

Humber Gate, Grimsby

Drainage Strategy

October 2025

Project Information	
Project:	Humber Gate, Grimsby
Report Title:	Drainage Strategy
Client:	Humber Resources Group Ltd
Instruction:	The instruction to undertake this Drainage Strategy was received from directors of Humber Resources Group Ltd.
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Approval Record	
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Document History		
Revision	Date	Comment
01	22/11/2024	First issue
02	29/05/2025	Second issue- Updated with revised site layout
03	06/10/2025	Third issue – Updated with revised drainage proposals
04	08/10/2025	Fourth issue – Updated following Client review

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Introduction

Waterco has been commissioned to undertake a Drainage Strategy in relation to a proposed waste management site at Humber Gate, Energy Park Way, Grimsby, DN31 2TT.

North East Lincolnshire Council, as Lead Local Flood Authority (LLFA) is a statutory consultee for major planning applications in relation to surface water drainage, requiring that all planning applications are accompanied by a Drainage Strategy. The aim of the Drainage Strategy is to identify water management measures to provide surface water runoff reduction and treatment.

This Drainage Strategy has been supported by and should be read in conjunction with the Waterco Flood Risk Assessment (document reference: 15887-FRA-02) and the Waterco Hydraulic Modelling Report (document reference: 15887-HMR-02).

Existing Conditions

The site covers an area of approximately 9.573ha and is located at National Grid Reference (NGR): 523683, 412733. A location plan and an aerial image are included in Appendix A.

The site is split into 2 distinct parcels which are separated by a ditch. The northern parcel is referred to as Plot I, the southern parcel is referred to as Plot C.

Online mapping (including Google Maps / Google Streetview imagery, accessed October 2025) shows that the northern extent of the site (Plot I) comprises undeveloped land. The southern extent of the site (Plot C) is currently undeveloped however has been subject to historical industrial land use.

The site is bordered by a former landfill (now capped) to the north-east, industrial land use to the south-east and south-west, and Oldfleet Drain with agricultural land beyond to the north-west. Access is provided from a shared access road to the south-east of the site which leads onto Energy Park Way. The Humber Estuary is located approximately 335m north-east of the site.

Local Topography

A topographical survey has been undertaken by Latitude Surveys in September 2023. The topographical survey shows that ground levels in Plot I vary from 2.88 metres Above Ordnance Datum (m AOD) in the north-west to 1.99m AOD in the south-west. Site levels in Plot C vary from approximately 3.00m AOD in the south-west to 2.47m AOD in the north-west.

Topographic levels to m AOD have also been derived from a 1m resolution Environment Agency (EA) composite 'Light Detecting and Ranging' (LiDAR) Digital Terrain Model (DTM). The LiDAR data generally corroborates the topographical survey.

Topographical information is provided as Appendix B.

Ground Conditions

The British Geological Survey (BGS) online mapping (1:50,000 scale) shows that the site is underlain by Tidal Flat Deposits generally comprising clay and silt. The superficial deposits are identified as being underlain by the Flamborough Chalk Formation.

The geological mapping is available at a scale of 1:50,000 and as such may not be accurate on a site-specific basis

Ground Investigations

Ground Investigations have been undertaken by Mayer Environmental Ltd in November 2023 (document reference: R-129-002870) to establish the ground conditions at the site. An extract of the ground investigation report is included as Appendix C. A summary of the ground investigation report is provided below:

- Plot I - Made Ground was not encountered in any location. Topsoil was encountered in some locations at the surface. In all locations the stiff clay of the tidal flat deposits was encountered to a maximum thickness of 3m, which was underlain by soft grey clay with peat and organic matter inclusions. The maximum thickness of this layer was 7.3m, with the firm brown clay present again under the grey clay. This in turn was underlain by putty chalk of the Flamborough Chalk Formation from a depth of circa 20m below ground level (m.bgl).
- Plot C - Made Ground was encountered at some locations to a maximum depth of 1.7m.bgl. Below this the Tidal Flat Deposits comprising a stiff brown clay were identified, with a soft grey clay also noted in some locations.
- Groundwater was encountered at 14m.bgl at BH03. Subsequent monitoring indicates that the groundwater is near the surface. This could be due to the monitoring wells creating preferential pathways for the groundwater, making it appear higher than it actually is. Artesian groundwater, that can rise to the surface under its own pressure, was encountered at all borehole locations.

Hydrogeology

According to the EA's Aquifer Designation data, obtained from MAGIC's online mapping [accessed October 2025], the Tidal Flat Deposits are classified as Unproductive strata. Unproductive Strata is classified by the EA as '*rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow*'.

The underlying Flamborough Chalk Formation is described as a Principal Aquifer. Principal Aquifers are '*layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale*'.

The EA's 'Source Protection Zones' data, viewed from MAGIC's online mapping [accessed October 2025], indicates that the site is not located within a Groundwater Source Protection Zone.

Local Drainage

Public sewer records have been obtained from Anglian Water and are included in Appendix D. The sewer records show that there are no public sewers in the immediate vicinity of the site.

A pipeline is located within a ditch which intersects Plots I and C. The pipeline (600mm diameter pumped main) discharges effluent from the wider Humber Gate industrial zone to the Humber Estuary. Details of the pipeline are included in Appendix E. The discharge from the pipeline to the Humber Estuary benefits from existing consent (Environment Agency Permit). The Ecospan Environmental 'Direct Toxicity Assessment of Technical Absorbents Final Effluent' report (Appendix E) states that the pipeline benefits from a consented discharge of 25,240m³ per day. The annual discharge in 2018 (date the Ecospan Environmental 'Direct Toxicity Assessment of Technical Absorbents Final Effluent' report was prepared) was 3,514m³.

Development Proposals

The proposed development is for a waste management site which will include the processing of specialist waste. A proposed development plan is included as Appendix E.

Plot I will contain all buildings and equipment involved in the waste management process and will introduce 3.1681ha of hardstanding in the form of buildings, equipment, yards and access roads. It is also proposed to raise ground levels at Plot I to a minimum level of 4.26m AOD to mitigate the risk of tidal flooding.

Plot C will introduce approximately 0.3724ha of hardstanding areas in the form of a new office building, parking, and access. The hardstanding area for Plot C includes the main site access road and bridge link to Plot I.

Hardstanding measurements have been provided by the Client.

Planning Policy

The North East Lincolnshire Local Plan 2013 to 2032 (adopted 2018) contains the following policy relating to drainage:

'Policy 34- Water management

- 1. Development proposals that have the potential to impact on surface and ground water should consider the objectives and programme of measures set out in the Humber River Basin Management Plan.*
- 2. Development proposals should consider how water will be used on the site and ensure that appropriate methods for management are incorporated into the design. Development proposals should demonstrate that:*
 - A. adequate and sustainable water supplies are available to support the development proposed;*

B. provisions are made for the efficient use of water, including its reuse and recycling. Proposals for residential development will be expected to demonstrate that a water efficiency standard of 110 litres per person per day can be achieved; and,

C. adequate foul water treatment already exists or can be provided in time to serve the development. Appropriate and sustainable sewerage systems should be provided for the collection and treatment of foul and surface water to ensure new development does not overload the existing sewerage infrastructure, minimising the need to discharge water into sewers, particularly combined sewers.

3. Where development is proposed within a Source Protection Zone, the potential for any risk to groundwater resources and groundwater quality must be assessed and it must be demonstrated that these would be protected throughout the construction and operational phase of development.'

Consultation

The site is shown to be located within an Internal Drainage Board (IDB) area. The IDB were contacted to confirm which assets/watercourses are under the management of the IDB. The IDB response is included within Appendix F. The IDB stated that:

'The site is in the North East Lindsey Drainage Board area and in the catchment of Mawmbridge Pumping Station & gravity discharge. See attached plan with the Board maintained watercourses.

While the proposed discharge rates are generally acceptable they rely on the riparian watercourses and pipe drainage system within the wider Business Park. So additional details would be required for the planning process to show the downstream route and confirm there is no increase in flood risk to adjacent sites.

Any discharge into a watercourse will require a consent from the Board under the Land Drainage Act.'

Surface Water Management

The site currently comprises undeveloped land, which is not formally drained. Plot I will introduce 3.1681ha of hardstanding in the form of buildings, equipment, yards and access roads. Plot C will introduce 0.3724ha of hardstanding in the form of a new office building, parking, and access (including the access road bridge link to Plot I).

It is the intention that all rainwater will be collected and re-used in the process with no requirement for off-site discharge (unless exceptional circumstances prevail). This is in accordance with the drainage hierarchy detailed in the National Standards for Sustainable Drainage Systems (July 2025).

All roof water runoff will be captured in local tanks and pumped directly into a rainwater lagoon located in the south-eastern extent of Plot C. Each roof area has its own tank which is filtered after discharging by gravity and then pumped directly into the lagoon via fixed pipework. The lagoon will be split with clean and

dirty water storage provided. Roof water will drain to the clean side of the lagoon.

All water from non-canopy or non-building areas is fed by gravity via 5no. local 3-stage interceptors (4 on Plot I, 1 on Plot C). The interceptors capture any residual solids or hydrocarbons and are periodically emptied and maintained. Each Interceptor is equipped with its own duty and standby pump, and effluent is pumped to the dirty side of the lagoon.

All water from the lagoon will be directed to an on-site water treatment plant which will clean the water for re-use within the process.

Water Storage Provision

The lagoon will provide 1,125m³ of dirty water storage and 1,875m³ of clean water storage. In addition, 4no. 50m³ clean rainwater storage tanks are proposed, providing a combined 200m³ of storage. 6no. 50m³ tanks, providing a total volume of 300m³ are proposed within the water treatment plant building. In total, the lagoon and tanks will provide a combined storage volume of 3,500m³.

In addition to storage tanks, Plot I will have a perimeter bund which will contain any additional rainfall volume. When excluding building footprints (where no water will be stored), the bunded area could provide an additional 2851.29m³ of storage, ensuring no exceedance flows will leave the site.

Water Usage

Data from the Client suggest that the total annual water usage (potable and non-potable) will be 55,413.84m³. This equates to an average daily water use of 151.82m³. The site will operate 7 days per week, 365 days per year. The annual water usage is summarised in Table 1.

Table 1 – Proposed Water Usage

Water Usage	Volume (m ³)	Summary
Annual - Boiler Top Up Water Needed	1819.8	
Annual - Average Use by Offices / Staff Onsite	941.7	Estimated 60 Litres per day per person onsite (Max 38) Plus 5 Visitors. Site will install low water usage washrooms and welfare facilities. This is based on 7 day week where majority of staff will only work 5 days
Annual Use Wet Scrubber	51132.34	From Mass balance of Plant
Annual Use IBC/Drum Washing	1000	Estimate based on 50 litres per IBC and 75 IBCs per day max, 5 days a week
Annual Use Tanker Washing	520	Estimate based on 1000 litres per tanker and 2 tanker washes a day, 5 days a week
Total Use - All Water - Potable and Non-Potable - Annual	55413.84	

Runoff Volume Analysis

The volume of runoff generated by the development has been estimated using the 6 hour duration 1 in 100 year peak rainfall intensity from FEH22 rainfall data. The 6 hour duration 1 in 100 year peak rainfall intensity is 63.97mm/hr. With 40% climate change applied, the peak rainfall intensity is 89.558mm/hr.

Based on a total hardstanding area of 3.5405ha (Plots I and C), the volume of runoff generated during the 1 in 100 year plus 40% climate change 6 hour duration storm event is 3,170.8m³.

The lagoon and storage tanks will provide a combined storage volume of 3,500m³, sufficient to accommodate a 1 in 100 year plus 40% climate change event, with surplus capacity.

Discharge Arrangement

Whilst it is intended that all water runoff will be collected and re-used, provision for discharge will be made as a failsafe, for example should consecutive storms occur, or there is a period of downtime (for maintenance) which occurs during an extreme storm event.

Where required, discharge from the site will be made to an existing pressurised pipeline (within the ditch which intersects Plots I and C) by a pumped connection (4 inch main). Discharge would only be made when the water storage features on site (tanks and lagoons) are full. Discharge would only be made from the clean side of the water lagoon (clean roof water or treated water only).

The pressurised pipeline is 600mm in diameter and accommodates flows from other sites within the wider industrial estate. The pipeline discharges to the Humber Estuary with the outfall located approximately 505m north-east of the site and approximately 650m from the proposed connection point from the site.

The Client has a covenant in place on the land which gives permission to discharge to the 600mm pressurised pipe. A site-specific Environmental Permit will be required for the discharge, and a permit application will be made to the Environment Agency.

The total current permitted discharge from other estate users to the 600mm pipeline is 25,240m³ per day. Utilising a flow rate calculator (source Copely.com) and based on a 600mm pipe diameter, conservative pressure of 1 BAR and a pipe distance of 700m (distance between pump and outfall), the 600mm diameter pressured pipe can accommodate 68,592.4m³ per day. As such, the receiving 600mm pipe has capacity to accommodate discharge from the site.

As discharge is ultimately to a tidal waterbody (Humber Estuary), the rate of discharge will not be controlled. This is in accordance with section 3.9 of the National Standards for Sustainable Drainage Systems (July 2025).

No discharge will be made to the ditches adjacent to the site or to Old Fleet Drain. As all water will be used in the process and requires on site treatment (using a site-specific water treatment building), and no flow control is necessary (as any discharge would be to the Humber Estuary), there is no requirement for the use of Sustainable Drainage Systems.

A conceptual drainage plan is provided in Appendix H.

Surface Water Pumping

In accordance with Sewer Sector Guidance, to reduce the risk of flooding in the event of pump failure, 125m³ of storage should be provided per hectare of impermeable drainage area (upstream of the pump chamber). Based on an impervious drainage area of 0.3724ha for Plot C, a storage volume of 46.55m³ would be required. The storage volume to accommodate for a pump failure can be provided within a proposed tank located beneath the car park.

For Plot I (3.1681ha), a storage volume of 396m³ would be required to accommodate for a pump failure. The storage lagoon, tanks and additional 2851.29m³ of above ground bunded storage can accommodate for a pump failure event.

Provision of standby pumps, an automated pump exercise regime and a pump failure alarm system would limit the risk of pump failure.

Surface Water Treatment

In accordance with the CIRIA C753 publication 'The SuDS Manual' (2015), other roofs (applicable to industrial roofs and the office building roof) have a 'low' pollution hazard level. Sites with heavy pollution i.e. waste sites, have a high pollution hazard level with the staff car park (on Plot C) classified as having a low pollution hazard level. Table 2 shows the pollution hazard indices for each land use:

Table 2 – Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Roofs	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.5
Staff car park	Low	0.5	0.4	0.4
Sites with heavy pollution	High	0.8	0.8	0.9

Table extract taken from the CIRIA C753 publication 'The SuDS Manual' – Table 26.2

* Indices values range from 0-1.

All water from non-canopy or non-building areas is fed by gravity via 5no. local 3-stage interceptors (4 on Plot I, 1 on Plot C). The interceptors capture any residual solids or hydrocarbons and are periodically emptied and maintained. Each Interceptor is equipped with its own duty and standby pump and effluent is pumped to the dirty side of the lagoon. Runoff from the lagoon is pumped to the on site water treatment plant which provides additional treatment prior to re-use on site. The proposed interceptors and on site water treatment plant will provide sufficient treatment to rainfall runoff.

Maintenance

Maintenance of all drainage systems will be the responsibility of the site owner. Maintenance of the interceptors will be as per the manufacturer's guidelines. A maintenance schedule for an attenuation tank (provided to accommodate storage in Plot C in the event of a pump failure) is included in Appendix I.

Foul Drainage

Domestic wastewater flow will be generated by the staff office building. There are no readily accessible public sewers within the vicinity of the site. Therefore, a private sewage treatment plant is proposed. A Klargestor treatment plant (or similar) would be a suitable option and would provide sufficient treatment for foul flows. Treated effluent will be pumped to the dirty side of the water lagoon in Plot I prior to being pumped to the on site water treatment building. The sewage treatment plant should be placed a minimum of 7m from buildings and a minimum of 10m from watercourses.

Conclusions

The proposed development is for a waste management site which will include the processing of specialist waste. The site is split into 2 distinct parcels. Plot I will contain all buildings and equipment involved in the waste management process. Plot C will comprise the office building and parking.

It is the intention that all rainwater will be collected and re-used in the process with no requirement for off-site discharge (unless exceptional circumstances prevail). Water storage will be provided in a water lagoon and also in above ground water storage tanks. Approximately 3,500m³ of water storage will be available.

Data from the Client suggest that the total annual water usage (potable and non-potable) will be 55,413.84m³. This equates to an average daily water use of 151.82m³.

The volume of runoff generated by the development has been estimated using the 6 hour duration 1 in 100 year peak rainfall intensity from FEH22 rainfall data. Based on a total hardstanding area of 3.5405ha (Plots I and C), the volume of runoff generated during the 1 in 100 year plus 40% climate change 6 hour duration storm event is 3,170.8m³. The lagoon and storage tanks will provide a combined storage volume of 3,500m³, sufficient to accommodate a 1 in 100 year plus 40% climate change event, with surplus capacity.

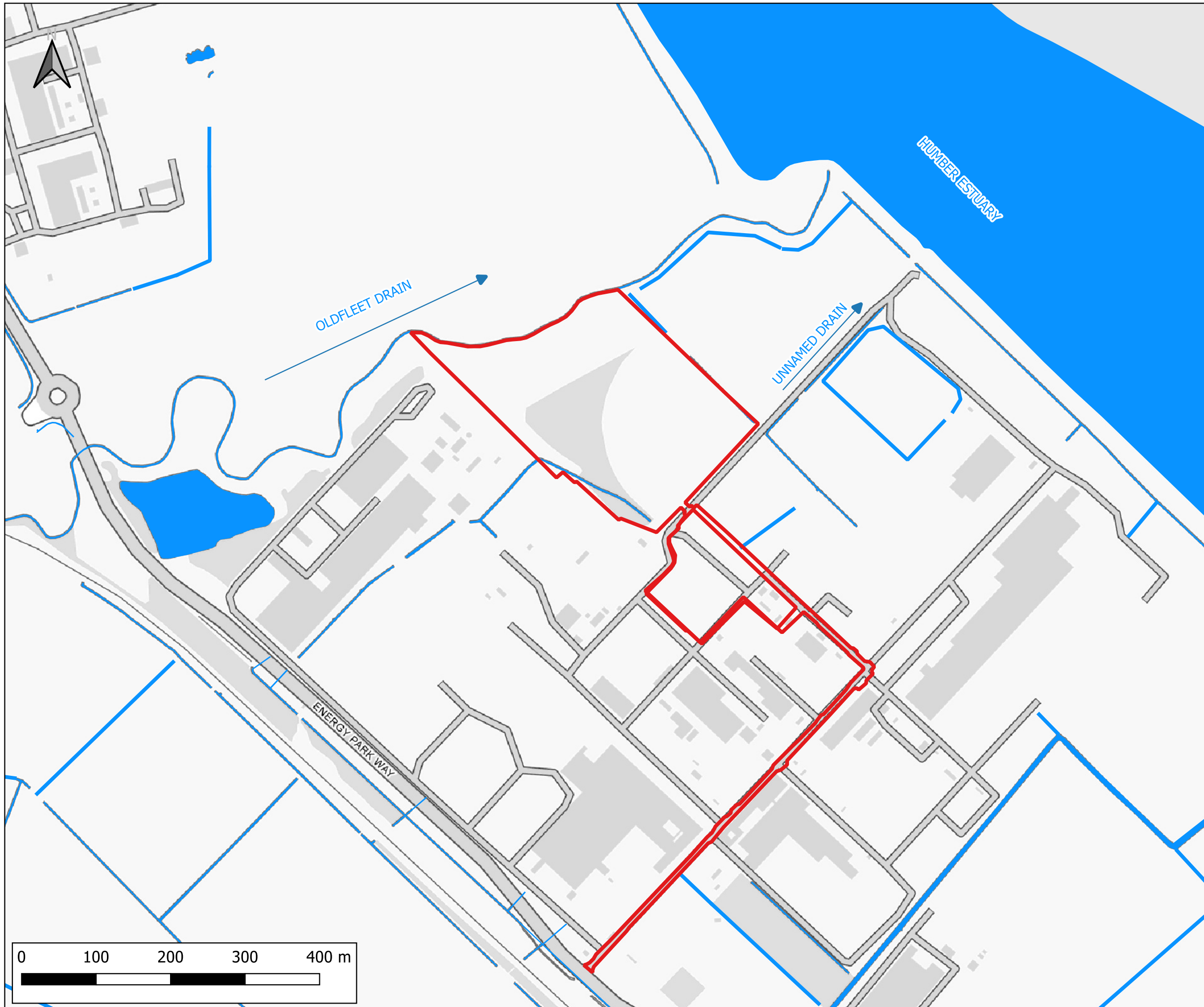
In addition to storage tanks, Plot I will have a perimeter bund which will contain any additional rainfall volume. When excluding building footprints (where no water will be stored), the bunded area could provide an additional 2851.29m³ of storage. This will ensure that no exceedance flooding will leave the site.

Whilst it is intended that all water runoff will be collected and re-used, provision for discharge will be made as a failsafe, for example should consecutive storms occur, or there is a period of downtime (for maintenance) which occurs during an extreme storm event. Where required, discharge from the site will be made to the existing pressurised pipeline (within the ditch which intersects Plots I and C) by a pumped connection (4 inch main). The pipeline discharges to the Humber Estuary and has capacity to accommodate discharge from the site. No discharge will be made to watercourses (ditches and Old Fleet Drain) local to the site.

Domestic wastewater flow will be generated by the staff office building. There are no readily accessible public sewers within the vicinity of the site. Therefore, a private sewage treatment plant is proposed. A Klargest treatment plant (or similar) would be a suitable option and would provide sufficient treatment for foul flows. Treated effluent will be pumped to the dirty side of the water lagoon in Plot I prior to being pumped to the on site water treatment building.

A Concept Designer's Risk Assessment (cDRA) has been prepared to inform future designers of any identified hazards associated with the scheme. The cDRA has been included in Appendix J.

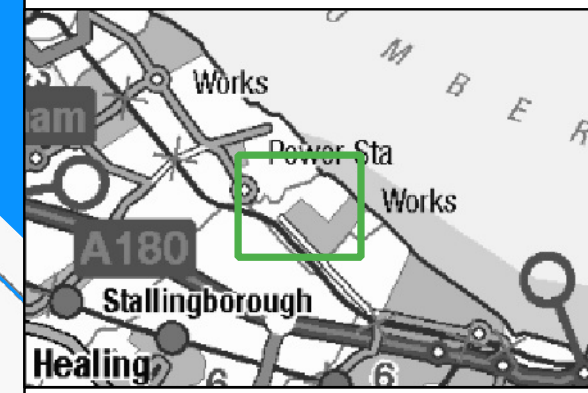
Appendix A Location Plan & Aerial Image



Notes:
 1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Waterbodies
- Watercourses



CLIENT:
 Humber Resources Group Ltd



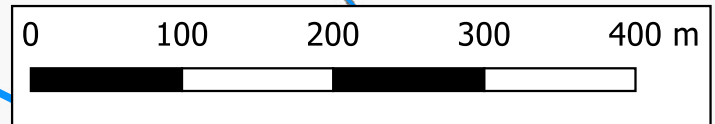
SCHEME:
 Humber Gate, Grimsby

PLOT TITLE:
 Location Plan

PLOT STATUS: FINAL DATE: 06-10-2025

DRAWN: IH	CHECKED: AA	APPROVED: LS	PLOT SCALE AT A3: 1:5000
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PLOT NAME: 15887_Location_Plan	REVISION: -
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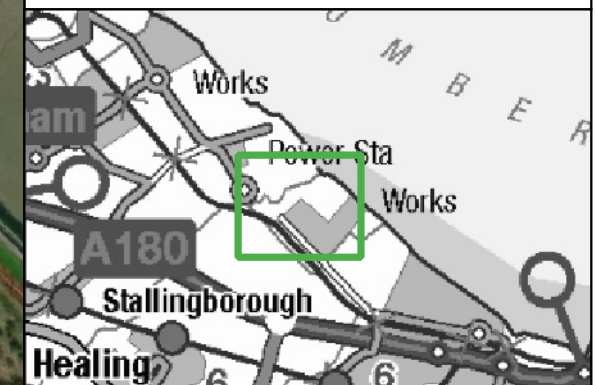




Notes:
 1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

 Site Boundary



CLIENT:
 Humber Resources Group Ltd



SCHEME:
 Humber Gate, Grimsby

PLOT TITLE:
 Aerial Plan

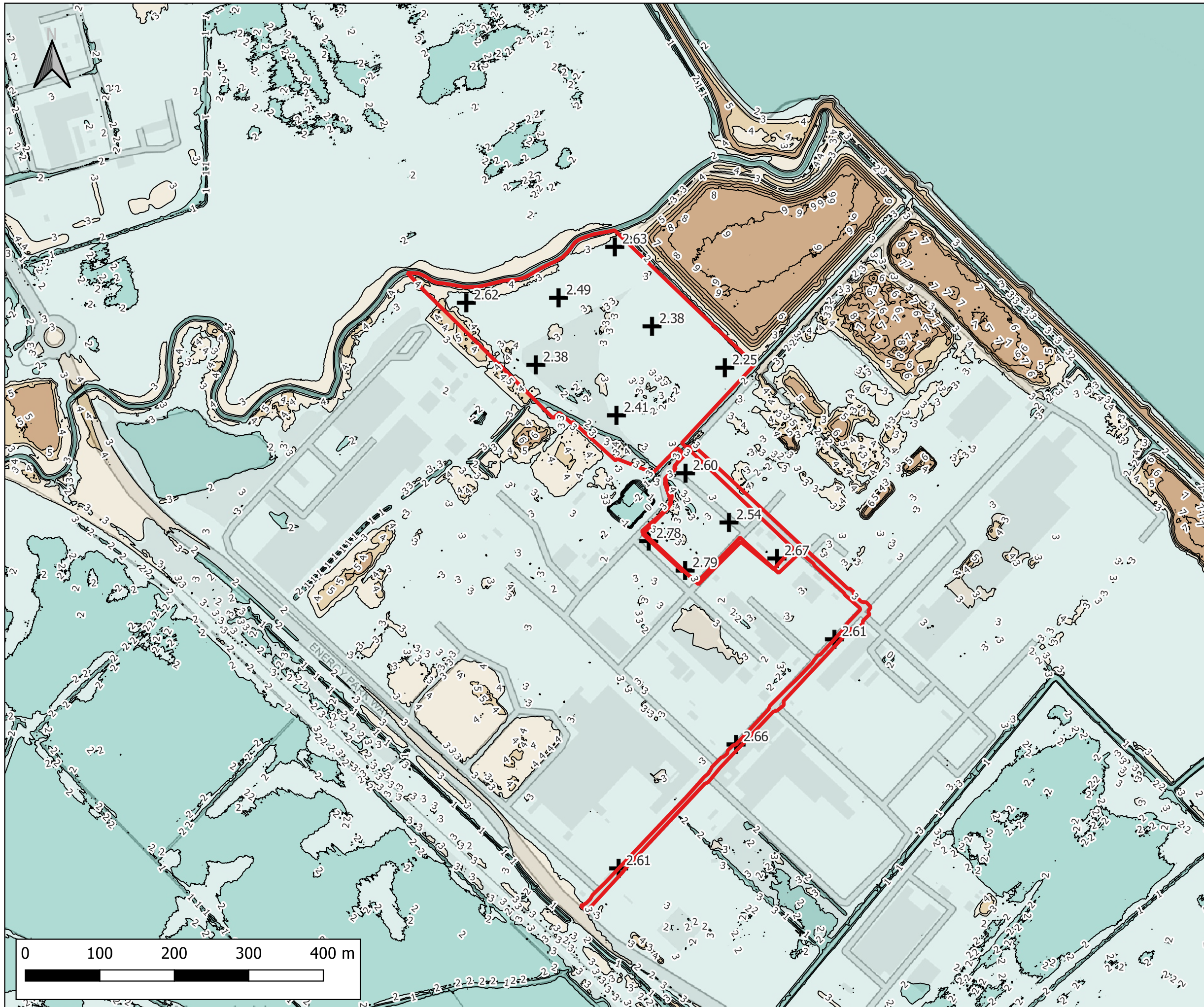
PLOT STATUS:	FINAL	DATE:	06-10-2025
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DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AA	LS	1:5000

PLOT NAME:	REVISION:
15887_Aerial_Plan	-



Appendix B Topographical Data



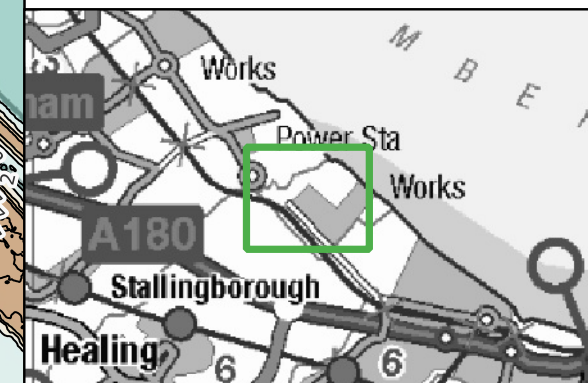
Notes:
 1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise


LEGEND

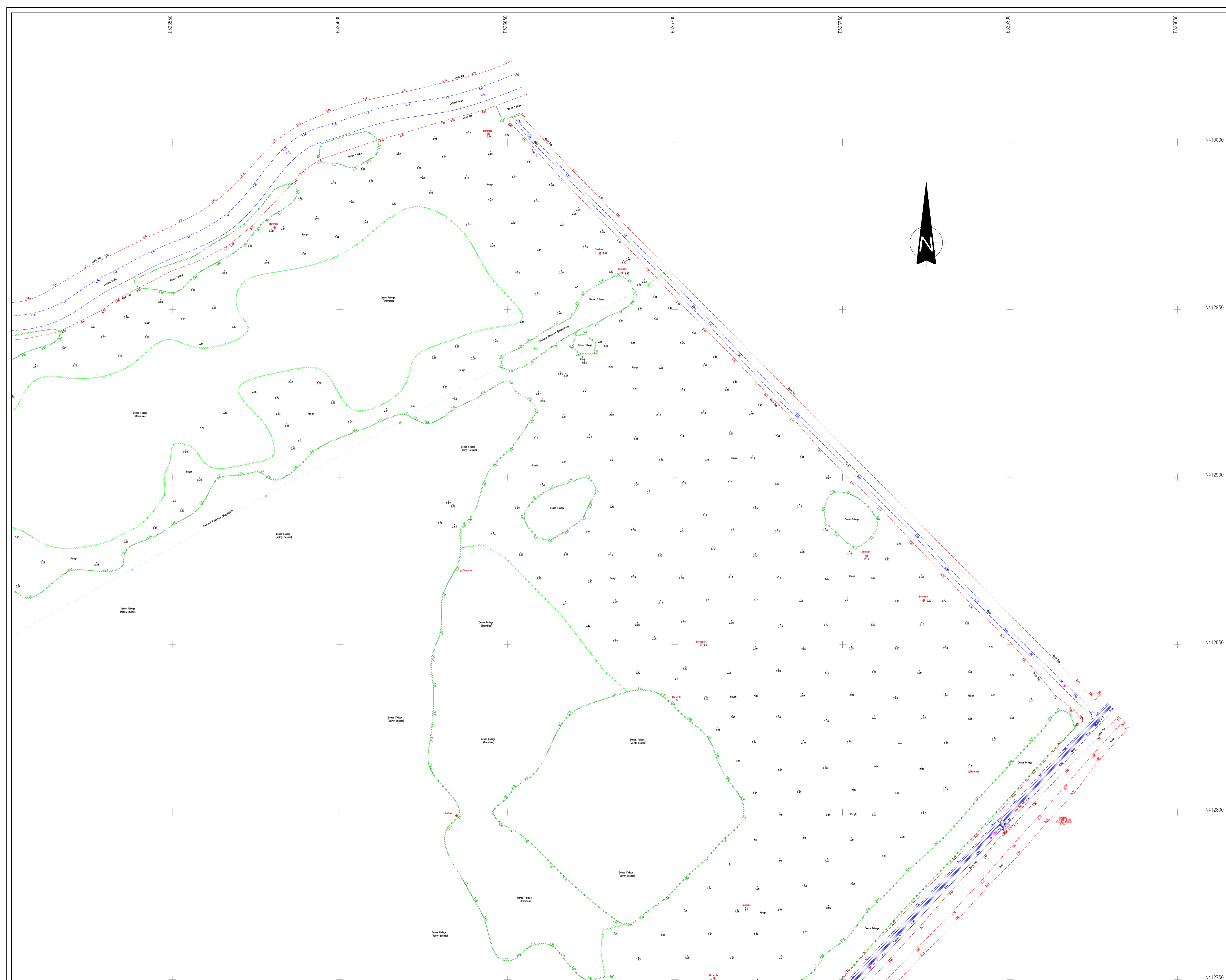
- Site Boundary
- 1m contour
- ⊕ Site Levels (m AOD)

Ground Elevations (m AOD)

- ≤ 2
- 2 - 3
- 3 - 4
- 4 - 5
- > 5



CLIENT:			
Humber Resources Group Ltd			
 www.waterco.co.uk			
SCHEME:			
Humber Gate, Grimsby			
PLOT TITLE:			
LIDAR Plan 1m Resolution Data from Environment Agency			
PLOT STATUS:		DATE:	
FINAL		06-10-2025	
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
JP	AW	MW	1:5000
PLOT NAME:			REVISION:
15887_LiDAR_Plan			-



SYMBOL LEGEND		LIMETYPE LEGEND	
	Borehole		Bridge
	Benchmark		Bottom of Bank
	Bollard		Canopy Edge
	Bus Stop		Concrete Edge
	Electricity Pole		Ditch
	Electricity Box		Drop Kerb
	Fence Post		Overhead Cable
	Gas Stop Valve		Fence
	Gate Post		Gate
	Gas Marker		Kerb
	Gully		Path
	Gas Well		Pipe Line
	Kerb Outlet		River
	Litter Bin		Surface Water Drain
	Leachate Chamber		Railway Line
	Lamp Post		Road Centre Line
	Manhole Point		Tarmac Edge
	Mn Triangular		Top of Bank
	Wooden Peg		Track
	Ground Marker		Wall
	Marker Post		Verge
	Pylon		Flagstone Paving
	Rodding Eye		Stone
	Sample Point		Hedge/Line
	Sign Post		Grass Edge
	Spot Height		
	Eave Level		
	Ridge Level		
	Site		
	Survey Station		
	Traffic Camera		
	Telephone Box		
	Tria Pt		
	Telegraph Pole		
	Deciduous Tree		
	Road Sign		
	Valve		
	Vent		
	Water Meter		
	Letter Box		
	Manhole		
	Knockout Pit		

ABBREVIATIONS

LP.	Lamp Post
TP.	Telegraph Pole
EP.	Electricity Pole
SP.	Sign Post
TL.	Traffic Light
BS.	Bus Stop
GM.	Gas Marker Monument
MH.	Manhole
GU.	Gully
FH.	Fire Hydrant
CATV.	Cable Television Point
WM.	Water Meter
WSV.	Water Stop Valve
GSV.	Gas Stop Valve
RE.	Rodding Eye
GU.	Gully
FH.	Fire Hydrant
CATV.	Cable Television Point
WM.	Water Meter
WSV.	Water Stop Valve
GSV.	Gas Stop Valve
TTP.	TTP Paving

MANHOLE LEGEND

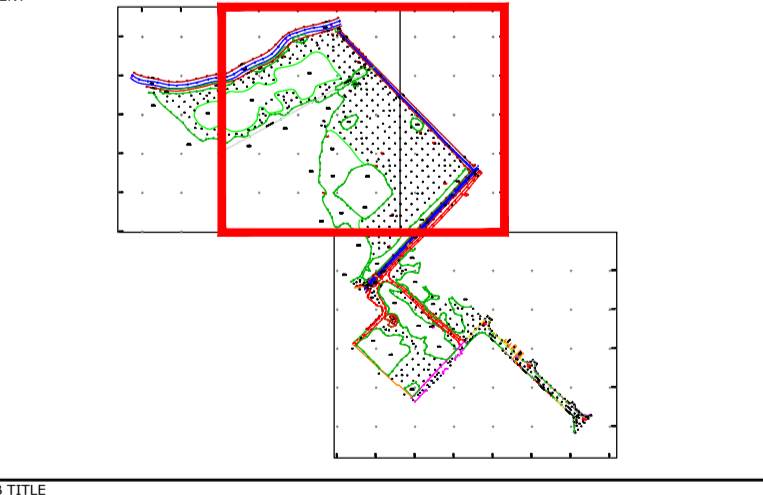
MHCT	Cable Television
MHGL	Electricity
MHGA	Gas
MHSW	Surface Water
MHFW	Foul Water
MHBT	British Telecom
MHWIT	Water

SURVEY IS ORIENTED TO ORDNANCE SURVEY NATIONAL GRID. POSITIONS FIXED BY GPS ACTIVE NETWORK TO OSGB36(15), LEVELS TO OSGM15.

THIS SURVEY SHOWS PHYSICAL SITE BOUNDARIES ONLY. CONFIRMATION OF LEGAL OWNERSHIP BOUNDARIES SHOULD BE OBTAINED BY REFERENCE TO THE H.M. LAND REGISTRY TITLE PLAN.

THE PLAN SCALE IS FOR GUIDANCE ONLY. DO NOT SCALE DIRECTLY. IF IN DOUBT, CONSULT LATITUDE SURVEYS

REV.	DESCRIPTION	DATE



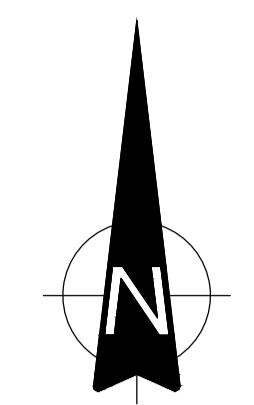
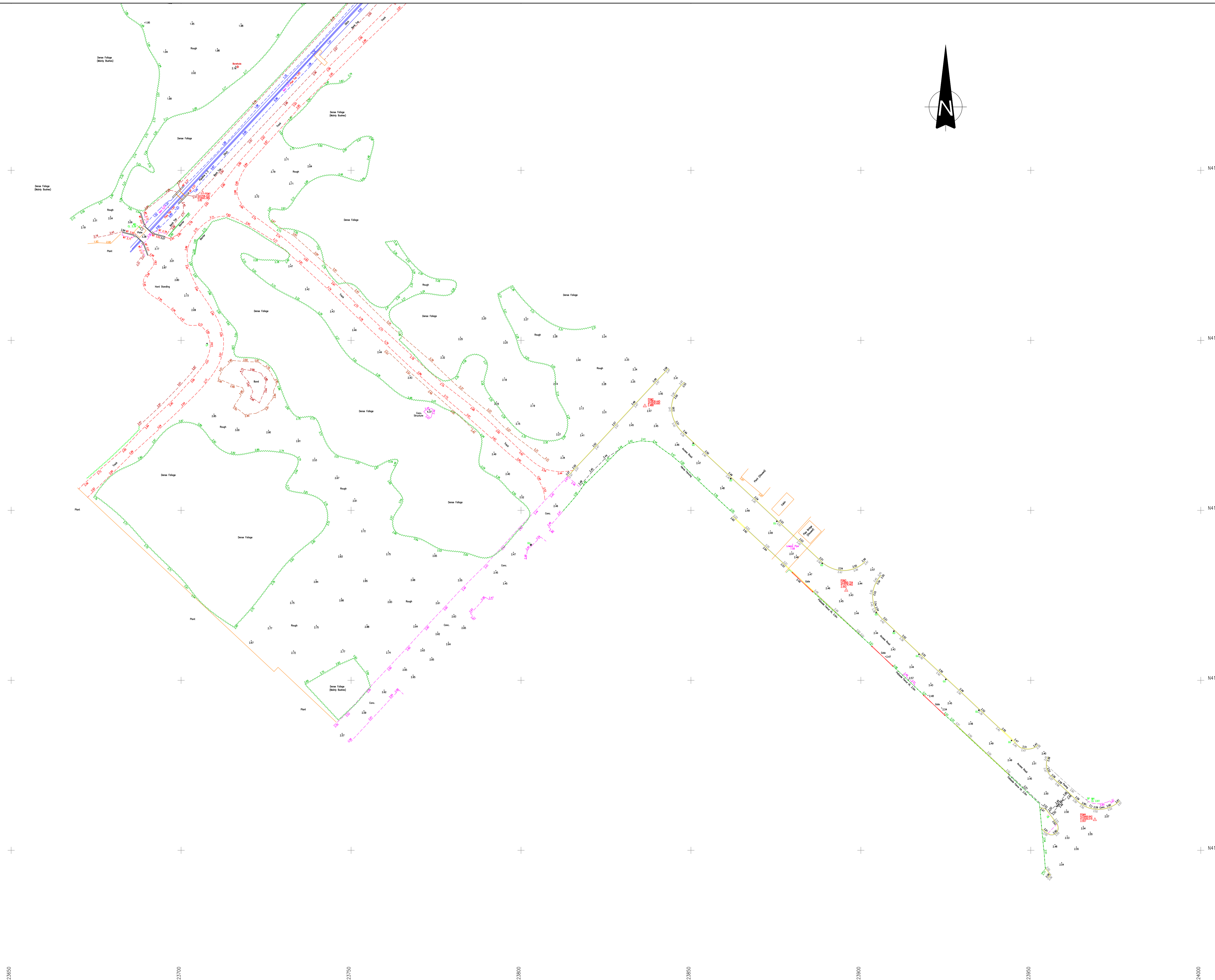
CLIENT

HUMBER GATE, IMMINGHAM

DRAWING TITLE

TOPOGRAPHIC SURVEY

DRAWN	SIGNATURE	DATE	STATUS
TD		29/09/2023	FOR COMMENT <input type="checkbox"/>
APPROVED	SIGNATURE	DATE	FOR APPROVAL <input type="checkbox"/>
			DRAFT <input type="checkbox"/>
			FINAL <input checked="" type="checkbox"/>
SCALE	SHEET	DRAWING NO.	REVISION
1:500	A1	GPP1009-002	-



SYMBOL LEGEND		LINE/TYPE LEGEND	
	Borehole		Bridge
	Benchmark		Bottom of Bank
	Bollard		Canopy Edge
	Bus Stop		Concrete Edge
	Electric Box		Ditch
	Electricity Pole		Drop Kerb
	Fence Post		Overhead Cable
	Gas Stop Valve		Fence
	Gate Post		Gate
	Gas Marker		Kerb
	Gully		Path
	Gas Well		Pipe Line
	Kerb Outlet		River
	Litter Bin		Surface Water Drain
	Leachate Chamber		Railway Line
	Lamp Post		Road Centre Line
	Manhole Point		Tarmac Edge
	Mn Triangular		Top of Bank
	Wooden Peg		Track
	Ground Marker		Wall
	Marker Post		Verge
	Pylon		Flagstone Paving
	Rodding Eye		Stone
	Sample Point		Hedge/line
	Sign Post		Grass Edge
	Spot Height		
	Eave Level		
	Ridge Level		
	Site		
	Survey Station		
	Traffic Camera		
	Telephone Box		
	Trial Pit		
	Telegraph Pole		
	Deciduous Tree		
	Road Sign		
	Valve		
	Vent		
	Water Meter		
	Letter Box		
	Mn		
	Knockout Pit		

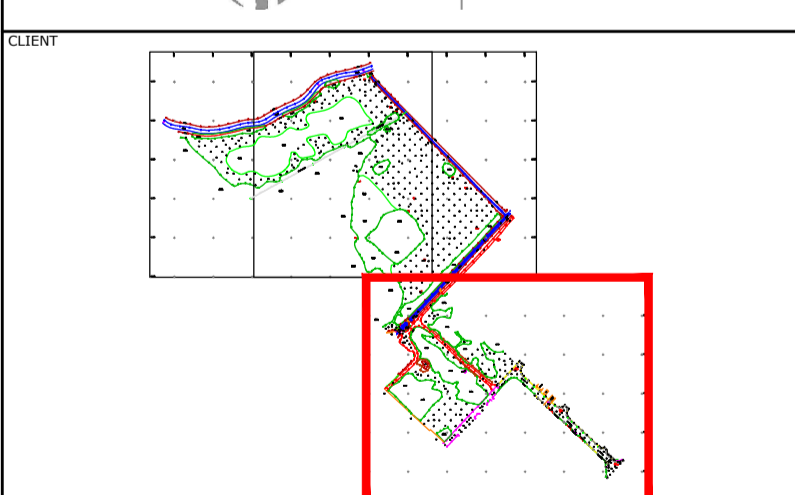
ABBREVIATIONS

LP.	Lamp Post
TP.	Telegraph Pole
EP.	Electricity Pole
SP.	Sign Post
TL.	Traffic Light
BS.	Bus Stop
GM.	Gas Marker Monument
MH.	Manhole
GU.	Gully
FH.	Fire Hydrant
CATV.	Cable Television Point
WM.	Water Meter
WSV.	Water Stop Valve
GSV.	Gas Stop Valve
RE.	Rodding Eye
GU.	Gully
FH.	Fire Hydrant
CATV.	Cable Television Point
WM.	Water Meter
WSV.	Water Stop Valve
GSV.	Gas Stop Valve
TTP.	TTP Paving

MICT Cable Television
 MIEG Electricity
 MHGA Gas
 MHFW Surface Water
 MHFW Foul Water
 MHBT British Telecom
 MHWT Water

SURVEY IS ORIENTED TO ORDNANCE SURVEY NATIONAL GRID. POSITIONS FIXED BY GPS ACTIVE NETWORK TO OSGB36(15), LEVELS TO OSGM15.
 THIS SURVEY SHOWS PHYSICAL SITE BOUNDARIES ONLY. CONFIRMATION OF LEGAL OWNERSHIP BOUNDARIES SHOULD BE OBTAINED BY REFERENCE TO THE H.M. LAND REGISTRY TITLE PLAN.
 THE PLAN SCALE IS FOR GUIDANCE ONLY. DO NOT SCALE DIRECTLY. IF IN DOUBT, CONSULT LATITUDE SURVEYS.

REV.	DESCRIPTION	DATE



HUMBER GATE, IMMINGHAM

TOPOGRAPHIC SURVEY

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APPROVED	SIGNATURE	DATE	FOR APPROVAL <input type="checkbox"/>
			DRAFT <input type="checkbox"/>
			FINAL <input checked="" type="checkbox"/>
SCALE	SHEET	DRAWING NO.	REVISION
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N412400 N412450 N412500 N412550 N412600 N412650 N412700

Appendix C Ground Investigation Results

Summary of GI Findings	
Site Works	Site work was undertaken from the 11 th to the 27 th September 2023.
Ground Conditions Encountered	<p>Plot C - Made Ground was encountered at some locations to a maximum depth of 1.7 m bgl. Below this the Tidal Flat Deposits comprising a stiff brown clay were identified, with a soft grey clay also noted in some locations.</p> <p>Plot I – Made Ground was not encountered on Plot I in any location. Topsoil was encountered in some locations at the surface. In all locations the stiff clay of the tidal flat deposits was encountered to a maximum thickness of 3m, which was underlain by soft grey clay with peat and organic matter inclusions. The maximum thickness of this layer was 7.3m, with the firm brown clay present again under the grey clay. This in turn was underlain by putty chalk of the Flamborough Chalk Formation from a depth of circa 20m bgl.</p>
Conclusions	<p>Soils</p> <p>No significant levels of contaminants were identified in the soils from Plot I. Asbestos fibres and PAHs were identified in discrete areas on Plot C.</p> <p>Groundwater</p> <p>No significant levels of contaminants were identified within the groundwater.</p> <p>Ground Gas</p> <p>Elevated levels of methane have been identified within boreholes BH03 and BH05, potentially linked to dissolved methane identified in the groundwater which is likely to be from the peat and organic matter present within the clay.</p> <p>Asbestos</p> <p>Asbestos cladding is potentially present on the existing buildings on Plot C.</p>
Final Conceptual Site Model	Overall the main pollutant linkage of concern is considered to be the presence of ground gas and the potential impact it may have on the proposed development. Further monitoring is required to further establish the significance of these ground gases.
Recommendations	Further gas monitoring is required comprising in-situ continuous gas monitoring and surface gas monitoring.
<p>The Executive Summary is based on the information presented in the full report and does not form a full assessment of the available data. This summary is to be read in conjunction with the full report.</p>	

6 GROUND INVESTIGATION

6.1 Site Works & Methodology

The work has been done to provide information for both environmental and geotechnical purposes. Mayer have worked alongside geotechnical specialists EAL on the following scope and interpretation of the subsequent findings and data.

Prior to any work being undertaken an underground utilities report was obtained for the site. Prior to commencing, services were scanned for at all exploratory hole locations. Locations of the exploratory holes are marked on the site plan included in Appendix A. Logs and installation details are included in Appendix F.

The main ground investigation was undertaken between 11th and 27th September 2023 with a Seismic Survey undertaken on 3rd October 2023 by Zetica Ltd and a resistivity survey undertaken on 16th October 2023 by EAL.

Soil samples were collected in accordance with the laboratory requirements for analysis, appropriately commensurate with BS 10175: 2011+A1:2013.

The following tables summarise the rationale for exploratory points and details of those undertaken.

TABLE 6.0 GROUND INVESTIGATION – PLOT C

Exploratory Holes	Depth (m bgl)	Method	Purpose	Notes / Installations
TP01, TP02, TP10	Max 2m bgl	Trial Pitting (JCB 3CX)	Establish ground conditions across Plot C focussing on areas of fly tipping.	Backfilled
TP09	3.0	Trial Pitting (JCB 3CX)	Establish ground conditions closest to existing buildings where asbestos sheeting and cans of paint stored.	Backfilled
WS05, WS06	Max 4m bgl	Tracked window sampling rig	Establish ground conditions across Plot C	Backfilled
TP11, TP12, TP13	Max 3.1m bgl	Trial Pitting (JCB 3CX)	Establish conditions under current roadway in anticipation of new roadway being located in same area.	Backfilled

TABLE 6.1 GROUND INVESTIGATION – PLOT I

Exploratory Holes	Depth (m bgl)	Method	Purpose	Notes / Installations
WS01 through WS04	Max 4m bgl	Tracked window sampling rig	Establish ground conditions across Plot I in area of proposed development with installation wells to establish if any ground gas moving on site from adjacent inert landfill.	Installed with 50mm Ø monitoring well to full depth drilled.
BH01, BH03, BH05	Max 27m bgl	Cable Percussion	Establish ground conditions across Plot I in area of proposed development and establish depth of chalk.	Installed with 50mm Ø monitoring well to 10m bgl.
BH02	23m bgl	Cable Percussion	Establish ground conditions in area of proposed chimney.	Installed with 150mm Ø plain pipe to 21m bgl for seismic survey.
BH04	21m bgl	Cable Percussion	Establish ground conditions across Plot I in area of proposed development.	Backfilled
TP03 through TP08	Max 4m bgl	Trial Pitting (JCB 3CX)	Establish ground conditions across Plot I in area of proposed development.	Backfilled
CBR01 through CBR09	Excavations max 1m bgl	Test Pits & CBR (Jackson Drilling) by JCB 3CX.	Establish ground conditions across Plot I in area of proposed development.	Backfilled
CPT 1-1, CPT 2-2, CPT 3-3, CPT 4-6, CPT 5-5, CPT 6-4	Excavations max 1.2m bgl	Test Pits by JCB 3CX. SPTs by 200KN Crawler CPT Rig operated by Central Alliance Ltd	Establish ground conditions across Plot I in area of proposed development.	Backfilled

6.2 Strata Encountered

Soils were logged in accordance with BS5930, logs and cross sections are included in Appendix F and Appendix G and a summary is included in the following tables.

TABLE 6.2 SUMMARY OF STRATA ENCOUNTERED

Strata	General Description	Depth to Top (m bgl)	Depth to Base (max) (m bgl)	Max Thickness (m bgl)
Made Ground	Topsoil, Brick, concrete, ash, surface roadstone, concrete and brickwork layers, limestone slab, pieces of rubber and fabric.	Surface	2.00	2.00
Tidal Flat	(Firm crust) Soft and very soft silty clay, clayey silt, peat,	0.0 – 2.0	8.9	8.9
Glacial Till	Firm brown clay with gravel Sand and gravel	7.0 – 8.9	22.1	13.2
Chalk	Chalk	18.5 – 22.1	N/A	Base not proven

Made Ground was encountered in most locations in Plot C and in only two locations in Plot I.

In Plot I, Made ground was encountered in BH01 and in TP08, comprising soils with brick to 0.3m and cobbles of brick and concrete with occasional plastic 0.5m, respectively.

In Plot C, all of the positions except TP10 encountered made ground, up to a maximum of 2m depth (WS05, TP09). The made ground generally comprised demolition type materials (brick and concrete, including whole bricks), surface concrete and roadstone (WS06, WS07) and gravelly ashy material with clinker, anthracite and slag (TP12, TP01). Layers of possible former slabs (concrete / limestone) and brickwork were found in TP 11, TP12 and TP13.

Some positions encountered more than one layer of fill: In TP09, brick and concrete gravel and cobbles 0.4m thick were over a layer of boulders of chalk to 1m depth. In TP01, two layers were observed with a 0.3m layer of ashy made ground with flint brick and concrete, above a layer of ashy made ground with brick, concrete, anthracite and pieces of rubber and fabric to 0.85m depth.

Topsoil type materials were noted, typically 0.4m thick in TP03, TP04, TP06, TP07 (including piece of wood and metal) and TP10. Shallower topsoil materials, overlying made ground, were found in TP11 (5cm thickness) TP12 and TP 13 (0.2m).

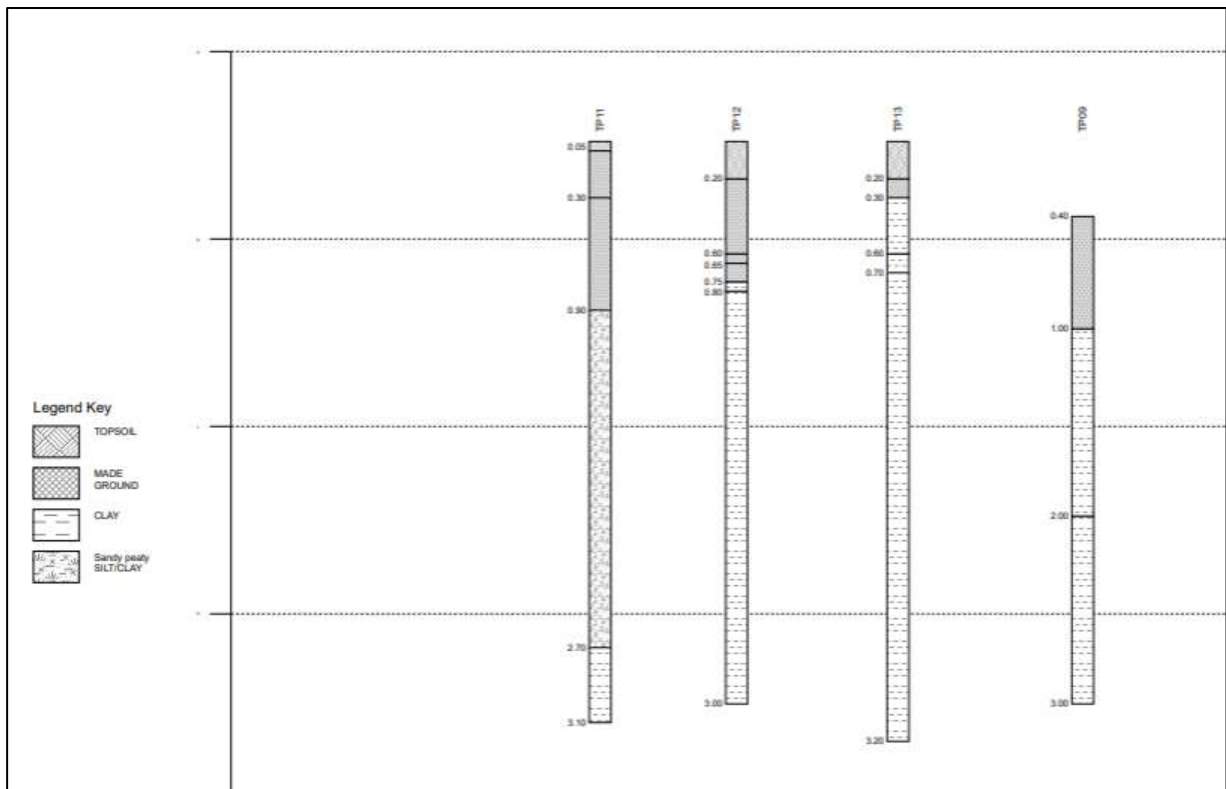
Below the made ground or topsoil, or from surface where made ground / topsoil was absent, strata comprised layered tidal flat deposits of mixed silts, clays, and peat. In the boreholes, it was possible to discern a “crust” of slightly more competent material to around 2m depth, but in general, the material was very soft and soft.

From between around 7m to 9m depth, glacial clay was encountered which became stiffer with depth and included layers of sand and gravel, which were associated with water strikes.

Chalk bedrock was encountered from 18.5 to 22m depth, initially comprising chalk gravel or clay with chalk gravel, with competent rock proven from around 20m. SPT tests undertaken in the chalk in BH1 from 19.5m to 27.0m depth indicate variable strength, which is typical of the material.

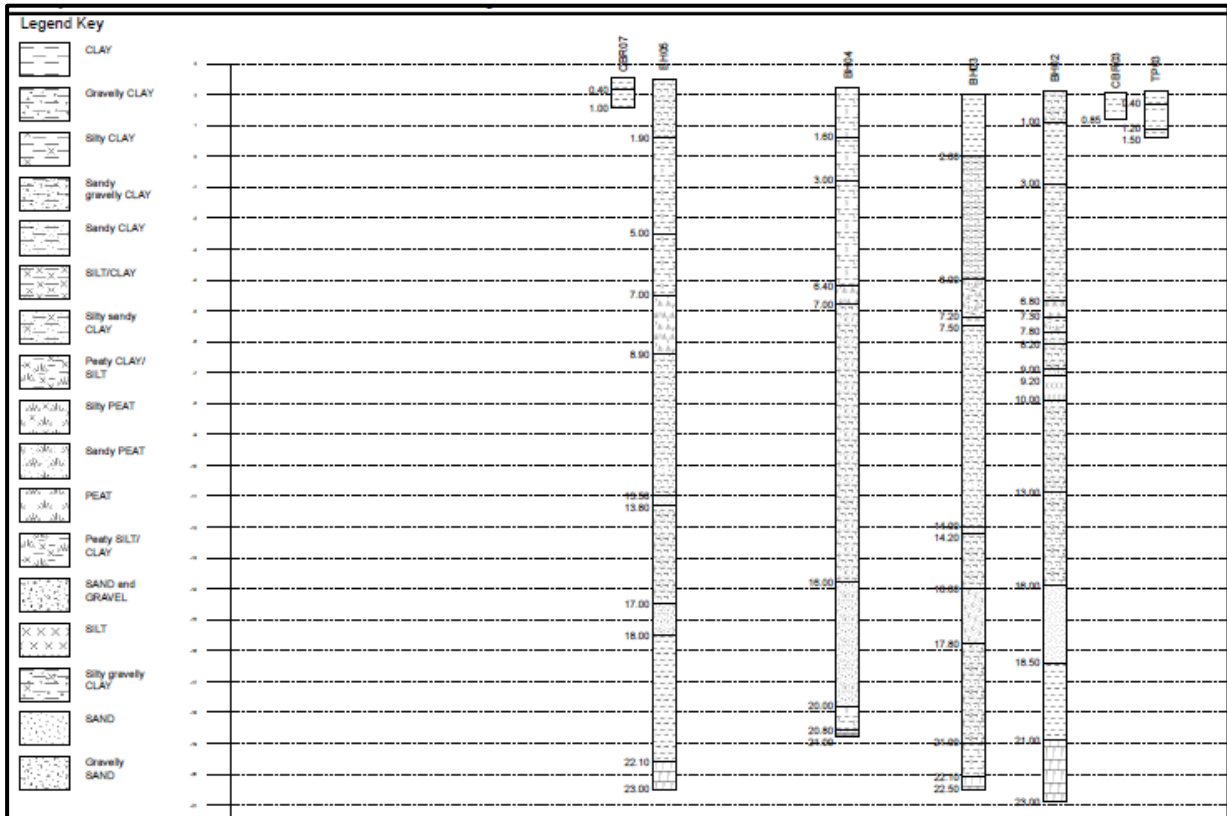
The diagram below shows a cross section of the underlying geology of Plot C running north to south. The Cross Section is also included in Appendix G.

SECTION 1 PLOT C CROSS SECTION RUNNING NORTH TO SOUTH ON PLOT C



The diagram below shows a cross section of the geology underlying Plot I running from the Oldfleet drain towards Plot C. The full cross section is included in Appendix G.

SECTION 2 PLOT I CROSS SECTION RUNNING OLDFLEET DRAIN TO PLOT C



6.3 Site Observations

From the ground investigation undertaken, the following table summarises the observations noted in each exploratory point, comprising subsurface structures or features and any visual or olfactory evidence of contamination.

Typically, contamination that can be apparent from visual or olfactory evidence includes (but not exclusively) organics / hydrocarbons, sulphurous materials, metals, free cyanides and cemented asbestos fragments.

TABLE 6.3 SUMMARY OF SITE OBSERVATIONS

Exploratory Point	Depth	Observation
TP01 – Plot C	0.0 – 0.3	Ashy Made Ground
	0.3 – 0.85	Ashy Made Ground
TP07 – Plot I	0.0 – 0.4	Made Ground with fragments of wood (potentially remnants of sidings) and metal bolt.
TP12 – Plot C	0.2 – 0.65	Made Ground, fragments of clinker and slag
WS06/06A Plot C	0.0 – 1	Ashy Made Ground

6.4 Scheduled Chemical Analysis

6.4.1 Soils

Representative samples of the Made Ground and natural soils were submitted for chemical analysis at a NAMAS / UKAS accredited laboratory with MCERTS certificates (where available) for analytes.

TABLE 6.4 SUMMARY OF SOIL ANALYSIS – PLOT C

Soil Analysis Suite	Made Ground	Natural Clay
ME2	7	5
Asbestos	7	1
TPH CWG	7	5
PCB	5	0
SVOC / VOC	5	0

TABLE 6.5 SUMMARY OF SOIL ANALYSIS – PLOT I

Soil Analysis Suite	Made Ground	Topsoil	Natural Clay	Chalk
ME2	1	4	19	1
Asbestos	1	1	0	0
TPH CWG	1	2	19	1
PCB	1	1	3	0
SVOC / VOC	1	2	3	0
LF1 (Waste Assessment)	0	1	1	0

Note that minimal Made Ground was encountered on Plot I and therefore very few samples were available for testing. In addition, Chalk was only encountered at sufficient depth to enable sampling at location BH01 due to the presence of artesian groundwater across the site.

6.4.2 Groundwater

To provide a general indication of the groundwater quality, three groundwater samples from BH01, BH03 and BH05, were collected on the 30th October 2023 and submitted for the general Mayer suite of contaminants and TPHCWG analysis.

The data is presented in the certificates of analysis in Appendix I.

6.5 Groundwater Conditions

The following table details the groundwater levels in locations with well installations noted during the ground investigation and afterwards, during monitoring. The groundwater monitoring records are included in Appendix M.

TABLE 6.4 GROUNDWATER LEVELS, DURING MONITORING

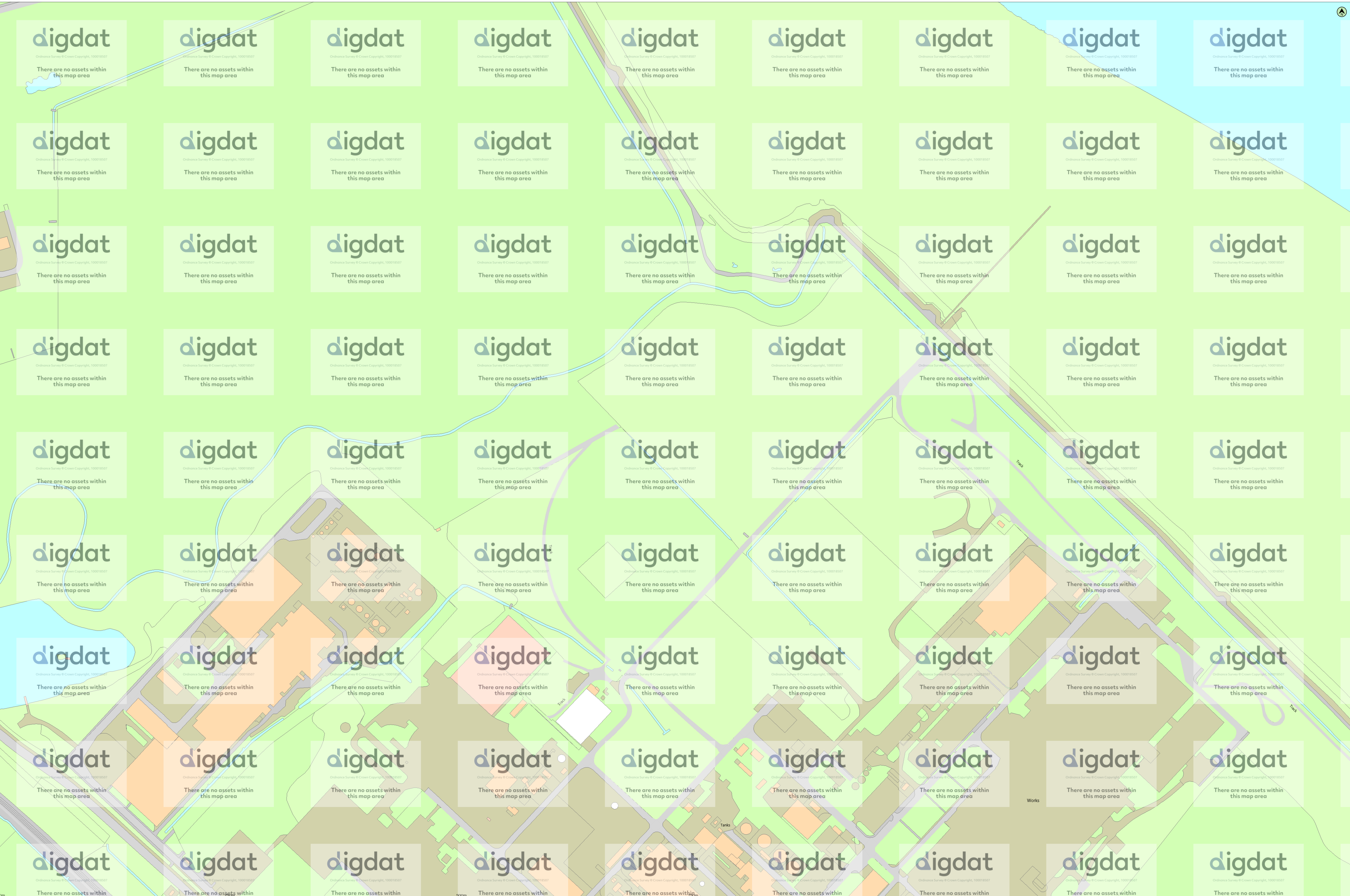
	BH01	BH03	BH05	Tide Level
During GI	16.5 m bgl	14 m bgl	17 m bgl	n/a
16.10.2023	0.22 m bgl	0.79 m bgl	1.12 m bgl	Falling
30.10.2023	0.05 m bgl	0.44mbgl	0.67 m bgl	Rising
09.11.2023	Above GL	Not recorded	Not recorded	Rising
16.11.2023	Above GL	1.15 m bgl	1.7 m bgl	Falling

The groundwater monitoring data suggests that during the drilling the groundwater was encountered at depth. Subsequent monitoring indicates that the groundwater is near surface. This could be due to the monitoring wells creating preferential pathways for the groundwater, making it appear higher than it actually is. Within the trial pits, groundwater seepage was noted at the base of some of the pits at approximately 4m bgl. Artesian groundwater, that can rise to the surface under its own pressure, was encountered at all borehole locations (BH01 through BH05) once the chalk was reached. This limited the depth of drilling as it was considered prudent to seal the boreholes once the artesian water was encountered. BH01 was drilled to depth to establish the presence and significance of the artesian water and was sealed prior to installing the monitoring well. However, the recent monitoring data indicates that the groundwater level in BH01 is still rising.

Comparing the groundwater levels to the rise and fall of the tide suggest that there is a tidal influence on the groundwater underlying the site.

Groundwater sampling for chemical analysis was undertaken in the BHs referred to on 30th October 2023. The wells were purged of three well volumes and the water purged from the wells was generally noted to be of dark grey and dark brown in colour, with some suspended sediment. No sheens or other odours were noted during the sampling.

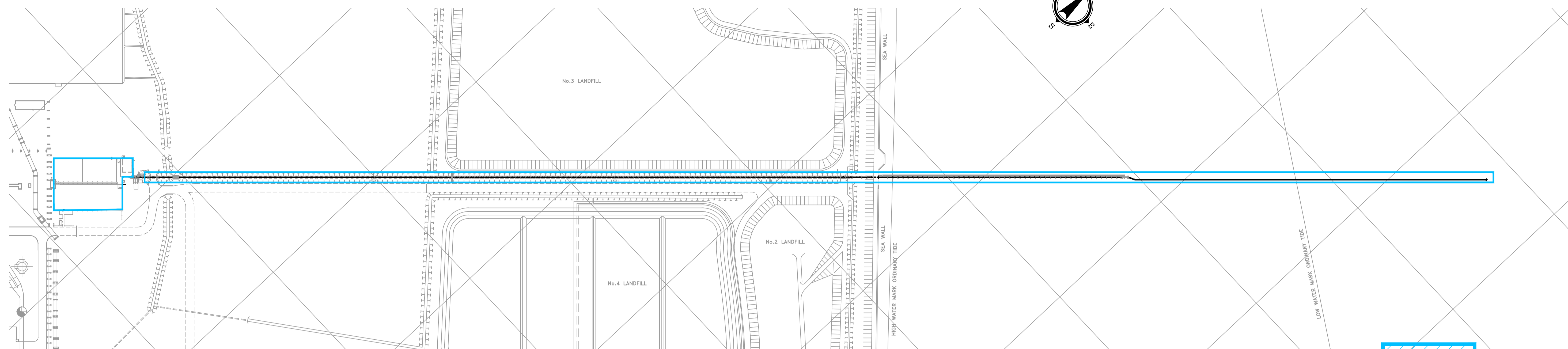
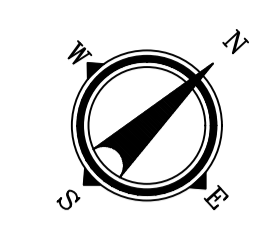
Appendix D Anglian Water Sewer Plan



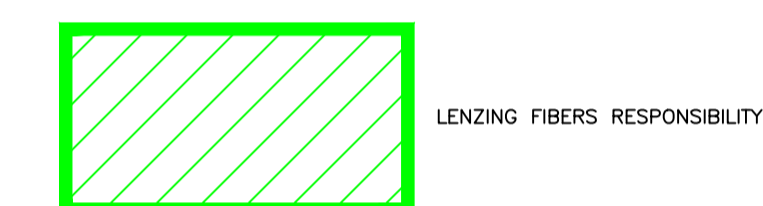
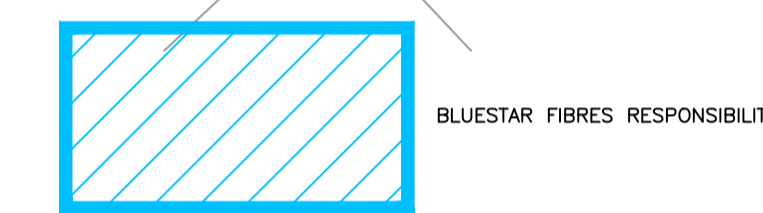
<p>© Crown copyright and database rights 2024 Ordnance Survey 100022432</p> <p>This data is provided by Anglian Water pursuant to its obligations under the Water Industry Act 1989 sections 189 or 199. It must be used in connection with any search results obtained. The information on this plan is based on data currently recorded for position marking in its systems. It is not a plan, and does not represent a guarantee of accuracy. It is not intended to be used for any other purpose, including but not limited to, the design, construction, or operation of any works. The actual position of all apparatus MUST be established by field notes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or omission or reliance, including but not limited to, the design, construction, or operation of any works. (See also the disclaimer on the Anglian Water website for any other use of this data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.)</p>	<p>Date: 14/05/24</p> <p>Scale: 1:1250</p> <p>Map Centre: 523760.412930</p> <p>Data updated: 30/04/24</p> <p>Our Ref: 140919-1</p>	<p> Foot Sewer Surface Sewer Combined Sewer Final Effluent Rising Main Private Sewer Decommissioned Sewer </p>	<p> Outfall Inlet Manhole </p>	<p> Sewage Treatment Works Public Pumping Station Decommissioned Pumping Station Private Sewer <p><small>*Colour denotes effluent type</small></p> </p>	<p> 15887 </p>	<p> love every drop anglianwater </p>	<p>Wastewater Plan A1</p>
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Appendix E Existing Pipeline Details

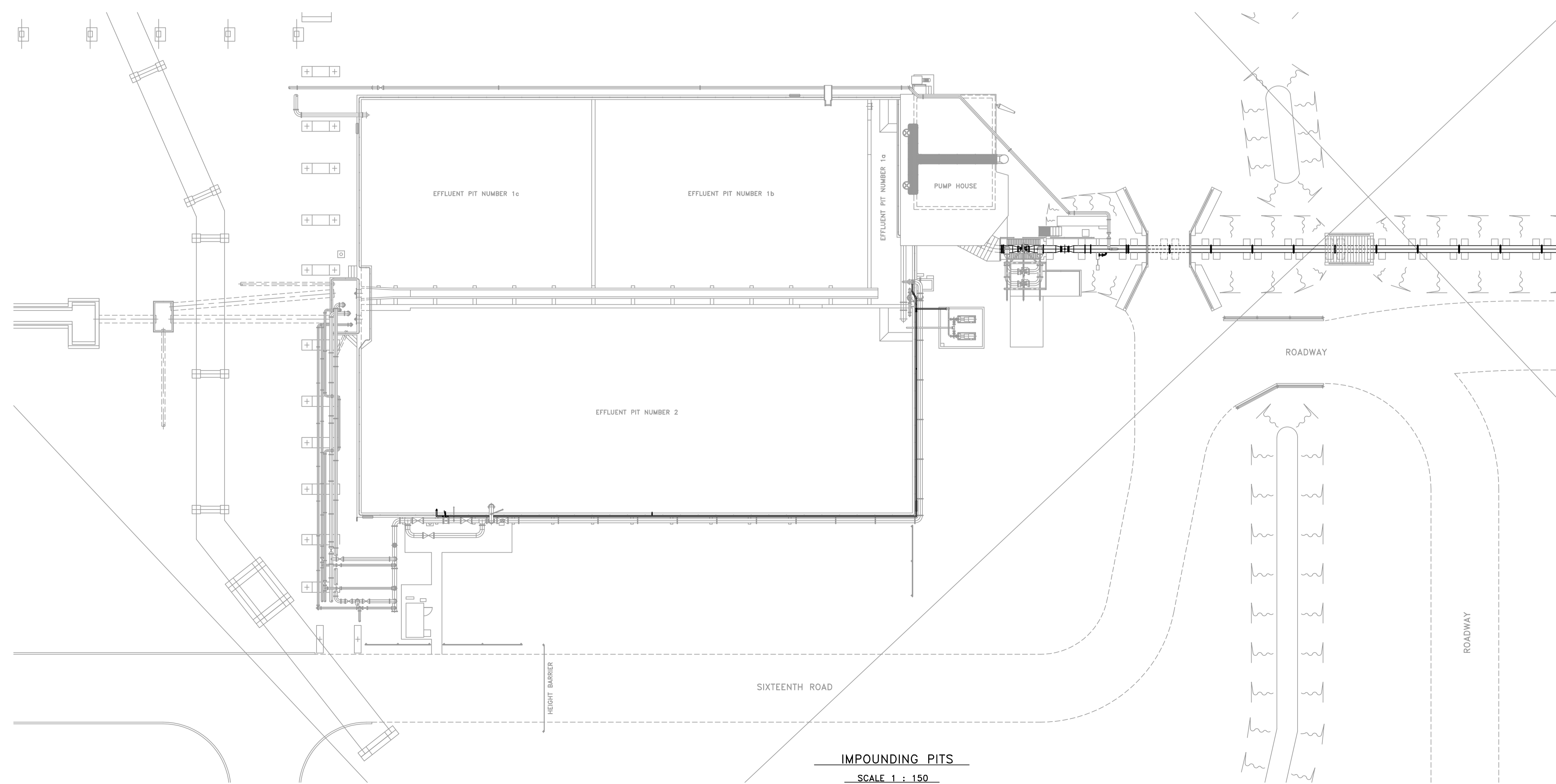
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2	08/10/12	TVG	TVG	REF DRAWINGS LIST CORRECTED



EFFLUENT MAIN
SCALE 1 : 1000



"UNSHADED" AREAS :-
ALL FIRE & SPRINKLER MAINS
ARE JERSEY PROPERTIES UNIT
TRUST RESPONSIBILITY.



IMPOUNDING PITS
SCALE 1 : 150

- REFERENCE DRAWINGS**
- 36542 - MASTER DRAWING
 - 36544 - IMPOUNDING PITS
 - 36545 - IMPOUNDING PITS INLET CHAMBER
 - 36546 - IMPOUNDING PITS PUMP HOUSE
 - 36547 - DISCHARGE MAIN JOINTS 2 TO 29
 - 36548 - DISCHARGE MAIN JOINTS 30 TO 58
 - 36549 - DISCHARGE MAIN JOINTS 59 TO 86
 - 36550 - DISCHARGE MAIN JOINTS 87 TO 115
 - 36551 - DISCHARGE MAIN JOINTS 116 TO 139
 - 36552 - HUMBER DISCHARGE PART 1
 - 36553 - HUMBER DISCHARGE PART 2
-
- 8546 - SUCTION PIPE DETAIL
 - 9663 - EFFLUENT SAMPLING PUMP AND S.D.F. PANEL GENERAL ARRANGEMENT
 - 9664 - EFFLUENT SAMPLING PUMP AND S.D.F. PANEL FRAME DETAIL
 - 9666 - EFFLUENT SAMPLING PUMP AND S.D.F. PANEL PIPEWORK ISOMETRIC
 - 9667 - EFFLUENT SAMPLING PUMP AND S.D.F. PANEL PIPEWORK ISOMETRIC
 - 11442 - COURTELLE EFFLUENT VALVE ACCESS PLATFORMS
 - 11443 - COURTELLE EFFLUENT VALVE ACCESS PLATFORMS
 - 11442 - COURTELLE EFFLUENT VALVE ACCESS PLATFORMS
 - 12255 - LEVEL CONTROL VALVES IN MAIN EFFLUENT LINE
 - 20312 - LIFTING BEAM OVER MAIN EFFLUENT VALVES
 - 20313 - LIFTING BEAM OVER MAIN EFFLUENT VALVES. DETAILS
 - 20314 - LIFTING BEAM OVER MAIN EFFLUENT VALVES. DETAILS
 - 20328 - GENERAL ARRANGEMENT OF EFFLUENT PITS
 - 20648 - ARRANGEMENT OF CONTAINMENT WALL
 - 35610 - PUMP HOUSE PIPEWORK

BLUESTAR
Tel 01472 241241 Fax 01472 244539

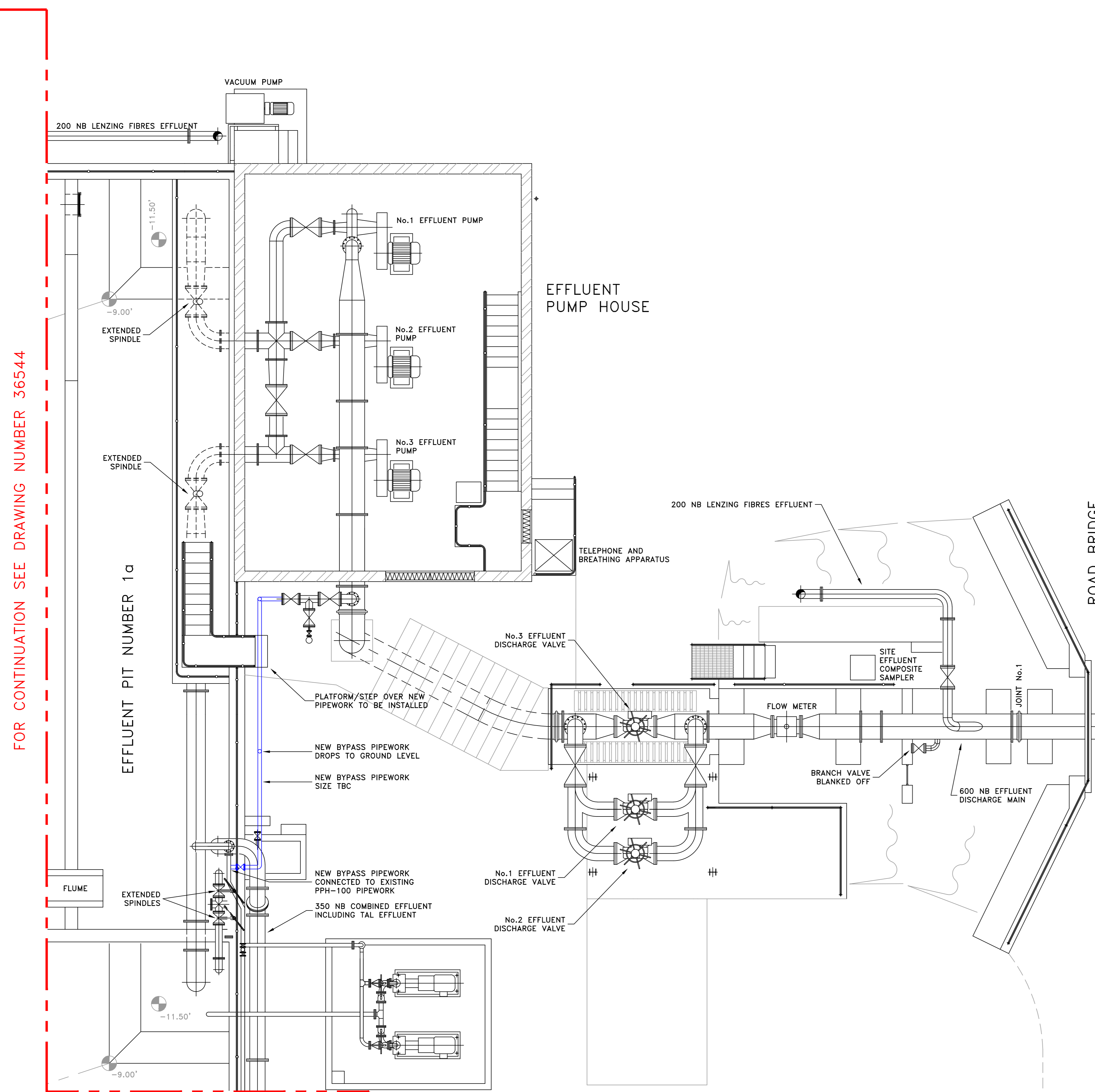
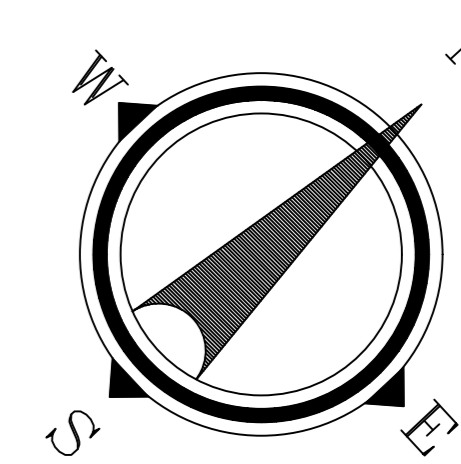
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EFFLUENT HOLDING / DISCHARGE SYSTEM
KEY PLAN

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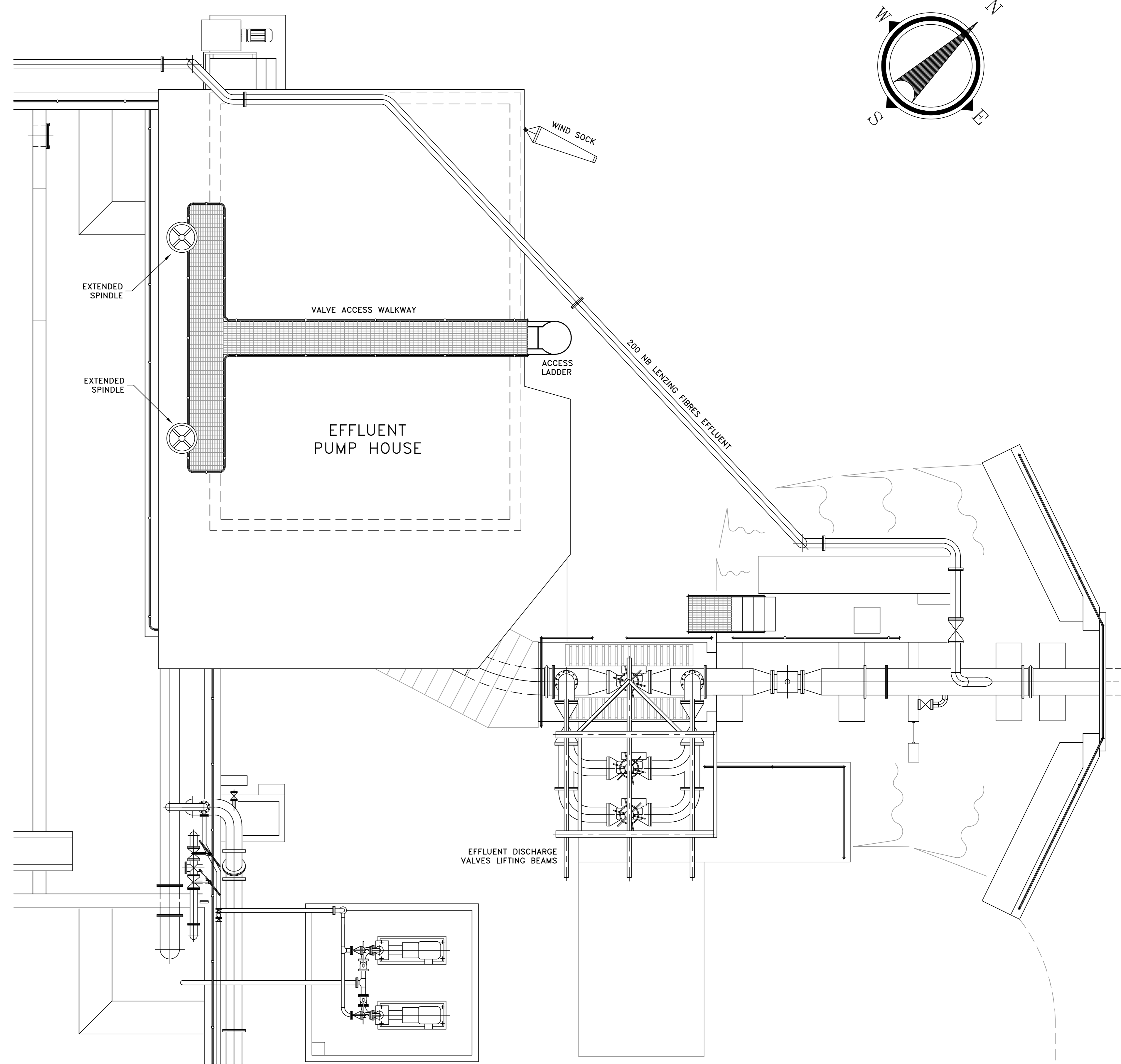
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2	16/10/02	TH	**	NEW TRANSFER PUMPS ADDED
3	15/04/09	TVG	**	UPDATED
4	26/01/15	FMB	**	ADDED NEW EFFLUENT BYPASS LINE



FOR CONTINUATION SEE DRAWING NUMBER 36544

FOR CONTINUATION SEE DRAWING NUMBER 36547



PLAN ON EFFLUENT PUMP HOUSE ROOF

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 - 36543 - KEY PLAN
 - 36544 - IMPOUNDING PITS
 - 36545 - IMPOUNDING PITS INLET CHAMBER
 - 36547 - DISCHARGE MAIN JOINTS 2 TO 29
 - 36548 - DISCHARGE MAIN JOINTS 30 TO 58
 - 36549 - DISCHARGE MAIN JOINTS 59 TO 86
 - 36550 - DISCHARGE MAIN JOINTS 87 TO 115
 - 36551 - DISCHARGE MAIN JOINTS 116 TO 139
 - 36552 - HUMBER DISCHARGE PART 1
 - 36553 - HUMBER DISCHARGE PART 2
- FOR FULL LIST OF REFERENCE DRAWINGS
SEE DRAWING NUMBER 36543

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Tel 01472 241241 Fax 01472 244539

Title
EFFLUENT HOLDING / DISCHARGE SYSTEM
IMPOUNDING PITS
PUMP HOUSE

Project 08400 Request No. 382

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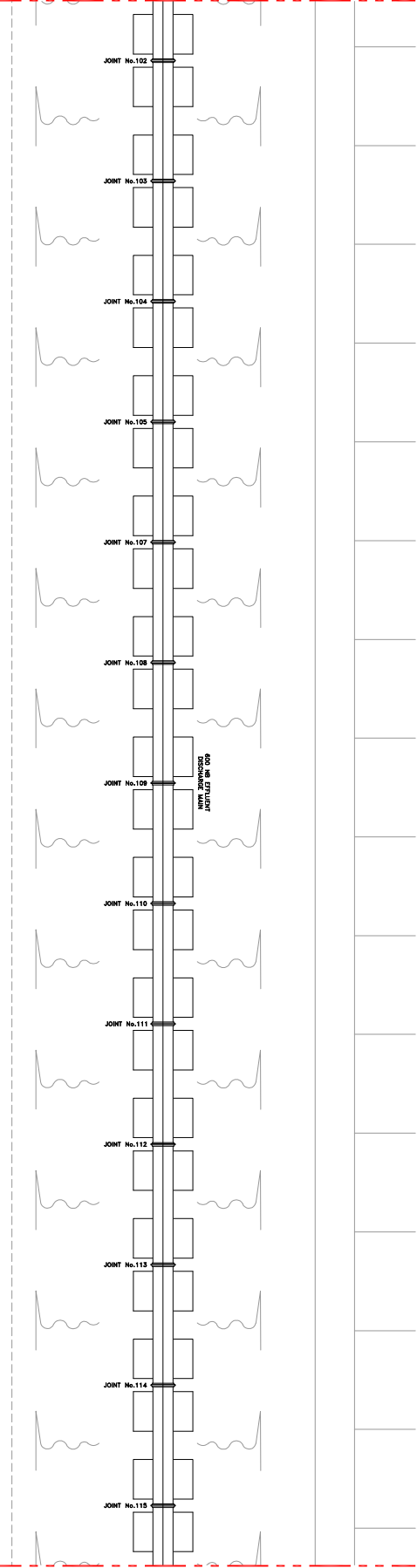
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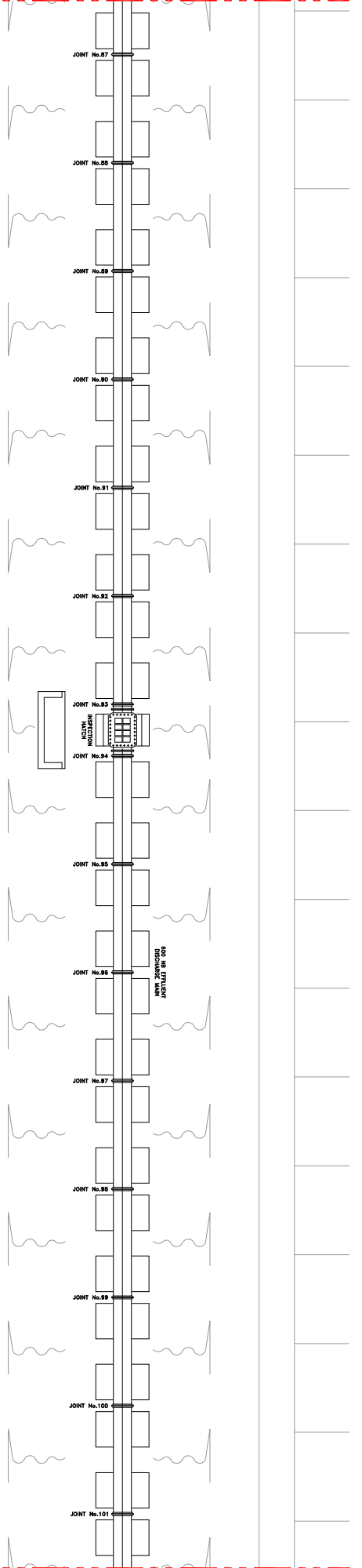
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ROADWAY

ROADWAY



FOR CONTINUATION SEE DRAWING NUMBER 36551



FOR CONTINUATION SEE BELOW



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 - 36559 - 600 AIR ATTENUATED DISCHARGE MAIN
 - 36560 - 600 AIR ATTENUATED DISCHARGE MAIN

SEE DRAWING NUMBER 36543



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DISCHARGE MAIN JOINTS No.87 TO No.115

Project: 08400 Request No. 392

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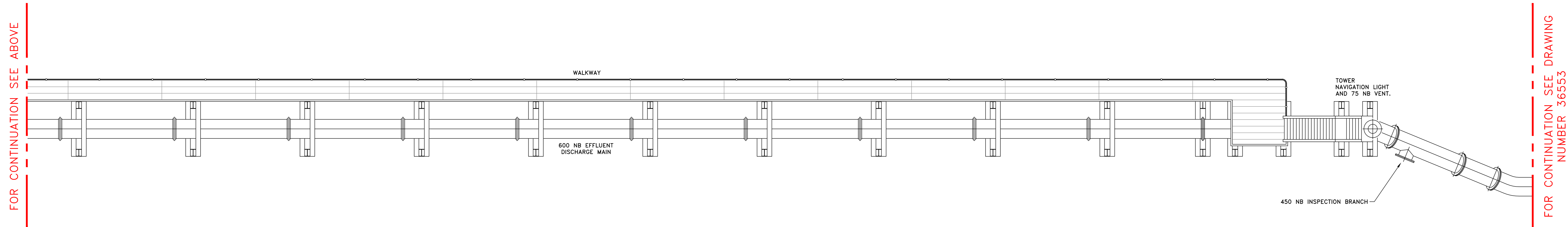
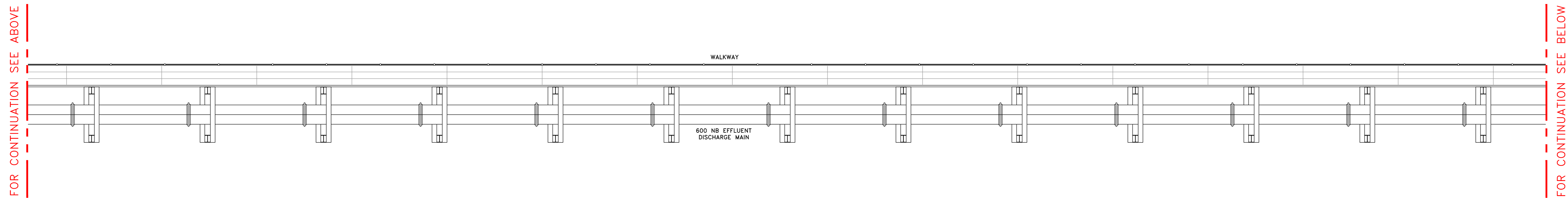
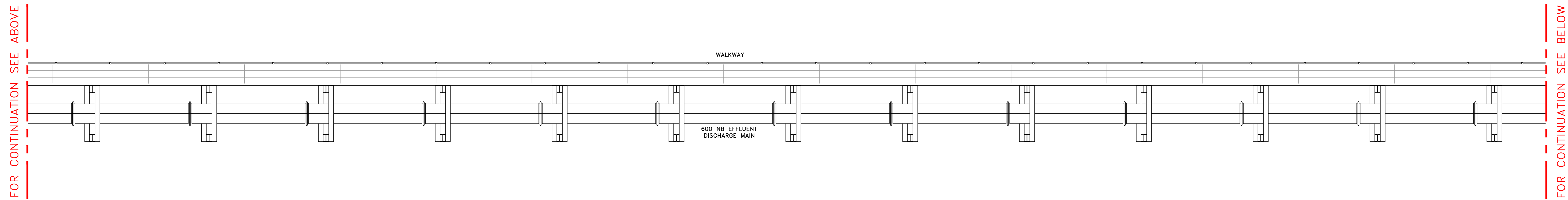
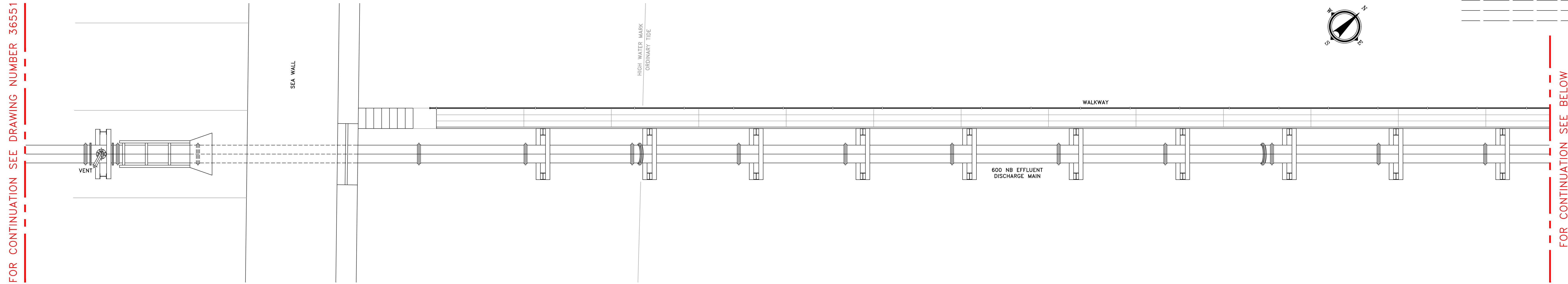
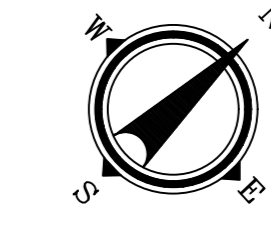
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07/20/20	Sward	ISS APPROVAL

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2	08/10/12	TVG	**	REF DRAWINGS LIST CORRECTED BLUESTAR BORDER INSERTED



ALL DETAILS BELOW HIGH WATER MARK
TO BE SITE CHECKED

REFERENCE DRAWINGS
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36543 - KEY PLAN
36544 - IMPOUNDING PITS
36545 - IMPOUNDING PITS INLET CHAMBER
36546 - IMPOUNDING PITS PUMP HOUSE
36547 - DISCHARGE MAIN JOINTS 2 TO 29
36548 - DISCHARGE MAIN JOINTS 30 TO 58
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36550 - DISCHARGE MAIN JOINTS 87 TO 115
36551 - DISCHARGE MAIN JOINTS 116 TO 139
36553 - HUMBER DISCHARGE PART 2
FOR FULL LIST OF REFERENCE DRAWINGS
SEE DRAWING NUMBER 36543

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BLUESTAR
Tel 01472 241241 Fax 01472 244539

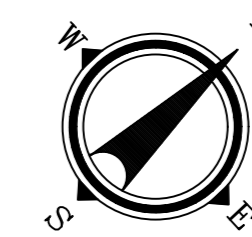
Title
EFFLUENT HOLDING / DISCHARGE SYSTEM
HUMBER DISCHARGE - PART 1

Project 08400 Request No. 382
Scale 1:50 Drawn By Sward

Path
S:\Drawing Office\KAD Drawings\36551.dwg

Drawing No. 36552 Issue 2

Issue No.	Date	Drawn App'd	Modification
1	07/02/00	Sward **	FOR APPROVAL
2	08/10/22	TVG **	BLUESTAR BORDER INSERTED



FOR CONTINUATION SEE
DRAWING NUMBER 36552

FOR CONTINUATION SEE BELOW

600 NB EFFLUENT DISCHARGE MAIN

FOR CONTINUATION SEE ABOVE

FOR CONTINUATION SEE BELOW

600 NB EFFLUENT DISCHARGE MAIN

LOW WATER MARK
ORDINARY TIDE

FOR CONTINUATION SEE ABOVE

FOR CONTINUATION SEE BELOW

600 NB EFFLUENT DISCHARGE MAIN

FOR CONTINUATION SEE ABOVE

600 NB EFFLUENT DISCHARGE MAIN

JET DIFFUSER

ALL DETAILS BELOW HIGH WATER MARK
TO BE SITE CHECKED

REFERENCE DRAWINGS
 36542 - MASTER DRAWING
 36543 - KEY PLAN
 36544 - IMPOUNDING PITS
 36545 - IMPOUNDING PITS INLET CHAMBER
 36546 - IMPOUNDING PITS PUMP HOUSE
 36547 - DISCHARGE MAIN JOINTS 2 TO 29
 36548 - DISCHARGE MAIN JOINTS 30 TO 58
 36549 - DISCHARGE MAIN JOINTS 59 TO 86
 36550 - DISCHARGE MAIN JOINTS 87 TO 115
 36551 - DISCHARGE MAIN JOINTS 116 TO 139
 36552 - HUMBER DISCHARGE PART 1

FOR FULL LIST OF REFERENCE DRAWINGS
SEE DRAWING NUMBER 36543

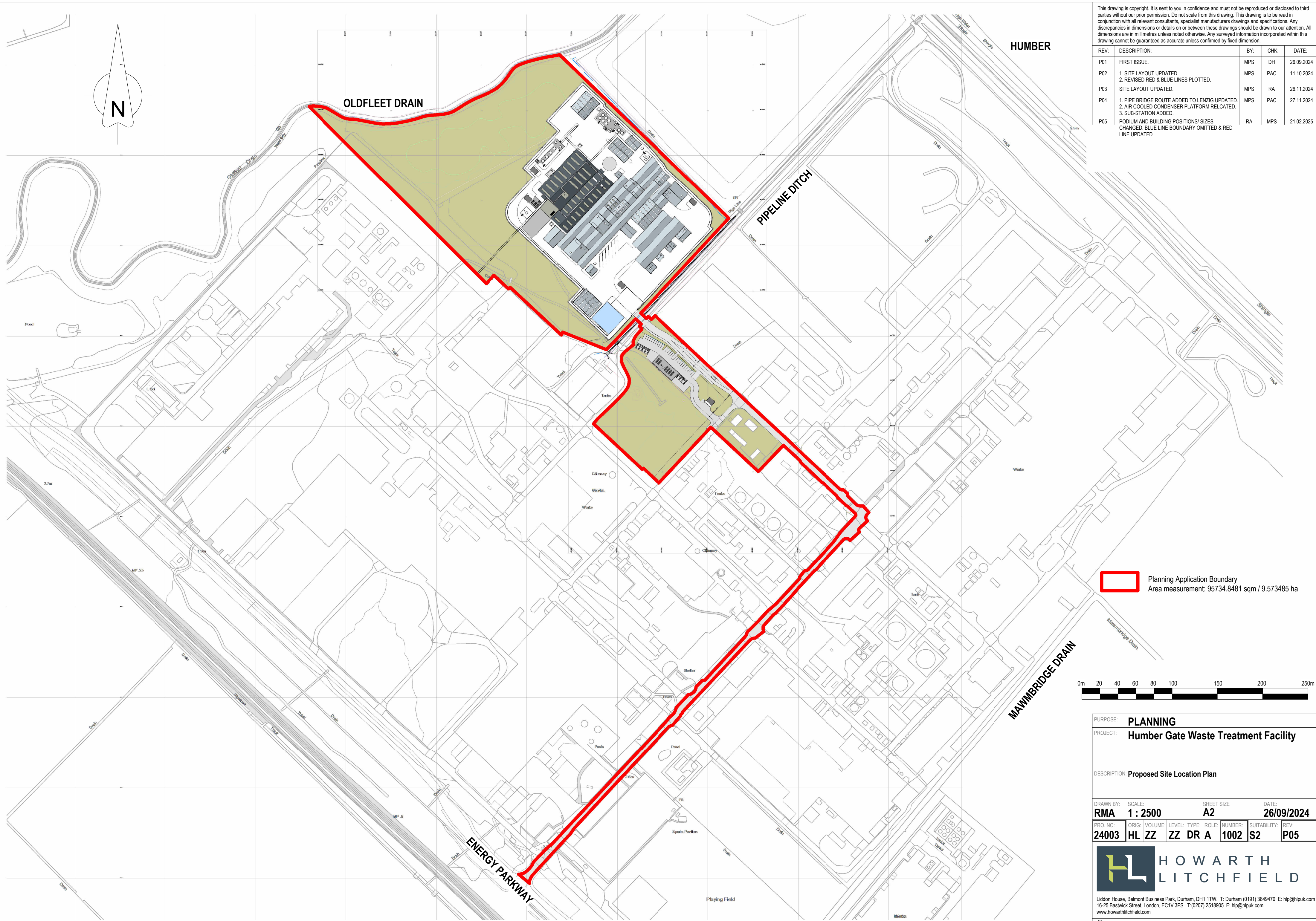
REDUCED COPY
DO NOT SCALE


BLUESTAR	
Tel 01472 241241 Fax 01472 244539	
Title EFFLUENT HOLDING / DISCHARGE SYSTEM HUMBER DISCHARGE PART 2	
Project 08400	Request No. 382
Scale 1:50	Drawn By Sward
Path S:\Drawing Office\KNO Drawings\36553_2	
Drawing No. 36553	Issue 2

Appendix F Proposed Development Plan

This drawing is copyright. It is sent to you in confidence and must not be reproduced or disclosed to third parties without our prior permission. Do not scale from this drawing. This drawing is to be read in conjunction with all relevant consultants, specialist manufacturers drawings and specifications. Any discrepancies in dimensions or details on or between these drawings should be drawn to our attention. All dimensions are in millimetres unless noted otherwise. Any surveyed information incorporated within this drawing cannot be guaranteed as accurate unless confirmed by fixed dimension.

REV:	DESCRIPTION:	BY:	CHK:	DATE:
P01	FIRST ISSUE.	MPS	DH	26.09.2024
P02	1. SITE LAYOUT UPDATED. 2. REVISED RED & BLUE LINES PLOTTED.	MPS	PAC	11.10.2024
P03	SITE LAYOUT UPDATED.	MPS	RA	26.11.2024
P04	1. PIPE BRIDGE ROUTE ADDED TO LENZIG UPDATED. 2. AIR COOLED CONDENSER PLATFORM RELOCATED. 3. SUB-STATION ADDED.	MPS	PAC	27.11.2024
P05	PODIUM AND BUILDING POSITIONS/ SIZES CHANGED. BLUE LINE BOUNDARY OMITTED & RED LINE UPDATED.	RA	MPS	21.02.2025



 Planning Application Boundary
Area measurement: 95734.8481 sqm / 9.573485 ha



PURPOSE: **PLANNING**
PROJECT: **Humber Gate Waste Treatment Facility**

DESCRIPTION: **Proposed Site Location Plan**

DRAWN BY: **RMA** SCALE: **1 : 2500** SHEET SIZE: **A2** DATE: **26/09/2024**

PRO. NO:	ORIG.:	VOLUME:	LEVEL:	TYPE:	ROLE:	NUMBER:	SUITABILITY:	REV:
24003	HL	ZZ	ZZ	DR	A	1002	S2	P05



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Appendix G IDB Correspondence

Jessica Joy

From: Guy Hird <guy.hird@witham3idb.gov.uk>
Sent: 01 October 2024 11:20
To: Jessica Joy
Cc: Aled Williams
Subject: RE: 15887-Humber Gate, Grimsby IDB request
Attachments: HumberGateMap.pdf

Categories: Info

Caution: This is an external email and may be malicious. Please take care when clicking links or opening attachments.

ND-3678-2017-PLN

Jessica

RE: 15887-Humber Gate, Grimsby IDB request

The site is in the North East Lindsey Drainage Board area and in the catchment of Mawmbridge Pumping Station & gravity discharge. See attached plan with the Board maintained watercourses.

While the proposed discharge rates are generally acceptable they rely on the riparian watercourses and piped drainage system within the wider Business Park. So additional details would be required for the planning process to show the downstream route and confirm there is no increase in flood risk to adjacent sites.

Any discharge into a watercourse will require a consent from the Board under the Land Drainage Act.

Regards

Guy Hird
Planning and Consents Officer
Normal working days are Tuesday, Wednesday and alternate Thursdays.

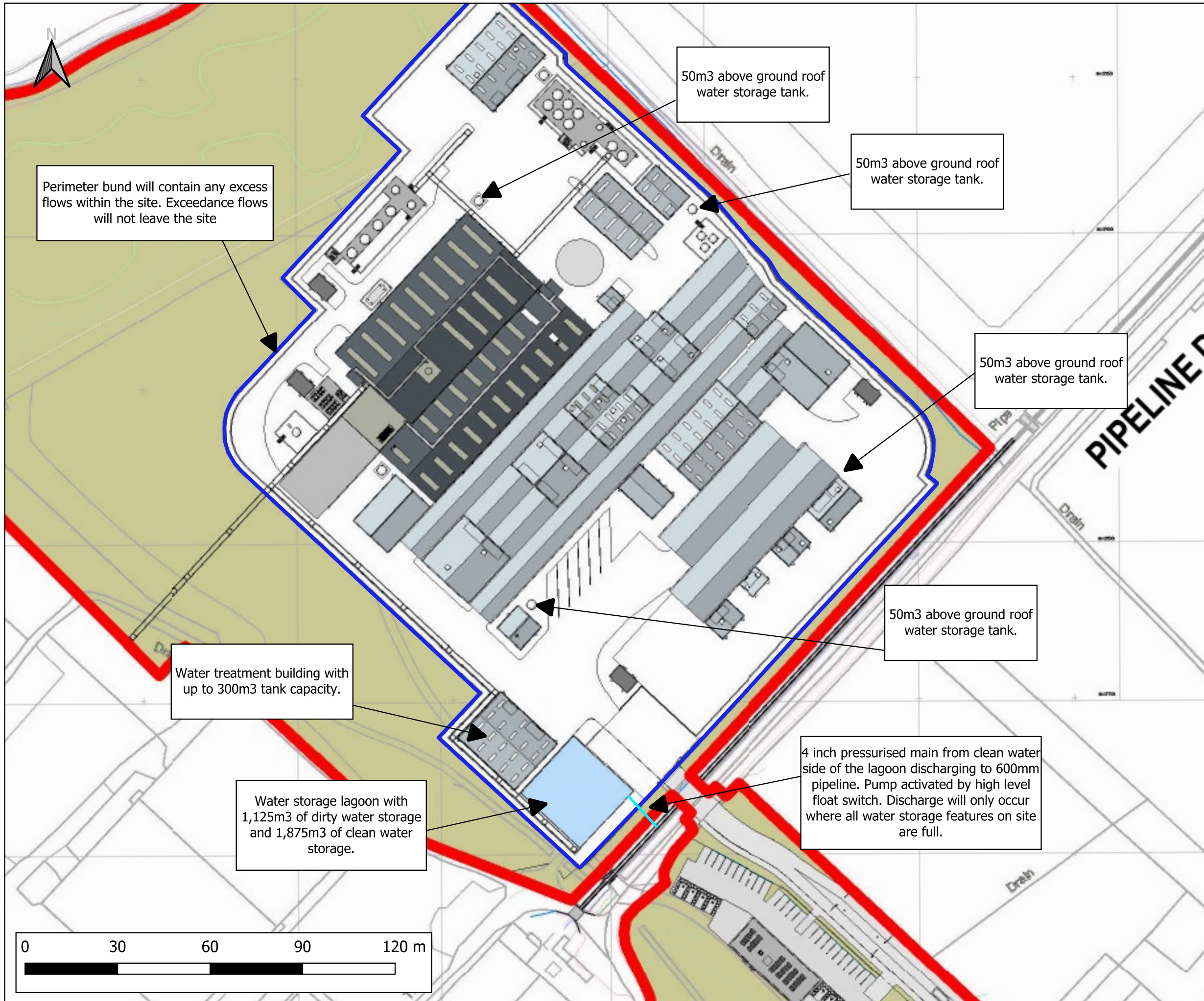
We have Engineering vacancies: <https://witham3idb.gov.uk/notices-ads/>

enquiries@witham3idb.gov.uk
accounts@witham3idb.gov.uk
planning@witham3idb.gov.uk
consents@witham3idb.gov.uk

Witham First District Internal Drainage Board
Witham Third District Internal Drainage Board
Upper Witham Internal Drainage Board
North East Lindsey Drainage Board

Witham House,
Meadow Lane
North Hykeham,
LINCOLN,

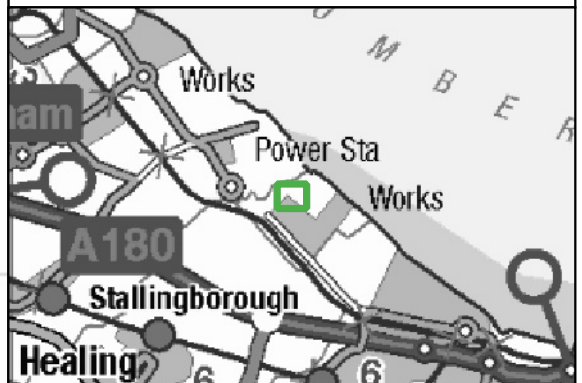
Appendix H Concept Drainage Plan



Notes:
 1) This sketch has not been subject to formal checks or approvals. Its validity and use must therefore be limited to discussion and information purposes only.
 2) Unless otherwise noted the risks associated with this proposal are not considered to be extra ordinary and within the remit of an experienced and competent contractor.
 3) All dimensions in millimetres and all levels in metres above ordnance datum unless shown otherwise.
 4) This drawing is an ammendment of the 'Proposed Site Location Plan' by 'Howarth Litchfield'. This drawing provides a concept only and is not intended for detailed design.

LEGEND

- ▭ Site Boundary
- ▭ Perimeter Bund
- ▭ Rising Main



CLIENT:
 Humber Resources Group Ltd



SCHEME:
 Humber Gate, Grimsby

PLOT TITLE:
 Concept Drainage Sketch

PLOT STATUS: FINAL
 DATE: 07-10-2025

DRAWN: JP
 CHECKED: AW
 APPROVED: MW
 PLOT SCALE AT A3: 1:1200

PLOT NAME: 15887_Concept_Drainage_Sketch
 REVISION: -

Appendix I SuDS Maintenance Schedules

Operation and Maintenance Requirements for Attenuation Storage Tanks

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows 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

Ref. Table 21.3, CIRIA C753 'The SuDS Manual'

The maintenance requirements detailed above are to be undertaken by the site owner.

Name :

Position :

Date :

Signed on behalf of the site owner :

Appendix J Concept Designers Risk Assessment

Project:	Humber Gate, Grimsby	Project No: 15887
Client:	GRG Property Holdings Ltd	
Report Reference:	15887-Drainage Strategy-01	

Prepared by:	Jessica Joy BSc (Hons) MCIWEM	Date:	21/11/2024
Checked by:	Aled Williams BSc (Hons) MCIWEM C.WEM	Date:	22/11/2024
Reviewed by:	Andrew Russell BEng (hons) IEng MICE	Date:	23/11/2024

Requirement:

The Construction (Design and Management) Regulations 2015 (CDM 2015) place an obligation on the Designer to take all reasonable steps to provide, with the design, sufficient information about the design, construction or maintenance of the structure, to adequately assist the client, other designers and contractors to comply with their duties under CDM. The Designer has undertaken this assessment to identify any extra-ordinary risks, or those that would not be expected on this particular project by an experienced and competent Contractor. The aim is to avoid needless paperwork and bureaucracy and ensure the assessment is project specific, relevant and proportionate to the risk.

DRA Summary

Each of the following risk areas has been considered using the question below. Is a risk present which is considered to be **extra-ordinary or unexpected** in this instance?

If **YES** - A detailed risk assessment is required at design stage

If **UNKNOWN** - Insufficient information has been provided at concept design stage and the risks are unknown. Further consideration must be given at design stage(s)

If **NO** - No further action is required.

Hazard Ref.	Risk Areas	YES, UNKNOWN or NO	Comments
1	Ground Conditions	Unknown	Ground Investigation report has been completed (document reference: R-129-002870)
2	Hazardous Environment	Unknown	Made Ground was present- potentially contaminated ground
3	Existing Working Environment	Unknown	Historical industrial land use
4	Existing Services	Unknown	No public sewers in the immediate vicinity of the site.
5	Proximity to Other Structure(s)	Yes	The site is bordered by a former landfill (now capped)
6	Near Waterbody / flood risk	Yes	The site is identified at risk of tidal flooding with a maximum flood level of 3.45m AOD during the 0.5% AEP (year 2099) breach event. See FRA, document reference: 15887-FRA-01).
7	Proximity to Other Activities	Unknown	To be considered at detailed design stage.
8	Sequence of Construction	Unknown	To be considered at detailed design stage.
9	Access	Unknown	Access is provided from a shared access road to the south-east off the site.
10	Interfaces	Unknown	To be considered at detailed design stage.
11	Confined Space Working	Unknown	To be considered at detailed design stage.
12	Maintenance Considerations	Unknown	To be considered at detailed design stage.
13	Working at Height	Unknown	To be considered at detailed design stage.
14	Steep Slopes	Yes	Steep slopes will be formed by raising Plot I above flood levels
15	Demolition / Refurbishment / Repair	Unknown	To be considered at detailed design stage.
16	Welfare	Unknown	To be considered at detailed design stage.
17	Occupational Health	Unknown	To be considered at detailed design stage.
18	Environmental Issues	Unknown	To be considered at detailed design stage.
19	Other Significant Hazards not Identified Above	Unknown	To be considered at detailed design stage.
20	Residual Risk to Future Users	Unknown	To be considered at detailed design stage.