an associated office, substation and transformer, clean water storage tank and dirty water storage tank.
- Enclosed conveyors on the existing access crossing of Royles Brook to move material between the two parcels of land.

Clean rainwater will be collected and stored on site and re-used for damping and washing down. This will be kept separate from any contaminated (dirty) water. A perimeter retaining wall is proposed around the main site and the southern parcel to prevent the escape of contaminated water from the site. This excludes the main site entrance area comprising the offices, weighbridge and car parking, which lies outside the operational area and where vehicles exiting the site will have passed over a wheel wash.

Vehicular access to the site would be provided via South Road, with the primary access via the main site entrance and a secondary access to the south of the southern parcel.

The proposed site plan and levels layout is provided in **Appendix A**.

The operational lifetime of the development is 25 years and with an anticipated commission date of December 2026, the estimated end of life is therefore 2051.

The NPPF classifies waste treatment facilities (for non-hazardous waste) as Less Vulnerable to flood risk.

2.3 Surface Waterbodies in the Vicinity of the Site

The River Wyre is located approximately 60 m east of the site and is tidally influenced.

Royles Brook flows in a south-easterly direction between the main site and the southern parcel. After passing beneath South Road, Royles Brook outfalls to a watercourse known as Hillylaid Pool, which discharges to the River Wyre, approximately 390 m to the south-east of the site via Stanah pumping station.

Stanah pumping station is located off River Road, beside the entrance to Wyre Estuary Country Park. The station was installed in the 1970’s following flooding to low-lying land in the area. The pumping station automatically activates when levels rise in Hillylaid Pool to contain floodwater within the channel. The station is operated and maintained by the Environment Agency.

A watercourse referred to as Springfield flows in open channel and culvert approximately 1.1 km north/north-west of the site and also outfalls to the River Wyre.

The River Wyre, Royles Brook, Hillylaid Pool and Springfield are all classified as main river.

2.4 Topographic Levels

A topographic survey of the site has been undertaken by Cheshire Surveys Ltd (**Appendix B**) and LiDAR data has been used to develop a digital terrain model of the site and surrounding area as illustrated in **Figure 2**.

Ground levels across the main site are typically indicated to be in the region of 5.6 - 5.9 m AOD, with ground in the south-west, adjacent to Royles Brook, rising to 6.0 - 6.2 m AOD. Ground levels on the southern parcel are indicated to be in the region of 5.3 - 5.8 m AOD. The existing access crossing of Royles Brook linking the two parcels of land is indicated to be at a level of 5.7 - 6.4 m AOD.

Ground levels on South Road are indicated to be in the region of 5.7 - 5.8 m AOD within the vicinity of the site.

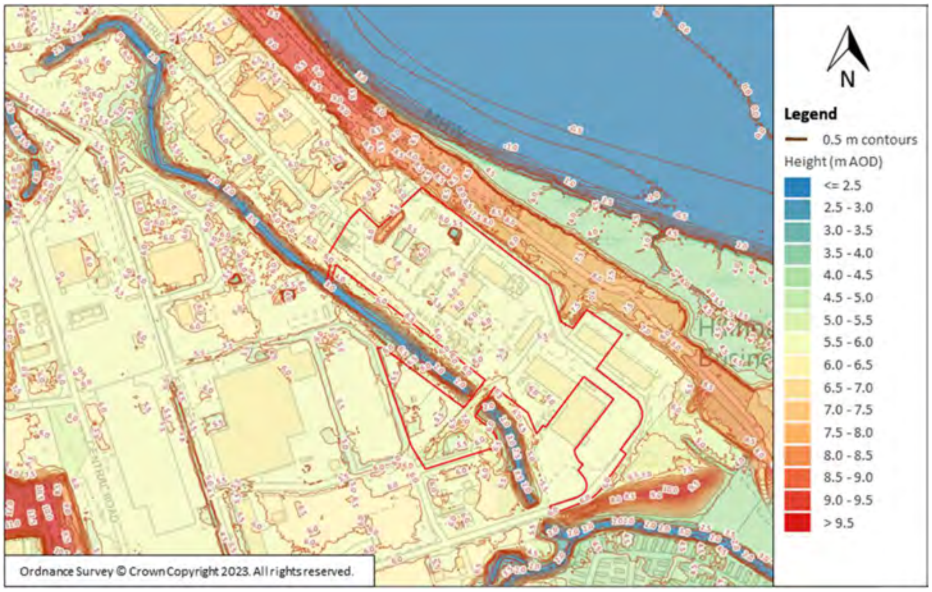


Figure 2: Digital Terrain Model from LiDAR Data

2.5 Ground Conditions

According to the Soilscapes soils dataset produced by the Cranfield Soil and AgriFood Institute[1], soil conditions at the site and within the surrounding area are described as loamy and clayey soils of coastal flats with naturally high groundwater.

British Geological Survey mapping of surface geology[2] indicates the underlying bedrock formation comprises Preesall Halite Member - Mudstone and Halite-Stone, with an area of Kirkham Mudstone Member - Mudstone in the south, overlain by Tidal Flat Deposits, 1 - Clay and Silt superficial deposits.

According to the MAGIC website[3] the Kirkham Mudstone Member bedrock at the site is classified as a Secondary B aquifer, whilst the superficial deposits and Preesall Halite Member bedrock are classified as unproductive. The site is not shown to be located within a designated groundwater source protection zone.

1 www.landis.org.uk/soilscapes/
2 https://www.bgs.ac.uk/map-viewers/geoindex-onshore/
3 https://magic.defra.gov.uk/MagicMap.aspx

3 PLANNING POLICY AND GUIDANCE

3.1 National Planning Policy and Policy Guidance

The thrust of national planning policy, as articulated in the NPPF is that inappropriate development in areas at risk of flooding should be avoided where possible, as summarised below:

- Inappropriate development in areas at risk of flooding should be avoided and that development should be directed away from areas at highest risk (whether existing or future), but where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere (NPPF para. 165).
- The policy of seeking to steer development to areas with the lowest risk of flooding, from any source, is implemented through the application of the flood risk Sequential Test. 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 sequential approach should be used in areas known to be at risk now or in the future from any form of flooding (NPPF para. 168).
- If it is not possible for development to be located in zones 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 test will depend on the potential vulnerability of the site and of the development proposed (as set out in Annex 3 of NPPF; also PPG Table 2) (NPPF para. 169). For example, the Exception Test need not be applied for less vulnerable development in any flood zone, or for more vulnerable development in flood zones 1 or 2.
- Where the Exception Test must be applied, application of the test for development proposals at the application stage should be informed by a site-specific flood risk assessment. For the test to be passed it should be demonstrated that: (a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; (b) and the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall (NPPF para. 170). Both elements of the test should be satisfied for the development to be permitted (NPPF para. 171).
- A site-specific flood risk assessment should be provided for all development in flood zones 2 and 3 [whilst] in flood zone 1, an assessment should accompany all proposals involving: sites of 1 ha or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use (NPPF para. 173).
- Development should not increase flood risk elsewhere (NPPF para. 173).
- Development should only be allowed in areas at risk of flooding where the flood risk assessment (and the sequential and exception tests, as applicable), demonstrate that: a) within the site, the most vulnerable development is located in areas of lowest flood risk (unless there are overriding reasons to prefer a different location); b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment; c) the development incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate; d) any residual (flood) risk can be safely managed; and e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan (NPPF para.173).
- Applications for some minor development and changes of use should not be subject to the sequential or exception tests (NPPF para. 174). The exceptions are stated in Footnote 60.
- Major development should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems should: a) take account of advice from the lead local flood authority; b) have appropriate proposed minimum operational standards; c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and d) where possible, provide multifunctional benefits (NPPF para. 175).

Guidance on application of the sequential and exception test is provided in the PPG - Flood Risk and Coastal Change. For example:

- The approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future (i.e. taking climate change into account) medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding (PPG para. 023).
- Where it is not possible to locate development in low risk areas, the Sequential Test should go on to compare reasonably available sites within medium risk areas and then, only where there are no reasonably available sites in low and medium risk areas, within high risk areas (PPG para. 024).
- Initially, the presence of existing flood risk management infrastructure should be ignored, as the long-term funding, maintenance and renewal of this infrastructure is uncertain. Climate change will also impact upon the level of protection infrastructure will offer throughout the lifetime of development (PPG para. 024).
- The Sequential Test should be applied to 'Major' and 'Non-major development' proposed in areas at risk of flooding, but it will not be required where; the site has been allocated for development and subject to the test at the plan making stage (provided the proposed development is consistent with the use for which the site was allocated and provided there have been no significant changes to the known level of flood risk to the site, now or in the future which would have affected the outcome of the test); the site is in an area at low risk from all sources of flooding, unless the Strategic Flood Risk Assessment, or other information, indicates there may be a risk of flooding in the future; the application is for a development type that is exempt from the test, as specified in footnote 60 of the NPPF (PPG para. 027).
- For individual planning applications subject to the Sequential Test, the area to apply the test will be defined by local circumstances relating to the catchment area for the type of development proposed. For some developments this may be clear, for example, the catchment area for a school. In other cases, it may be identified from other Plan policies. For example, where there are large areas in Flood Zones 2 and 3 (medium to high probability of flooding) and development is needed in those areas to sustain the existing community, sites outside them are unlikely to provide reasonable alternatives. Equally, a pragmatic approach needs to be taken where proposals involve comparatively small extensions to existing premises (relative to their existing size), where it may be impractical to accommodate the additional space in an alternative location. For nationally or regionally important infrastructure the area of search to which the Sequential Test could be applied will be wider than the local planning authority boundary (PPG para. 027).
- 'Reasonably available sites' are those in a suitable location for the type of development with a reasonable prospect that the site is available to be developed at the point in time envisaged for the development. These could include a series of smaller sites and/or part of a larger site if these would be capable of accommodating the proposed development. Such lower-risk sites do not need to be owned by the applicant to be considered 'reasonably available' (PPG para. 028).
- The Exception Test should only be applied as set out in Table 2 [of the PPG ("Flood Risk Vulnerability and Flood Zone Incompatibility")] and only if the Sequential Test has shown that there are no reasonably available, lower risk sites, suitable for the proposed development, to which the development could be steered (PPG para. 032).

3.2 Local Planning Policy

The Development Plan for the site is made up of the Joint Lancashire Minerals and Waste Development Framework Core Strategy Development Plan Document (February 2009), the Joint Lancashire Minerals and Waste Local Plan; Site Allocation and Development Management Policies - Part One (September 2013) and the Wyre Local Plan (2011-2031) (incorporating partial update of 2022 and adopted January 2023).

The following policy is relevant in respect of flood risk and drainage:

CDMP2; Flood Risk and Surface Water Management

Flooding

1. *Development is required to have regard to the most up-to-date Wyre Strategic Flood Risk Assessment [SFRA] Level 2 including the SFRA Level 2 Flood Risk Sequential Test Paper and comply with the most up to date version of any relevant plans and strategies including:*
   a. *Surface Water Management Plan;*
   b. *Local Drainage Strategies;*
   c. *Land Drainage Strategy;*
   d. *Catchment Flood Management Plans;*
   e. *Shoreline Management Plan;*
   f. *Coastal Defence Strategy;*
   g. *Emergency Flood Plans.*
2. *Development will be required to demonstrate that:*
   a. *It will not be at an unacceptable risk of flooding; and*
   b. *It would not lead to an increased risk of flooding elsewhere; and*
   c. *It would not adversely affect the integrity of tidal and fluvial defences or access for essential maintenance and emergency purposes.*
3. *Where development is proposed in areas at risk of flooding, unless specifically proposed in this Local Plan, it must be demonstrated that the Sequential Test has been applied and there are no reasonable available alternative sites at lower risk, considering the nature of flooding and the vulnerability of the development.*
4. *Subject to passing the Sequential Test and, where required, the Exception Test as set out in national policy and guidance, development will only be permitted in flood risk areas where appropriate mitigation and/or adaption measures are proposed to reduce the likelihood and / or impact of flooding.*

Surface Water Management

5. *Major category development will be expected to include proposals for, and implement Sustainable Drainage Systems (SuDS) utilising lower lying land within the site, existing natural water features and other above ground measures for the management of surface water at source, unless demonstrated to be inappropriate.*
6. *Where possible all development will need to achieve greenfield runoff rates and will need to comply with the options below in accordance with the hierarchy order set below, for the management of surface water:*
   a. *Rainwater harvesting for later use;*
   b. *Continue and/or mimic the site's current natural discharge process;*
   c. *Discharge into infiltration systems located in porous sub soils;*
   d. *Reduce flows to a minimum by green engineering solutions such as ponds; swales or other open water features for gradual release to a watercourse and/or porous sub soils;*
   e. *Attenuate by storing in tanks or sealed systems for gradual release to a watercourse;*
   f. *Direct discharge to a watercourse;*
   g. *Direct discharge to a surface water sewer;*
   h. *Direct discharge to highway drainage systems subject to an agreement with the Local Highway Authority; and*
   i. *Only as a last resort after all other options have been discounted, including evidence of an assessment, controlled discharge into the combined sewerage network where United Utilities have indicated acceptance. Development will be required to minimise the rate of discharge to the public sewerage system as much as possible. On previously developed land, a reduction of at least 30% will be sought, rising to a minimum of 50% in Critical Drainage Areas. Developments will be expected to drain on a separate sewerage system, with only foul drainage connected into the foul sewerage network.*
7. *Developments will need to consider and implement measures either wholly or in part, including in combination, higher up in the priority list and demonstrate why measures higher up in the priority list*

are not practical wholly or in part including in combination, before considering measures lower down the priority list.

8. *Development proposals will need to demonstrate an adequate surface water drainage system which is maintainable for the lifetime of the development. Within Critical Drainage Areas this will need to be covered as part of a Flood Risk Assessment (FRA). Developers will need to provide details of the long term maintenance of the surface water drainage system*

The site falls within SA4 Hillhouse Technology Enterprise Zone on the supporting Policies Map, which is identified as a sub regionally significant employment area for Use Classes B1, B2 and B8. Policy SA4 states that the *"site is to be brought forward in line with a masterplan for the Enterprise Zone to be produced covering the whole of the designated area"* and identifies the following key development considerations:

3. *[The Enterprise Zone] is located in Flood Zone 2 and 3. Mitigation measures are required to ensure that the [Enterprise Zone] is safe for the lifetime of the development. The results of the FRA must be used to take a sequential approach to site layout. The FRA must also consider the risk results from a breach at the tidal river embankment adjacent to the lagoon areas. Development must contribute to improvements of this embankment in accordance with [the Environment Agency] Wyre Urban Core Strategy (2013). Finished floor levels must be above the undefended appropriate design flood level plus an allowance for climate change for the life of the development. Where finished floor levels cannot be set above this level, the developer must state in their FRA why it is not possible and identify and implement flood proofing/resilience measures that will protect occupants and their property up to that floor level.*
4. *Residual surface water run-off should drain direct to the River Wyre via Springfield in the north and Royles Brook in the south.*
5. *Springfield and Royles Brook are both designated Main Rivers. The prior written consent of the Environment Agency is required for any proposed works or structures in, under, over or within 8 metres of the top of the bank of the watercourse and 16 metres of the estuary flood defences. An open space buffer should be provided to protect the watercourse from detrimental impacts.*

In 2018 Blackpool, Fylde and Wyre Economic Development Company and NPL Group, as the primary owner of the Enterprise Zone, commissioned Mott MacDonald to develop the masterplan for the area. The masterplan now serves as the visionary document and framework which guides development in the Hillhouse International Enterprise Zone.

The masterplan does not specifically identify the site for an intended use, most likely due to its previously developed nature; however, the site is located within a "Secure Industrial Area" for which it states, *"the masterplan will preserve and enhance the existing secured industrial area within the Enterprise Zone offering industrial, manufacturing, commercial and logistics related uses along with related services"*.

Furthermore, Hillhouse Enterprise Zone is an area identified within the Joint Lancashire Minerals and Waste Local Plan (Site Allocation and Development Management Policies - adopted September 2013) where *"large scale built waste management facilities"* (Policy WM2) and *"aggregate recycling facilities"* (Policy WM4) will be supported.

The site is not within a defined Critical Drainage Area under the 2016 Level 2 Strategic Flood Risk Assessment.

3.3 Drainage Technical Guidance

Non-statutory technical standards for sustainable drainage published by DEFRA in March 2015 set out how surface water runoff generated during the present day 1 in 30 and 1 in 100 annual exceedance probability (AEP) rainfall events and for events exceeding the present day 1 in 100 AEP event should be managed, how peak runoff rates should be restricted and how runoff volumes should be controlled.

3.4 Water Framework Directive

The Water Framework Directive (WFD) provides a legal framework for the protection, improvement and sustainable use of inland surface waters, groundwater, transitional waters, and coastal waters across England, and seeks to:

- Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters
- Achieve at least 'good' status for all waterbodies by 2015
- Promote the sustainable use of water as a natural resource
- Conserve habitats and species that depend directly on water
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Contribute to mitigating the effects of floods and droughts.

The WFD applies to any proposed development which has the potential to impact on a waterbody. Where this is the case, the Environment Agency may require evidence demonstrating that the proposed development does not compromise the aims of the WFD.

3.5 Environmental Permitting

Under the Environmental Permitting (England and Wales) Regulations 2016 an Environmental Permit for Flood Risk Activities[4] is required from the Environment Agency for any permanent or temporary works, including works:

- In, over or under a designated main river
- Within 8 m of the top of bank of a designated main river or of the landward toe of a flood defence (16 m if it is a tidal main river or a sea defence).

In addition, any permanent or temporary works within the floodplain of a designated main river may also require an Environmental Permit for Flood Risk Activities. A permit is separate to and in addition to any planning permission granted.

An Environmental Permit application will be made by Fortis IBA Ltd alongside the planning application.

[4] https://www.gov.uk/guidance/flood-risk-activities-environmental-permits

4 REVIEW OF FLOOD RISK

4.1 Historical Records of Flooding

The Environment Agency Historic Flood Map[5] indicates that there are no records of flooding at or within the immediate vicinity of the site.

4.2 Flood Risk from the Sea (Tidal / Coastal) and Rivers (Fluvial)

The Environment Agency Flood Map for Planning (Rivers and Sea)[6] (**Figure 3**) indicates the site to be located in flood zone 3. This is reiterated on Figure 1.2 of the 2016 Level 2 Strategic Flood Risk Assessment ("Fluvial and Coastal Flood Zones").

Table 1 of the PPG defines flood zones as follows[7]:

- Flood zone 1: Low Probability. Land having a less than 0.1% annual probability of river or sea flooding
- Flood zone 2: Medium Probability. Land having between a 1% and 0.1% annual probability of river flooding or between a 0.5% and 0.1% annual probability of sea flooding
- Flood zone 3a: High Probability. Land having a 1% or greater annual probability of river flooding or a 0.5% or greater annual probability of sea flooding
- Flood zone 3b: Functional Floodplain. Land where water from rivers or the sea has to flow or be stored in times of flood. Land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively or land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as a 0.1% annual probability of flooding).

Figure 1.2 of the 2016 Level 2 Strategic Flood Risk Assessment ("Fluvial and Coastal Flood Zones") confirms that the site is not located in the functional floodplain and that the site is located in flood zone 3a.

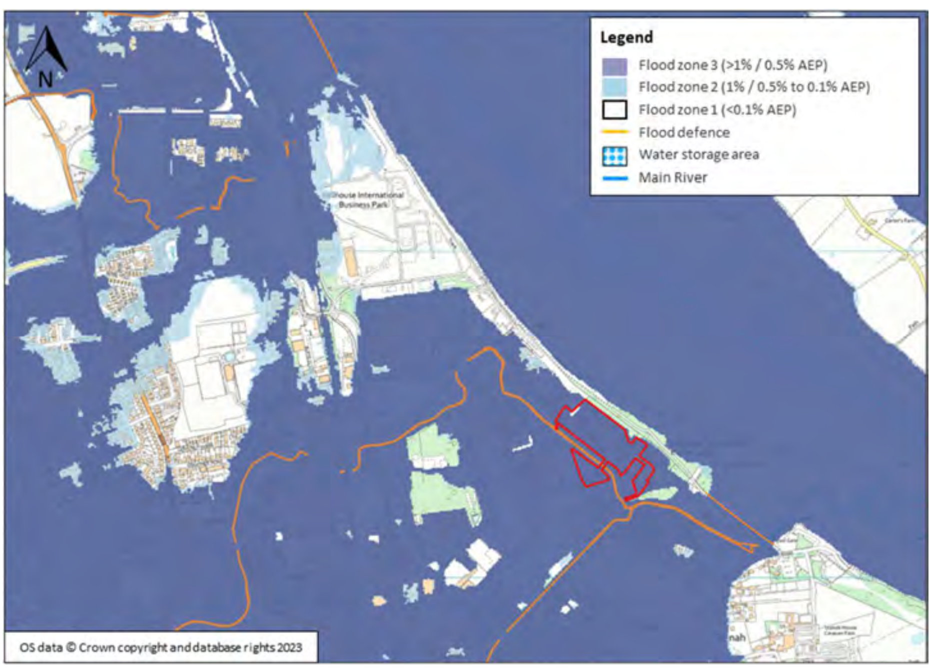


Figure 3: Flood Map for Planning
Source: gov.uk website; Accessed: July 2024

5 https://data.gov.uk/dataset/76292bec-7d8b-43e8-9c98-02734fd89c81/historic-flood-map
6 https://flood-map-for-planning.service.gov.uk/
7 https://www.gov.uk/guidance/flood-risk-and-coastal-change#flood-zone-and-flood-risk-tables

4.2.1 Flood Risk from the Sea (Tidal / Coastal)

Tidal flood defences are located to the north-west and south-east of the site as illustrated on the Flood Map for Planning (**Figure 3**). The Environment Agency has advised[8] that the defences comprise embankments with an effective crest level of 6.95 and 7.63 m AOD respectively. The embankments provide a 0.5% AEP and 4% AEP standard of protection respectively and are in 'fair' condition. LiDAR data (**Figure 2**) indicates that high ground is present along the north/north-western boundary of the site and is at a level of 7.5 - 8.6 m AOD. It is assumed that the flood defences tie-in to the high ground to provide a contiguous defence.

Section 3.2.3 of the 2016 Level 2 Strategic Flood Risk Assessment states that *"there is a long-term aspiration to maintain existing defences and major assets to their current standard of protection and improve assets to an appropriate standard where they fail to meet their target condition"*.

At a regional level, the River Wyre Catchment Flood Management Plan and the Shoreline Management Plan, both propose policies to "hold the line" or to "take further action to reduce flood risk". At a local level, the Wyre Urban Core Strategy outlines the desired approach to flood risk management in the coastal peninsula, which includes the upgrade, maintenance and replacement of existing defences.

According to the Environment Agency's Coastal Flood Boundary Conditions for the UK: 2018 Update[9], the "present day" (2017) peak still tidal levels presented in **Table 1** are expected adjacent to the site.

The NPPF requires an allowance for climate change to be made. Using the allowances set out in Government guidance[10], a design life of 25 years and an anticipated commission date for the IBAA processing plant of December 2026, this allowance has been calculated as 0.20 m (70th Percentile; 70P) and 0.26 m (95th Percentile; 95P). The peak still tidal levels accounting for climate change are also presented in **Table 1**.

The Government climate change guidance states that for flood risk assessments, both the 70P and 95P allowances should be assessed, with the 70P typically used to inform design levels and the 95P to inform mitigation measures, access and egress routes and emergency evacuation plans.

Table 1: Peak Still Tidal Levels

AEP Event	Peak Still Tidal Level (m AOD)	
	Coastal Flood Boundary Conditions for the UK, 2018	
0.5% "present day"	2017	6.67
0.1% "present day"	2017	6.98
0.5% plus climate change - 70P	2051	6.87
0.5% plus climate change - 95P	2051	6.93

Overtopping of the existing tidal flood defences has been assessed as part of North West Region - Lancashire Tidal Areas Benefitting from Defences Revisited (January 2015) for the present day 0.5% and 0.1% AEP events. The 0.5% AEP event plus climate change was also assessed for the year 2069 (+0.37 m), 2115 (+0.67 m) and 2119 (+0.97 m).

The sea level rise considered for the 2069 scenario provides a conservative assessment of the 95P allowance derived in accordance with current climate change guidance to the year 2051 and has therefore been utilised to assess the future flood risk to the site.

The modelled defended (overtopping) outputs are provided in **Figure 4** and indicate that no flooding of the site or access would be expected in a present day 0.5% and 0.1% AEP event, and in a 0.5% AEP event plus climate change (2069 - 2051, 95P proxy).

A breach of the existing tidal flood defence to the south-east of the site was assessed as part of the aforementioned modelling study for the present day 0.5% AEP event. The modelled output is provided in

8 Flood risk assessment data provided on 20 September 2022 (Ref. CL272367)
9 https://data.gov.uk/dataset/73834283-7dc4-488a-9583-a920072d9a9d/coastal-design-sea-levels-coastal-flood-boundary-extreme-sea-levels-2018
10 Flood Risk Assessments: Climate Change Allowances - https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Figure 5. The output indicates that flooding of the site would occur with a peak flood level of 6.22 m AOD. The peak flood depth is typically indicated to be below 0.6 m.

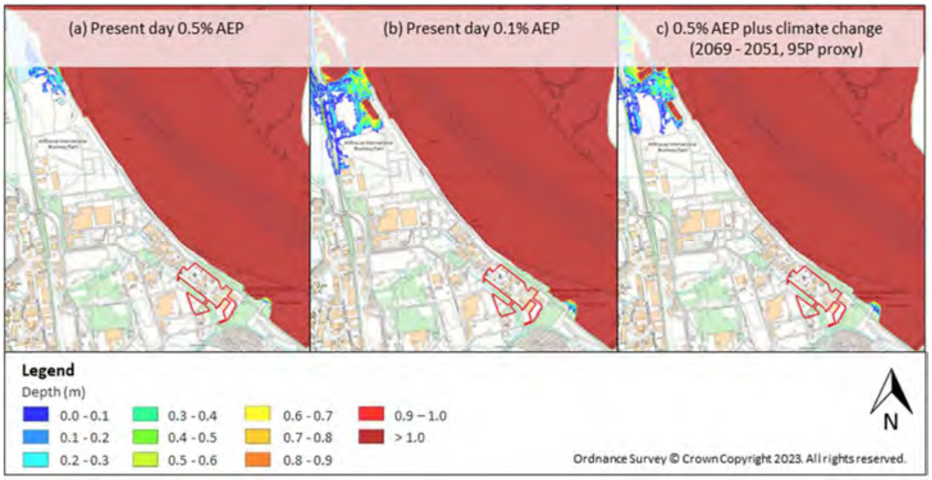


Figure 4: Modelled Flood Extents - River Wyre Defended (Overtopping)
Source: North West Region - Lancashire Tidal Areas Benefitting from Defences Revisited, January 2015

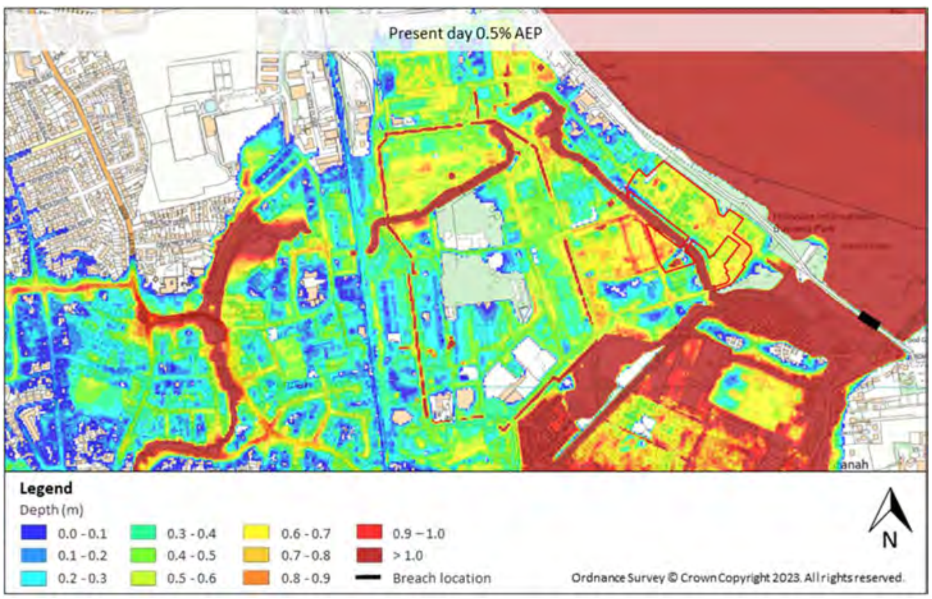


Figure 5: Modelled Flood Extents - River Wyre Breach
Source: North West Region - Lancashire Tidal Areas Benefitting from Defences Revisited, January 2015

Climate change was not considered as part of the breach assessment. In the absence of such data the undefended modelled outputs may be utilised to provide a conservative estimate of the risk of flooding during such a scenario. The modelled output for the 0.5% AEP undefended event plus climate change (2069 - 2051, 95P proxy) is provided in **Figure 6**. The model output indicates widespread flooding of the surrounding area, with a maximum flood level of 6.69 m AOD at the site.

However, a more accurate maximum flood level at the site for the year 2051 may be estimated as 6.42 m AOD (70P) and 6.48 m AOD (95P); this is the modelled flood level at the site during a present day 0.5% AEP breach event (6.22 m AOD) plus the calculated allowance for climate change of 0.20 m and 0.26 m respectively (albeit such increases in sea level may not be expected to be fully realised at the site).

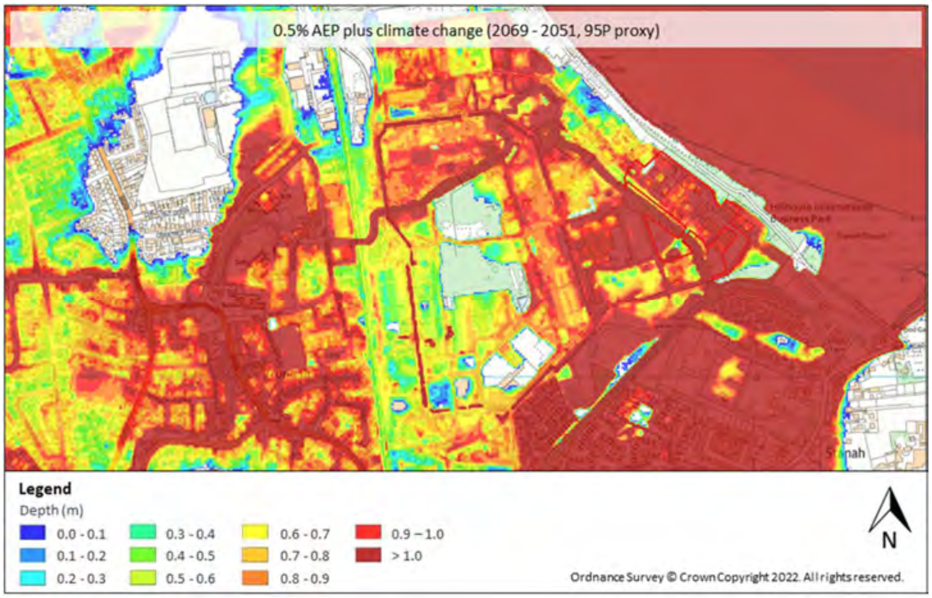


Figure 6: Modelled Flood Extents - River Wyre Undefended
Source: North West Region - Lancashire Tidal Areas Benefitting from Defences Revisited, January 2015

It is concluded that the site is at a Low risk of flooding from the River Wyre (tidal) as a result of overtopping; however, there is a residual risk of flooding from defence failure (breach). Given the aspirations to maintain defences within the locality, the risk of tidal flooding may be defined as Medium.

4.2.2 Flood Risk from Rivers (Fluvial)

A 1D-2D ISIS-TUFLOW hydraulic model of Hillylaid Pool and Royles Brook was developed as part of the Environment Agency Hillylaid Pool and Royles Brook Flood Risk Mapping Study (February 2012). This assesses the risk of flooding from Hillylaid Pool and Royles Brook for the present day 1% and 0.1% AEP events and the 1% AEP event +20% climate change.

The modelling study considered the following two scenarios:

- Defended - Stanah and Royles Brook pumping stations operating at 100% capacity, with all inline structures clear of blockage and siltation;
- Undefended - Stanah and Royles Brook pumping stations not operating and flapped outfalls on pump outlets removed to allow tidal incursion, with all structures clear of blockage and siltation.

The modelled outputs for the defended and undefended 0.1% AEP event are provided in **Figure 7** and indicate that no flooding of the site or access would be expected. As such, the site can be regarded as being in flood zone 1 in respect of flood risk from Royles Brook and Hillylaid Pool.

The current Environment Agency guidance on climate change allowances (May 2022) advises that the Central allowance should be used to assess flood risk for the lifetime of the development. The Central allowance for the Wyre management catchment is +23% (2050s). Recognising the flood extents presented in **Figure 7**, such an increase in peak river flow during a 1% AEP event would not be expected to impact the site during either the defended or undefended scenario.

There are a number of existing culverts along Royles Brook within the vicinity of the site, including at the existing access crossing between the main site and the southern parcel. Blockage of these structures was not considered as part of the 2012 modelling study.

The topographic survey (**Appendix B**) indicates that the existing access crossing is at a level of 5.7 - 6.4 m AOD, whilst existing ground levels on the main site and the southern parcel are indicated to be in the region of 5.3 - 5.9 m AOD. In the event of a blockage of this structure, there is the potential for floodwater to flow onto the site if bank levels are exceeded.

However, given the presence of culverts upstream of the site, and the industrial setting, the likelihood of the culvert adjacent to the site becoming blocked is assessed to be relatively low.

The topographic survey and LiDAR data indicate that the Royles Brook channel is relatively deep (typically in excess of 3.0 m), so if a blockage of the culvert inlet did occur, it may be reasonable to assume that floodwaters would be contained in (or within close proximity to) the channel until such time as the blockage is cleared. If bank levels were exceeded, floodwater would not be expected to accumulate to any significant depth due to the dispersion of floodwater over a large area (ground levels across Hillhouse Enterprise Zone to the east and west of Royles Brook are relatively flat).

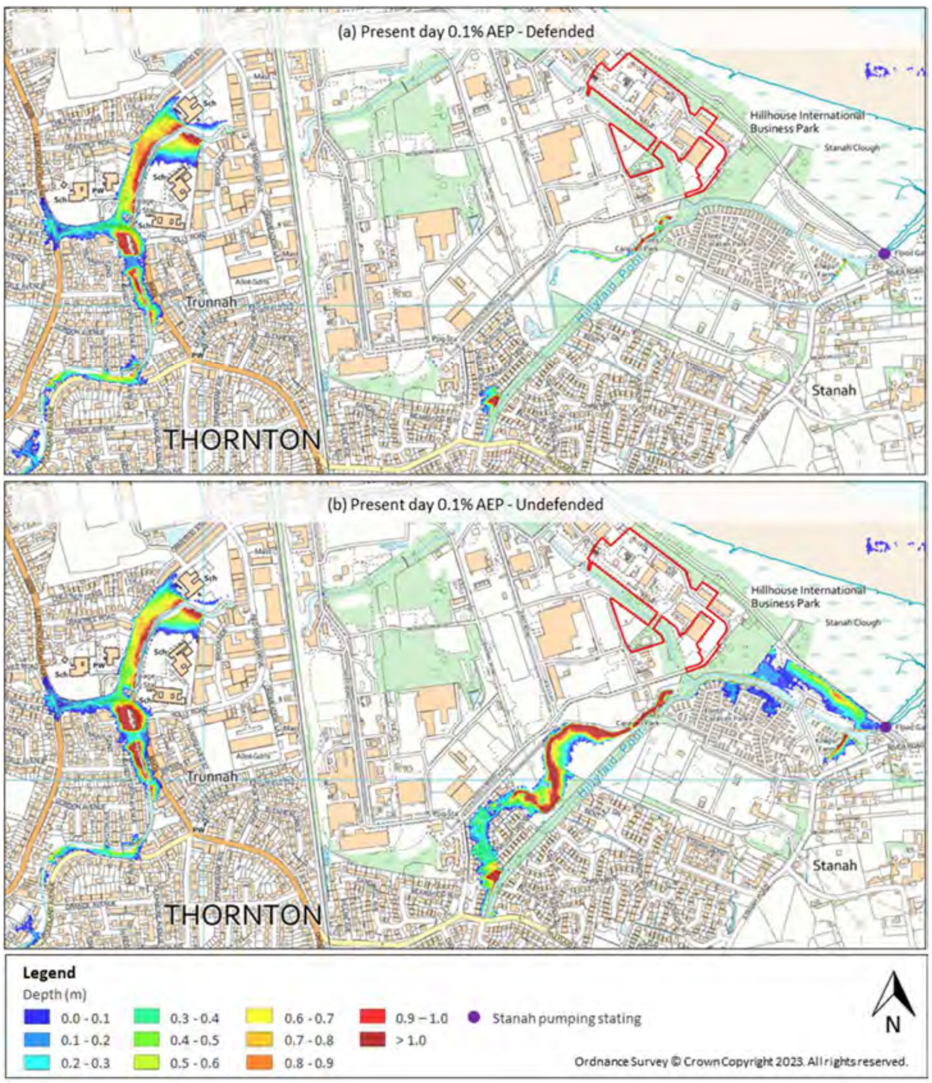


Figure 7: Modelled Flood Extents - Hillylaid Pool and Royles Brook
Source: Hillylaid Pool and Royles Brook Flood Risk Mapping Study, February 2012

No modelled data has been provided by the Environment Agency for Springfield. The Flood Risk from Surface Water map (**Figure 8**) has therefore been utilised to assess the risk of flooding from this source. This indicates that no flooding of the site is expected from Springfield in up to a 0.1% AEP event.

It is concluded that the site is at a Low risk of flooding from rivers (fluvial), albeit there may be a residual risk of flooding due to blockage of the inlet of the existing Royles Brook access crossing culvert adjacent to the site.

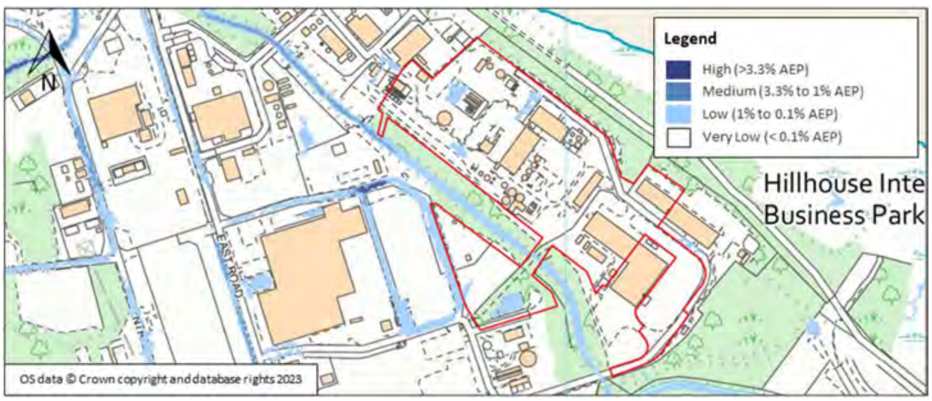
4.3 Flood Risk from Small Watercourses and Surface Water (Pluvial)

There are no small watercourses located within the vicinity of the site.

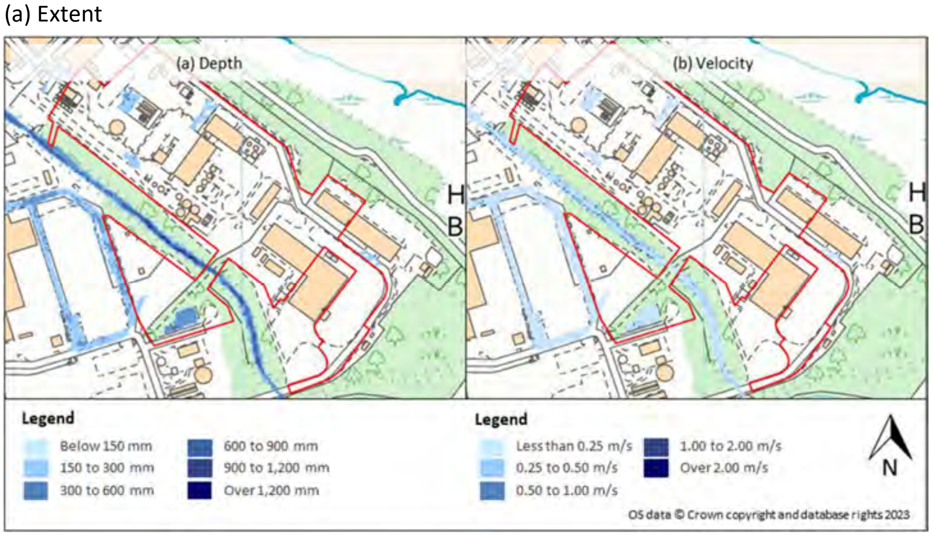
The Flood Risk from Surface Water map (**Figure 8**) indicates that the site is predominately at a Very Low risk of pluvial flooding from surface water; however, there are three isolated areas of Low risk in the north-west of the main site and one in the south-east of the southern parcel, which represent localised depressions in the topography. The maximum flood depth and velocity at these locations is indicated to below 0.3 m (with depths of up to 0.6 m on the southern parcel) and 0.25 m/s respectively.

However, the Flood Risk from Surface Water map is indicative and does not differentiate between multiple sources of flood risk. In this instance the local drainage systems are unlikely to be accurately represented due to assumptions made regarding their capacity. For example, the Risk of Flooding from Surface Water modelling methodology assumes that surface water drainage systems provide a 12 mm/hr (33.3 l/s per ha) surface water removal rate in urban areas. This is likely to be a significant underestimation.

It is concluded that the site is not at risk of flooding from small watercourses and is at a Very Low risk of pluvial surface water flooding.



(a) Extent



(b) Depth and Velocity - Low Risk

Figure 8: Flood Risk from Surface Water
Source: gov.uk website; Accessed: July 2024

4.4 Flood Risk from Reservoirs, Canals and Other Water Impounding Structures

There are no canals or other impounded waterbodies located within the immediate vicinity of the site. The Flood Risk from Reservoirs map (**Figure 9**) indicates that the site is not at risk of flooding from such sources.

It is concluded that the site is not at risk of flooding from reservoirs, canals or other water impounding structures.

Figure 9: Flood Risk from Reservoirs
Source: gov.uk website; Accessed: July 2024

4.5 Flood Risk from Groundwater

Figure 9.3 of the 2016 Level 1 Strategic Flood Risk Assessment ("Groundwater Flooding") indicates that the site is located within an area with a >= 50% <70% susceptibility to groundwater flooding. However, it is acknowledged that this mapping is relatively broad scale.

The JBA Groundwater Flood Risk Indicator map (**Figure 10**) indicates that the site is at a Negligible risk during a 1% AEP groundwater flood event.

Based upon the above data, it is concluded that the site is at a Low risk of flooding from groundwater.

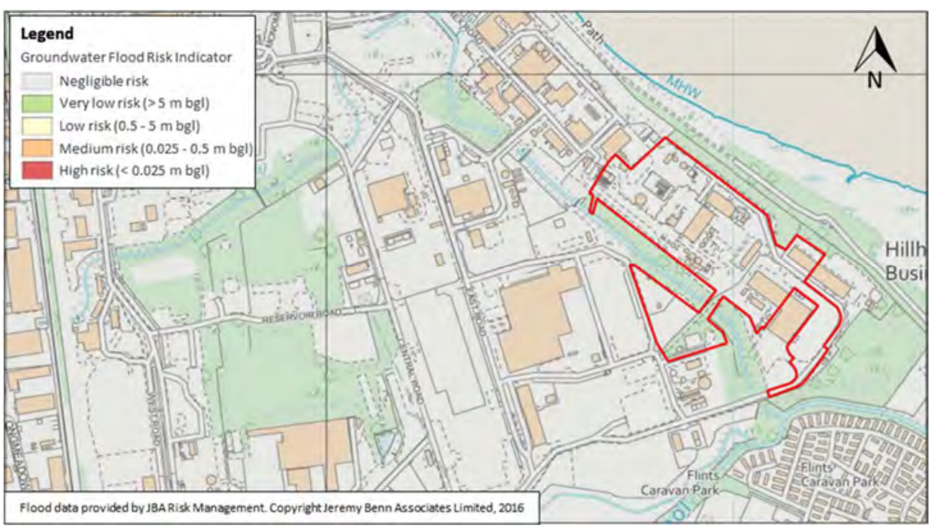


Figure 10: JBA Groundwater Flood Risk Indicator Map
Source: Blue Sky Maps; Accessed: January 2024

4.6 Flood Risk Mitigation

The risk of flooding to the proposed development from all identified sources is assessed to be low, albeit there is a residual risk of flooding from failure (breach) of the River Wyre tidal defences and due to blockage of the inlet of the existing access crossing culvert on Royles Brook adjacent to the site.

Taking into account the constraints imposed by existing infrastructure within the vicinity of the site, the risk of flooding to the proposed development will be mitigated through the implementation of the following measures, in accordance with Policy SA4 of the Wyre Local Plan (January 2023):

- IBA and IBAA stockpiles shed to be located on a concrete slab set at a level of 6.50 m AOD. *This is 20 mm above the estimated flood level of 6.48 m AOD expected at the site in a 0.5% breach event plus climate change (2051, 95P).*
- IBA processing plant building to be located on a concrete slab set at a level of 5.72 - 6.56 m AOD, with the plant all on steel framework above 6.50 m AOD.
- Finished floor level of all proposed offices to be set at a minimum level of 6.48 m AOD.
- Where practicable, the finished floor level of all new buildings to be at least 0.15 m above adjacent ground levels following any reprofiling of the site, with ground levels sloping down from the buildings.
- A retaining wall to be constructed around the main site (excluding the main site entrance area) to prevent the escape of contaminated water. This will be 3.0 m high adjacent to Royles Brook and in the form of raised upstand/kerb along the northern boundary at a level of 6.80 m AOD.
- A retaining wall to be constructed around the southern parcel (at a minimum level of 6.50 m AOD), which will mitigate the residual risk of flooding from failure (breach) of the River Wyre tidal defences and prevent the escape of contaminated water from the site.
- An open space buffer to be provided adjacent to Royles Brook to protect the watercourse from detrimental impacts and allow for future access for maintenance.
- An Environmental Permit for Flood Risk Activities to be obtained from the Environment Agency for any permanent or temporary works to or within 8 m of the landward toe of the Royles Brook flood defence.
- The Royles Brook culvert at the existing access crossing between the main site and the southern parcel to be regularly checked to ensure that this remains free of debris and to minimise the risk of blockage.
- A Flood Warning and Evacuation Plan to be prepared in consultation with Wyre Council and Lancashire County Council emergency planning teams. The site is included in an Environment Agency flood alert and warning area. This provides the opportunity for the relevant response procedures set out in the plan to be invoked in response to receipt of a flood warning from the Environment Agency.

These measures will, subject to the implementation of an appropriately designed surface water drainage scheme (**Section 5**), enable any potential overland flows to be conveyed safely across the site without affecting property.

4.7 Flood Risk Elsewhere

The site is not at risk of flooding in up to a 1% AEP fluvial event including an allowance for climate change and in a 0.5% AEP tidal defended (overtopping) event plus climate change (2069 - 2051, 95P proxy).

As such the proposals would not be expected to have an adverse impact flood risk elsewhere.

4.8 Flood Risk Sequential Test

A summary of the risk assessment from all potential sources of flooding using a low to very high risk classification (as defined in **Appendix C**) is presented in **Table 2**.

In accordance with PPG - Flood Risk and Coastal Change para. 027 application of the Sequential Test is not required where a site has been allocated for development and the proposed use is consistent with the use for which the site was allocated.

As outlined in **Section 3.2**, the site falls within Policy SA4 Hillhouse Technology Enterprise Zone of the Wyre Local Plan 2011 - 2031 (January 2023), which is identified as a sub regionally significant employment area. Whilst the site is not specifically identified for the intended use on the supporting masterplan (Mott

MacDonald, 2018), most likely due to its previously developed nature, the site is located within a "Secure Industrial Area" for which it states, *"the masterplan will preserve and enhance the existing secured industrial area within the Enterprise Zone offering industrial, manufacturing, commercial and logistics related uses along with related services"*.

Furthermore, Hillhouse Enterprise Zone is an area identified within the Joint Lancashire Minerals and Waste Local Plan (Site Allocation and Development Management Policies - adopted September 2013) where *"large scale built waste management facilities"* (Policy WM2) and *"aggregate recycling facilities"* (Policy WM4) will be supported.

The proposal may therefore be considered to accord with the general principles of SA4, its supporting masterplan and the Lancashire County Council development plan, and as such comply with the requirements of the flood risk Sequential Test.

Table 2: Site Summary of Flood Risk from All Sources

Source of Risk	Risk Classification					Sources of Information*
	None/Negligible	Low	Medium	High	Very High	
Sea (tidal / coastal)			✔ 1	✔ 1		a, b
Rivers (fluvial)		✔				a, b
Small watercourses	✔					a, b, c, f
Surface water (pluvial)		✔ 2				b, c
Reservoirs	✔					b, d, f
Canals	✔					b, f
Other water impounding structures	✔					b, f
Groundwater		✔				b, e

Notes

* (a) Environment Agency Flood Map for Planning (Rivers and Sea); (b) Strategic Flood Risk Assessment (July 2016 and October 2016); (c) Environment Agency Flood Risk from Surface Water; (d) Environment Agency Flood Risk from Reservoirs; (e) JBA Groundwater Flood Risk Indicator Map; (f) Ordnance Survey mapping.

1. A High risk classicisation is attributed to the site based on its flood zone 3 designation in accordance with **Appendix C**; however, the assessment presented in **Section 4.2.1** of this report concludes that the actual (i.e. when taking into account existing flood defences) risk of flooding from the River Wyre (tidal) may be defined as Medium.
2. The flood risk to the site from surface water is predominately defined as 'Very Low' on the Flood Risk from Surface Water map (**Figure 8**). Within the sequential assessment a Low risk classification has been attributed to the site in accordance with **Appendix C**, which is defined as land having a < 0.1% annual probability of flooding.

4.9 Exception Test

The Exception Test need not be applied for 'Less Vulnerable' development within flood zone 3. Notwithstanding this, the assessment presented in this report demonstrates that the proposed development passes element (b) of the test, i.e. the development will be safe for its lifetime taking account of the vulnerability of its users and will not increase flood risk elsewhere.

5 SURFACE WATER MANAGEMENT

5.1 Surface Water Drainage at the Existing Site

An indicative existing surface water drainage record drawing for the main site is included in **Appendix D** which shows several outfalls to Royles Brook, two from the north-east and five from the south-west.

<u>North-East</u>
The topographic survey (**Appendix B**) identifies a 600 mm diameter piped north-western outfall to Royles Brook; however, the south-east outfall is located in an area of dense shrub which was unable to be surveyed.

<u>South-West</u>
Within the southern parcel, the topographic survey identifies a channel drain, several manholes and a 680 mm diameter piped outfall to Royles Brook located adjacent to the watercourse crossing. No other outfalls are identified as these are located outside of the southern parcel area.

5.1.1 Existing Runoff Rates

The site has a total area of 3.7 ha, of which 2.48 ha currently comprises impermeable areas and 1.08 ha permeable areas. The greenfield runoff rates for the site have been calculated using the greenfield runoff estimation tool on the UKSuDS website. Runoff rates from existing impermeable areas have been calculated using the Modified Rational Method. Details of the input parameters and the output results are provided in **Appendix E** and **Appendix F** respectively.

The runoff rates from the existing site are presented in **Table 3**.

Table 3: Peak Runoff Rate - Existing Site

AEP of rainfall event	**Permeable Runoff Rate** 1.08 ha (l/s)	**Impermeable Runoff Rate** 2.48 ha (l/s)	**Total** (l/s)
1 in 1	2.4	224.2	226.6
QBAR / 1 in 2	2.7	289.4	292.1
1 in 30	4.6	541.3	545.9
1 in 100	5.6	691.0	696.6

5.2 Surface Water Drainage at the Redeveloped Site

5.2.1 Disposal of Surface Water

In accordance with local planning policy, surface water runoff should be disposed of according to the following hierarchy: Rainwater harvesting for later use; Into the ground (infiltration); To a surface water body; To a surface water sewer; To a highway drain; To a combined sewer.

Given the processes to be used on site, Fortis IBA Ltd intend to capture surface water runoff and store within on site tanks for later use as part of a rainwater harvesting system. Any overflow runoff, and runoff from the car park/office area (i.e. the main site entrance), will be directed to Royles Brook as the site is underlain by soils with impeded drainage, as detailed in **Section 2.5**. Therefore, the disposal of surface water via infiltration is unlikely to be feasible and is not considered practicable.

5.2.2 Post Development Impermeable Area

The area of impermeable surfaces within the proposed development has been calculated to be 2.8 ha, based on **Appendix A**. A summary of contributing areas to the proposed development is provided in **Table 4**.

5.2.3 Peak Flow Control

The total flow from the redeveloped site will discharge at restricted rates to suit a 30% betterment of the 1 in 1 AEP brownfield rate of 224.2 l/s, equating to a total flow rate of 155.9 l/s.

It is proposed to restrict surface water runoff from the car park/office area to the existing greenfield QBAR rate of 2.5 l/s/ha so far as is practicable; however, it is recognised that a flow control with a diameter of less than 75 mm may pose a risk of blockage to the drainage system. As such, it is proposed to utilise a discharge rate of 3.5 l/s to suit a 75 mm control opening.

Surface water runoff from the metal bays, stockpile shed and plant roofs will discharge to above ground storage tanks. These tanks will act as long term storage for later use and also provide attenuation storage when the required long term capacity has been reached. On a pro-rata basis based on contributing areas, an overflow to each tank will discharge at restricted rates totalling 152.4 l/s. A summary of the rate to each drainage area is provided in **Table 4**.

Surface water runoff from the external hardstanding area of the southern parcel will discharge into a catchpit prior to being pumped to an above ground storage tank. No overflow for discharge to Royles Brook is proposed as this water will be potentially contaminated. This water will be disposed of by pumping to the IBA and IBAA storage building where it will be sprayed onto material heaps, ensuring that the tank remains empty.

It is understood that there will be no piped discharge of runoff to Royles Brook for the majority of rainfall events due to the volume of water needed for the processes on site.

5.2.4 Volume Control

Where reasonably practicable, for sites which have been previously developed, the runoff volume from the proposed development to any highway drain, sewer or surface water body in the 1 in 100 AEP, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.

As outlined within the CIRIA SuDS Manual 2015 extra runoff volumes in extreme events may be managed by releasing all runoff (above the 1 in 1 AEP event) from the site at a maximum rate of 2 l/s/ha or QBAR, whichever is the higher value.

It is proposed to reuse runoff from roof areas across the site and restrict peak discharge rates from the car park/office area to the greenfield QBAR rate recognising a rate of 3.5 l/s would apply in up to the 1 in 100 AEP event, including an allowance for climate change. This will minimise the impact of the increase in the volume of surface water generated from the site.

5.2.5 Attenuation Storage

The attenuation storage facility for the car park/office area has been modelled using Causeway Flow. The attenuation storage facility for the metal bays, stockpile shed and plant roof, and the southern parcel external area, has been modelled using the Source Control module of MicroDrainage. The model outputs are provided in **Appendix G**.

The required storage volumes have been sized to store the 1 in 100 AEP rainfall event including a 25% increase in rainfall intensity to allow for climate change in accordance with the design life and Environment Agency guidance[11]. The proposed attenuation details are provided in **Table 4**.

The storage tank requirement for the southern parcel external area is based on the 1 in 100 AEP event, including a 25% increase in rainfall to allow for climate change, over 4,320 mins (three days). This ensures that if there is a rainfall event over a weekend, for example, the water can be pumped as required the following working day.

A preliminary surface water drainage layout is provided in **Appendix H**.

[11] Flood Risk Assessments: climate change allowances (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances)

Table 4: Summary of Proposed Surface Water Drainage Scheme
1 in 100 AEP event plus 25% climate change

Drainage Area	**Contributing Area** (ha)	**Peak Overflow rate** (l/s)	**Total Required Attenuation Volume** (m³)	**Storage Type**	**Storage Area** (m²)	**Storage Depth** (m)
Car park/office area	0.27	3.5	148.2	Pipe network Geo-cellular tank	- 168.0	- 0.80
Metal bays roof	0.12	8.6	53.6	Above ground tank	56.4	1.00
Stockpile shed roof	1.86	131.9	881.3	Above ground tank	800.0	1.15
Plant roof	0.17	11.9	75.9	Above ground tank	28.2	2.70
Southern parcel external area	0.38	N/A	505.7	Above ground tank/bund	174.2	2.92

5.2.6 Exceedance Routes

Flows resulting from rainfall in excess of the 1 in 100 AEP rainfall event including an allowance for climate change will be managed in exceedance routes. It is assumed that as the development proposals progress, the design of the site would ensure flood flows are directed towards carriageways, with the site being profiled to ensure that flood flows are directed away from built development.

5.2.7 Pollution Control

Table 26.2 of the CIRIA SuDS Manual identifies industrial sites as having a 'high' pollution hazard level. Table 26.2 of the CIRIA SuDS Manual 2015 indicates that the pollution hazard indices for total suspended solids, hydrocarbons and metals are 0.80, 0.80 and 0.90.

It is proposed to incorporate a SPEL Stormceptor (or similar) bypass retention separator within the car park area where discharge will be continuous. According to SPEL documentation, the SuDS mitigation indices for the Puraceptor series of bypass separators for total suspended solids, hydrocarbons and metals are 0.80, 0.60 and 0.90

Catchpit manholes will be utilised to help ensure debris does not discharge into the downstream receptor.

5.2.8 Adoption and Maintenance of SuDS

SuDS elements will be maintained by the site operator.

An indicative maintenance schedule is presented in **Table 5**.

Table 5: Maintenance Requirements

Schedule	**Required action**	**Frequency**
Geo-cellular attenuation storage tank		
Regular maintenance	Inspect and identify any areas that are not operating correctly	Monthly for 3 months, then annually
	Remove debris from the catchment surface	Monthly
	Remove sediment from internal forebays	Annually, or as required
Remedial action	Repair inlet/outlet and vents	As required
Monitoring	Inspect catchpit manholes and note rate of sediment accumulation	Monthly in the first year and then annually
	Inspect inlet/outlet and vents to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years, or as required
Flow Control Unit		
Routine maintenance	Remove litter and debris and inspect for sediment accumulation	Six Monthly

Schedule	Required action	Frequency
	Remove sediment from sump	As necessary – Indicated by system inspections
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six Monthly
	Inspect flow control unit and establish appropriate replacement frequencies	Six Monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first year of operation, then every six months
Typical Proprietary Treatment System (e.g. bypass separator)		
Routine maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six Monthly
	Change the filter media	As recommended by manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six Monthly
	Inspect filter media and establish appropriate replacement frequencies	Six Monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first year of operation, then every six months

6 FOUL WATER MANAGEMENT

6.1 Existing Assets

An extract of the public sewer records obtained from United Utilities is provided in **Appendix I**. This indicates that there are no public sewers located in the vicinity of the site. No details of a private network are currently available.

6.2 New Connections

The anticipated domestic foul loading from the site has been calculated in accordance with Design and Construction Guidance[12]. The expected total peak flow rate from the development would be 2.2 l/s. The site will not have any trade effluent discharge requirements.

Foul water from the offices and weighbridge area will be treated on site and discharged to Royles Brook. Foul water from the plant area will also be treated on site, including UV filtering, and discharged into the surface water drainage system and stored in the above ground tanks for later use.

It is anticipated that below ground private package treatment plants will be utilised and maintained by the site operator/owner.

An environmental permit will be required for treated foul water discharging to Royles Brook.

[12] Sewerage Sector Guidance Appendix C, Water UK, Approved Version 2.0, March 2020

7 SUMMARY AND RECOMMENDATIONS

This report has been prepared for Axis on behalf of Fortis IBA (part of the Raymond Brown Group) and relates to the proposed redevelopment of land at Hillhouse Enterprise Zone, Thornton-Cleveleys, Lancashire for use as an Incinerator Bottom Ash (IBA) processing facility.

The Environment Agency Flood Map for Planning indicates the site to be located in flood zone 3.

The site is not at risk of flooding from the River Wyre (tidal) in a 0.5% AEP defended (overtopping) event plus climate change (2069 - 2051, 95P proxy); however, there is a residual risk of flooding from defence failure (breach). The modelled flood level at the site during a present day 0.5% AEP breach event is 6.22 m AOD, whilst the estimated flood level at the site during a 0.5% AEP breach event plus climate change (2051) is 6.42 m AOD (70P) and 6.48 m AOD (95P).

The site is not at risk of flooding from Royles Brook in up to a 0.1% AEP event, albeit there may be a residual risk of flooding due to blockage of the inlet of the existing access crossing culvert adjacent to the site.

The site is assessed to be at a low risk of pluvial surface water flooding and groundwater flooding, and is not at risk of flooding from small watercourses, reservoirs, canals or other water impounding structures.

The site falls within Policy SA4 Hillhouse Technology Enterprise Zone of the Wyre Local Plan 2011 - 2031 (January 2023), which is identified as a sub regionally significant employment area. Whilst the site is not specifically identified for the intended use on the supporting masterplan (Mott MacDonald, 2018), the site is located within a “Secure Industrial Area”. The proposed development accords with the aspiration to preserve and enhance this area “*offering industrial, manufacturing, commercial and logistics related uses along with related services”*.

Furthermore, Hillhouse Enterprise Zone is an area identified within the Joint Lancashire Minerals and Waste Local Plan where *“large scale built waste management facilities”* and *“aggregate recycling facilities”* will be supported.

The proposal may therefore be considered to accord with the general principles of Policy SA4, its supporting masterplan and the Lancashire County Council development plan, and as such comply with the requirements of the flood risk Sequential Test in accordance with PPG - Flood Risk and Coastal Change para. 027.

The Exception Test need not be applied for ‘Less Vulnerable’ development within flood zone 3.

Taking into account the constraints imposed by existing infrastructure within the vicinity of the site, the risk of flooding to the proposed development will be mitigated through the implementation of the following measures:

- IBA and IBAA stockpiles shed to be located on a concrete slab set at a level of 6.50 m AOD.
- IBA processing plant building to be located on a concrete slab set at a level of 5.72 - 6.56 m AOD, with the plant all on steel framework above 6.50 m AOD.
- Finished floor level of all proposed offices to be set at a minimum level of 6.48 m AOD.
- Where practicable, the finished floor level of all new buildings to be set at least 0.15 m above adjacent ground levels following any reprofiling of the site, with ground levels sloping down from the buildings.
- A retaining wall to be constructed around the main site (excluding the main site entrance area) to prevent the escape of contaminated water.
- A retaining wall to be constructed around the southern parcel (at a minimum level of 6.50 m AOD).
- An open space buffer to be provided adjacent to Royles Brook
- Environmental Permit for Flood Risk Activities to be obtained from the Environment Agency for any permanent or temporary works to or within 8 m of the top of bank of Royles Brook.
- Royles Brook culvert at the existing access crossing between the main site and the southern parcel to be regularly checked to ensure that this remains free of debris and to minimise the risk of blockage.
- Flood Warning and Evacuation Plan to be developed in consultation with Wyre Council and Lancashire County Council.

The proposed development would not have an adverse impact on flood risk elsewhere.

The assessment presents an indicative scheme for the management of surface water from the proposed development. A summary of the principal findings and proposals is provided below:

- Surface water runoff from roof areas (metal bays, stockpile shed and plant) will be collected and stored in above ground tanks for later use. Overflows will be required when the storage tanks are full with flows restricted to a 30% betterment of 1 in 1 AEP brownfield rates.
- Surface water runoff from the car park/office area (i.e. the main site entrance), and any overflow runoff, will discharge to Royles Brook.
- Surface water runoff from the southern parcel external area will be stored in an above ground tank. No overflow proposed for discharge to Royles Brook due to potential contamination. All runoff to be used for spraying on material heaps.
- Runoff to Royles Brook from the car park/office area will be restricted to the existing greenfield QBAR rate recognising that a discharge rate of 3.5 l/s to suit a 75 mm control opening will be used to help prevent blockages.
- Attenuation storage will be provided in a geo-cellular tank and above ground tanks.
- Water quality treatment measures include the provision of a bypass retention separator and catchpit manholes.

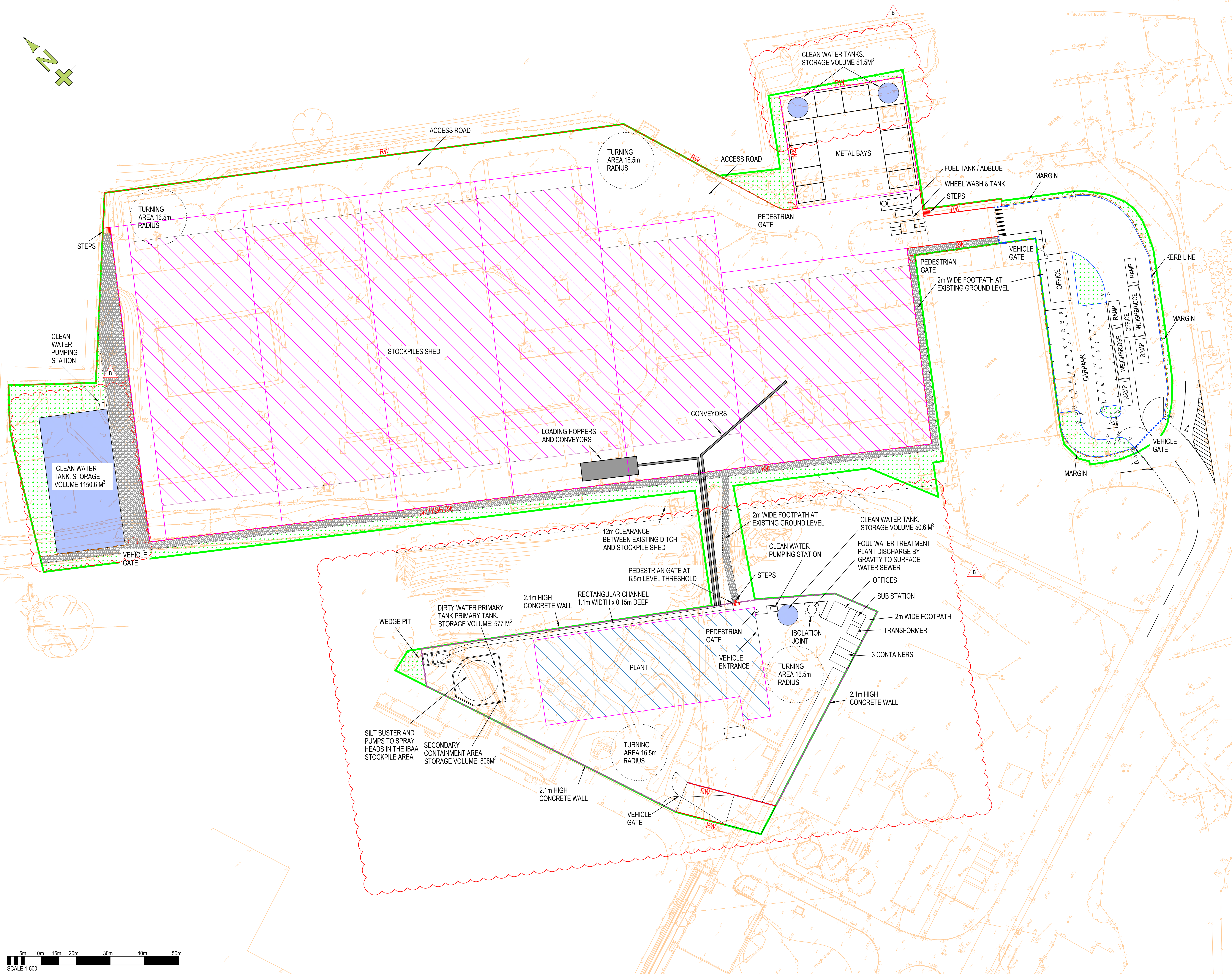
Foul water is to be treated on site, with treated flows from the office and weighbridge area discharging to Royles Brook and treated flows from the plant area stored on site for later use.

In conclusion, this report demonstrates that the proposed development may be completed in accordance with the requirements of planning policy, specifically Policy SA4 of the Wyre Local Plan (2011-2031) and the key development considerations contained therein as follows:

3. Mitigation measures have been implemented to ensure that the proposed development is safe for its lifetime considering the risk from both overtopping and breach (failure) of the tidal river embankment. Floor levels have been raised above the appropriate undefended design flood level plus an allowance for climate change, with additional measures (i.e. retaining wall) implemented where this is not feasible to protect occupants and property to that floor level.
4. Residual surface water run-off will discharge to the River Wyre via Royles Brook.
5. An Environmental Permit for Flood Risk Activities will be obtained from the Environment Agency for any permanent or temporary works to or within 8 m of the top of bank of Royles Brook. An open space buffer has also been provided adjacent to Royles Brook to protect the watercourse from detrimental impacts.

APPENDIX A

Proposed Site Plan and Levels Layout



NotesA

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT.

CDM REGULATIONS 2015 - SIGNIFICANT RISKS -

1. EXISTING UTILITY MAINS & SERVICES ARE PRESENT AND HAVE BEEN TAKEN FROM RAYMOND BROWN'S TOPOGRAPHICAL SURVEY DRG. NO. B0782 4656 01 / 05 REV A DATED 09/01/24 AND INTERSECT SURVEYS DRG. NO 133601-000 DATED JUNE 2024. THERE IS A RISK OF UNCHARTED SERVICES BEING PRESENT.
3. THE CONTRACTOR MUST TAKE ADEQUATE PRECAUTIONS FROM THE POSSIBLE PRESENCE AND CONTAMINATION FROM LEPTOSPIROSIS (WEILS DISEASE).
4. THE WORKS WILL INVOLVE THE MOVEMENT OF PLANT AND MACHINERY IN A LIVE CARRIAGEWAY. THERE IS A RISK OF POTENTIAL CONFLICT BETWEEN PLANT AND ROAD/PEDESTRIAN USERS.
5. WORKING ADJACENT A MAIN RIVER. RISK OF DROWNING.

KEY

- SITE BOUNDARY
- PLANT
- STOCKPILES
- PORTAL ROOF
- RW RETAINING WALL
- PROPOSED FENCE LINE

Rev	Description	Drn	Chk	Date
B	CLEAN & DIRTY WATER TANKS UPDATED	SGS	CJM	09.07.24
A	FOR APPROVAL	SGS	CJM	05.06.24

BdR
Civil & Structural Engineering Consultants
The Old Engine House, Goblands Farm Business Park
Court Lane, Hadlow, Kent. TN11 0DP
Tel 01732 851416
email: engineering@bdr.uk.com

Client
FORTIS
Preserving our Natural Resources

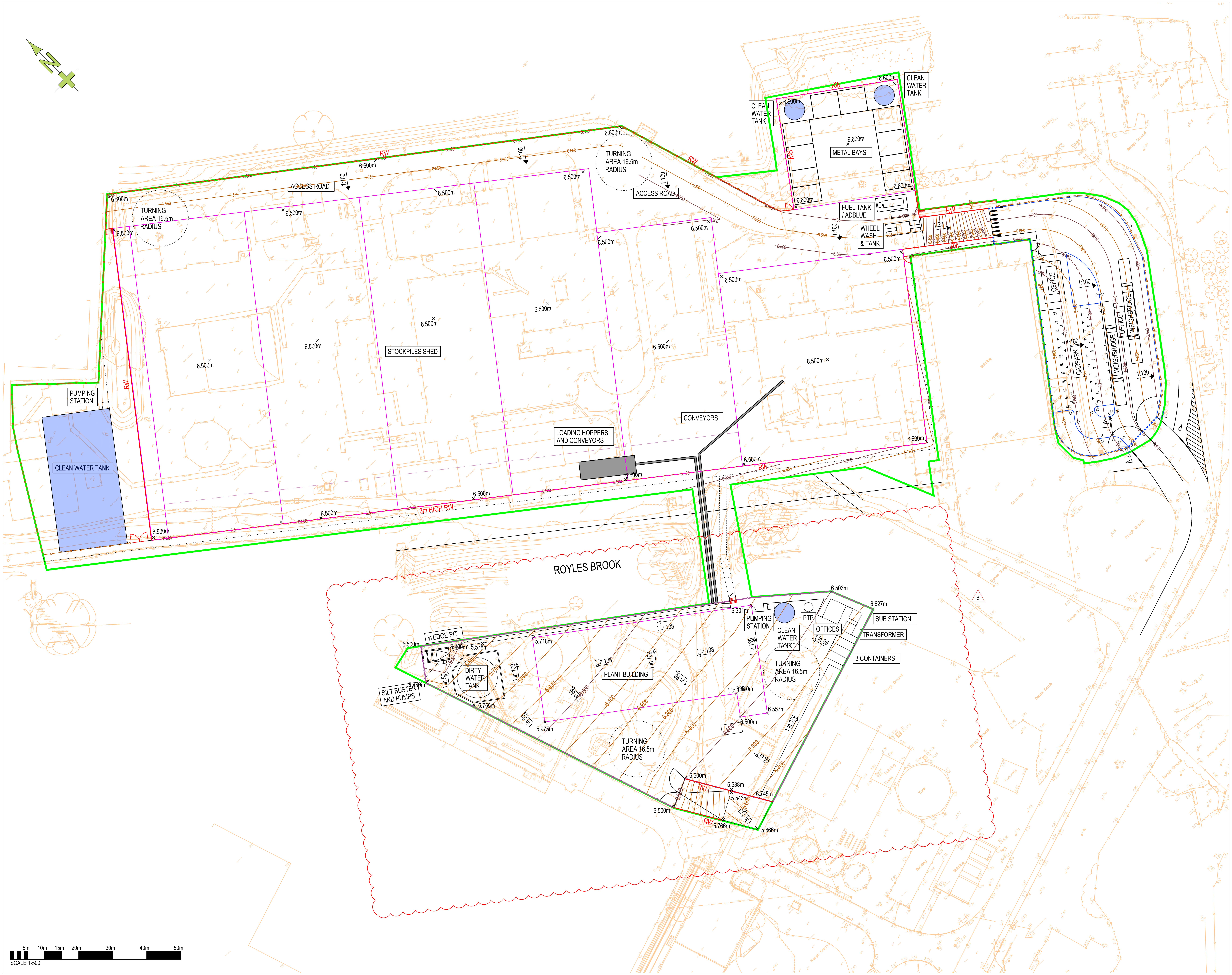
Project
IBA PROCESSING FACILITY
HILLHOUSE, FY5 4QD

Drawing
SITE PLAN LAYOUT

FOR APPROVAL

Scale @ A1	Date	Drawn by	Checked
1:500	27.03.24	SGS	CJM

Job No.	Drg. No.	Rev
24-0045	C11105	B



Notes

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5. WORKING ADJACENT A MAIN RIVER. RISK OF DROWNING.

KEY

SITE BOUNDARY
1:30 PROPOSED SURFACE GRADIENT
33.108m PROPOSED SURFACE LEVEL
RW RETAINING WALL

Rev	Description	Drn	Chk	Date
B	PLANT AREA UPDATED	SGS	CJM	09.07.24
A	FOR COMMENTS	SGS	CJM	03.05.24

BdR
Civil & Structural Engineering Consultants
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Client
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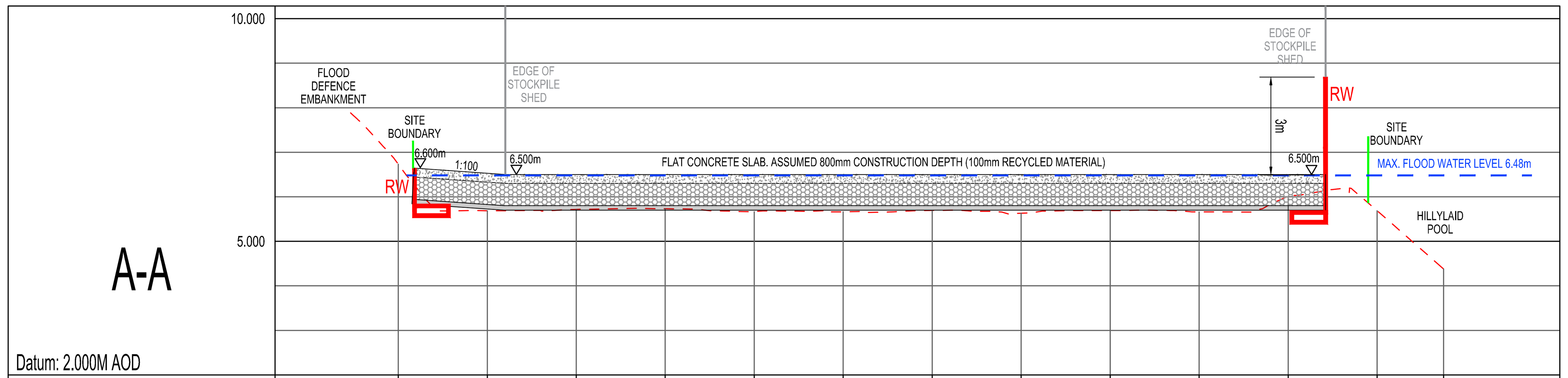
Project
IBA PROCESSING FACILITY
HILLHOUSE, FY5 4QD

Drawing
SITE LEVELS LAYOUT

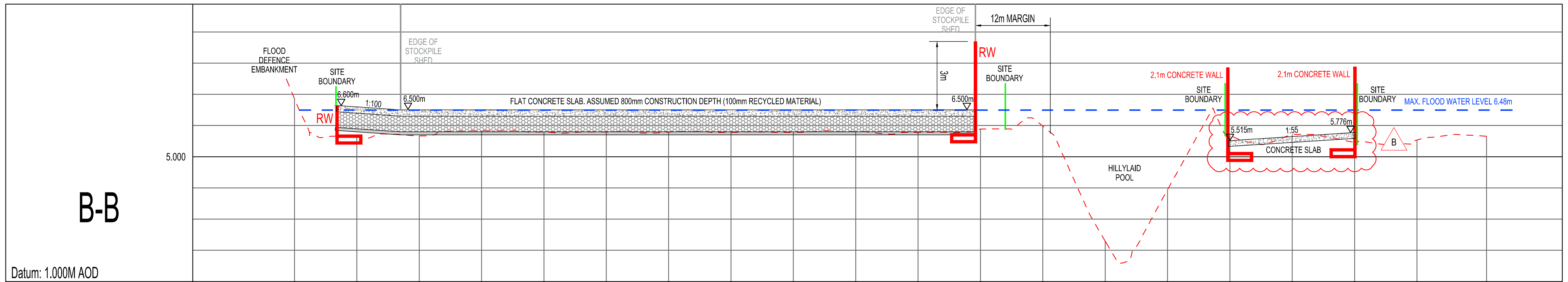
FOR APPROVAL

Scale @ A1: 1:500 | Date: 27.03.24 | Drawn by: SGS | Checked: CJM

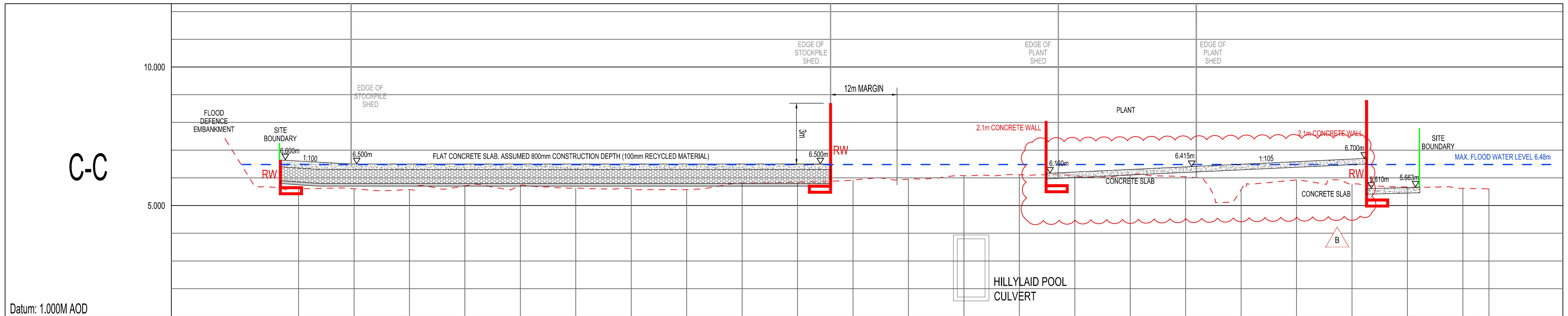
Job No. 24-0045 | Drg. No. C11101 | Rev B



EXISTING CHAINAGE (m)	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	127.473
EXISTING LEVELS (m)	6.731	5.686	5.717	5.732	5.667	5.664	5.693	5.630	5.690	5.663	6.016	5.687	4.377
PROPOSED LEVELS (m)	6.600	6.500	6.500	6.500	6.500	6.500	6.500	6.500	6.500	6.500	6.500		



EXISTING CHAINAGE (m)	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	201.155
EXISTING LEVELS (m)	6.858	5.644	5.667	5.836	5.795	5.792	5.790	5.783	5.783	5.812	5.782	5.887	5.981	2.293	3.943	5.676	5.709	5.495	5.534	5.656
PROPOSED LEVELS (m)		6.575	6.500	6.500	6.500	6.500	6.500	6.500	6.500	6.500	6.500					5.515	5.652	5.776		



EXISTING CHAINAGE (m)	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000		240.000	244.709
EXISTING LEVELS (m)	5.608	5.605	5.575	5.712	5.724	5.625	5.614	5.575	5.818	5.850	5.921	5.948	6.078	6.113	6.073	6.117	6.040	5.576	5.926	5.775	5.670		5.620	5.599
PROPOSED LEVELS (m)	6.600	6.500	6.500	6.500	6.500	6.500	6.500	6.500	6.500	6.500					6.241	6.329	6.416	6.503	6.590	6.675	5.649	5.663		

VERTICAL EXAGGERATION 1:5

5m 10m 15m 20m 30m 40m 50m

SCALE 1-500

Notes:

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2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT.

Rev	Description	Drn	Chk	Date
B	PLANT LEVELS UPDATED	SGS	CJM	09.07.24
A	FOR COMMENTS	SGS	CJM	03.05.24

BdR
Civil & Structural Engineering Consultants
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Client

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Project

IBA PROCESSING FACILITY
HILLHOUSE, FY5 4QD

Drawing

SITE SECTIONS

FOR APPROVAL

Scale @ A1	Date	Drawn by	Checked
1:500	27.03.24	SGS	CJM

Job No.	Drg. No.	Rev
24-0045	C10851	B

APPENDIX B

Topographic Survey

Services carried out by Cheshire Surveys Ltd

Topographical Surveys - Measured Building Surveys - 3D Laser Scanning - Check Surveys
Monitoring Surveys - Deformation Surveys - Volumetric Surveys - Levelling - Setting Out

Disclaimer:
All efforts have been made to survey all utility services within the boundary of the survey
We can not guarantee that we have been able to locate everything and further investigation will be required to establish full extents of services

Abbreviations

AV	Air Valve	GP	Gate Post
CAM	Camera	IC	Inspection Cover
CP	Catch Pit	INV	Invert Level
BH	Bore Hole	LP	Lamp Post
BM	Bench Mark	MH	Man Hole
BOL	Bollard	OH	Overhead Cable
BS	Bus Stop	OSBM	Ordnance Survey BM
BT	British Telecom	RS	Road Sign
CATV	Cable TV	RWP	Rain Water Pipe
CCTV	Close Circuit TV	SVP	Soil Vent Pipe
CONC	Concrete	SV	Sluice Valve
DPC	Damp Proof Course	TBM	Temporary Bench Mark
EARTH	Earth Point	TP	Telegraph Pole
EP	Electricity Pole	W	Water Cover
ER	Earth Rod	WL	Water Level
FFL	Finish Floor Level	WS	Window Sample
G	Gulley	WO	Wash Out

Legend

Barrier	Barrier
Bottom of bank	Bottom of Batter
	Building
Concrete edge	Concrete edge
Channel	Channel
Canopy	CANOPY
Concrete edge	concrete slab
Drop kerb	Drop Kerb
Driveway	driveway
Chainlink fence	Chainlink fence
Fence	Fence Misc
Palisade fence	Palisade fence
P & W fence	Post and Wire Fence
Kerb	Kerb Line
Overhead cables	Overhead Power lines
Paving	Paving
Pipeline	Pipline
Ramp	Ramp
Road edge	Road edge
	Scrub
	Steel
Top of bank	Top of Batter
Track edge	TRACK
Verge	Verge
Wall	Wall

SURVEY STATIONS

Name	Easting	Northing	Height
A1	334877.757	443443.990	6.118
A10	334926.139	443204.567	5.646
A10A	334884.579	443222.641	6.117
A10B	334879.346	443256.570	5.704
A11	334919.257	443268.317	5.668
A11A	334900.722	443292.266	5.387
A11B	334953.393	443288.319	5.675
A11C	334972.186	443302.917	6.387
A12	334896.178	443315.847	5.308
A12A	334925.934	443321.661	6.854
A12B	334952.382	443322.883	6.077
A13	334889.427	443359.692	5.519
A2	334879.429	443496.921	7.630
A3	334941.841	443467.321	5.807
A3A	334905.462	443529.078	5.776
A4	334980.018	443406.154	5.891
A4A	334926.771	443528.743	5.610
A4B	334990.314	443491.441	5.623
A4C	335046.656	443422.678	5.519
A5	335015.768	443350.972	5.848
A6	335053.856	443393.791	5.642
A6A	335075.963	443422.215	5.807
A6B	335104.297	443398.426	5.842
A7	335089.719	443377.435	5.729
A8	335111.009	443343.249	5.539
A8A	335115.063	443292.199	5.784
A9	335073.490	443243.819	5.773
B1	335096.037	443423.138	5.585
C1	334822.727	443488.401	6.240
C2	334816.784	443473.039	5.728
C3	334976.173	443358.082	5.898
C4	334960.310	443343.353	4.037
D1	334988.878	443333.659	1.934
D2	334984.575	443336.196	2.165

02/02/2024

Amend A: 1/02/2024 Additional survey south of original survey area.
See Sheet 4 & 5 for details

Notes:
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Topographical Surveys	Residential Setting out
Measured Building Surveys	Volumetric Surveys
3D Laser Scanning	Commercial Setting out
Deformation Surveys	3D Ground Modelling
Floor Level Surveys	Monitoring

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Measuring the world around us
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Email : info@cheshiresurveys.co.uk Tel: 01829 741859 / Mob: 077 7474 1397
Web: Cheshiresurveys.co.uk, Find Us on: Facebook Twitter & Linkedin

Client
Raymond Brown

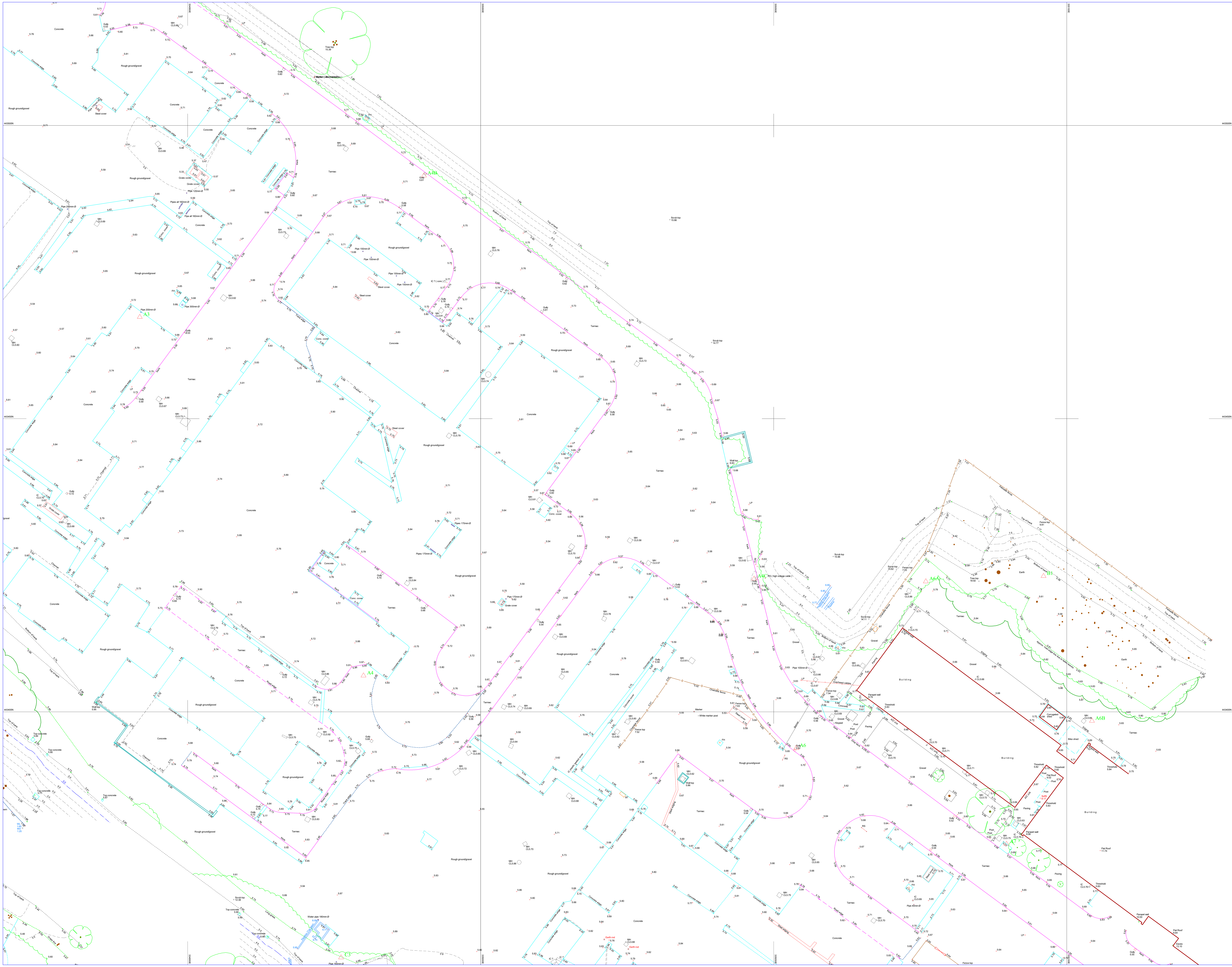
Location
Land at Hillhouse
International Business Centre

Description
Topographical survey

	Client	Cntrct	N4ce	Mdl	Sheet	Rev.
Drg. No.:	B0782	4656	01	01	1of5	A

Date: 09/01/2024 Scale: 1:200 @A0

Surveyed By:GF Drawn By: GF



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Residential Setting out
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Client
Raymond Brown

Location
Land at Hillhouse
International Business Centre

Description
Topographical survey

	Client	Cntrct	N4ce	Mdl	Sheet	Rev.
Drg. No.:	B0782	4656	01	01	2of5	A

Date:	09/01/2024	Scale:	1:200 @A0
Surveyed By:GF		Drawn By: GF	

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Legend

Barrier	Barrier
Bottom of bank	Bottom of Batter
	Building
Concrete edge	Concrete edge
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Concrete edge	concrete slab
Drop kerb	Drop Kerb
Driveway	driveway
Chainlink fence	Chainlink fence
Fence	Fence Misc
Palisade fence	Palisade fence
P & W fence	Post and Wire Fence
Kerb	Kerb Line
Overhead cables	Overhead Power lines
Paving	Paving
Pipeline	Pipline
Ramp	Ramp
Road edge	Road edge
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A10	334926.139	443204.567	5.646
A10A	334884.579	443222.641	6.117
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C4	334960.310	443343.353	4.037
D1	334988.878	443333.659	1.934
D2	334984.575	443336.196	2.165

02/02/2024

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Client
Raymond Brown

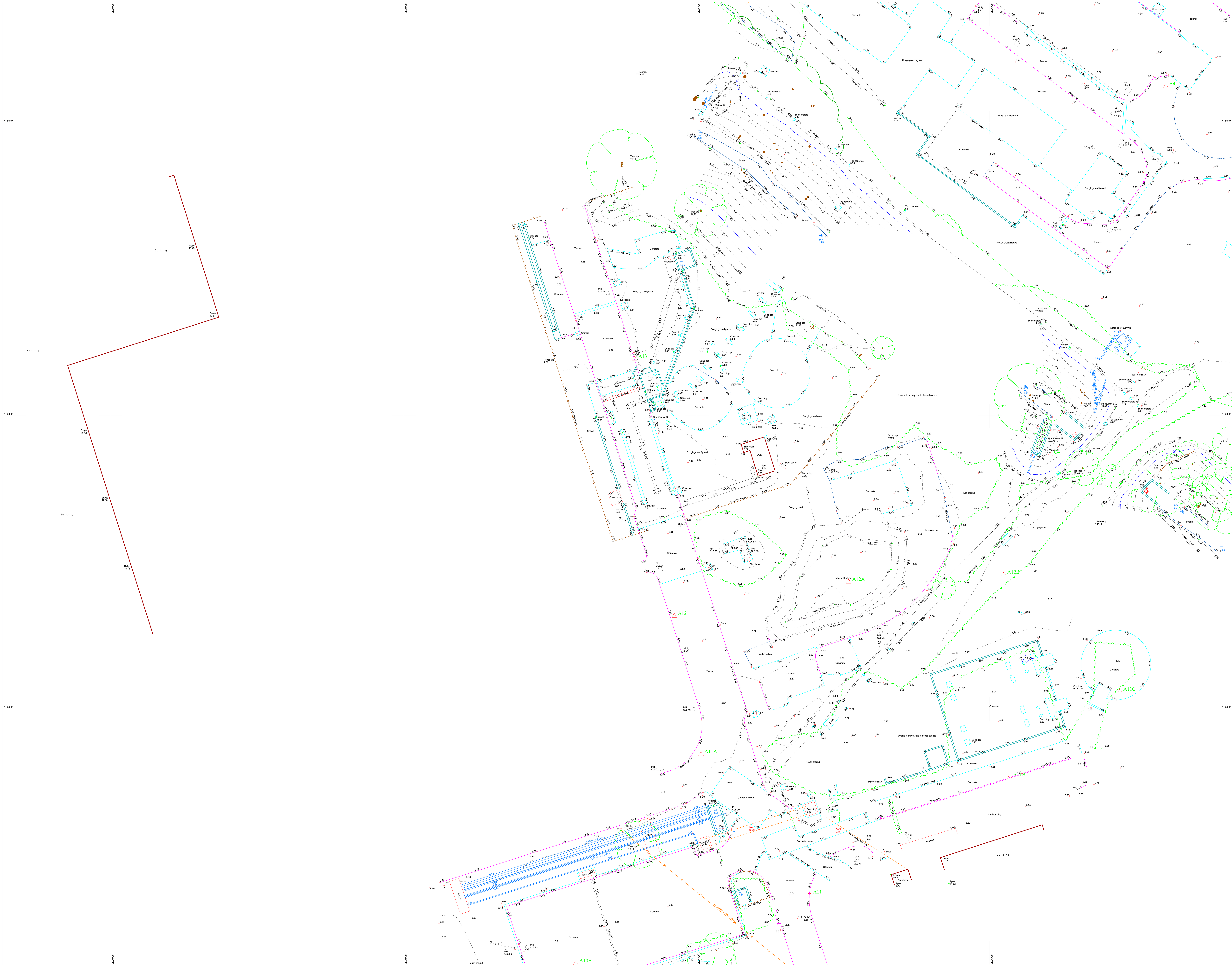
Location
Land at Hillhouse
International Business Centre

Description
Topographical survey

	Client	Cntrct	N4ce	Mdl	Sheet	Rev.
Drg. No.:	B0782	4656	01	01	3of5	A

Date: 09/01/2024 | Scale: 1:200 @A0

Surveyed By:GF | Drawn By: GF



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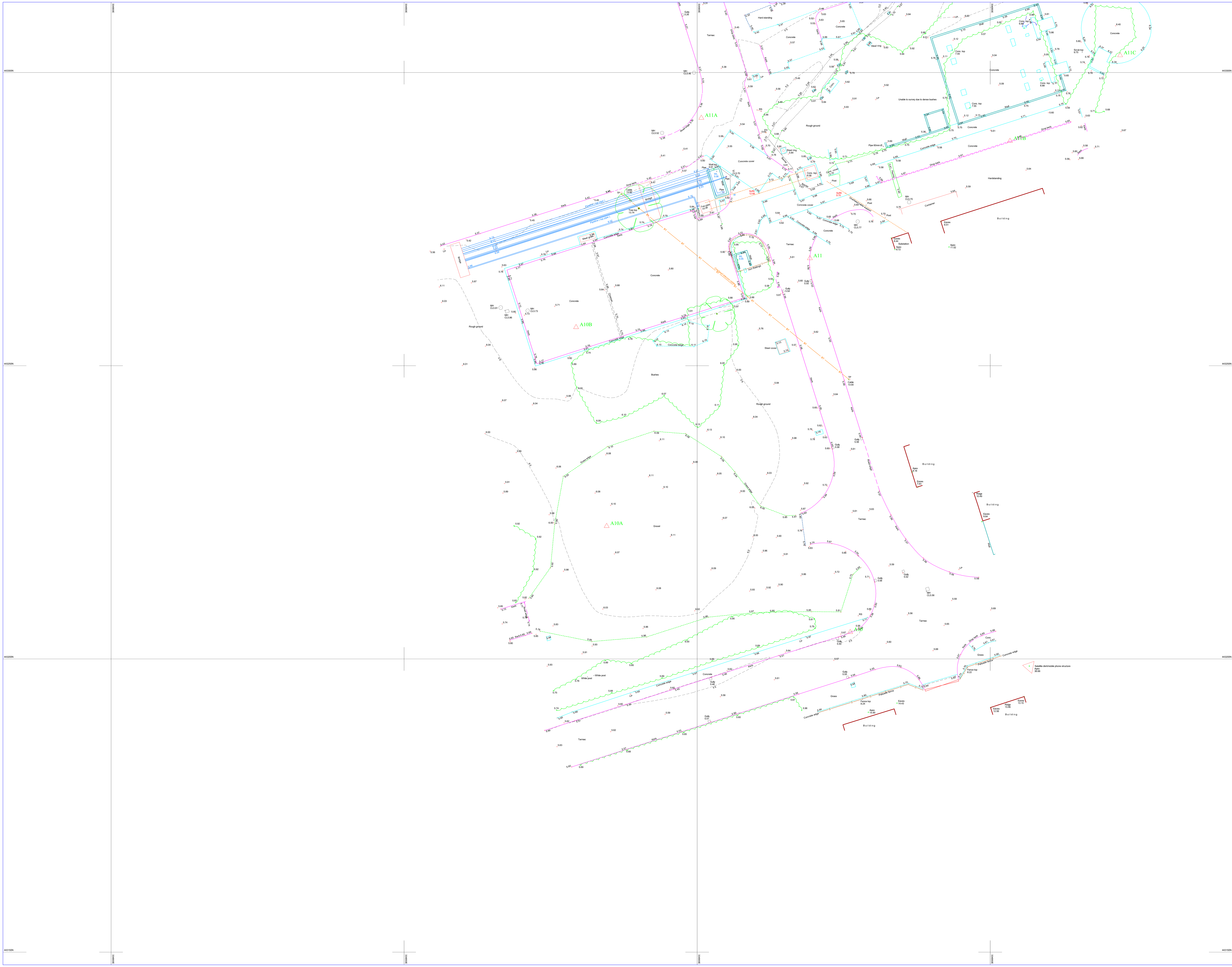

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Date: 09/01/2024 Scale: 1:200 @A0

Surveyed By:GF Drawn By: GF

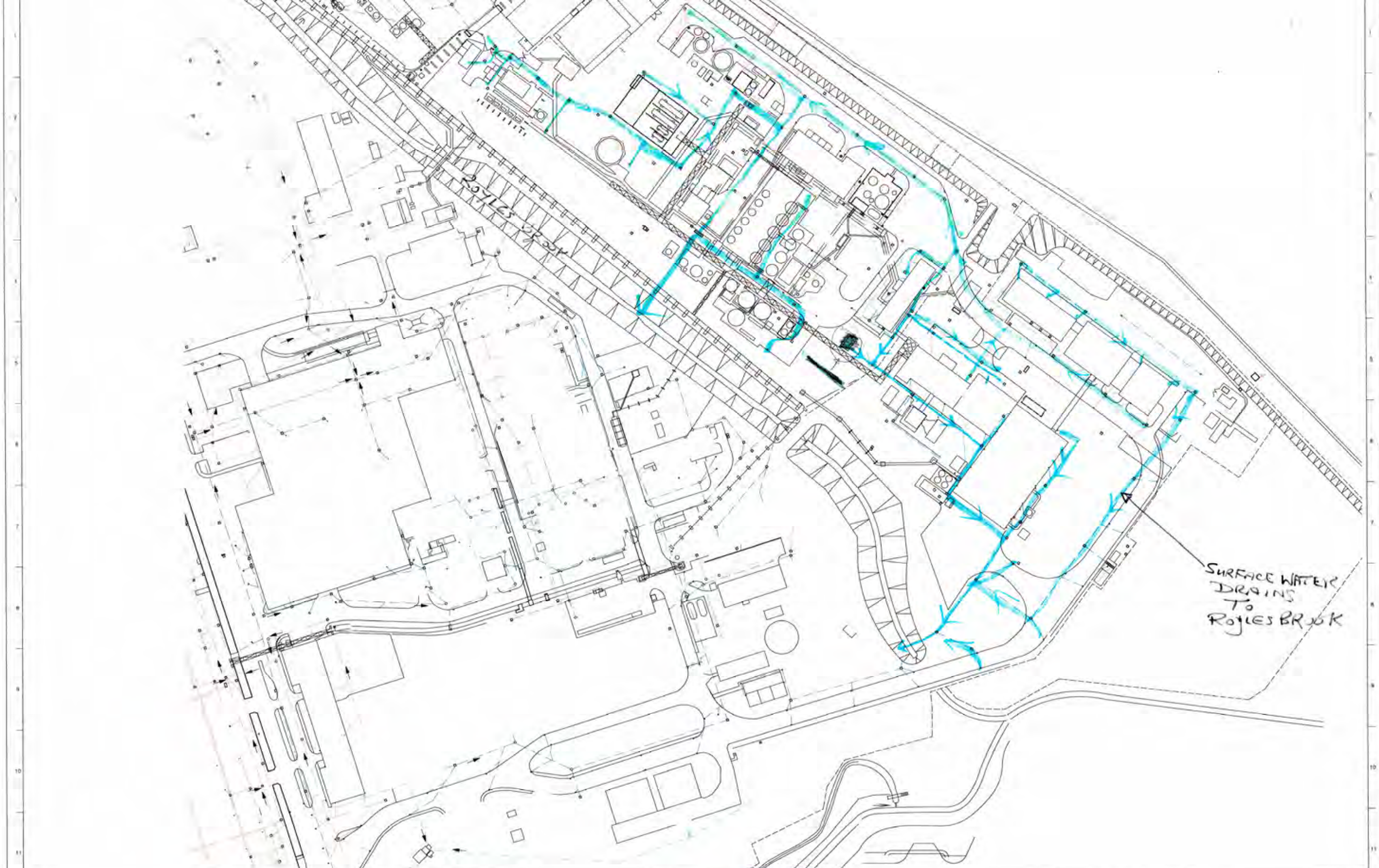
APPENDIX C

Sequential Test Flood Risk Classification

Risk	Source of Flood Risk						
	Sea (tidal / coastal) and rivers (fluvial)	**Small watercourses and surface water (pluvial)**	**Reservoirs**	**Canals**	**Other water impounding structures**	**Groundwater**	
	Flood Map for Planning *Strategic Flood Risk Assessment*	*Flood Risk from Surface Water* *Strategic Flood Risk Assessment*	*Flood Risk from Reservoirs*	*Ordnance Survey mapping* *Topographic data*	*Ordnance Survey mapping* *Topographic data*	*Groundwater Flood Risk Indicator*	*Other source*
None/Negligible	Site not near the sea or rivers	No small watercourses in the vicinity of the site	Not within the maximum extent of flooding	No canals in the vicinity of the site	No other water impounding structures in the vicinity of the site	n/a	Not prone to groundwater flooding.
Low	Flood zone 1 < 0.1% AEP	Very low < 0.1% AEP	Within the maximum extent of flooding	Canals in the vicinity of the site but limited potential for flooding	Other water impounding structures in the vicinity but limited potential for flooding	Negligible to low risk	Limited potential for groundwater flooding
Medium	Flood zone 2 1%/0.5% to 0.1% AEP	Low 1% to 0.1% AEP	n/a	Potential for canal flooding	Potential for flooding from other water impounding structures	Medium risk	Potential for groundwater flooding
High	Flood zone 3a > 1%/0.5% AEP	Medium 3.3% to 1% AEP	n/a	n/a	Historical records of flooding from other water impounding structures	High risk or records of historical flooding	Historical records of groundwater flooding
Very High	Flood zone 3b > 3.3% AEP	High > 3.3 AEP	n/a	n/a	n/a	n/a	n/a

APPENDIX D

Existing Drainage Record Drawing



KNOWN UNDERGROUND SERVICES

EFFLUENT (BROKEN LINE)
SOIL DRAINAGE (BROKEN LINE)
SURFACE & STORM WATER (BROKEN LINE)

A	ORIGINAL ISSUE		JMO		
ISSUE	REVISION	DRND	EXPD	APP	DATE

TITLE: UNDERGROUND SERVICES

Hillhouse International
P.O. Box 4
Thornton Cleveleys
Lancashire
FY5 4QD
Tel: +44 (0)1253 [illegible]
Fax: +44 (0)1253 [illegible]

ADDISON project plc

CLIENT	VINNOLIT	DRAWN BY	JMO
LOCATION	HILLHOUSE	DATE	02-05-08
PLANT		SCALE	1:750 @ A1
SECTION		TECH/REQUEST NO	

PROJECT: A1

DRAWING: ALL DRAINS 08

REV: A

APPENDIX E

Greenfield Runoff Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Keely Bonser
Site name:	5974 Hillhouse Enterprise Zone
Site location:	

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.88253° N
Longitude:	2.99127° W
Reference:	3896720186
Date:	Dec 20 2023 13:41

Runoff estimation approach: IH124

Site characteristics

Total site area (ha): 1

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics

	Default	Edited
SAAR (mm):	919	919
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	2.51	2.51
1 in 1 year (l/s):	2.18	2.18
1 in 30 years (l/s):	4.26	4.26
1 in 100 year (l/s):	5.21	5.21
1 in 200 years (l/s):	5.94	5.94

APPENDIX F

Peak Runoff Rate from Existing Site

The peak discharge rates of surface water runoff from the impermeable areas at the site have been calculated based on the Modified Rational Method[13]

The following parameters have been obtained from the maps in Volume 3 of the Wallingford Procedure:

M5-60 minute rainfall depth:	17 mm
Ratio of M5-60 to M5-2 day rainfall:	0.4
Average Annual Rainfall:	919 mm
Winter Rain Acceptance Potential/ Soil Type :	2
The Urban Catchment Wetness Index (UCWI) value:	101

A time of concentration of 10 minutes has been used comprising a time of entry of 5 minutes and a time of flow of 5 minutes.

A rainfall estimation calculation has been carried out to convert the M5-60 minute rainfall to the 5-minute duration rainfall for the 1 in 1 and 1 in 100 annual exceedance probability (AEP) rainfall events. The calculated rainfall intensities for these events are 33.2 and 102.4 mm/hr respectively.

The flow rate as given by the Modified Rational Method is:

$$\mathbf{Q=2.78 \times C_v \times C_r \times \text{rainfall intensity} \times \text{impermeable area}}$$

where:

C_v is the volumetric runoff coefficient = P_r/PIMP = 0.75
where P_r is Percentage Runoff and PIMP is Percentage Impermeable Area
C_r is the routing coefficient = 1.3
Impermeable Area = 2.48 ha

The peak discharges of surface runoff from impermeable areas of the existing site are shown in the table below:

AEP of rainfall event	Peak discharge for 2.48 ha impermeable area (l/s)
1 in 1	224.2
1 in 2	289.4
1 in 30	541.3
1 in 100	691.0

[13] The Wallingford Procedure, Volume 4, 1981

APPENDIX G

Surface Water Attenuation - Storage Volume Calculation

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	2	Maximum Rainfall (mm/hr)	200.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	1	0.094	5.00	5.600	Manhole	Adoptable	1500	335113.519	443344.085	1.500
✓	2			5.750	Manhole	Adoptable	1500	335095.473	443320.119	1.750
✓	3-FC	0.176	5.00	5.750	Manhole	Adoptable	1500	335079.065	443298.443	1.850
✓	INTERCEPTOR			5.800	Manhole	Adoptable	600	335073.799	443296.863	2.100
✓	4			5.850	Manhole	Adoptable	1200	335070.100	443296.918	2.200
✓	EX MH			5.770	Manhole	Adoptable	1500	335066.212	443294.609	2.180

Links (Input)

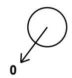
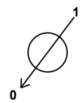
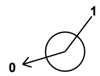
	Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
?	1.000	1	2	30.000	0.600	Colebrook-White	4.100	4.000	0.100	300.0	450	Circular	5.43	52.2
✓	1.001	2	3-FC	27.186	0.600	Colebrook-White	4.000	3.900	0.100	271.9	450	Circular	5.80	50.7
?	1.002	3-FC	INTERCEPTOR	5.498	0.600	Colebrook-White	3.900	3.800	0.100	55.0	150	Circular	5.86	50.4
?	1.003	INTERCEPTOR	4	3.699	0.600	Colebrook-White	3.700	3.650	0.050	74.0	150	Circular	5.92	50.2
?	1.004	4	EX MH	4.522	0.600	Colebrook-White	3.650	3.590	0.060	75.4	150	Circular	5.98	49.9

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	30.000	300.0	450	Circular	5.600	4.100	1.050	5.750	4.000	1.300
1.001	27.186	271.9	450	Circular	5.750	4.000	1.300	5.750	3.900	1.400
1.002	5.498	55.0	150	Circular	5.750	3.900	1.700	5.800	3.800	1.850
1.003	3.699	74.0	150	Circular	5.800	3.700	1.950	5.850	3.650	2.050
1.004	4.522	75.4	150	Circular	5.850	3.650	2.050	5.770	3.590	2.030

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1500	Manhole	Adoptable	2	1500	Manhole	Adoptable
1.001	2	1500	Manhole	Adoptable	3-FC	1500	Manhole	Adoptable
1.002	3-FC	1500	Manhole	Adoptable	INTERCEPTOR	600	Manhole	Adoptable
1.003	INTERCEPTOR	600	Manhole	Adoptable	4	1200	Manhole	Adoptable
1.004	4	1200	Manhole	Adoptable	EX MH	1500	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections		Link	IL (m)	Dia (mm)	Link Type
1	335113.519	443344.085	5.600	1.500	1500	Manhole	Adoptable		0	1.000	4.100	450	Circular
2	335095.473	443320.119	5.750	1.750	1500	Manhole	Adoptable		1	1.000	4.000	450	Circular
									0	1.001	4.000	450	Circular
3-FC	335079.065	443298.443	5.750	1.850	1500	Manhole	Adoptable		1	1.001	3.900	450	Circular
									0	1.002	3.900	150	Circular

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
INTERCEPTOR	335073.799	443296.863	5.800	2.100	600	Manhole	Adoptable	1	1.002	3.800	150	Circular
								0	1.003	3.700	150	Circular
4	335070.100	443296.918	5.850	2.200	1200	Manhole	Adoptable	1	1.003	3.650	150	Circular
								0	1.004	3.650	150	Circular
EX MH	335066.212	443294.609	5.770	2.180	1500	Manhole	Adoptable	1	1.004	3.590	150	Circular

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	25	0	0
30	25	0	0				

Node 3-FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	3.900	Product Number	CTL-SHE-0083-3500-1400-3500
Design Depth (m)	1.400	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.5	Min Node Diameter (mm)	1200

Node 3-FC Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	3.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	168.0	0.0	0.800	168.0	0.0	0.801	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	4.192	0.092	16.5	0.2772	0.0000	OK
360 minute summer	2	240	4.107	0.107	4.1	0.1898	0.0000	OK
360 minute summer	3-FC	240	4.107	0.207	11.7	33.8736	0.0000	SURCHARGED
360 minute summer	INTERCEPTOR	240	3.743	0.043	3.1	0.0121	0.0000	OK
360 minute summer	4	240	3.692	0.042	3.1	0.0478	0.0000	OK
360 minute summer	EX MH	240	3.629	0.039	3.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	16.2	0.715	0.087	0.6804	
360 minute summer	2	1.001	3-FC	4.0	0.405	0.021	1.3639	
360 minute summer	3-FC	Hydro-Brake®	INTERCEPTOR	3.1				
360 minute summer	INTERCEPTOR	1.003	4	3.1	0.755	0.149	0.0151	
360 minute summer	4	1.004	EX MH	3.1	0.798	0.151	0.0175	61.1

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
240 minute winter	1	232	4.513	0.413	8.8	1.2463	0.0000	OK
240 minute winter	2	232	4.513	0.513	7.9	0.9060	0.0000	SURCHARGED
240 minute winter	3-FC	232	4.513	0.613	22.6	100.0382	0.0000	SURCHARGED
30 minute summer	INTERCEPTOR	92	3.744	0.044	3.3	0.0124	0.0000	OK
30 minute summer	4	92	3.694	0.044	3.3	0.0492	0.0000	OK
30 minute summer	EX MH	92	3.630	0.040	3.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m^3)	Discharge Vol (m^3)
240 minute winter	1	1.000	2	7.9	0.529	0.043	4.6603	
240 minute winter	2	1.001	3-FC	6.5	0.545	0.033	4.3074	
240 minute winter	3-FC	Hydro-Brake®	INTERCEPTOR	3.3				
30 minute summer	INTERCEPTOR	1.003	4	3.3	0.764	0.157	0.0158	
30 minute summer	4	1.004	EX MH	3.3	0.809	0.159	0.0182	49.6

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
360 minute winter	1	344	5.326	1.226	8.2	3.7032	0.0000	FLOOD RISK
360 minute winter	2	344	5.327	1.327	7.2	2.3446	0.0000	SURCHARGED
360 minute winter	3-FC	344	5.328	1.428	21.2	133.0003	0.0000	SURCHARGED
360 minute winter	INTERCEPTOR	344	3.746	0.046	3.5	0.0130	0.0000	OK
360 minute winter	4	344	3.696	0.046	3.5	0.0515	0.0000	OK
360 minute winter	EX MH	344	3.632	0.042	3.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m^3)	Discharge Vol (m^3)
360 minute winter	1	1.000	2	7.2	0.472	0.039	4.7533	
360 minute winter	2	1.001	3-FC	6.1	0.490	0.031	4.3074	
360 minute winter	3-FC	Hydro-Brake®	INTERCEPTOR	3.5				
360 minute winter	INTERCEPTOR	1.003	4	3.5	0.779	0.171	0.0168	
360 minute winter	4	1.004	EX MH	3.5	0.827	0.173	0.0194	94.9

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	8.153	0.653	3.5	18.4	O K
30 min Summer	8.314	0.814	3.9	23.0	O K
60 min Summer	8.410	0.910	4.2	25.7	O K
120 min Summer	8.452	0.952	4.3	26.8	O K
180 min Summer	8.432	0.932	4.2	26.3	O K
240 min Summer	8.389	0.889	4.1	25.1	O K
360 min Summer	8.287	0.787	3.9	22.2	O K
480 min Summer	8.193	0.693	3.6	19.5	O K
600 min Summer	8.112	0.612	3.4	17.3	O K
720 min Summer	8.045	0.545	3.2	15.4	O K
960 min Summer	7.939	0.439	2.8	12.4	O K
1440 min Summer	7.804	0.304	2.3	8.6	O K
2160 min Summer	7.699	0.199	1.9	5.6	O K
2880 min Summer	7.644	0.144	1.5	4.1	O K
4320 min Summer	7.594	0.094	1.2	2.6	O K
5760 min Summer	7.570	0.070	1.0	2.0	O K
7200 min Summer	7.561	0.061	0.8	1.7	O K
8640 min Summer	7.556	0.056	0.7	1.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.286	0.0	20.6	17
30 min Summer	91.643	0.0	27.5	31
60 min Summer	58.144	0.0	34.9	52
120 min Summer	35.941	0.0	43.1	84
180 min Summer	26.715	0.0	48.1	120
240 min Summer	21.439	0.0	51.4	154
360 min Summer	15.472	0.0	55.7	220
480 min Summer	12.164	0.0	58.4	286
600 min Summer	10.055	0.0	60.3	350
720 min Summer	8.588	0.0	61.8	412
960 min Summer	6.676	0.0	64.1	532
1440 min Summer	4.673	0.0	67.3	768
2160 min Summer	3.283	0.0	70.9	1128
2880 min Summer	2.570	0.0	74.0	1476
4320 min Summer	1.848	0.0	79.8	2204
5760 min Summer	1.482	0.0	85.4	2936
7200 min Summer	1.263	0.0	90.9	3648
8640 min Summer	1.116	0.0	96.4	4384

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
10080 min Summer	7.553	0.053	0.7	1.5	O K
15 min Winter	8.154	0.654	3.5	18.4	O K
30 min Winter	8.317	0.817	3.9	23.0	O K
60 min Winter	8.412	0.912	4.2	25.7	O K
120 min Winter	8.438	0.938	4.2	26.5	O K
180 min Winter	8.397	0.897	4.1	25.3	O K
240 min Winter	8.334	0.834	4.0	23.5	O K
360 min Winter	8.202	0.702	3.6	19.8	O K
480 min Winter	8.087	0.587	3.3	16.6	O K
600 min Winter	7.995	0.495	3.0	14.0	O K
720 min Winter	7.921	0.421	2.8	11.9	O K
960 min Winter	7.814	0.314	2.4	8.8	O K
1440 min Winter	7.694	0.194	1.8	5.5	O K
2160 min Winter	7.616	0.116	1.3	3.3	O K
2880 min Winter	7.582	0.082	1.1	2.3	O K
4320 min Winter	7.559	0.059	0.8	1.7	O K
5760 min Winter	7.551	0.051	0.6	1.4	O K
7200 min Winter	7.546	0.046	0.5	1.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Summer	1.012	0.0	102.0	5064
15 min Winter	137.286	0.0	20.6	17
30 min Winter	91.643	0.0	27.5	31
60 min Winter	58.144	0.0	34.9	56
120 min Winter	35.941	0.0	43.1	90
180 min Winter	26.715	0.0	48.1	128
240 min Winter	21.439	0.0	51.4	164
360 min Winter	15.472	0.0	55.7	234
480 min Winter	12.164	0.0	58.4	300
600 min Winter	10.055	0.0	60.3	362
720 min Winter	8.588	0.0	61.8	426
960 min Winter	6.676	0.0	64.1	548
1440 min Winter	4.673	0.0	67.3	780
2160 min Winter	3.283	0.0	70.9	1128
2880 min Winter	2.570	0.0	74.0	1472
4320 min Winter	1.848	0.0	79.8	2184
5760 min Winter	1.482	0.0	85.4	2912
7200 min Winter	1.263	0.0	90.9	3672

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
8640 min Winter	7.543	0.043	0.5	1.2	O K
10080 min Winter	7.540	0.040	0.4	1.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Winter	1.116	0.0	96.4	4360
10080 min Winter	1.012	0.0	102.0	5048

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 335092 443381 SD 35092 43381
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+25

Time Area Diagram

Total Area (ha) 0.060

Time (mins) From:	To:	Area (ha)
0	4	0.060

Model Details

Storage is Online Cover Level (m) 8.500

Tank or Pond Structure

Invert Level (m) 7.500

Depth (m)	**Area (m²)**	**Depth (m)**	**Area (m²)**
0.000	28.2	1.000	28.2

Orifice Outflow Control

Diameter (m) 0.046 Discharge Coefficient 0.600 Invert Level (m) 7.500

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	7.216	0.716	102.6	572.7	O K
30 min Summer	7.406	0.906	117.9	724.8	O K
60 min Summer	7.532	1.032	127.2	825.8	O K
120 min Summer	7.602	1.102	131.9	881.3	O K
180 min Summer	7.596	1.096	131.5	876.8	O K
240 min Summer	7.560	1.060	129.1	848.4	O K
360 min Summer	7.461	0.961	122.0	768.6	O K
480 min Summer	7.362	0.862	114.6	689.3	O K
600 min Summer	7.275	0.775	107.6	620.0	O K
720 min Summer	7.201	0.701	101.3	560.9	O K
960 min Summer	7.086	0.586	90.5	468.8	O K
1440 min Summer	6.942	0.442	75.1	353.7	O K
2160 min Summer	6.842	0.342	59.9	273.6	O K
2880 min Summer	6.795	0.295	48.5	236.4	O K
4320 min Summer	6.744	0.244	36.0	195.6	O K
5760 min Summer	6.716	0.216	29.3	172.6	O K
7200 min Summer	6.696	0.196	25.0	156.8	O K
8640 min Summer	6.680	0.180	22.3	144.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.286	0.0	629.1	20
30 min Summer	91.643	0.0	842.8	32
60 min Summer	58.144	0.0	1077.0	54
120 min Summer	35.941	0.0	1332.4	86
180 min Summer	26.715	0.0	1486.0	122
240 min Summer	21.439	0.0	1590.3	156
360 min Summer	15.472	0.0	1721.7	222
480 min Summer	12.164	0.0	1804.8	286
600 min Summer	10.055	0.0	1864.8	350
720 min Summer	8.588	0.0	1911.3	410
960 min Summer	6.676	0.0	1980.5	532
1440 min Summer	4.673	0.0	2077.9	768
2160 min Summer	3.283	0.0	2195.2	1124
2880 min Summer	2.570	0.0	2290.3	1476
4320 min Summer	1.848	0.0	2467.7	2208
5760 min Summer	1.482	0.0	2645.6	2936
7200 min Summer	1.263	0.0	2816.8	3672
8640 min Summer	1.116	0.0	2986.4	4408

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
10080 min Summer	6.669	0.169	20.3	134.9	O K
15 min Winter	7.217	0.717	102.6	573.3	O K
30 min Winter	7.408	0.908	118.1	726.2	O K
60 min Winter	7.533	1.033	127.2	826.1	O K
120 min Winter	7.582	1.082	130.6	865.9	O K
180 min Winter	7.553	1.053	128.6	842.3	O K
240 min Winter	7.495	0.995	124.5	796.0	O K
360 min Winter	7.361	0.861	114.5	689.0	O K
480 min Winter	7.241	0.741	104.7	592.7	O K
600 min Winter	7.142	0.642	95.9	513.6	O K
720 min Winter	7.062	0.562	88.2	449.8	O K
960 min Winter	6.947	0.447	75.6	357.4	O K
1440 min Winter	6.835	0.335	58.2	267.7	O K
2160 min Winter	6.768	0.268	41.7	214.4	O K
2880 min Winter	6.731	0.231	33.0	185.1	O K
4320 min Winter	6.689	0.189	23.8	151.2	O K
5760 min Winter	6.662	0.162	19.2	129.8	O K
7200 min Winter	6.647	0.147	16.5	117.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Summer	1.012	0.0	3154.8	5136
15 min Winter	137.286	0.0	629.1	20
30 min Winter	91.643	0.0	842.8	32
60 min Winter	58.144	0.0	1077.0	58
120 min Winter	35.941	0.0	1332.4	92
180 min Winter	26.715	0.0	1486.0	130
240 min Winter	21.439	0.0	1590.3	166
360 min Winter	15.472	0.0	1721.7	234
480 min Winter	12.164	0.0	1804.8	300
600 min Winter	10.055	0.0	1864.8	362
720 min Winter	8.588	0.0	1911.3	424
960 min Winter	6.676	0.0	1980.5	542
1440 min Winter	4.673	0.0	2078.0	768
2160 min Winter	3.283	0.0	2195.3	1128
2880 min Winter	2.570	0.0	2290.4	1500
4320 min Winter	1.848	0.0	2468.1	2244
5760 min Winter	1.482	0.0	2645.6	2944
7200 min Winter	1.263	0.0	2816.9	3672

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
8640 min Winter	6.638	0.138	14.5	110.8	O K
10080 min Winter	6.633	0.133	13.3	106.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Winter	1.116	0.0	2986.6	4408
10080 min Winter	1.012	0.0	3155.4	5144

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 335092 443381 SD 35092 43381
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+25

Time Area Diagram

Total Area (ha) 1.860

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	1.000	4	8	0.860

Model Details

Storage is Online Cover Level (m) 7.650

Tank or Pond Structure

Invert Level (m) 6.500

Depth (m)	**Area (m²)**	**Depth (m)**	**Area (m²)**
0.000	800.0	1.150	800.0

Orifice Outflow Control

Diameter (m) 0.253 Discharge Coefficient 0.600 Invert Level (m) 6.500

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.347	1.847	9.8	52.1	O K
30 min Summer	9.804	2.304	11.0	65.0	O K
60 min Summer	10.074	2.574	11.6	72.6	O K
120 min Summer	10.191	2.691	11.9	75.9	O K
180 min Summer	10.133	2.633	11.7	74.3	O K
240 min Summer	10.013	2.513	11.5	70.9	O K
360 min Summer	9.725	2.225	10.8	62.7	O K
480 min Summer	9.458	1.958	10.1	55.2	O K
600 min Summer	9.230	1.730	9.5	48.8	O K
720 min Summer	9.037	1.537	8.9	43.3	O K
960 min Summer	8.735	1.235	8.0	34.8	O K
1440 min Summer	8.348	0.848	6.6	23.9	O K
2160 min Summer	8.045	0.545	5.2	15.4	O K
2880 min Summer	7.885	0.385	4.3	10.9	O K
4320 min Summer	7.738	0.238	3.3	6.7	O K
5760 min Summer	7.669	0.169	2.7	4.8	O K
7200 min Summer	7.632	0.132	2.3	3.7	O K
8640 min Summer	7.610	0.110	2.1	3.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.286	0.0	58.3	17
30 min Summer	91.643	0.0	77.9	31
60 min Summer	58.144	0.0	98.8	52
120 min Summer	35.941	0.0	122.2	86
180 min Summer	26.715	0.0	136.2	120
240 min Summer	21.439	0.0	145.8	154
360 min Summer	15.472	0.0	157.8	220
480 min Summer	12.164	0.0	165.4	286
600 min Summer	10.055	0.0	170.9	350
720 min Summer	8.588	0.0	175.2	412
960 min Summer	6.676	0.0	181.6	532
1440 min Summer	4.673	0.0	190.6	778
2160 min Summer	3.283	0.0	200.9	1128
2880 min Summer	2.570	0.0	209.7	1496
4320 min Summer	1.848	0.0	226.2	2204
5760 min Summer	1.482	0.0	241.9	2936
7200 min Summer	1.263	0.0	257.6	3672
8640 min Summer	1.116	0.0	273.3	4400

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
10080 min Summer	7.596	0.096	1.9	2.7	O K
15 min Winter	9.350	1.850	9.8	52.2	O K
30 min Winter	9.813	2.313	11.0	65.2	O K
60 min Winter	10.082	2.582	11.6	72.8	O K
120 min Winter	10.155	2.655	11.8	74.9	O K
180 min Winter	10.040	2.540	11.5	71.6	O K
240 min Winter	9.863	2.363	11.1	66.6	O K
360 min Winter	9.488	1.988	10.2	56.1	O K
480 min Winter	9.163	1.663	9.3	46.9	O K
600 min Winter	8.900	1.400	8.5	39.5	O K
720 min Winter	8.689	1.189	7.8	33.5	O K
960 min Winter	8.379	0.879	6.7	24.8	O K
1440 min Winter	8.031	0.531	5.1	15.0	O K
2160 min Winter	7.803	0.303	3.8	8.5	O K
2880 min Winter	7.703	0.203	3.0	5.7	O K
4320 min Winter	7.621	0.121	2.2	3.4	O K
5760 min Winter	7.589	0.089	1.8	2.5	O K
7200 min Winter	7.578	0.078	1.5	2.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Summer	1.012	0.0	289.0	5128
15 min Winter	137.286	0.0	58.3	17
30 min Winter	91.643	0.0	77.9	31
60 min Winter	58.144	0.0	98.8	56
120 min Winter	35.941	0.0	122.2	90
180 min Winter	26.715	0.0	136.2	128
240 min Winter	21.439	0.0	145.8	164
360 min Winter	15.472	0.0	157.8	234
480 min Winter	12.164	0.0	165.4	300
600 min Winter	10.055	0.0	170.9	364
720 min Winter	8.588	0.0	175.2	426
960 min Winter	6.676	0.0	181.6	548
1440 min Winter	4.673	0.0	190.6	782
2160 min Winter	3.283	0.0	200.9	1128
2880 min Winter	2.570	0.0	209.7	1496
4320 min Winter	1.848	0.0	226.2	2204
5760 min Winter	1.482	0.0	241.9	2936
7200 min Winter	1.263	0.0	257.6	3656

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m^3)	Status
8640 min Winter	7.571	0.071	1.3	2.0	O K
10080 min Winter	7.567	0.067	1.2	1.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m^3)	Discharge Volume (m^3)	Time-Peak (mins)
8640 min Winter	1.116	0.0	273.3	4288
10080 min Winter	1.012	0.0	289.0	5024

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 335092 443381 SD 35092 43381
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+25

Time Area Diagram

Total Area (ha) 0.170

Time (mins) From:	To:	Area (ha)
0	4	0.170

Model Details

Storage is Online Cover Level (m) 10.200

Tank or Pond Structure

Invert Level (m) 7.500

Depth (m)	**Area (m²)**	**Depth (m)**	**Area (m²)**
0.000	28.2	2.700	28.2

Orifice Outflow Control

Diameter (m) 0.059 Discharge Coefficient 0.600 Invert Level (m) 7.500

Summary of Results for 100 year Return Period (+25%)

Critical storm may not be identified, please run longer storm durations.

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	7.252	0.752	0.0	130.4	O K
30 min Summer	7.504	1.004	0.0	174.1	O K
60 min Summer	7.773	1.273	0.0	220.9	O K
120 min Summer	8.074	1.574	0.0	273.2	O K
180 min Summer	8.255	1.755	0.0	304.5	O K
240 min Summer	8.378	1.878	0.0	325.9	O K
360 min Summer	8.533	2.033	0.0	352.8	O K
480 min Summer	8.631	2.131	0.0	369.8	O K
600 min Summer	8.702	2.202	0.0	382.1	O K
720 min Summer	8.757	2.257	0.0	391.6	O K
960 min Summer	8.839	2.339	0.0	405.9	O K
1440 min Summer	8.956	2.456	0.0	426.1	O K
2160 min Summer	9.088	2.588	0.0	449.1	O K
2880 min Summer	9.201	2.701	0.0	468.7	O K
4320 min Summer	9.415	2.915	0.0	505.7	O K
15 min Winter	7.252	0.752	0.0	130.4	O K
30 min Winter	7.504	1.004	0.0	174.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.286	0.0	0.0	19
30 min Summer	91.643	0.0	0.0	34
60 min Summer	58.144	0.0	0.0	64
120 min Summer	35.941	0.0	0.0	124
180 min Summer	26.715	0.0	0.0	184
240 min Summer	21.439	0.0	0.0	244
360 min Summer	15.472	0.0	0.0	364
480 min Summer	12.164	0.0	0.0	484
600 min Summer	10.055	0.0	0.0	604
720 min Summer	8.588	0.0	0.0	724
960 min Summer	6.676	0.0	0.0	964
1440 min Summer	4.673	0.0	0.0	1444
2160 min Summer	3.283	0.0	0.0	2164
2880 min Summer	2.570	0.0	0.0	2884
4320 min Summer	1.848	0.0	0.0	4324
15 min Winter	137.286	0.0	0.0	19
30 min Winter	91.643	0.0	0.0	34

Summary of Results for 100 year Return Period (+25%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	7.773	1.273	0.0	220.9	O K
120 min Winter	8.074	1.574	0.0	273.2	O K
180 min Winter	8.255	1.755	0.0	304.5	O K
240 min Winter	8.378	1.878	0.0	325.9	O K
360 min Winter	8.533	2.033	0.0	352.8	O K
480 min Winter	8.631	2.131	0.0	369.8	O K
600 min Winter	8.702	2.202	0.0	382.1	O K
720 min Winter	8.757	2.257	0.0	391.6	O K
960 min Winter	8.839	2.339	0.0	405.9	O K
1440 min Winter	8.956	2.456	0.0	426.1	O K
2160 min Winter	9.088	2.588	0.0	449.1	O K
2880 min Winter	9.201	2.701	0.0	468.7	O K
4320 min Winter	9.415	2.915	0.0	505.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	58.144	0.0	0.0	64
120 min Winter	35.941	0.0	0.0	124
180 min Winter	26.715	0.0	0.0	184
240 min Winter	21.439	0.0	0.0	244
360 min Winter	15.472	0.0	0.0	364
480 min Winter	12.164	0.0	0.0	484
600 min Winter	10.055	0.0	0.0	604
720 min Winter	8.588	0.0	0.0	724
960 min Winter	6.676	0.0	0.0	964
1440 min Winter	4.673	0.0	0.0	1444
2160 min Winter	3.283	0.0	0.0	2164
2880 min Winter	2.570	0.0	0.0	2884
4320 min Winter	1.848	0.0	0.0	4324

Model Details

Storage is Online Cover Level (m) 11.650

Tank or Pond Structure

Invert Level (m) 6.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	173.5	4.000	173.5	4.001	109.3	5.000	109.3

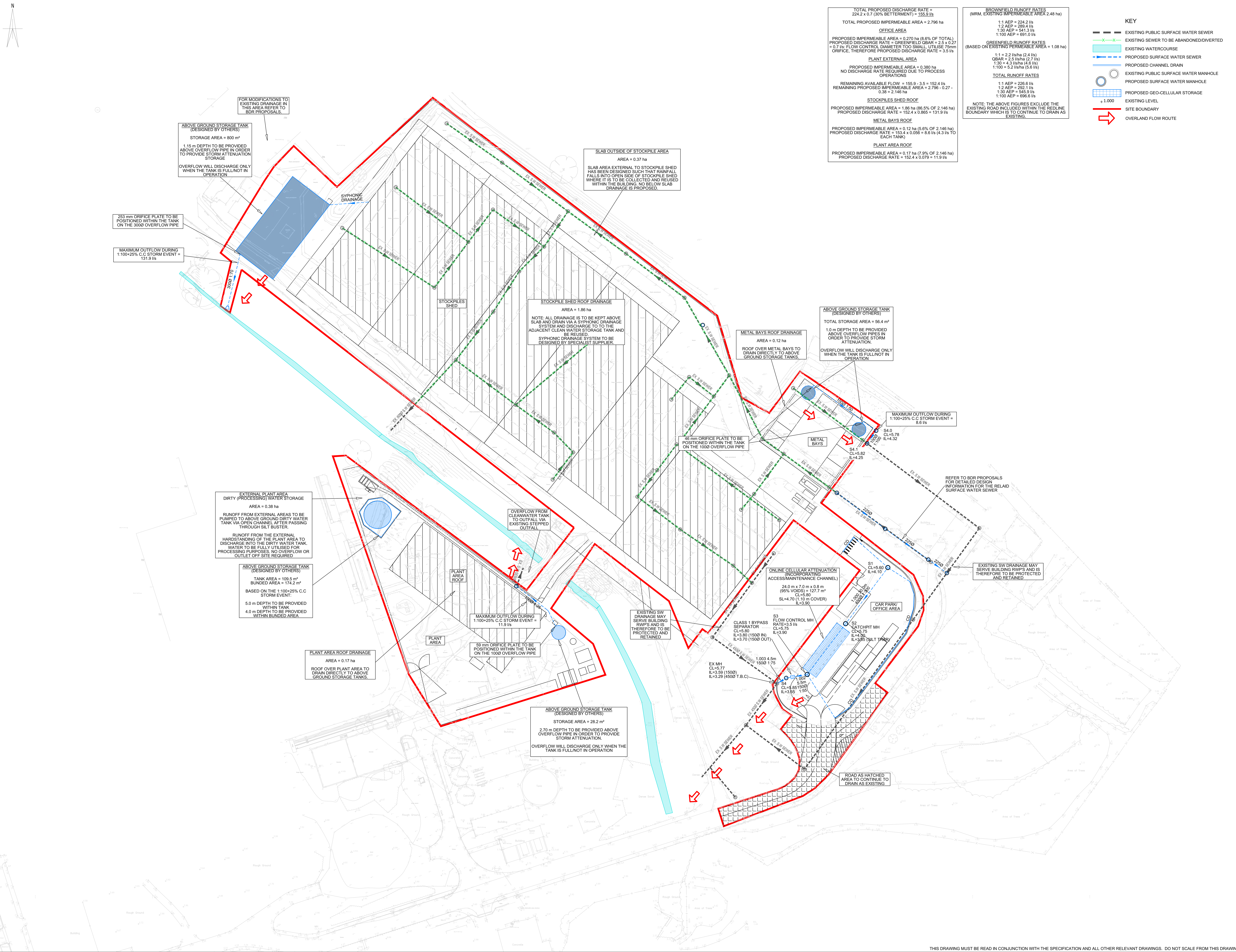
Pump Outflow Control

Invert Level (m) 6.500

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	0.0000	2.000	0.0000

APPENDIX H

Preliminary Drainage Layout



TOTAL PROPOSED DISCHARGE RATE =
224.2 x 0.7 (30% BETTERMENT) = 155.9 l/s

TOTAL PROPOSED IMPERMEABLE AREA = 2.796 ha

OFFICE AREA

PROPOSED IMPERMEABLE AREA = 0.270 ha (8.6% OF TOTAL)
PROPOSED DISCHARGE RATE = GREENFIELD QBAR = 2.5 x 0.27 = 0.7 l/s: FLOW CONTROL DIAMETER TOO SMALL, UTILISE 75mm ORIFICE, THEREFORE PROPOSED DISCHARGE RATE = 3.5 l/s

PLANT EXTERNAL AREA

PROPOSED IMPERMEABLE AREA = 0.380 ha
NO DISCHARGE RATE REQUIRED DUE TO PROCESS OPERATIONS

REMAINING AVAILABLE FLOW = 155.9 - 3.5 = 152.4 l/s
REMAINING PROPOSED IMPERMEABLE AREA = 2.796 - 0.27 - 0.38 = 2.146 ha

STOCKPILES SHED ROOF

PROPOSED IMPERMEABLE AREA = 1.86 ha (86.5% OF 2.146 ha)
PROPOSED DISCHARGE RATE = 152.4 x 0.865 = 131.9 l/s

METAL BAYS ROOF

PROPOSED IMPERMEABLE AREA = 0.12 ha (5.6% OF 2.146 ha)
PROPOSED DISCHARGE RATE = 153.4 x 0.056 = 8.6 l/s (4.3 l/s TO EACH TANK)

PLANT AREA ROOF

PROPOSED IMPERMEABLE AREA = 0.17 ha (7.9% OF 2.146 ha)
PROPOSED DISCHARGE RATE = 152.4 x 0.079 = 11.9 l/s

BROWNFIELD RUNOFF RATES
(MRM, EXISTING IMPERMEABLE AREA 2.48 ha)

1:1 AEP = 224.2 l/s
1:2 AEP = 289.4 l/s
1:30 AEP = 541.3 l/s
1:100 AEP = 691.0 l/s

GREENFIELD RUNOFF RATES
(BASED ON EXISTING PERMEABLE AREA = 1.08 ha)

1:1 = 2.2 l/s/ha (2.4 l/s)
QBAR = 2.5 l/s/ha (2.7 l/s)
1:30 = 4.3 l/s/ha (4.6 l/s)
1:100 = 5.2 l/s/ha (5.6 l/s)

TOTAL RUNOFF RATES

1:1 AEP = 226.6 l/s
1:2 AEP = 292.1 l/s
1:30 AEP = 545.9 l/s
1:100 AEP = 696.6 l/s

NOTE: THE ABOVE FIGURES EXCLUDE THE EXISTING ROAD INCLUDED WITHIN THE REDLINE BOUNDARY WHICH IS TO CONTINUE TO DRAIN AS EXISTING.

NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
2. PROPOSED SITE LAYOUT TAKEN FROM BDR 'SITE LEVELS LAYOUT' DRAWING (REF: 24-0045-C11101 REV B, JULY 2024).
3. EXISTING LEVEL INFORMATION TAKEN FROM CHESHIRE SURVEYS LTD 'TOPOGRAPHIC SURVEY' (REF: B0782-4656, JAN 2024).
4. EXISTING DRAINAGE LOCATION TAKEN FROM RECORD DRAWING PROVIDED BY CLIENT, MAR 2024.

REV	DATE	DESCRIPTION	DRAWN	CHECK
P4	31.07.24	OFFICE/CAR PARK DRAINAGE UPDATED TO SUIT BDR DETAILS	TB	DSH
P3	22.07.24	PLANT AREA UPDATED	DSH	TB
P2	17.07.24	UPDATED TO SUIT REVISED SITE PLAN AND CLIENT COMMENTS	DSH	TB
P1	06.06.24	INITIAL ISSUE	DSH	TB

Weetwood
Development • Planning • Environment

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Client
AXIS PED LTD

Drawing Status: PLANNING	Date: JUN 2024
	Scale (A0): 1:500
Project: HILLHOUSE IBA PROCCESSING FACILITY	Drawn: DSH
	Checked: TB
	Project No: 5974
Title: PROPOSED SURFACE WATER DRAINAGE LAYOUT	Drawing No: 100
	Revision: P4

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL OTHER RELEVANT DRAWINGS. DO NOT SCALE FROM THIS DRAWING.

APPENDIX I

United Utilities Public Sewer Record

United Utilities
Water for the North West

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

dan hodson

Ffordd Byrnwr Gwair
Ffordd Byrnwr Gwair, Flintshire
Mold, Flintshire
ch71fq

FAO:

Your Ref: 5974
Our Ref: UUPS-ORD-573581
Date: 03/06/2024

Dear Sirs

Location: THORNTON FACILITIES MANAGEMENT LTD HILLHOUSE INTERNATIONAL WORKS FLEETWOOD ROAD NORTH, THORNTON-CLEVELEYS, FY5 4QD

I acknowledge with thanks your request dated 28/05/2024 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. http://www.unitedutilities.com/work-near-asset.aspx .

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

Karen McCormack
Property Searches Manager

United Utilities
Water for the North West

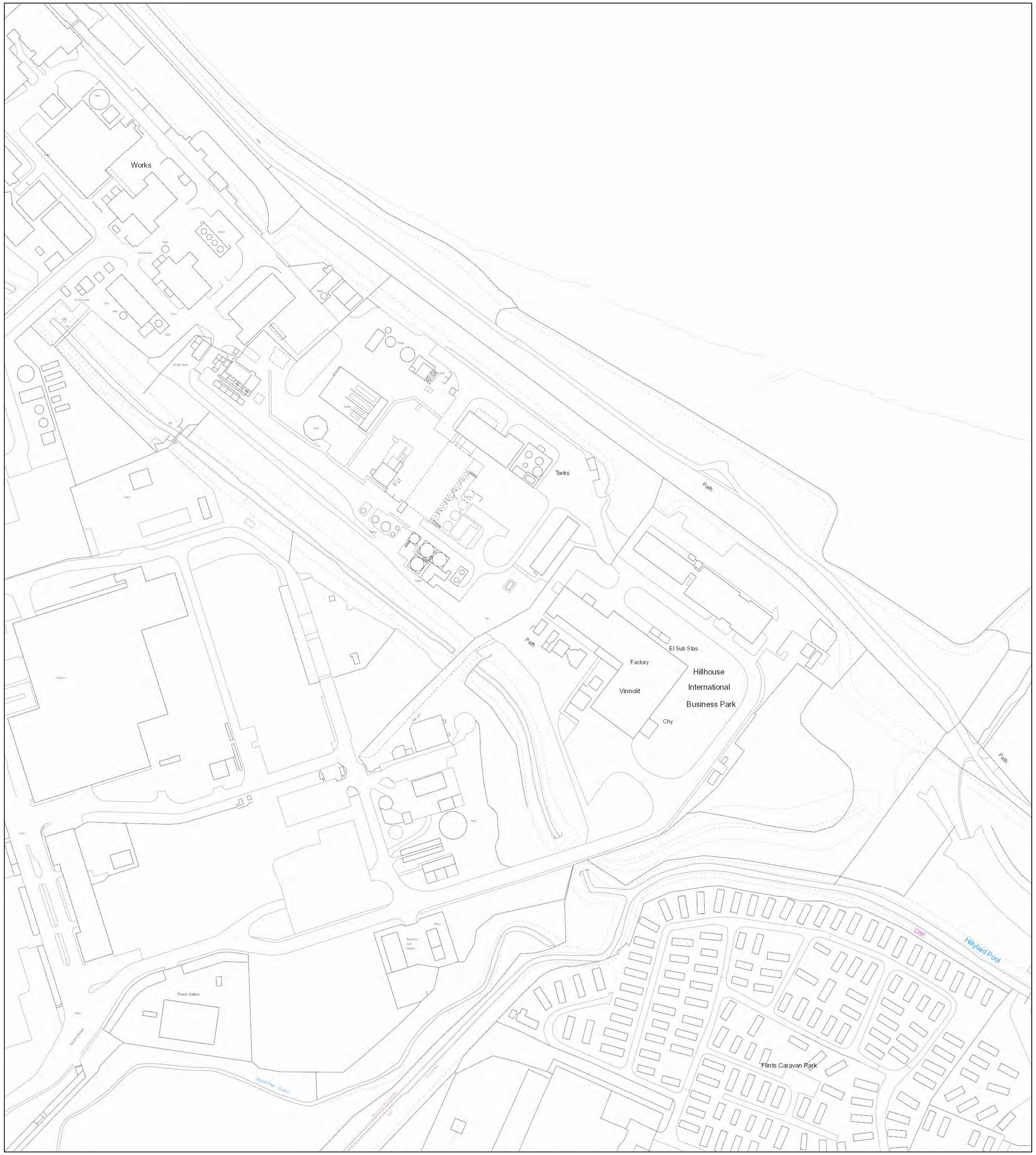
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

THORNTON FACILITIES MANAGEMENT LTD
HILLHOUSE INTERNATIONAL WORKS FLEETWOOD ROAD NORTH,
THORNTON-CLEVELEYS,
FY5 4QD

Scale: 1:1250 **Date:** 03/06/2024

Sheet: 1 of 1

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SEWER RECORDS

United Utilities
Water for the North West