BAYNHAM MEIKLE

Consulting Civil and Structural Engineers

Graze, Hayes

Springfield Rd, Hayes

Water Effluent Treatment

Project Ref: **13664**

Report Ref: **R100**

Revision 1.0

April 2024

Client

Graze - Nature Delivered Limited

BAYNHAM MEIKLE

0121 434 4100

8 Meadow Road, Edgbaston, Birmingham, B17 8BU

Company Registration Number: 04124240

www.baynhammeikle.co.uk

BAYNHAM MEIKLE

Consulting Civil and Structural Engineers

REPORT STATUS

Client	Graze - Nature Delivered Limited
Project Title	Graze, Hayes
Report Type	Water Effluent Treatment Drainage Statement
Report Number	R100

Revision	Revised by	Approved by	Date
1.0	Marcel Richards – Assistant Engineer	Gavin Lord – Managing Director	26/04/2024

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1 Contents

2 Existing Site

This drainage statement has been prepared on behalf of Graze Nature Delivered Ltd, in support of the planning application for a new water effluent treatment works. The site is located in Hayes with nearest postcode UB4 0TP with access gained to it from Bullsbrook Road. The site's approximate ordinance grid reference is E511348, N180536.

A site location plan is included within the appendices.

3 Development Proposal

The proposed development at Graze, Hayes requires the introduction of an effluent treatment plant, replacing two existing shipping containers situated within the staff car park.

The main purpose of the proposed water effluent treatment plan is to meet the trade effluent discharge consent limits specified by Thames Water.

4 Discharge Consent Limits

The local water authority is Thames Water. Thames Water has been contacted for information regarding trade effluent discharge consent limits, see Thames Water correspondence included within the appendices. See table below for Thames Water trade effluent discharge consent limits:

Volume Limits:

- Maximum daily discharge: 55m³/day
- Maximum hourly discharge: 12m³/hour
- Maximum discharge rate: 3.5l/s

Temperature Limits:

- Maximum temperature: 43°C

pH Limits:

- pH range: 6 to 11

Concentration Limits:

Determinand Name	Consented Limit
Chemical Oxygen Demand	12000.0
Suspended Solids	2000.0
Sulphate	1800.0
Chloride	1500.0
Settleable Solids	1000.0
Saponifiable Material	300.0
Rapidly Settleable Solids	100.0
Unsaponifiable Material	50.0
Ammoniacal Nitrogen	35.0
Total Phosphorus	13.0
Sulphide	1.0

5 Proposed Water Effluent Treatment Plant

The proposed water effluent treatment plant is to be designed and manufactured by ETP Services Limited. The effluent treatment plant will be specifically designed to effectively manage effluent from the bakery and ensure that water is treated before being discharged into the Thames Water sewer system, in order to meet the effluent discharge consent limits, set by Thames Water.

5.1 Key Features of the Water Treatment Plant

Flow Regulation:

The treatment plant has a flow regulation mechanism to restrict the discharge rate to a maximum of 2m³/hour. By controlling the flow the effluent volume remains well within allowable limits.

Temperature Management:

To adhere to Thames Water's maximum temperature limit of 43°C, the water treatment facility is equipped with a cooling system. This cooling system effectively reduces the temperature of the wastewater to match the outdoor temperature before release, thereby preventing thermal pollution and safeguarding aquatic ecosystems.

pH Control:

The water treatment plant will regulate and improve the pH levels of the discharged water which is essential so that the pH of the effluent is within Thames Waters pH range of 6 to 11 which is crucial for environmental protection.

Pollutant Reduction:

The implementation of the water treatment plant is to significantly reduce the concentration of pollutants in the effluent from the bakery to meet Thames Water's concentration limits. Additionally, the water treatment plant is equipped with oil and grease removal to effectively reduce the concentration of all pollutants by 70% from the effluent. This ensures that the discharged water complies with regulatory standards and does not pose a risk to the environment.

Further details of the Effluent Treatment Plant can be found within the appendices.

6 Drainage Strategy

The existing drainage system will remain in place but there will be the introduction of a water effluent treatment plant. The water effluent treatment plant will aim to control and treat the effluent water produced within the bakery whilst ensuring compliance with the effluent discharge consent limits set by Thames Water. Through the implementation of the treatment plant, pollutants and contaminants will be efficiently removed from the effluent water before it is discharged back into the existing foul drainage system, ensuring environmental compliance and sustainability.

See the appendices for a Drainage Plan indicating the location and connectivity of the treatment plant.

7 Summary

The development is located in Hayes, Greater London and can be accessed off Bullsbrook Road, nearest postcode UB4 0TP.

Existing shipping containers that can be found in the staff car park of the development are to be replaced by the introduction of an effluent treatment plant. The introduction of the effluent treatment plant is to ensure that effluent water being discharged from the bakery is meeting Thames Water's discharge consent limits. ETP Services Limited are to design and manufacture the effluent treatment plant. Key features, such as flow regulation, temperature management, pH control, and pollutant reduction, will be incorporated within the design of the treatment plant as Thames Water have set specific guidelines on allowable discharge. Whilst the existing drainage system remains intact, the introduction of the treatment plant signifies a step towards efficiently managing and treating effluent water. Through the implementation of the treatment plant, pollutants and contaminants will be efficiently removed from the effluent water before it is discharged back into the existing foul drainage system, ensuring environmental compliance and sustainability.

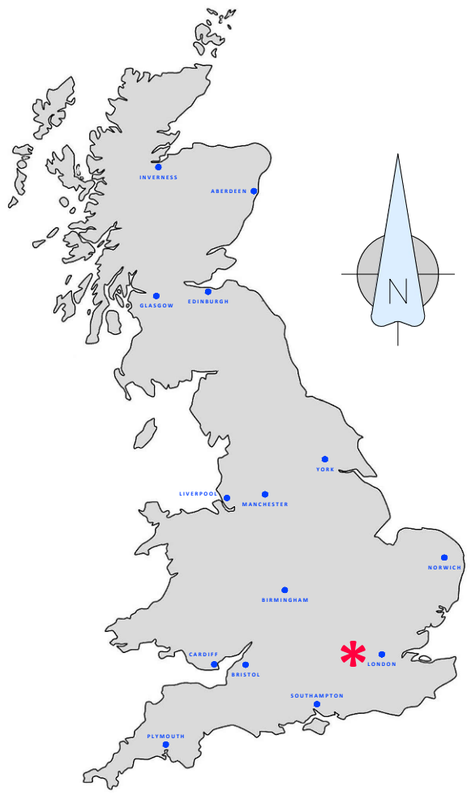
8 Appendices

8.1 Site Location Plan

8.2 ETP Services Limited Effluent Treatment Plant Details

8.3 Thames Water Correspondence

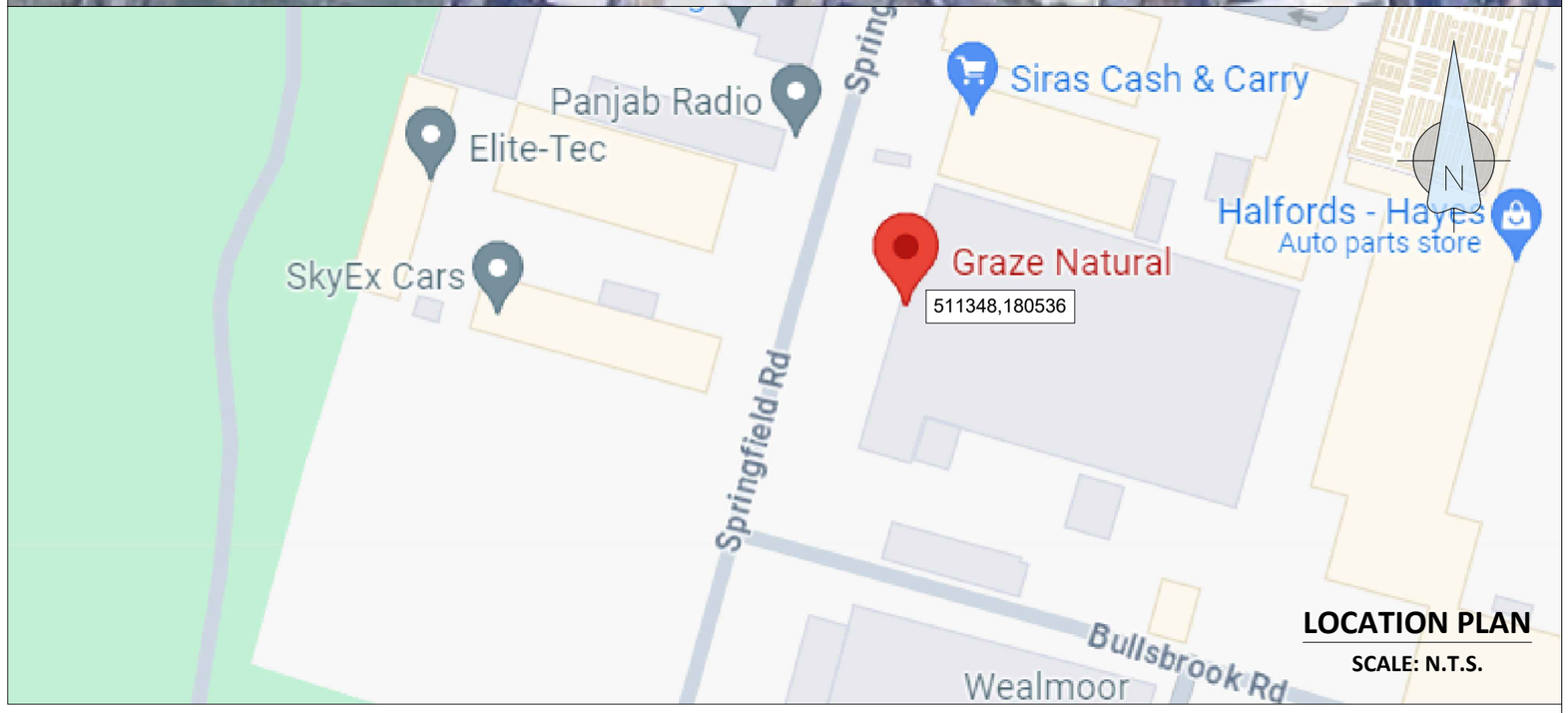
8.4 Drainage & Treatment Layout



SITE DETAILS		
Address:	**Graze, Springefield Rd,Hayes**	
Nearest Postcode:	**UB4 0TP**	
Grid Co-Ordinates:	**E: 511348**	**N: 180536**

Notes **A3**

SITE PLAN
SCALE: N.T.S.



LOCATION PLAN
SCALE: N.T.S.

Project Title	Drawing Title	Drawing Status
Graze, Hayes, Springfield Rd	**SITE LOCATION PLAN**	**For Information**

BM Ref	Scale @ A3	Drawn by	Checked by	Project Eng	Drawing Number	Revision
13520	AS SHOWN	L.M.	M.R.	J.H.	**13664_100**	—

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Rev	Date	Description	By	Chkd
-	29/04/2024	First Issue.	L.M.	M.R.

Revision Schedule

etpservices
Effluent Treatment Plant - Sales & Service

ETP Services Limited
Units 9-11, Marles Close,
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Newark, NG24 2FD
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Milly Benson
Project Manager
Graze Natural
Springfield Road
Hayes
Middlesex
UB4 0TP

Date 27th February 2024
Our ref GG 3351

Dear Milly,

Upon your request, we remain free to submit the following:

Design Manufacture and supply an Effluent Treatment Plant solution, for your Springfield Road site.

For project scope, technical description and prices please see the following pages.

We trust that all is clear and look forward to hearing from you shortly.

Yours sincerely

Graham Gent ETP

Graham Gent
Engineering Director
ETP Services

Commercial Details:

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1. **Scope of supply**

To manufacture and supply, 1 x ETP3. Containerised.

A: 20ft Container to include the following:

Aluminum Flooring

ETP Services model 2" pipe flocculator

- in HDPE plastic with stainless steel support frame. Welded construction, complete with:
- Injection valves for the dosing pumps.
- Manifold and valves to house pH probe.
- Inlet for polymer dosing unit.
- Flow switch.
- Sample taps.
- Discharge of flocculator piped to inlet of DAF.
- Whitewater inlet

Feed Pump

Twin Dry well mounted progressive cavity forward feed pump rated at 1 – 8 cubic meters per hour, fitted with a variable speed drive, complete with:

- Dry run protection device fitted to pump.
- Smart conveying technology allowing the pumps to be maintained without removing pipework or internal joints.
- Isolation valves on suction and discharge of pump.
- Suction of pump connected to Feed Stream.
- Discharge of pump connected to inlet of flocculator.
- Pump controlled by ultrasonic head mounted above Balance Tank**.**

pH Control System

- Prominent Caustic and Acid dosing pumps rated to deliver up to 25l/hr. With a back pressure up to 10 Bar.
- Injection valves for the dosing pumps mounted on the flocculator.
- Polypropylene cabinet to house the dosing pumps.
- Chemical delivery Dual contained pipes from pumps to flocculator.
- Chemical suction pipes complete with foot valve and level indicator within IBC.

Polymer preparation and dosing unit

Polymer preparation and dosing unit complete with:

- Polymore Mini 30-3.0 Polymer preparation and dosing unit.
- Polypropylene cabinet to house the Polymore unit.
- Polymer delivery pipe from Polymore to flocculator.

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- Polymore suction pipe complete with foot valve.

E: Coagulation Pump

Coagulant dosing pump complete with:

- Prominent Coagulant dosing pump rated to deliver up to 10 l/hr. with a back pressure up to 7 Bar.
- Injection valve for the dosing pump mounted on the flocculator.
- Polypropylene cabinet to house the dosing pump.
- Chemical delivery pipe from pump to flocculator.
- Chemical suction pipes complete with foot valve and level indicator within IBC.

f: DAF Cell

3m cubic meter per hour 316 stainless steel DAF tank complete with:

- Platform and steps
- skimmer system and drive for removal of floating sludge
- sludge hopper level control
- Estop attached to the side of the tank.
- 2 no. 75mm actuated sand valve
- Sand drain discharge pipe to be linked through to nearby sump pit via sand drain trap.

G; Whitewater system

Whitewater system attached to the DAF tank complete with:

- Stainless steel saturation vessel
- 7.5kW whitewater pump
- Pneumatic control panel
- Injectors
- Pipework and valves

H: Sludge Pump

Twin Dry well mounted progressive cavity sludge pump rated at 10 cubic meters per hour complete with:

- Dry run protection device fitted to pump.
- Smart conveying technology allows the pumps to be maintained without removing pipework or internal joints.
- Controlled by level in the DAF sludge hopper.
- Isolation valves on suction and discharge of pump.
- Suction pump connected to DAF sludge hopper.

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- Discharge of pump connected to sludge outlet flange on side of Container.

I: Control Panel

Stainless Steel composite control panel containing:

- Panel Isolator.
- 24VDC 10A Power Supply.
- Mains and 24VDC distribution circuit breakers.
- Siemens PLC and additional I/O.
- 9" colour touchscreen HMI for operator interface.
- Remote access unit to provide customer support and access to logged process data.
- Power on indicator.
- System start pushbutton, illuminated green.
- System stop pushbutton, raised red.
- Auto-Off Manual three position selector switch.
- Emergency stop pushbutton.
- Emergency stop reset pushbutton, illuminated blue.
- Motor starters for forward feed pump, sludge pump, whitewater pump, scraper drive, sand drain return pumps, final effluent transfer pumps, screen motor, balance tank transfer pumps.
- MCB's for 5 dosing pumps and Polymore.
- MSB's for DC power supply, 2 dulcometers and flowmeter.
- Flow switch for detecting flocculator flow.
- UPS PLC back up power supply.

J: 20' watertight container

- To include internal lighting – Heating and ventilation
- Internal mounted Electrical consumer unit
- Aluminum checker plated floor
- DAF Cell
- The housing of plant control panel
- Pipe flocculator.
- All Chemical dosing pump and control units
- Air compressor
- Roof top steel fabricated personnel platform with full surround handrail security including floor mounted access ladder.

Giving access to both Balance and Sludge tank plus Circular Drum Screen.
With space for future Sludge dewatering press if required later.

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K: Radar level sensors

- for balance tank
- sludge tank
- sludge hopper
- influent discharge tank.

L: SGR Externally Fed rotary Drum Screen

Description:

ROTARY FILTERING DRUM SGR 0.5mm wedge wire screen:
to separate the solids from wastewater, as described beneath. The screen is composed of a stainless steel AISI 304 tank. A stainless steel AISI 304 filtering drum is installed inside the tank. The drum has trapezoidal slots whose distance corresponds to the openings size required. The tank is supplied with a nozzle with section suitable for the flow rate. Fluids to be treated are conveyed through a distributor onto the external surface of the drum. The side sealing is composed of nylon sliding blocks. Solids rotate and are kept by the external surface of the rotary filter. Solids are then discharged, and the drum is cleaned by means of a brass or Teflon cleaning blade. The filtered fluid passes through the drum and is collected on the bottom of the tank where it is discharged through a nozzle. The filter rotates thanks to a “bath oil” double worm screw gearbox, which is connected to one end of the drum through a joint. On the opposite side, a cleaning system is installed. The system is composed of a pipe equipped with a high-pressure nozzle which periodically cleans the filtering drum (mobile washing system). The system shall be connected to the hydraulic net.

M: 30m3 Balance Tank:

- 1 x 30m3 capacity fully enclosed Polypropylene rotationally moulded tank
- 600mm Dia top access lid
- Welded Inlet/outlet flanged locations.
- Flanged Radar level sensor
- Internal submerged Mixer with slide location bar complete with lifting Davit
- 6” fabricated mushroom vent (Welded)
- Discharge emptying pipeline with Bauer fitting close to bund wall for tanker connection.

N: 3.6m3 Conical bottomed Sludge Tank:

- 1 x 3.6m3 capacity fully enclosed Polypropylene rotationally moulded tank conical bottom giving full drainage of sludge content during tanker emptying operation.

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- Tank mounted upon steel fabricated stand.
- De-cantering pipe manifold
- 420mm Dia top access lid
- Welded inlet/outlet flanged locations.
- Flanged radar level sensor
- 4" fabricated mushroom vent (Welded)
- Discharge emptying pipeline with Bauer fitting close to bund wall for tanker connection.

Influent discharge tank:

- 1 x Stainless Steel 2m3 Discharge tank, factory Effluent collection point.
- 2 x surface mounted discharge to Rotary Screen pumps (duty/assist)
- Radar level sensor.

Chemical IBC Stand:

- 1 x Steel fabricated Galvanised stand, to hold 3 x chemical IBC's within Bunded area at a height above wall for ease of loading and unloading by fork truck.

Screen waste collection trolley:

- Designed and manufactured to capture solids discharge from rotary screen above plant room container.
  Once full to be internally pushed to a position next to bund wall and designed so that a fork truck can lift out of bunded area with ease and emptied accordingly.

All interconnecting pipework:

- All pipework PVC manufactured.
- Lagging and trace heated
- Labelled for recognition and directional purposes.

Bund containment discharge pump:

- Self-level controlled submersible grinder pump placed within bund pit.
  To pump all containment liquids up into discharge tank and recycled through effluent treatment plant.

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To include:

- Transport to site.
- On site Craneage.
- Installation, labour, and accommodation.
- Commissioning.
- 2 days operator and Engineer Training.

Outlet Discharge Guarantee:

ph. = 6 – 10
TSS = 90% Removal
BOD/COD = 30%-60% Removal
TOG = 70% Removal

All based on similar factors using DAF treatment system, but subject to site specific chemical Tests.

Exclusions:

- Mains Water supply (polymer solution and screen wash)
- Mains Electricity supply to plant room consumer unit.
- Civils works.

The price for the above-mentioned works (Excluding optional items) per our specifications herein amounts to

£ 283,356:00p

(Two Hundred and Eighty-Three Thousand Three Hundred and Fifty-Six Pounds)

. Prices

All prices mentioned are net, excluding applicable taxes and duties.

.

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12 weeks from order and on receipt of;

- an official order number in favour of ETP Services Ltd.

. **Transfer risk**

The goods or the parts thereof shall be in every respect for your risk as soon as they have arrived on site, so that you will have to take care of insurance upon their arrival.

. **Payments**
40% with order
40% on delivery of goods
20% Stictly 30 days Nett

. **Guarantee**

The guarantee period is 12 months. Any claims shall only be entertained if you have adhered strictly to the instructions for use and maintenance received by you.

The period of guarantee shall commence after commissioning but shall not exceed 18 months after delivery.

. **Validity**

This quotation is valid for 1 month from the above date.

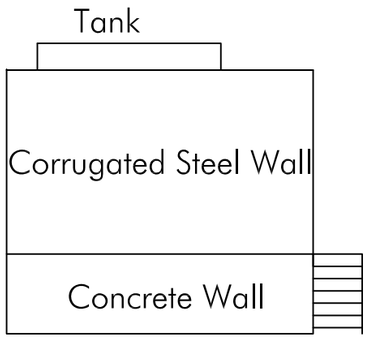
APPENDIX 1 - SUBSTANCES

THE TRADE EFFLUENT shall not contain any of the substances listed below at a concentration expressed in milligrams per litre greater than that stated:

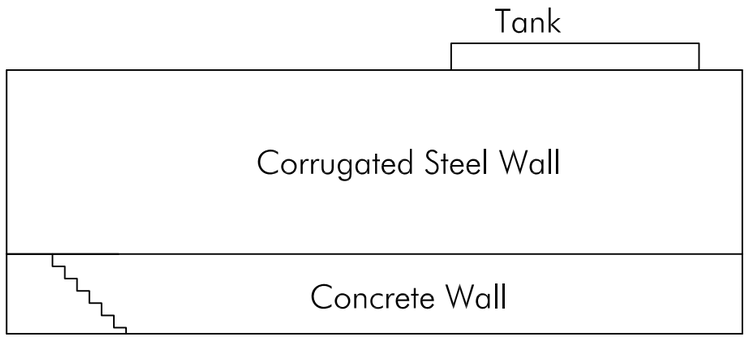
Determinand Name	Consented Limit
Chemical Oxygen Demand	12000.0
Suspended Solids	2000.0
Sulphate	1800.0
Chloride	1500.0
Settleable Solids	1000.0
Saponifiable Material	300.0
Rapidly Settleable Solids	100.0
Unsaponifiable Material	50.0
Ammoniacal Nitrogen	35.0
Total Phosphorus	13.0
Sulphide	1.0

GRAZE NATURAL

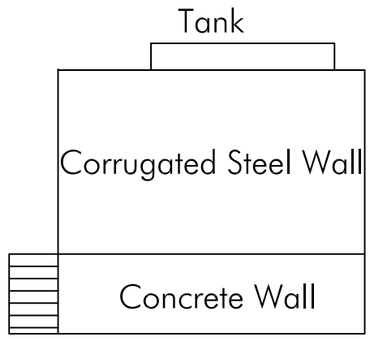
Ground Floor



Side Elevation 1

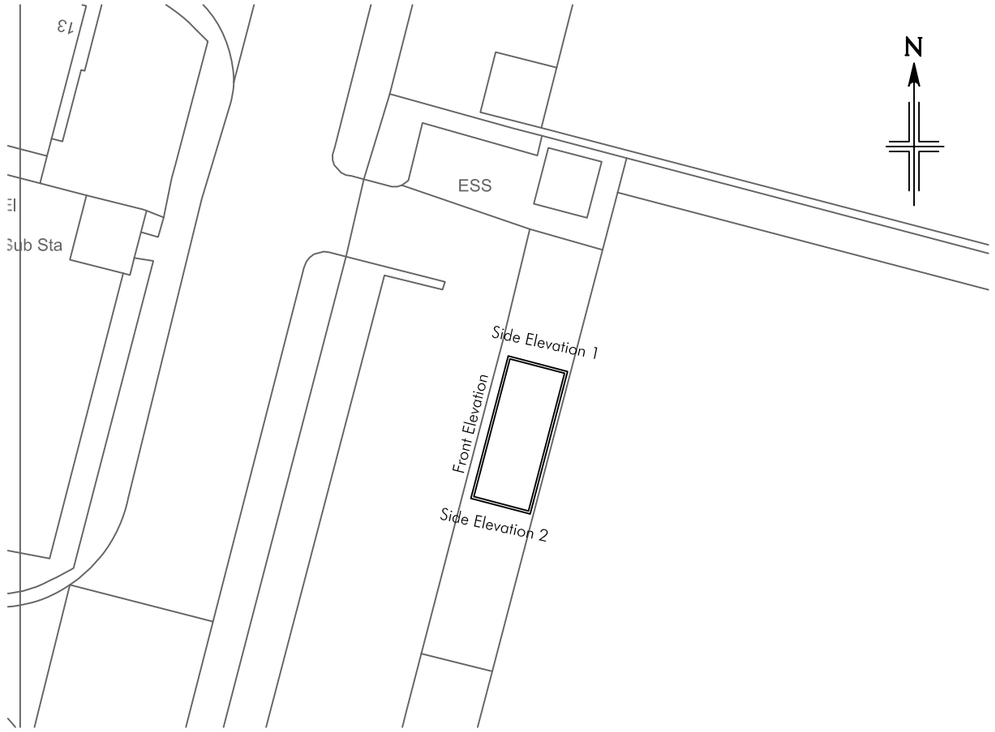


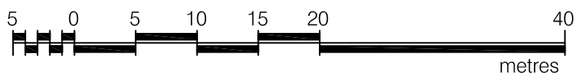
Front Elevation

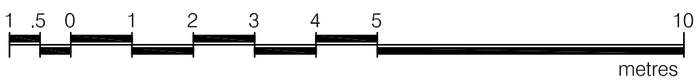


Side Elevation 2

Location Plan 1:500





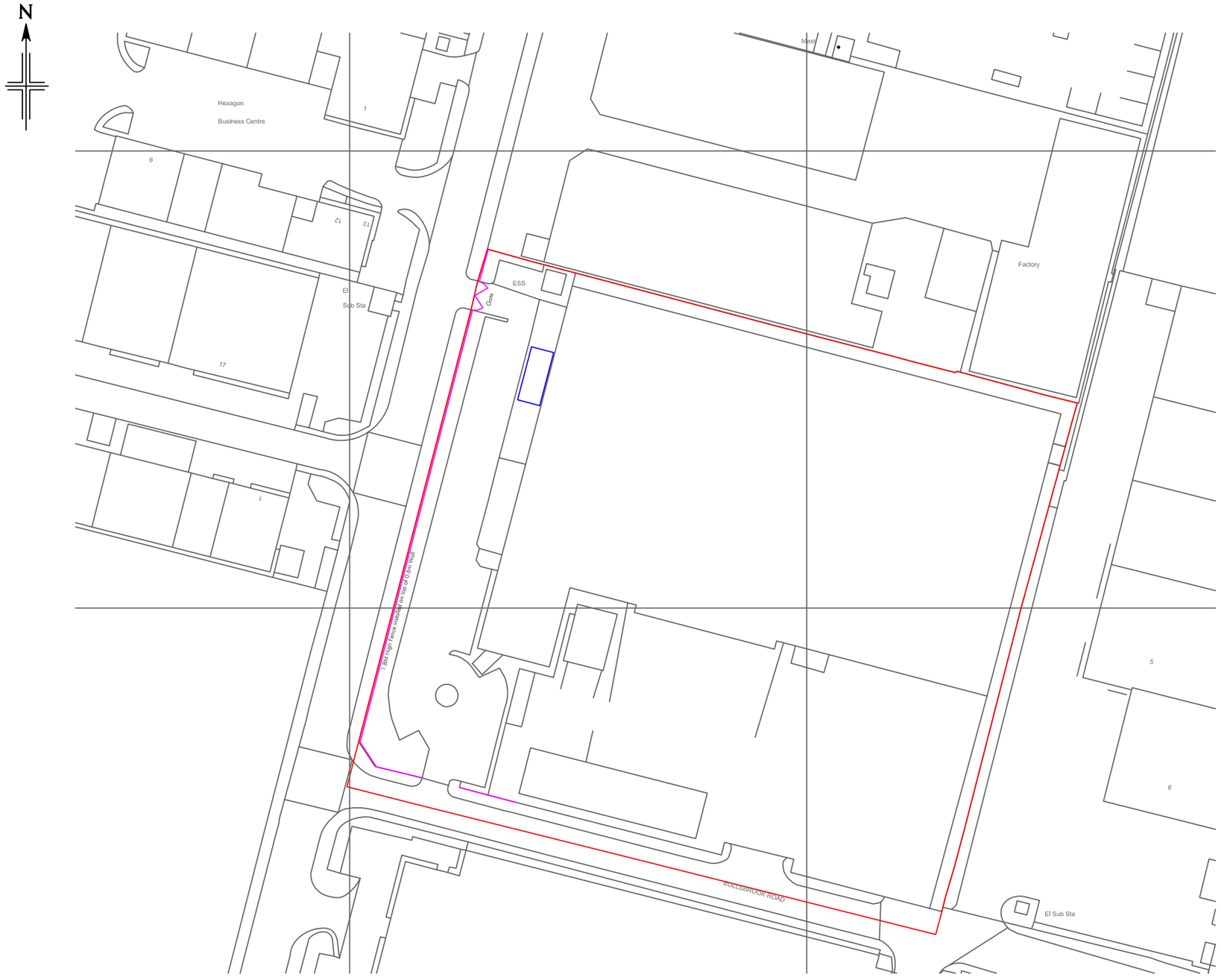


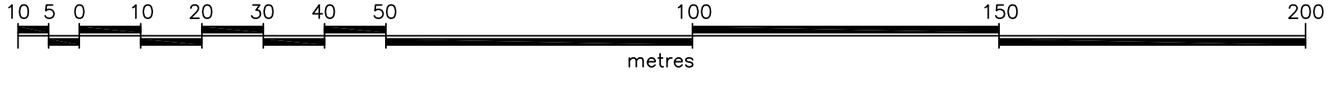
Notes:

Care should be taken when drawings are printed to avoid image distortion.

CBRE Limited, Henrietta House, Henrietta Place,
London, W1G 0NB
Switchboard: 0207 182 2000 Fax: 0207 182 3007
Web: www.cbre.com

Address:	Graze Natural Springfield Road Hayes UB4 0TP		
Drawing:	Proposed Elevations		
Date:	24/04/2024	Project No.	564791
Scale:	1:100@A3	Alt. Scale:	
Drawn:	SA	Checked:	PF
Dwg. No.	564791-E-00	Rev.	A





GRAZE NATURAL

Ground Floor

Demise

Proposed Treatment Plant

Proposed New 1.8M Fence

Notes:

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Address:	Graze Natural Springfield Road Hayes UB4 0TP		
Drawing:	Location Plan		
Date:	24/04/2024	Project No.	564791
Scale:	1:1000@A3	Alt. Scale:	
Drawn:	SA	Checked:	PF
Dwg. No.	564791-00	Rev.	A