Discharges To Water

Introduction

The TEGCO Immingham Ltd Installation at Netherlands Way, Stallingborough, Grimsby, DN41 8DF is an Energy from Waste (EfW) process. The installation is designed to consume 320,000 Te/yr of Refuse Derived Fuel (RDF) based on 10 MJ/kg (LHV), producing: -

- 12 MW electrical export,
- 51 MW thermal export (60 Te/hr) as steam (no condensate return).

The installation is a Combined Heat & Power (CHP) plant sized and is designed to replace the steam and electricity currently generated by an existing CHP plant on an adjacent industrial plant. The existing CHP plant is reaching the end of its operational life and will be decommissioned when the installation is operational.

The need to continue to take waste in the event that steam and/or electricity cannot be exported (e.g. customer is shutdown), the installation is designed such that all steam generated at normal waste feed can pass through the turbine and condenser resulting in 24 MW electrical export.

A proportion of the RDF is sourced from local waste management companies and transported to the installation by road. The remaining is sourced from further afield and transported by rail to 1 of 2 local railheads and the final transfer from the railhead to the installation is by road.

The installation will operate continuously (24 hr/day & 7 day/week) for >8,000 hr/yr.

The installation consists of 2 off 20Te/hr incineration lines (combustor, boiler & feed-water system) and a single turbine and air cooled condenser.

The installation is designed not to generate any waste water from the process during normal operation.

The installation is designed to be fully compliant with the 2019 European BREF for Waste Incineration (JRC 118637) and the associated BAT Conclusions published in the Official Journal of the European Union on 3rd December 2019.

Overview

The incineration and power generation process at the installation is designed to ensure that there is no waste water generated from the process when operating in CHP or condensing (electrical generation only) mode. The various waste water streams from the process (e.g. from demineralised water plant, permeate polisher etc.) are collected in the Waste Water Pit and reused within the process.

Waste water is likely to be generated as part of maintenance activities etc. however the Waste Water Pit has adequate capacity to contain this (e.g. contents of boiler should this be drained for maintenance or repair). The contents of the Waste Water Pit can be reused or sent for disposal off-site at suitably licenced facilities (e.g. STW).

However there is still a requirement to discharge water from the installation, this is from: -

- Surface water run-off due to rainfall,

- Discharge from onsite packaged sewerage treatment plant treating "domestic" type discharge from the onsite offices etc. (i.e. from toilets, washing facilities, kitchen facilities & similar welfare facilities),
- Wash water used to clean the external fins on the air cooled condenser (ACC).

Surface Water Run-off Drainage System

The RDF off-loading, storage and incineration takes place within closed buildings (to prevent odour/dust emissions) meaning that rain and resultant surface water run-off does not come into contact with the RDF.

The system design is included as Appendix 1 of this document.

In summary, the system is a Sustainable Urban Drainage System developed with reference to CIRIA Report C753, the SUDS Manual. The design provides mitigation for suspended solids, metals and hydrocarbons based on assessment of the potential risks of various areas of the site. This is detailed in Appendix 1.

In line with planning conditions the maximum discharge rate is 8.1 l/s and equates to the calculated "greenfield" run off rate for the site. This compares to an estimated existing (i.e. existing site infrastructure before the redevelopment proposed within this permit application) QBAR of 21.3 l/s. The post development position therefore reduces the contribution of run-off to potential offsite flooding and flows (& water quality) in the North Beck during/immediately after extreme weather compared to the current arrangement.

The design (including an impoundment/buffer capacity of 1,440 m^3) is based on a "1:100 yr. plus 40%" weather event to adequately address impacts of climate change.

The drainage system design is based on flows of 5.6 l/s for rainwater runoff and 2.5 l/s for process and foul effluents. The incineration process design has since progressed meaning there is now no process effluent produced during normal operation. TEGCO have decided to leave the design of the drainage system unchanged, this effectively increases the impoundment/buffer capacity and reduces frequency of maintenance.

The discharge is to the North Beck at discharge point W1 (Appendix 2.2) located at the North East corner of the site, grid reference TA 20707 14490 via a pumped discharge. The following features are present at the discharge: -

- "Penstock valve" allowing discharge to be prevented in the event of an incident at the installation,
- Flap valve to prevent potential reverse flow in the event of extreme water level in North Beck,
- Flow rate and daily flow measurement,
- Collection of a 24 hr flow related composite sample.

TEGCO propose to complete analysis of each sample for the following: -

- pH,
- Oil & Grease,
- Suspended Solids/Turbidity,
- Chemical Oxygen Demand/Biological Oxygen Demand,
- Ammonia.

As the discharge will have to go through/over the existing flood defence bank, TEGCO propose to have a single discharge, therefore the following will discharge into the surface water run-off system: -

- Demineralised water run-off from air ACC,
- Discharge from packaged sewerage treatment plant (STP) at W2 on drawing in Appendix 2.2.

For information, the point W3 shown on the drawing in Appendix 2.2 is the approximate location for a future potential discharge from the Waste Water Pit, initially this is isolated with blanks/removable spool piece (depending on final detailed engineering design) meaning there is a permanent physical break preventing accidental/malicious discharge. A suitable connection will not be installed until such a discharge has been agreed with the EA (e.g. permit variation) together with the installation of agreed sampling, monitoring, isolation equipment and the implementation of appropriate management systems.

The following table summarises the daily discharge flows (m^3/day) from the installation: -

Conditions	Runoff (Rain)	ACC Cleaning	Packaged STP	Total
Normal Dry Weather Flow	0 m^3/day	0 m^3/day	3.5 m^3/day	3.5 m^3/day
Max Dry Weather Flow(1)	50 m^3/day	0 m^3/day	3.5 m^3/day	53.5 m^3/day
Wet Weather Flow(2)				
1 mm/day rainfall:	25 m^3/day	0 m^3/day	3.5 m^3/day	28.5 m^3/day
5 mm/day rainfall:	125 m^3/day	0 m^3/day	3.5 m^3/day	128.5 m^3/day
10 mm/day rainfall:	250 m^3/day	0 m^3/day	3.5 m^3/day	253.5 m^3/day
15 mm/day rainfall:	375 m^3/day	0 m^3/day	3.5 m^3/day	378.5 m^3/day
20 mm/day rainfall:	500 m^3/day	0 m^3/day	3.5 m^3/day	503.5 m^3/day
25 mm/day rainfall:	625 m^3/day	0 m^3/day	3.5 m^3/day	628.5 m^3/day
Maximum(3):	695 m^3/day	0 m^3/day	3.5 m^3/day	700 m^3/day

Notes:

1. Up to 1 day/week in summer,
2. Assuming no requirement to wash ACC fins during wet weather,
3. Maximum discharge of 700 m^3 (8.1 l/s for 24 hrs)) equates to approximately 27.8 mm/day rainfall.

TEGCO understand that the options for handling clean surface water runoff are prioritised as below: -

1. By infiltration,
2. Discharge to suitable water body,
3. Discharge to sewerage system.

The soil conditions (e.g. the presence of impermeable clays etc.) at the site mean that infiltration is not a practicable solution for surface water runoff. The first choice option is therefore not practicable.

The second choice option is discharge suitable surface water, the North Beck Drain rounds along the northern boundary of the installation and there is currently a surface water discharge from the area of the current site into the watercourse. TEGCO therefore propose to discharge clean surface water to the North Beck Drain.

The detention basins have an impermeable liner to contain contaminated water (e.g. firewater) following an incident. In these circumstances the penstock valve is closed to prevent any discharge.

ACC Washing

The rate of airflow over the ACC radiators is controlled by fans as required to achieve optimum condensation. However overtime, especially during prolonged dry periods, dust etc. entrained in the air will accumulate on the external surfaces of the ACC radiators reducing cooling efficiency.

Demineralised water can be sprayed onto the external fins to display the accumulated dirt restoring performance. This water will then fall to the ground and enter the surface water drainage system, passing through the SUDs system and drain to the eastern basin prior to discharge to the North Beck Drain.

Approximately 50 m^3 of demineralised water is used at each clean and TEGCO predict the fins may require cleaning weekly (maximum frequency) in the event of prolonged dry periods during the summer months. In the winter months, the more regular rainfall results in significantly lower fouling (rainfall will tend to clean the fins) and lower ambient temperatures aid heat transfer reducing the impact of fouling.

Demineralised water, by definition is "pure" water containing virtually no contaminants ("boiler quality" water) and quality is routinely monitored. The feed to the cleaning system is taken prior de-aeration and the addition of boiler treatment chemicals (oxygen scavengers, corrosion inhibitors etc.). The wash water will however pick up material from the fouling on the fins and adsorb gases from the air as it falls to the ground. While passing through the surface water drainage system, the SUDS design will ensure removal of entrained contaminants as it does for rainwater runoff. The wash water is therefore essentially the same as rainwater and no additional monitoring is proposed.

The wash water will only be in contact with the ACC surfaces for a very short period before falling to the ground and passing through the drainage system. The maximum temperature at discharge point W1 is therefore not expected to be above 20°C.

The discharge of wash water via the same discharge point as the surface water run-off (rainwater) will: -

- Prevent the requirement for an additional discharge through the flood bank,
- Help maintain the average water level and flow in the North Beck Drain during dry periods.

Packaged Sewerage Treatment Plant Discharge

A small packaged sewerage treatment plant ("Karlgestor BioDisc®"), having a maximum flow of 3.5 m3/day is proposed to treat the grey & foul effluent from the offices and welfare facilities at the installation.

The unit is certified to BS EN 12255, BS 12566 Part 3, and BS EN 13725 and to produce a discharge quality that meets following limits: -

- Suspended Solids (SS): 15 mg/l,
- Biological Oxygen Demand: 10 mg/l,
- Ammonia: 3.8 mg/l.

Detail of the proposed packaged treatment plant is included in Appendix 3.

TEGCO understand that a discharge such as this does not require additional assessment and that it can be discharged into the North Beck Drain. The discharge is via point W2 (See Appendix 2.2) into the Surface Water Drainage System and hence via W1 to the North Beck Drain.

TEGCO propose to collect a 24 hr composite sample from the discharge at W2 (grid reference TA 20778 14395) and complete analysis of each sample for the following: -

- Total flow,
- pH,
- Oil & Grease,
- Suspended Solids/Turbidity,
- Biological Oxygen Demand,
- Ammonia.

This will provide demonstration of satisfactory performance of the packaged STP and support any investigation into unexpected results obtained at W1.

The generally preferred disposal route for this effluent is via public sewer system; however there is no currently connection to the public sewer at the installation.

The calculation outlined on Application Form B6, Question 5 indicates for this effluent (at a maximum flow of 3.5 m^3/day), the discharge should be to public sewer providing that this is within 140 m of the site boundary (i.e. not entailing excessive cost).

In this instance, the nearest potential connection to public sewer is approximately 250 m (circa 178% of the threshold distance calculated above) from the south eastern corner of the installation as the crow flies. This route is not practicable due to: -

- Issues of land ownership,
- Easements (including for railway sidings),
- Location of buildings and other infrastructure etc.

The shortest practicable route, following existing roadways is approximately 650 m (approximately 4.5 times the threshold distance calculated above).

The proposed packaged STP will cost circa £20,000 to install while initial estimates for construction of a sewer connection are circa £260,000. There are likely to be additional costs due to the need to obtain access etc. as the roadways and surrounding land is privately owned.

The estimated flow is a conservative estimate based on 30 employees with WC, hand wash and shower facilities with some allowance for visitor, driver & contractor facilities. This is subject to detailed design and it is expected that the final maximum daily flow may be lower.

The discharge temperature at W2 is expected to be no higher than 25°C due to mixing and residence time within the packaged STP. The small volume and low flows mean that the water is predicted to cooled to no higher than 20°C due to mixing with surface water (from wet weather/ACC washing) within the containment basin and/or pump out sump at W1.

Considering these factors, TEGCO have concluded that the cost of connection to the public sewer is excessive.

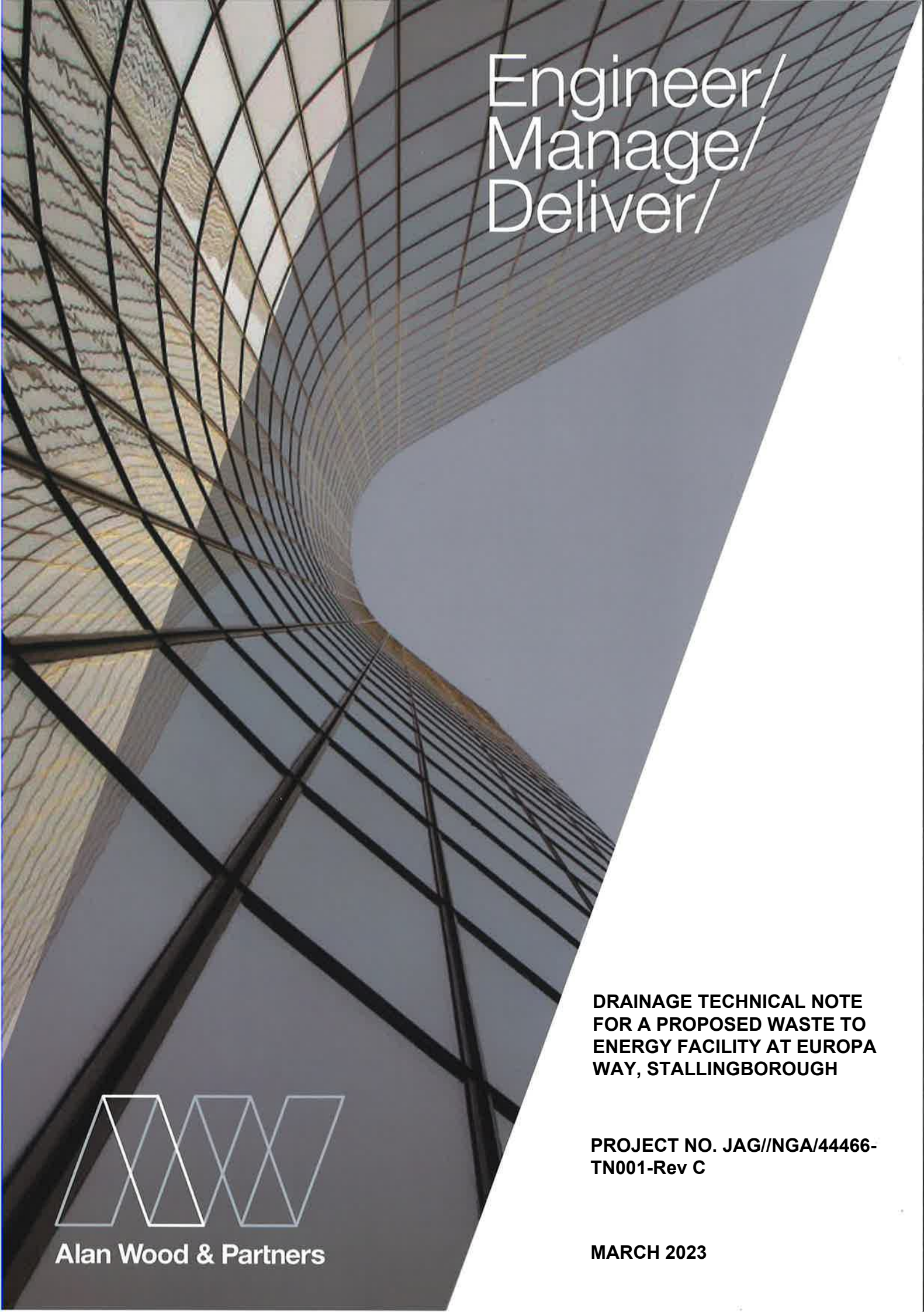
The discharge of the packaged STP effluent via same discharge point as the surface water run-off (rainwater), as opposed to via public sewer, will: -

- Prevent the requirement for an additional discharge through the flood bank,
- Help maintain the average water level and flow in the North Beck Drain during dry periods.

Discharges To Water

Appendix 1

1. **Drainage Technical Note**



DRAINAGE TECHNICAL NOTE FOR A PROPOSED WASTE TO ENERGY FACILITY AT EUROPA WAY, STALLINGBOROUGH

PROJECT NO. JAG//NGA/44466-TN001-Rev C

MARCH 2023

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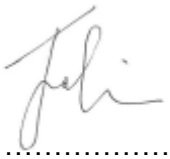
DRAINAGE TECHNICAL NOTE FOR A PROPOSED WASTE TO ENERGY FACILITY AT EUROPA WAY, STALLINGBOROUGH

Prepared by: N Ager BEng (Hons), IEng CWEM MCIWEM
Senior Engineer

Signed: ……
Date: 8th December 2020

Approved by: J Gibson, MEng (Hons), CEng, CWEM MCIWEM
Civil Engineering Director



Signed: ……
Date: 8th December 2020

Issue	Revision	Revised by	Approved by	Revised Date
A	Revised Report to reflect updated site layout	NGA	JAG	09.02.23
B	Updated Appendix E & G	NGA	JAG	14.03.23
C	Updated Appendix F	NGA	JAG	16.03.23

TABLE OF CONTENT

APENDICES

1.0 INTRODUCTION

1.1 Alan Wood & Partners (AWP) were commissioned by TEGCO UK Ltd to prepare a surface water drainage solution for the proposed waste to energy site at Europa Way, Stallingborough.

1.2 The works received planning approval from North East Lincolnshire Council (NELC) on 24/10/2020, the planning reference number is DM/0274/20/FUL and a copy of the notice of decision is included in Appendix A.

1.3 Twenty-four conditions were attached, including a condition relating to the provision of a sustainable provision of surface water drainage. This technical note outlines the historic, and proposed methods of draining the development and discusses how the planning condition is met.

1.4 Condition 6 states

> *"No development shall commence until a scheme for the sustainable provision of surface water drainage has been submitted to and approved in writing by the Local Planning Authority. The development shall then proceed and be completed in accordance with the approved details."*

and is addressed in this report.

1.5 Reference is made to the Flood Risk Assessment (FRA), which was prepared by KRS Environmental (Reference KRS.0637.001.R.001.A) which should be read in conjunction with this drainage assessment.

2.0 EXISTING SITE

2.1 Site Location

2.1.1 The development is within the Redwood Industrial Park, approximately 3.0Km North of Stallingborough, and 2.8Km East of Immingham, and is accessed via Europa Way. The OS Grid Reference of the site is TA 20676 14369.

2.1.2 A location plan identifying the location of the site is included in Figure 1 below.

Figure 1: Development Location (Google Maps)

2.2 Existing Site Details

2.2.1 The site has a total area of approximately 2.5Ha, of which 1.37Ha comprises an existing steel frame warehouse, with the remainder being compacted stone surfacing. North Beck Drain, a Main River, forms the northern boundary of the site.

2.2.2 The site is broadly flat and level with a flood defence embankment forming the north boundary. The crest level of the embankment is approximately 4.4mAOD. The existing site level at the toe of the embankment to the south face of the existing building is approximately 3.2mAOD, before falling to between 2.5mAOD and 2.8mAOD on the southern boundary. A copy of the Topographic Survey is included in Appendix B.

2.2.3 Anecdotal evidence from the current site owner indicates that the site is currently positively drained, and it discharges at an uncontrolled rate into North Beck Drain via a piped sewer system and existing watercourses adjacent to the site. This is reinforced by the presence of rainwater downpipes on the existing building, and manhole chambers and gullies shown on the topographic survey.

2.2.4 An aerial photograph of the site taken in 2020 showing the existing site is included in Figure 2 below.

Figure 2: Existing Site Plan (Google Maps)

2.2.5 The site is bounded by North Beck Drain to the north and west. This is a designated Main River with an embankment which acts as a flood defence structure. Works within 16m of the toe of the embankment will require an Environmental Permit to be obtained from the Environment Agency.

3.0 PROPOSED DEVELOPMENT

3.1. The proposed development comprises a waste to energy power plant, access roads, and other associated infrastructure. A plan showing the proposed layout and overall drainage strategy is included in Appendix C.

3.2. The development is a single level, with deliveries being received via HGV at the west end of the site via the north perimeter road prior to unloading into a receiving structure at the eastern end of the site. Vehicles will then exit via the southern perimeter road.

3.3. The external yard areas have been set at 3.7m AOD for the purposes of outline design with the building floor levels at approximately 4.000m.

3.4. The site will be drained via a Sustainable Drainage System to provide both surface water attenuation storage required to prevent on site flooding due to the reduction in allowable discharge rate and provide water quality enhancement prior to discharge into North Beck Drain.

3.5. In order to determine the level of SuDS treatment required the development has been divided into low, medium and high risk zones, relating to the potential for pollution due to suspended solids, hydrocarbons, and heavy metals. In the high-risk areas, a Class 1 Bypass Interceptor will provide primary treatment prior to the SuDS components providing secondary treatment.

3.6. The type, and location of the SuDS elements is constrained by the limited land availability within the site. Potential future development restricts the siting of systems to the east of the receiving yard. The North West/South West boundary is formed by North Beck Drain and its associated flood defence embankment. Works within the embankment would not be economically practical. Additionally, a strip of land adjacent to the north embankment is reserved for future services and pipes further limiting the positioning of SuDS elements.

3.7. The proposed substation and service trench to the south of the southern access road fall outside the scope of this technical note but restrict the positioning of SuDS features in this area.

3.8. The Peak water Level in North Beck Drain ranges from 2.48mAOD (50% AEP), to 3.82mAOD (1%+20% Climate Change AEP). The lowest invert level of the proposed drainage system is 0.191mAOD, therefore a pumped outfall will be necessary.

3.9. Surface, and treated foul & process water will be discharged via a pump station into North Beck Drain at a combined rate of 8.1 l/s, comprising a 5.6l/s surface water and 2.5l/s treated process & foul.

3.10. The outfall into North Beck Drain will be above modeled high-water level for the design life of the development, and a flap valve will be provided to prevent backflow in the event of an abnormally high water level.

3.11. An Environmental Permit will be required for any permanent or temporary engineering works within 16m of the toe of the embankment. A discharge consent defining the water quality and volume of process water and foul water permitted to discharge into North Beck Drain will also be required.

4.0 SURFACE WATER DRAINAGE PRINCIPLES

4.1 Existing Surface Water Drainage

4.1.1 As previously discussed, the current site owner has stated that the site is drained to North Beck Drain via an existing onsite piped drainage network and watercourses adjacent to the site.

4.1.2 The site is 2.5Ha, of which the existing warehouse is shown to be positively drained. The plan area of the warehouse is 1.32Ha and comprises 54% of the site. A IH124 assessment conducted in MicroDrainage Source Control for a 50Ha catchment with 54% hard standing to represent the positively drained areas. In accordance with guidance this was scaled down by 95% to replicate a 2.5Ha site. A copy of the Source Control calculations are included in Appendix D.

Catchment Area	1:1	QBAR	1:100
50Ha	369.9 l/s	425.1 l/s	1,017.0 l/s
2.5Ha	18.6 l/s	21.3 l/s	50.9 l/s

Table 1: Existing Surface Runoff

4.2 Surface Water Details

4.2.1 A high level assessment of the unrestricted runoff from the redeveloped site, based on a discharge rate of 140l/s/Ha, and a drained area of 1.57Ha is 220l/s.

4.2.2 In order to discharge as close to greenfield rate as possible, a peak discharge rate of 8.1l/s has been applied in accordance with planning permission DM/0628/18/FUL. This represents a 62% reduction from the existing partly urbanised QBAR runoff rate, an 84.3% reduction from the 1:100 runoff, and a 96% reduction from the unrestricted redeveloped runoff rate. Therefore, flood risk will be significantly reduced due to the proposed development.

4.2.3 The surface water discharges into North Beck Drain via a pumped outfall at a peak rate of 8.1l/s, which comprises 5.6l/s of surface water, and 2.5l/s of process water.

4.2.4 The tipping hall yard discharges into the eastern detention basin via a full retention interceptor area which will provide initial treatment prior to entering SuDS treatment path. The roof runoff discharges into the system between the interceptor and lagoon, as it will require less treatment than the tipping hall yard as it is a lower risk area. The remainder of the site carriageways will discharge via a filter drain into the carrier piped network and then into the detention basins. The roof drainage will discharge directly into the carrier drains. The gravel area will discharge into a herringbone perforated pipe network, and then into the main carrier drainage system.

4.2.5 Additionally there are two areas of high spillage risk, these will normally be drained via the normal surface water carrier system. However, in the event of a spill the area will be isolated from the drainage system while the spill is rectified.

4.2.6 Due to the restriction in available land for the detention basin at the east end of the site a secondary basin is provided at the west end, which are linked by a large diameter pipe that also acts as a carrier drain for the northern section of the development and allows the stored surface water runoff to be balanced between the two lagoons.

4.2.7 The western detention basin has a bed level of 1.4m, and top bank level of 2.7m, with 1:3 bank slopes, and can retain a maximum volume of approximately 470m^3.

4.2.8 The eastern detention is split over two levels, the deeper section to the north having a bed level of 0.5m AOD, and a shallower section, due to land constraints to the south with a bed level of 1.4m AOD. The total storage volume in this lagoon is approximately 970m^3.

4.2.9 The drainage systems & attenuation have been designed to prevent surface water flooding within the site for a 1:100+40% climate change rainfall event and take no account of the proposed substation located on the southern edge of the site as this is being served by a separate system.

4.2.10 A copy of the impermeable drained areas showing point of discharge and proposed drainage layout are shown in Appendix E. WinDES simulation calculations are included in Appendix F.

4.3 SuDS Treatment Processes

4.3.1 The planning condition requires a sustainable surface water drainage solution, to assess the water quality, the proposals were developed with reference to Chapter 26 CIRIA Report C753, the SuDS Manual.

4.3.2 Prior to discharge the surface water pass through a SuDS train incorporating filter drains and a detention basin that will provide treatment to remove suspended solids, heavy metals, and hydrocarbons. These elements also provide storage for the surface water attenuation required due to the restricted outfall.

4.3.3 Additionally, runoff from the access roads will pass through trapped gullies prior to entering the filter drains. The tipping hall area discharges via full retention interceptor prior to entering the eastern detention basin.

4.3.4 The quality of treatment within SuDS systems is linked to both velocity and retention time within the system, with a low velocity and high retention time allowing for sediment deposition and filtration processes within the site prior to discharge.

4.3.5 Water Quality Risk Management has been assessed via the simple index approach as outlined in Table 26.1 of C753. The site has been subdivided into roof and highway areas. The gravel plant area has been assessed as a low traffic road as there are no anticipated vehicle movements, but a potential contamination risk from adjacent access roads. The pollution hazard index for each area assessed in accordance with Table 26.2. A plan showing the level assigned to each area and the Suds Components is included in Appendix G.

Land Use	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Tipping Hall Yard	High	0.8	0.8	0.9
Perimeter Roads	Medium	0.7	0.6	0.6
Gravel External Plant Area	Low	0.5	0.4	0.4
Roof Area	Low	0.3	0.2	0.05

Table 2: Extract of C573 Table 26.1

4.3.6 In order to deliver adequate treatment, the mitigation index provided by the SuDS elements must exceed the pollution hazard index shown in Table 1.

Suds Component	Total Suspended Solids	Metals	Hydrocarbons
Filter Drain	0.4	0.4	0.4
Detention Basin	0.5	0.5	0.6

Table 3: Extract of C573 Table 26.3

4.3.7 Where SuDS components are used in series, each element after the first shall have its mitigation index reduced by 50% to reflect the reduced performance of additional elements. The mitigation factors of the full retention interceptor.

4.4 Tipping Hall Yard: High Risk

4.4.1 The tipping hall yard is considered to high risk due the regular presence of heavy goods vehicles conducting unloading operations with waste material, in order to mitigate the pollution, risk the hard standing drains via a Class 1 Full Retention Interceptor before discharging into east attenuation lagoon, which in turn discharges to North Beck Drain via a pumped outfall. Mitigation indices have been estimated for the interceptor, and the mitigation index of the detention basin is retained at 100% of that in CIRIA C573 to recognise its position as the first SuDS treatment process.

	Total Suspended Solids	Metals	Hydrocarbons
Class 1 Interceptor	0.5	0.5	0.5
Detention Basin	0.5	0.5	0.6
Total Mitigation Index	1.0	1.0	1.1
Pollution Index	0.8	0.8	0.9

Table 4: HGV Yard

4.5 Perimeter Road: Medium Risk

4.5.1 The perimeter roads drain via trapped gullies into roadside filter drains, which in turn discharge into carrier drains that discharge into the detention basins prior to discharging via a pump station into North Beck Drain. Trapped gullies have an estimated mitigation index which assumes a medium level of suspended solids removal, but low hydrocarbon and heavy metal removal.

	Total Suspended Solids	Metals	Hydrocarbons
Trapped Gullies	0.25	0.1	0.1
Filter Drain	0.4	0.4	0.4
Detention Basin	0.25	0.25	0.3
Total Mitigation Index	0.9	0.75	0.8
Pollution Index	0.7	0.6	0.7

Table 5: Perimeter Road Treatment

4.5.2 The mitigation index of the SuDS components on the perimeter road exceeds the pollution index for metals and hydrocarbons and therefore the provisions of C753 are met. The trapped gullies will primarily reduce the volume of suspended solids in the surface runoff and thus reduce the pollution index, and therefore the SuDS elements will provide a sufficient level of treatment.

4.6 External Plant Area: Low Risk

4.6.1 The external plant area is drained via a herringbone perforated pipe drain network within a gravel trench and overlaid with a gravel surface. The filter drain and gravel surface are underlain by an impermeable membrane to prevent potential infiltration into the subsoil.

	Total Suspended Solids	Metals	Hydrocarbons
Filter Drain	0.4	0.4	0.4
Detention Basin	0.25	0.3	0.3
Total Mitigation Index	0.65	0.7	0.7
Pollution Index	0.5	0.4	0.4

Table 6: External Plant Area Treatment

4.6.2 The mitigation index of the SuDS components on the plant area exceeds the Pollution index and therefore the provisions of C753 are met.

4.7 Roof: Low Risk

4.7.1 Roof areas are drained into the carrier drains which discharge into the detention basins. Where the roof drainage in the vicinity of the tipping hall yard discharges into the east detention basin it will do so downstream of the full retention interceptor as the pollution risk from the roof is lower, and the treatment provided by the interceptor is not required.

	Total Suspended Solids	Metals	Hydrocarbons
Detention Basin	0.5	0.6	0.6
Total Mitigation Index	0.5	0.6	0.6
Pollution Index	0.3	0.2	0.05

Table 7: Roof Treatment

4.7.2 The mitigation index of the filter drain exceeds the roof pollution index area; therefore, the roof runoff can be sufficiently treated even if the detention basis is not utilized.

4.8 Foul & Process Treatment

4.8.1 In order to discharge to watercourse a discharge consent is required, that will impose limits of the allowable level of pollutants. Treatment processes that fall outside the scope of this technical note will be required to ensure that proposed effluent is treated to the required level.

4.8.2 The process water storage will be isolated from the main drainage subject to testing. If the water quality criteria are met the process water will discharge to the surface water system. If the water is not of sufficient quality, it will be disposed of off-site an at appropriate facility.

4.8.3 Wastewater from the toilet/washing facilities block will be treated by a suitably sized package waste water treatment plant that will discharge into the detention lagoon prior to discharging to North Beck Drain. The water supply to the accommodation facilities will be in part provided by the provision of rainwater harvesting system, and grey water reuse. It is anticipated that there will be a maximum of 30 employees on site, with mess facilities within the administration block.

4.9 Pump Station

4.9.1 The pump station will receive surface runoff via the site drainage/SuDS system, with a separate inlet for the treated process water. A non-return valve will be required on the process inlet to prevent cross-mixing of the separate systems.

4.9.2 The rising main will discharge into an access chamber sited on the top berm of the embankment, and discharge via a gravity connection into the watercourse. A flap valve should be installed on the outfall to prevent backflow in the event of the water level in the beck exceeding the invert of the outfall.

4.9.3 Reference should be made to the potential flood water level when siting the pump station control panels.

4.10 Site Isolation

4.10.1 In the event of a spill or leak the site can be isolated from North Beck Drain by shutting down the pump station and containing the pollutants within the site and site drainage system.

5.0 SUMMARY

5.1 The existing site comprises an area of approximately 2.5Ha and contains a 1.37Ha warehouse surrounded by a compacted stone service yard, the site drains to North Beck Drain. The greenfield runoff rate for the site is 8.1l/s, and QBAR, including the positively drained existing warehouse roof is 21.3l/s.

5.2 The site will discharge surface water into North Beck Drain at a peak rate of 5.6l/s with process water accounting for the remaining 2.5l/s. The total discharge of 8.1l/s is equivalent to the greenfield runoff from the site and equates to a 62% reduction from the existing QBAR rate.

5.3 Due to the relative levels of the onsite drainage system and predicted water level in North Beck Drain a pumped outfall will be required.

5.4 The surface water attenuation system is provided by two detention basins that have a total volume of approximately 1,440m^3, this will provide sufficient capacity to store the surface water runoff for the critical 1:100+40% storm event.

5.5 The tipping yard receiving area is categorised as high risk for pollutants. Drainage from this area will pass through a full retention interceptor order to provide an initial stage of water quality improvement prior to discharging into the east detention basin.

5.6 Water quality treatment is provided by multiple SuDS components assessed in accordance with the CIRIA SuDS guidance. The risk level of each section of the site has been assessed using the simple index approach against the likely pollutant loading derived from the end use. In addition to the SuDS treatment processes Class 1 Full Retention Interceptors are proposed to provide additional treatment to the highest risk level area, and the non-commercial vehicle parking area prior to discharge into the drainage network and SuDS components.

5.7 Consents will be required for temporary or permanent construction works adjacent to the North Beck Drain embankment, and for the discharge rate and quality of surface and treated foul/process water. The permit applications will be progressed by other parties and fall outside the scope of the discharge of planning conditions.

5.8 The proposed site drainage restricts discharge rate to the greenfield runoff rate of the existing site, therefore reducing the discharge rate into North Beck Drain and reducing flood risk.

5.9 SuDS components have been incorporated into the drainage system in order to increase the quality of surface water discharge into North Beck Drain.

5.10 Areas of high spillage risk will have the facility to be isolated from the surface water drainage network in event of a spill incident.

5.11 An onsite foul water package treatment plant will be provided to treat waste water prior to discharge to North Beck Drain via the eastern detention basin. Water for the facilities will be provided by the use of a rainwater harvesting system that will be fed by the runoff from low risk roof areas.

5.12 This report, supporting calculations and drawings show that the planning condition has been complied with and can be discharged.

Alan Wood & Partners

APPENDIX A

NELC Planning Decision Notice

NORTH EAST LINCOLNSHIRE COUNCIL
www.nelincs.gov.uk

Town and Country Planning Acts

NOTICE OF DECISION

Application Number: DM/0274/20/FUL

Issuing Authority: North East Lincolnshire Council

Applicant's Name and Address:	**Agent's Name and Address:**
Immingham Industrial Estates Immingham Railfreight Terminal Stallingborough Grimsby DN41 8DU	Mr Max Jones Max Design Consultancy Max Design The White House 278 Bawtry Road Doncaster DN4 7PD

Proposal: Variation of condition 2 (Approved Plans) pursuant to DM/0628/18/FUL (Partially demolish existing building and erect 20MWE waste to energy power generation facility, 65m stack and associated plant, machinery, parking and external works) to increase bunker and boiler room height to 40m to the ridge, amend roof design to a mono-pitch, amend roof design of boiler room to pitch roof, erect raised platform of 3.8m high for fuel delivery, repositioning of attenuation basin and handing of the building by 180 degrees

Application Site: Immingham Railfreight Terminal Scandinavian Way Stallingborough Grimsby

The following decision has been made upon your application received on 2nd April 2020.

Granted subject to: -

1 Condition
The development hereby permitted shall begin by the 20th December 2021.

Reason
To comply with S.91 of the Town and Country Planning Act 1990.

2 Condition
The development shall be carried out in accordance with the following plans:

1816-08C Proposed Block Plan
1816-09C Site Location Plan
1816-006E Proposed Elevations 1

1816-007E Proposed Elevations 2
1816-30 Proposed Elevations 1 and 2
1816-31 Proposed Elevations 3 and 4

Floor plans as approved under DM/0628/18/FUL

1816-01 A Ground Floor Plan
1816-02 A First Floor Plan
1816-03 A Second Floor Plan
1816-04 A Third Floor Plan
1816-05 A Fourth Floor Plan

Reason
For the avoidance of doubt and in the interests of proper planning.

3 Condition
The hereby approved power facility shall use refuse derived fuel only (RDF). RDF comprises of pre-treated / residual waste from municipal, household, commercial and industrial sources. All as detailed in the Environmental Statement.

Reason
To ensure the proposal is consistent with the submitted details and supporting Environmental Statement to accord with Policies 5 and 41 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

4 Condition
At no time shall any fuel stock for the power generation facility be stored outside of the main building.

Reason
In the interest of environmental protection in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

5 Condition
Development shall not begin until details of all external materials to be used in construction of the buildings have been submitted to and approved in writing by the Local Planning Authority. The development shall then proceed in accordance with the approved details.

Reason
To ensure the development has an acceptable external appearance and is in keeping with the visual amenity and character of the area in accordance with Policy 5 and 22 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

6 Condition
No development shall commence until a scheme for the sustainable provision of surface water drainage has been submitted to and approved in writing by the Local Planning Authority. The development shall then proceed and be completed in accordance with the approved details.

Reason
To prevent an increased risk of flooding by ensuring the provision of a satisfactory means of surface water disposal in accordance with Policy 5 and 34 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

7 Condition
Prior to the development commencing, a Construction Management Plan shall be submitted to and approved in writing by the Local Planning Authority. A Construction Management Plan can be submitted separately for the defined ground works and for the balance of the development. All development shall then proceed in accordance with the approved details. The Construction Management Plan shall contain:

- Working hours during the construction process;
- Visitor and contractor parking areas;
- Materials storage area;
- Wheel cleaning facilities;
- Noise, vibration and dust mitigation measures;
- Deliveries and servicing plan;
- Pollution control;
- Construction traffic management plan:
-- The expected number, types and size of vehicles during the entire construction period;
-- Details of expected delivery schedules and how this will be managed to eliminate waiting on the public highway (i.e. call ahead or pre-booking scheduling system), if required;
-- Routing for all construction traffic.

Reason
In the interests of highway safety and to protect local amenity in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

8 Condition
Before development commences detailed specifications of the type of piling/foundations to be used to support the building/structures shall be submitted to the Local Planning Authority for written approval. Included shall be a scheme to mitigate the effects of the piling with particular regard to noise and vibration to surrounding properties and pollution of the underlying chalk aquifer. The piling/foundations shall be carried out/constructed in accordance with the approved details, unless variations are first approved in writing by the Local Planning Authority.

Reason
To protect local amenity and to ensure the integrity of the underlying aquifer is not compromised in accordance with Policy 5 and 34 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

9 Condition
The scheme of landscaping approved under DM/0167/19/CND shall be fully implemented in accordance with the approved details

Reason
To ensure a satisfactory appearance and setting for the development and protection of existing features in the interests of local amenity in accordance with Policy 5 and 42 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

10 Condition
The scheme of landscaping and tree planting required through condition 9 of this planning permission shall be completed within a period of 12 months, beginning with the date on which development first becomes operational or within such longer period as may be first agreed in writing by the Local Planning Authority. All planting shall be adequately maintained for a period of five years in accordance with the details agreed through condition 9 and during that period all losses shall be replaced during the next planting season.

Reason
To ensure a satisfactory appearance and setting for the development and continued maintenance of the approved landscaping in the interests of local amenity in accordance with Policy 5 and 42 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

11 Condition
The development permitted by this planning permission shall be carried out in accordance with the approved Flood Risk Assessment (FRA) reference SHF.1561.001.HY.R.001.B dated October 2018, compiled by Enzygo, and the following mitigation measures detailed within the FRA:

- Finished floor levels for the plant to be no lower than 300mm above ground level
- Critical equipment to be located no lower than 5.95m above Ordnance Datum
- Flood resilient construction measures to be incorporated
- Areas of safe refuge at first and second floor to be available to staff at all times
- Flood barriers to be fitted to the waste and slag bunkers

The mitigation measures shall be fully implemented prior to occupation and subsequently remain in place throughout the lifetime of the development.

Prior to the occupation and use of the development a flood evacuation and emergency plan shall be submitted to and approved in writing by the Local Planning Authority. The development shall then be occupied and used in accordance with that plan.

Reason
To reduce the risk of flooding to the proposed development and future employees in accordance with Policy 5 and 33 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

12 Condition

Prior to any operation or occupation of the development, a detailed operational travel plan for all operational HGVs entering and leaving the site shall be submitted to and approved in writing by the Local Planning Authority. This shall include a routing agreement. The development shall operate in accordance with the approved travel plan throughout its lifetime unless otherwise agreed in writing with the Local Planning Authority.

Reason

In the interest of highway safety and amenity in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

13 Condition

Prior to occupation and use of the development a Business Travel Plan (BTP) shall be produced and submitted in writing to the Local Planning Authority for approval. The BTP should be produced in accordance with NELC Guidance and in liaison with the Business Travel Plan Officer. The BTP should be fully costed for all measures/incentives and include, but not be limited to the following:

1. Contact details of the person with responsibility for the implementation for the BTP (i.e. The Travel Plan Coordinator);

2. Details of measures and initiatives to be in place to encourage travel by sustainable modes of travel, in particular walking, cycling, and public transport use;

3. 3 and 5 year targets associated with minimising lone car occupancy travel;

4. Details of how the BTP will be monitored (e.g. results of travel surveys within 3 months of first occupation and at key stages during occupancy;

5. The 'life' of the BTP should be from first occupation to 5 years after full occupation of the development to ensure that the BTP has adequate time to become effective;

6. For the lifetime of the Travel Plan, any new employee shall be provided with one public transport voucher to the value of a one week 'taster' Megarider Plus bus pass or equivalent.

7. Promotion of a car sharing scheme such as 'liftshare' and money set aside for guaranteed taxi home if required in emergency situations;

8. Provision of a Travel Information Pack (in hard and electronic copy) to be provided to all new employees for the life of the development;

9. Implement a 'cycle to work' salary sacrifice scheme.

10. Provision of electric vehicle charging points including timing of provision.

Once approved, the BTP shall be implemented in accordance with its terms.

Reason
In the interests of sustainable development in accordance with Policy 5 and 36 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

14 Condition
The development shall be implemented in accordance with the approved Barn Owl mitigation plan approved under DM/0167/19/CND and retained thereafter.

Reason
In the interests of environmental protection in accordance with Policy 41 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

15 Condition
Prior to construction commencing on the development a detailed Ecological and Bio-diversity Improvement and Management Plan for the site shall be submitted to and approved in writing by the Local Planning Authority. It shall include:

- Measures for bio-diversity and habitat improvement;
- An implementation plan;
- On going management plan;

The development shall then proceed in accordance with the approved detail and the area thereafter retained and managed in accordance with the approved details.

Reason
In the interests of bio-diversity enhancement and protection in accordance with Policy 41 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

16 Condition
Prior to the development first coming into use a minimum of 1 electric vehicle charging point (minimum 7kw) shall be provided within the parking area. Once provided it shall be maintained and retained through the lifetime of the development.

Reason
To encourage sustainable travel in accordance with Policy 5 and 36 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

17 Condition
Development shall not begin until management arrangements for any carriageways, footways or landscaped areas not to be adopted by the local authority have been submitted to and approved in writing by the Local Planning Authority. The carriageways, footways and landscaping areas shall be managed in accordance with the approved details thereafter.

Reason
In the interests of public safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

18 Condition
Unless otherwise agreed by the Local Planning Authority, development other than that required to be carried out as part of an approved scheme of remediation must not commence until conditions 19 to 21 have been complied with. If unexpected contamination is found after development has begun, development must be halted on that part of the site affected by the unexpected contamination to the extent specified by the Local Planning Authority in writing until condition 22 has been complied with in relation to that contamination.

Reason
In the interest of pollution control and health and safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

19 Condition
An investigation and risk assessment, in addition to any assessment provided with the planning application, must be completed in accordance with a scheme to assess the nature and extent of any contamination on the site, whether or not it originates on the site. The contents of the scheme are subject to the approval in writing of the Local Planning Authority. The investigation and risk assessment must be undertaken by competent persons and a written report of the findings must be produced. The written report is subject to the approval in writing of the Local Planning Authority. The report of the findings must include:

(i) a survey of the extent, scale and nature of contamination;

(ii) an assessment of the potential risks to:

human health, property (existing or proposed) including buildings, crops, livestock, pets, woodland and service lines and pipes, adjoining land, groundwaters and surface waters, ecological systems, archaeological sites and ancient monuments;

(iii) an appraisal of remedial options, and proposal of the preferred option(s).

This must be conducted in accordance with DEFRA and the Environment Agencys Model Procedures for the Management of Land Contamination, CLR 11.

Reason
In the interest of pollution control and health and safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

20 Condition

A detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, buildings and other property and the natural and historical environment must be prepared, and is subject to the approval in writing of the Local Planning Authority. The scheme must include all works to be undertaken, proposed remediation objectives and remediation criteria, timetable of works and site management procedures. The scheme must ensure that the site will not qualify as contaminated land under Part 2A of the Environmental Protection Act 1990 in relation to the intended use of the land after remediation.

Reason

In the interest of pollution control and health and safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

21 Condition

The approved remediation scheme must be carried out in accordance with its terms prior to the commencement of development other than that required to carry out remediation, unless otherwise agreed in writing by the Local Planning Authority. The Local Planning Authority must be given two weeks written notification of commencement of the remediation scheme works. Following completion of measures identified in the approved remediation scheme, a verification report that demonstrates the effectiveness of the remediation carried out must be produced, and is subject to the approval in writing of the Local Planning Authority.

Reason

In the interest of pollution control and health and safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

22 Condition

In the event that contamination is found at any time when carrying out the approved development that was not previously identified it must be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment must be undertaken in accordance with the requirements of condition 19, and where remediation is necessary a remediation scheme must be prepared in accordance with the requirements of condition 20, which is subject to the approval in writing of the Local Planning Authority. Following completion of measures identified in the approved remediation scheme a verification report must be prepared, which is subject to the approval in writing of the Local Planning Authority in accordance with condition 21.

Reason

In the interest of pollution control and health and safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

23 Condition
Prior to development commencing details and timing of the installation of a flashing red light to be positioned on the highest point of the stack shall be submitted to and approved in writing by the Local Planning Authority. The light shall be installed in accordance with the details approved and shall be so retained at all times thereafter.

Reason
In the interest of air safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

24 Condition
Prior to development commencing, other than the defined ground works, the following information shall be submitted to the Local Planning Authority, who shall notify UK DVOF and Powerlines at the Defence Geographic Centre:

a. Precise location of development.
b. Date of commencement of construction.
c. The proposed date of completion of construction.
d. The height above ground level of the tallest structure.
e. The maximum extension height of any construction equipment.
f. Details of aviation warning lighting fitted to the structure(s)

At the earliest opportunity prior to the known final date of completion of the construction, the actual date of construction completion shall be submitted to the Local Planning Authority. There shall be no deviation from, or exceedance of the details provided to the Local Planning Authority, without the Authority's prior approval.

Reason:
In the interests of air safety in accordance with Policy 5 of the North East Lincolnshire Local Plan 2013-2032 (adopted 2018).

Informatives:-

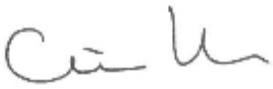
1 Reason for Approval
The Local Planning Authority has had regard to development plan policies and especially those in the North East Lincolnshire Local Plan. The proposal would not harm the area character or local amenity and is acceptable under all other planning considerations including highway safety and ecology. It will support the economic development of the area. This proposal is approved in accordance with the North East Lincolnshire Local Plan 2013-2032 (adopted 2018), in particular policies 1, 5, 6, 7, 9, 33, 36, 41 and 42.

2 Added Value Statement
Article 31(1)(cc) Statement - Positive and Proactive Approach
In accordance with paragraph 187 of the National Planning Policy Framework, the Local Authority has worked in a positive and proactive manner with the applicant to seek solutions to problems arising, by providing detailed pre-application advice on the proposed development and by addressing highway and ecological matters.

3 Informative
The applicants attention is drawn to the comments of the Environment Agency dated 9th February 2018 and their reference to the need for environmental permitting.

4 Informative
Please note that you may also require Building Regulations. You are advised to contact them in advance of work on site commencing (Tel: 01472 325959).

This Notice is issued on behalf of North East Lincolnshire Planning Authority.



Signed:
Clive Tritton
Official Capacity: Interim Director of Economy and Growth
Date: 24th September 2020

INFORMATION ON APPEALS TO THE SECRETARY OF STATE

If you are aggrieved by this decision to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under Section 78 of the Town and Country Planning Act 1990, or for Listed Building Consent, under Sections 20 and 21 for Listed Buildings & Conservation Areas Act 1990.

If you want to appeal this application, please carefully read the information below and choose which option applies to your application:

If this is a decision to refuse planning permission for a **householder** application and you want to appeal against the decision, then you must do so within 12 weeks of the date of this notice;

If this is a decision to refuse planning permission for a **minor commercial application (e.g. shop fronts)** and you want to appeal against the decision, you must do so within 12 weeks of the date of this notice;

If this is a decision to refuse express consent for the display of an **advertisement** and you want to appeal against the decision, you must do so within 8 weeks of the date of receipt of this notice;

For all other **Full** and **Listed Building Consent** applications - If you wish to appeal against the decision, you must do so within 6 months of the date of this notice.

Appeals on Planning Applications involving Enforcement Notices

If this is a decision on a planning application relating to the same or substantially the same land and development as is already the subject of an enforcement notice, if you want to appeal against the decision on your application, you must do so within 28 days of the date of this notice;

If an enforcement notice is served relating to the same or substantially the same land and development as in your application and you want to appeal against the decision on your application, you must do so within: 28 days of the date of service of the enforcement notice, or within 6 months [12 weeks in the case of a householder appeal] of the date of this notice, whichever period expires earlier.

All Appeals must be made using a form which you can obtain from:

Planning Inspectorate,
Temple Quay House,
2 The Square,
Temple Quay,
Bristol,
BS1 6PN

(Tel: 0303 444 5000) or to submit electronically at https://www.gov.uk/planning-inspectorate.

The Secretary of State can allow a longer period for giving notice of an appeal but will not normally use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to the Secretary of State that the Local Planning Authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order. In practice, the Secretary of State does not refuse to consider appeals solely because the Local Planning Authority based their decision on a direction given by him/her.

If you intend to submit an appeal that you would like examined by inquiry then you must notify the Local Planning Authority (planning@nelincs.gov.uk) and Planning Inspectorate (inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. Further details are online on GOV.UK https://www.gov.uk/government/collections/casework-dealt-with-by-inquiries.

The Planning Inspectorate has introduced an online appeals service which you can use to make your appeal online at https://www.gov.uk/planning-inspectorate. The Inspectorate will publish details of your appeal on the internet. This may include a copy of the original planning application form and relevant supporting documents supplied to the local authority by you or your agent, together with the completed appeal form and information you submit to the Planning Inspectorate. Please ensure you only provide information, including personal information belonging to you that you are happy will be made available to others in this way. If you supply personal information belonging to a third party, please ensure you have their permission to do so. More detailed information about data protection and privacy is available on the Planning Inspectorate web site.

NB. Any approval in this notice of decision refers only to that required under the Town and Country Planning Acts and does not include any consent under any other enactment, bylaw, order, building or other regulation.

IF YOUR APPLICATIONS HAS BEEN REFUSED:

If you decide to resubmit, your application will not be subject to a fee under the Town and Country Planning (Fees for Applications and Deemed Applications) (Amendment) Regulations 2002 provided the new application:-

a) Is submitted as a valid application within one year of the date of the decision

b) Is development of the same character and description as submitted previously.

c) Relates to the same site area or part of the same site and does not include additional land

d) Is submitted by the same applicant

e) The applicant many only benefit from the fee exemption once for any site

Prior to any resubmission, it is strongly recommended that you discuss the revised scheme with the development management team so that any issues can be identified quickly and solutions to any barriers to achieving a planning permission discussed with you.

Alan Wood & Partners

APPENDIX B

Topographic Survey

520600m

520700m

NOTES:

1. THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.

3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.

4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE AND ENSURE THAT THE BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY. SUCH MATERIAL REMAINING THE THE PROPERTY OF THE CONTRACTOR ON COMPLETION, AND FOR ENSURING THAT THE WORKS AND ANY ADJACENT PROPERTIES ARE SAFE IN THE TEMPORARY CONDITION.

Rev	Description	Date	By	Chk	App
P2	REVISED SITE LAYOUT	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	08.12.20	NA	JC	JAG

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York T. 01904 611594

Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: TOPOGRAPHIC SURVEY

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Suitability Code:

Job. no. 44466

Scale@ A1: 1:500

Rev. P2

Project Originator Volume Level Type Role Number
IWEF - AWP - ZZ - XX - DR - C - 0001

100mm at A1

Alan Wood & Partners

APPENDIX C

Proposed Site Layout

SITE PLAN 1:500

SCALE 1:500
0 5 10 15 20 25 30 35 40 45 50m

Notes

Figured dimensions only to be taken from this drawing.
Do not scale.If in doubt ask.

Rev	Date	Drawn	Description
-	-	-	-

MaxDesign

Architecture | Planning | Consultancy

Armstrong House, First Avenue, Doncaster DN9 3GA
t: 01302 867509 m: 07734 939 044
e: design@maxdesignconsultancy.co.uk w: maxdesignconsultancy.co.uk

status: Section 73

client: TEGCO

project: Immingham

title: Site plan

scale: 1:500@A0

date: AUG 22

project no.:	drawn:	number:	rev:
1816	ZY	005	-

Alan Wood & Partners

APPENDIX D

WinDES IH124 Calculation

IH 124 Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	50.000	Urban	0.540
SAAR (mm)	618	Region Number	Region 5

Results	**l/s**
QBAR Rural	189.9
QBAR Urban	425.1
Q100 years	1017.0
Q1 year	369.9
Q2 years	420.1
Q5 years	569.6
Q10 years	670.8
Q20 years	765.9
Q25 years	796.8
Q30 years	819.5
Q50 years	882.7
Q100 years	1017.0
Q200 years	1117.0
Q250 years	1147.1
Q1000 years	1357.6

APPENDIX E

Proposed Drainage & Construction Details

520600m

520700m

MEDIUM RISK
S1.003
1,029m²

MEDIUM RISK
S1.002
1,847m²

TIPPING HALL YARD
DELIVERY AREA
HIGH RISK
S3.000
3,618m²

TIPPING HALL ROOF
LOW RISK
S3.000
1,223m²

MEDIUM RISK
S1.001
1,907m²

ROOF/NON TRAFFICKED
AREAS
LOW RISK
S1.002
2,160m²

PACKAGE WWTW - CAPACITY
3.5m3/day

LOW RISK
S1.001
163m²

ROOF/NON TRAFFICKED
AREAS
LOW RISK
S2.000
2,069m²

FOUL CONNECTION TO
PACKAGE WWTW FROM
ADMINISTRATION BLOCK

EXTERNAL GRAVEL YARD
LOW RISK
S1.001
980m²

MEDIUM RISK
S1.000
1,391m²

EXTERNAL GRAVEL YARD
LOW RISK
S2.000
1,544m²

MEDIUM RISK
S2.000
468m²

MEDIUM RISK
S2.000
1,166m²

100mm at A1

NOTES:

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FOR GENERAL NOTES PLEASE REFER TO AWP DRAWING No. IWEF-AWP-ZZ-XX-DR-C-3700

Rev	Description	Date	By	Chk	App
P3	REVISED TIPPING YARD DRAINAGE AREA	16.03.23	NA	JC	JAG
P2	REVISED SITE LAYOUT	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	08.12.20	NA	--	--

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Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: DRAINAGE IMPERMEABLE AREAS

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Suitability Code:

Job. no. 44466

Scale@ A1: 1:500

Rev. P3

Project Originator Volume Level Type Role Number
IWEF - AWP - ZZ - XX - DR - C - 3000

520600m

520700m

HEADWALL OUTFALL INTO NORTH BECK DRAIN

OUTLET TO HAVE FLAP VALVE AND BE ABOVE PREDICTED MAXIMUM WATER LEVEL

ENVIRONMENT AGENCY TO AGREE DISCHARGE RATE AND CONSENT PERMANENT AND TEMPORARY WORKS

PUMPED OUTFALL PEAK RIR 2.5l/s PROCESS & 5.5l/s SURFACE WATER

GRAVITY CONNECTION TO NORTH BECK DRAIN DOWNSTREAM OF PUMP STATION

PN 01.000 Dia. 150mm

S11 1500mm CL 3.700m IL (m)1.312

PN 01.001 Dia. 150mm

OUTLET HEADWALL IL 1.5m

GABION BASKET/RENO MATTRESS ON OUTFALL TO PROVIDE EROSION PROTECTION

EAST DETENTION BASIN 1:3 SLOPES BED LEVEL 1.5m BERM LEVEL 2.4m TOP BANK 3.7m

INLET HEADWALL WITH TRASH SCREEN & SAFETY RAILINGS. GABION BASKET/RENO MATTRESS ON OUTFALL TO PROVIDE EROSION PROTECTION IL 1.5m 750Ø

PN 01.000 Dia. 150mm

PN 01.000 Dia. 750mm

S1 1800mm CL 3.700m IL (m)1.631

CHANNEL DRAIN

TIPPING YARD TO FALL TO CHANNEL DRAIN

TIPPING YARD TO FALL TO CHANNEL DRAIN

LAGOON 1:3 SLOPES BED LEVEL 2.4M TOP BANK 3.7m

INLET HEADWALL WITH TRASH SCREEN & SAFETY RAILINGS GABION BASKET/RENO MATRESS FOR EROSION PROTECTION ON OUTFALL IL 2.4m 450Ø

SPILL RISK AREA TO BE ISOLATED FROM SURFACE WATER DRAINAGE NETWORK IN EVENT OF A SPILL

ISOLATED DRAINAGE AREA - SPILL RISK

GRAVELED AREA

PROCESS WATER WASTE PIT ISOLATED FROM SURFACE WATER NETWORK DISCHARGE AT 2.5l/s FOLLOWING TREATMENT & TESTING

PROCESS WATER WASTE PIT

PN 01.000 Dia. 150mm

PN 01.000 Dia. 750mm

S1 1800mm CL 3.700m IL (m)1.700

ROOF RUNOFF TO DISCHARGE DIRECTLY INTO SURFACE WATER NETWORK DISCHARDING DIRECTLY TO EAST LAGOON & BYPASSING FULL RETENTION INTERCEPTOR

ANY SURFACE WATER WITHIN TIPPING HALL TO DRAIN INTO TIPPING BUNKER

PN 02.000 Dia. 525mm

CONNECTION FROM DELIVERY YARD ROOF DRAINAGE

S9 1500mm CL 3.700m IL (m)2.496

SILT TRAP ON OUTFALL FROM CHANNEL DRAIN

HIGH RISK YARD AREA TO DRAIN TO LAGOON VIA FULL RETENTION INTERCEPTOR

PACKAGE WWTW - CAPACITY 3.5m3/day

GRAVEL SURFACE WITH PERFORATED UNDERDRAIN

FILTER TRENCH

SPILL RISK AREA TO BE ISOLATED FROM SURFACE WATER DRAINAGE NETWORK IN EVENT OF A SPILL

FILTER TRENCH

S1 1800mm CL 3.700m IL (m)1.807

GRAVELED AREA

FILTER TRENCH

PN 01.000 Dia. 150mm

PN 01.000 Dia. 750mm

S1 1800mm CL 3.700m IL (m)1.807

INLET/OUTLET HEADWALL WITH TRASH SCREEN & GABION/RENO MATRESS ON OUTFALL IL 2.4m

WEST DETENTION BASIN BED LEVEL 2.4m TOP BANK 3.7m 1:3 SLOPES

INLET/OUTLET HEADWALL WITH TRASH SCREEN & GABION/RENO MATRESS ON OUTFALL 450Ø IL 2.4m

PN 01.000 Dia. 150mm

S10 1500mm CL 3.700m IL (m)2.400

S11 1800mm CL 3.700m IL (m)1.939

GRAVEL SURFACE WITH PERFORATED UNDERDRAIN

GULLIES ADJACENT TO DETENTION BASIN TO DISCHARGE DIRECTLY INTO BASIN

INLET/OUTLET HEADWALL WITH TRASH SCREEN & GABION/RENO MATRESS ON OUTFALL IL 2.4m

ISOLATED DRAINAGE AREA - SPILL RISK

ROOF RUNOFF TO DISCHARGE DIRECTLY INTO SURFACE WATER NETWORK

HERRINGBONE FILTER DRAIN UNDER GRAVEL AREA

GRAVELED AREA

GRAVEL SURFACE WITH PERFORATED UNDERDRAIN

PN 01.000 Dia. 150mm

PN 01.000 Dia. 525mm

S1 1500mm CL 3.700m IL (m)2.067

FOUL CONNECTION TO PACKAGE WWTW FROM ADMINISTRATION BLOCK

GULLIES TO DISCHARGE INTO FILTER DRAIN WHERE PRESENT

FILTER TRENCH

S1 1500mm CL 3.700m IL (m)2.305

100mm at A1

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FOR GENERAL NOTES PLEASE REFER TO AWP DRAWING No. IWEF-AWP-ZZ-XX-DR-C-3700

- SURFACE WATER SEWER
- CHANNEL DRAIN
- PERFORATED UNDERDRAIN
- ROADSIDE FILTER DRAIN
- SURFACE WATER ACCESS CHAMBER
- SURFACE WATER PUMP STATION
- ROAD GULLY
- HEADWALL
- FULL RETENTION INTERCEPTOR

Rev	Description	Date	By	Chk	App
P3	UPDATED TIPPING HALL DRAINAGE NOTES	13.03.23	NA	-	-
P2	REVISED SITE LAYOUT	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	18.12.20	NA	--	--

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Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGGO UK Ltd

Drawing: PRELIMINARY SURFACE & FOUL WATER DRAINAGE LAYOUT

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Suitability Code:

Job. no. 44466

Scale@ A1: 1:500

Rev. P3

Project Originator Volume Level Type Role Number
IWEF - AWP - ZZ - XX - DR - C - 3001

DRAINAGE NOTES

1. ALL BUILDING DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT BRITISH/EUROPEAN STANDARDS BSEN752 (SUPERSEDING BS:8301 "BUILDING DRAINAGE"), THE CURRENT BUILDING REGULATIONS AND THE LOCAL AUTHORITY BUILDING CONTROL OR NHBC SPECIFICATIONS AND REQUIREMENTS.

2. THIS DRAWING TO BE READ IN ACCORDANCE WITH ALL OTHER RELEVANT DRAWINGS.

3. CONCRETE MANHOLES AND PLASTIC INSPECTION CHAMBERS TO BE PROVIDED AS REQUIRED BY THE RELEVANT STANDARDS.

4. INSITU AND PRECAST CONCRETE UNITS SHALL HAVE SULPHATE RESISTING PORTLAND CEMENT TO BS 4027, UNLESS A LABORATORY REPORT IS PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.

5. PRECAST CONCRETE MANHOLES TO BE IN ACCORDANCE WITH BS 5911:PART 200.

6. SEWERS 300MM DIAMETER OR GREATER SHALL BE CONCRETE PIPES. ANY SMALLER PIPES TO BE VITRIFIED CLAY.

7. ALL CONCRETE PIPES TO BE CLASS 120 TO BS EN 1916/BS5911-1:2002.

8. VITRIFIED CLAY PIPES AND FITTINGS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN295 AND BS 65 RESPECTIVELY AND BE KITEMARKED. ALL PIPES SHALL BE EXTRA STRENGTH TO BS 65 OR EQUIVALENT BS EN295 PIPE CRUSHING STRENGTH. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100MMØ - 40KN/M, 150MMØ - 40KN/M, 225MMØ - 45KN/M BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).

9. SEWERS TO BE LAID IN CLASS "S" BEDDING (150MM GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THAN 1.2M IN HIGHWAYS AND VERGES (OR LESS THAN 900MM IN NON-VEHICULAR ACCESS AREAS) THEN A REINFORCED CONCRETE SLAB SHOULD BE PROVIDE ABOVE GRANULAR BED AND SURROUND.

10. WHERE TWO SEWERS CROSS, THE LOWER SEWER TO BE PROVIDED WITH A 150MM CONCRETE BED AND SURROUND.

11. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN124, 150MM DEEP FRAMES UNLESS OTHERWISE SPECIFIED. MANHOLE COVERS AND FRAMES TO BE OF A NON-ROCKING DESIGN WITH CUSHION INSERTS AND KITEMARKED. COVERS TO BE LOAD CLASS E600 IN ALL AREAS ACCESSIBLE FOR HGVS, OTHERWISE TO BE CLASS D400. MANHOLE COVER SLABS AND ACCESS TO BE IN ACCORDANCE WITH CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA) TECHNICAL BULLETIN ISSUED AUTUMN 2004.

12. GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN124 AND BE OF A NON-ROCKING DESIGN WITH LEFT HANDED CAPTIVE HINGE ACCESS AND BE KITEMARKED. LOAD CLASS E600 IN ALL AREAS ACCESSIBLE FOR HGVS, OTHERWISE TO BE CLASS D400. MINIMUM AREA OF WATERWAY TO BE 1010CM².

13. ALL GULLY CONNECTIONS TO BE MINIMUM 150Ø.

14. ANY ADOPTABLE SEWER WORKS AND CONNECTIONS TO ADOPTABLE SEWERS AND MATERIAL TO BE IN ACCORDANCE WITH "SEWERS FOR ADOPTION", THE RELEVANT BRITISH/EUROPEAN STANDARDS/REQUIREMENTS/ADDENDUM AND KITEMARKED.

15. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.

16. NO SUB-SURFACE OR GROUNDWATER TO BE PERMITTED TO ENTER THE FOUL OR SURFACE WATER DRAINAGE SYSTEMS.

17. SEWERS LAID BELOW BUILDINGS TO BE KEPT TO A MINIMUM. NO INTERNAL MANHOLES PERMITTED.

SUDS NOTES

1. SIDE SLOPES TO BE 1:3.

2. SLOPE REINFORCEMENT TO BE PROVIDED AS NECESSARY, BASED ON GROUND CONDITIONS, SURCHARGE LOADING, SLOPE ANGLE AND STORAGE VOLUME REQUIRED.

3. BASINS AND SWALES SHOULD BE LINED WITH WELDED WATERTIGHT MEMBRANE TO PREVENT GROUNDWATER/SUBSURFACE WATER INGRESS AND TERMINATED AT BANK TOP VIA AN ANCHOR TRENCH.

4. INLET AND OUTLET HEADWALLS TO BE PRECAST UNITS AND PROVIDED WITH PROTECTIVE BASKET GRILLES OVER PIPE CONNECTION WHERE PIPE IS LARGER THAN 350Ø. HEADWALLS TO BE PROVIDED WITH HANDRAILS AROUND TOP AND SIDES.

5. EDGE PROTECTION TO PREVENT ERRANT ACCESS TO BASINS REQUIRED (TO BE AGREED AS VEHICULAR OR PEDESTRIAN).

6. SUDS BASINS TO BE PLANTED TO SUIT ECOLOGIST AND LANDSCAPING REQUIREMENTS TO ENCOURAGE FLORA, FAUNA AND HABITAT CREATION.

7. SWALES AND OTHER SUDS TO BE PROTECTED FROM EROSION FROM INCOMING AND OUTGOING FLOWS.

8. CONTRACTOR TO PROVIDE OPERATION AND MAINTENANCE REQUIREMENTS FOR DRAINAGE AND SUDS FEATURES.

9. FOR BASINS AND SWALES, IMPERMEABLE LINERS/MEMBRANES TO BE BENTOMAT CLAY LINER OR SIMILAR APPROVED.

EXISTING SERVICES NOTES

1. CONTRACTOR TO PROTECT EXISTING SERVICES WITHIN THE SITE OR DIVERT AS REQUIRED.

2. EXISTING CULVERT TO BE PROVEN REDUNDANT AND REMOVED AS REQUIRED AND BACKFILLED WITH SUITABLE MATERIAL TO PROVIDE A STABLE FOUNDATION FOR THE PROPOSED ACCESS ROAD.

3. EXISTING GAS MAIN TO BE PROTECTED DURING THE WORKS.

4. EXISTING SEWERS AND OTHER SERVICES IN THE VICINITY OF THE PROPOSED WORKS TO BE SURVEYED AND DETAILS PROVEN AND PROTECTED AS NECESSARY FROM PROPOSED WORKS.

PRIVATE DRAINAGE NOTES:

1. DRAINAGE SYSTEMS TO COMPLY WITH THE FOLLOWING STANDARDS:
   - BS EN 752:2008
   - BUILDING REGULATIONS APPROVED DOCUMENT PART H, 2015 EDITION

2. ALL COMPONENTS USED IN DRAINAGE SYSTEMS TO COMPLY WITH THE FOLLOWING: BS EN 476:2011

3. ALL DRAINAGE SYSTEMS AND COMPONENTS TO BE CONSTRUCTED AND TESTED TO THE FULL SATISFACTION OF THE BUILDING REGULATIONS INSPECTOR

4. ALL DRAINAGE TO BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH BS EN 1610:2015.

5. PIPES UPTO 225Ø TO BE VITRIFIED CLAY, VITRIFIED CLAY PIPES AND FITTINGS TO COMPLY WITH THE RELEVANT PROVISIONS OF BS EN295-1:2013,-2:2013,-3:2012 AND BS 65 RESPECTIVELY AND BE KITEMARKED. ALL PIPES SHALL BE EXTRA STRENGTH TO BS 65 OR EQUIVALENT BS EN295 PIPE CRUSHING STRENGTH.

6. PIPES > 225Ø TO BE CONCRETE. CONCRETE PIPES TO BE CLASS 120 TO BS EN1916:2002 & BS5911-1:2002.

7. PRECAST CONCRETE MANHOLES TO BE IN ACCORDANCE WITH BS EN 1917:2002 AND BS 5911-3:2010,-4:2002 AND TO BE KITEMARKED. PRECAST CONCRETE RINGS AND COVER SLABS TO CONCRETE PIPES TO BE JOINTED WITH CEMENT MORTAR UNLESS NOTED OTHERWISE.

8. INSITU AND PRECAST CONCRETE UNITS SHALL HAVE SULPHATE RESISTING PORTLAND CEMENT TO BS EN 197-1:2011.

9. POLYPROPYLENE INSPECTION CHAMBERS TO COMPLY WITH BS EN 13598-1:2010,-2:2016 AND BS 7158:2001 AND TO BE KITEMARKED.

10. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015. MANHOLE COVERS AND FRAMES TO BE OF A NON-ROCKING DESIGN WITH CUSHION INSERTS AND KITEMARKED. LOAD CLASS D400 COVERS TO BE USED IN ALL LOCATIONS. ALL COVERS TO BE BADGED "FW" OR "SW" AS APPROPRIATE. MANHOLE COVER SLABS AND ACCESS TO BE IN ACCORDANCE WITH CONCRETE PIPE ASSOCIATION TECHNICAL BULLETIN ISSUED SEPTEMBER 2001.

11. POLYPROPYLENE INSPECTION CHAMBER COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015. COVERS AND FRAMES TO BE OF A NON-ROCKING DESIGN WITH CUSHION INSERTS AND KITEMARKED. LOAD CLASS A15 COVERS TO BE USED IN AREAS INACCESSIBLE TO VEHICLES; LOAD CLASS D400 COVERS TO BE USED ELSEWHERE.

12. ROAD GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015 AND BE OF A NON-ROCKING DESIGN WITH LEFT HANDED CAPTIVE HINGE ACCESS AND BE KITEMARKED. LOAD CLASS D400 GRATES TO BE USED THROUGHOUT WITH 450mm SQ. GRATE AND FRAME. MINIMUM AREA OF WATERWAY TO BE 1010cm².

13. YARD GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015 AND BE OF A NON-ROCKING DESIGN AND BE KITEMARKED. LOAD CLASS A15 GRATES TO BE USED IN AREAS INACCESSIBLE TO VEHICLES. GRATES TO BE 300mm SQ. MINIMUM AREA OF WATERWAY TO BE 900cm².

14. DRAINAGE CHANNELS TO BE ACO MULTIDRAIN MD100 0.0 OR EQUAL & APPROVED, UNLESS NOTED OTHERWISE ON DRAWING. CHANNELS TO BE FITTED WITH SLOTTED DUCTILE IRON GRATING. GRATES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015 AND BE KITEMARKED. LOAD CLASS B125 GRATES TO BE USED IN AREAS INACCESSIBLE TO VEHICLES; LOAD CLASS D400 GRATES TO BE USED ELSEWHERE. SUMP UNIT AND SILT BUCKET UNITS TO BE USED ON ALL OUTLETS.

15. CLASS Z BEDDING DETAIL SHALL BE PROVIDED:
   - WHERE COVER TO PIPE BARREL IS;
     i) <1.2m IN VEHICULAR TRAFFICKED AREAS
     ii) <0.9m IN AREAS INACCESSIBLE TO VEHICLES.
   - AT ALL ROAD GULLY, YARD GULLY, RWP, SVP AND DRAINAGE CHANNEL BRANCHES.
   - AREAS OF DEEP ROOTING VEGETATION.
   - PIPE RUNS NEAR BUILDINGS IN ACCORDANCE WITH TYPICAL SECTIONS ON AWP DRAWINGS.
   - WHERE TWO PIPES CROSS WITH A CLEAR GAP OF <300mm. CLASS Z SURROUND TO EXTEND A MINIMUM OF 1.0m FROM THE CENTRE OF THE CROSSING POINT & EXTENDED TO WITHIN 150mm OF THE NEAREST FLEXIBLE JOINT, WHERE REQUIRED.

17. CLASS Y BEDDING DETAIL TO BE PROVIDED WHERE COVER TO PIPE CROWN FROM THE UNDERSIDE OF THE SUB STRUCTURE IS LESS THAN 300mm.

18. PIPE BEDDING MATERIALS TO COMPLY GENERALLY WITH SHW - SERIES 500 - CLAUSE 503. GRANULAR BEDDING MATERIALS TO ALSO COMPLY WITH BS EN 13242 & THE GRANULAR BEDDING MATERIAL TABLE ON THIS DRAWING.

19. SELECTED BACKFILL MATERIAL TO BE PROVIDED ABOVE THE PIPE SURROUND TO A HEIGHT OF 300mm MINIMUM ABOVE THE TOP OF THE PIPE. SELECTED BACKFILL MATERIAL TO BE CLASS 8 - LOWER TRENCH FILL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600 TABLE 6/1 & TO COMPRISE OF UNIFORM SOIL, FREE FROM STONES LARGER THAN 40mm, LUMPS OF CLAY OVER 100mm, TIMBER, FROZEN MATERIAL & VEGETABLE MATTER. SELECTED BACKFILL MATERIAL TO BE PLACED & COMPACTED IN LAYERS NOT EXCEEDING 150mm IN THICKNESS. SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A SUITABLE HARD GRANULAR MATERIAL SHALL BE USED.

20. GENERAL BACKFILL TO DRAINAGE TRENCHES [OTHER THAN FILTER DRAINS] IN VEHICULAR TRAFFICKED AREAS ABOVE THE PIPE BEDDING & SELECTED BACKFILL SHALL BE CLASS 1, 2 OR 3 GENERAL FILL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600.

21. GENERAL BACKFILL UNDER NON-VEHICULAR TRAFFICED AREAS TO BE SUITABLE AS-DUG MATERIAL COMPACTED IN ACCORDANCE WITH SHW - SERIES 600 IN LAYERS NOT EXCEEDING 225mm, EACH LAYER COMPACTED TO FORM A STABLE TRENCH BACKFILL, SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A HARD GRANULAR MATERIAL SHALL BE USED UP TO FORMATION LEVEL.

22. ALL CONCRETE TO BE DESIGNATED CONCRETE TO CONFORM TO BS 8500-2.

23. NO MECHANICAL COMPACTION OF FILL MATERIAL WITHIN 300mm OF THE CROWN OF ANY PIPE.

CONCRETE NOTES:

DESIGNATED CONCRETE:

1. ALL DESIGNATED CONCRETE TO CONFORM TO BS 8500-2

   DESIGNATION - GEN 1:
   - CEMENT TYPE - SRPC
   - MAXIMUM AGGREGATE SIZE - 20mm
   - CONSISTENCY CLASS - TO BE AGREED ON SITE

   DESIGNATION - GEN 3:
   - CEMENT TYPE - SRPC
   - MAXIMUM AGGREGATE SIZE - 20mm
   - CONSISTENCY CLASS - TO BE AGREED ON SITE

   DESIGNATION - RC 25/30:
   - CEMENT TYPE - SRPC
   - MAXIMUM AGGREGATE SIZE - 20mm
   - CONSISTENCY CLASS - TO BE AGREED ON SITE

2. NOMINAL COVER TO ALL REINFORCEMENT TO BE 50mm (UNLESS NOTED OTHERWISE).

3. ALL HIGH YIELD REINFORCEMENT (H BARS) TO BE GRADE 500.

4. BOTTOM STEEL REINFORCEMENT TO BR SUPPORTED ON 50x50x50mm DEEP CONCRETE BLOCKS OR SIMILAR, WIRED TO REINFORCEMENT.

5. TYING WIRE TO BE STAINLESS STEEL.

6. SPACING OF REINFORCEMENT TO BE ADJUSTED LOCALLY AS REQUIRED IN PARTICULAR TO AVOID HOLES, POCKETS, SOCKETS, RECESSES AND HOLDING DOWN BOLTS.

7. ALL EXPOSED EDGES TO HAVE 20x20mm CHAMFER.

8. IMMEDIATELY AFTER LAYING, CONCRETE SHALL BE PROTECTED FROM RAIN, RAPID TEMPERATURE CHANGE, FROST AND FROM DRYING OUT. ALSO MAINTAIN THE CONCRETE ABOVE 2° IN COLD WEATHER. THE METHODS USED SHALL BE IN ACCORDANCE WITH B.S. 5400, OR APPROVED BY THE ENGINEER.

STANDARDIZED PRESCRIBED CONCRETE:

1. ALL STANDARDIZED PRESCRIBED CONCRETE TO CONFORM TO BS 8500-2

2. STANDARDIZED PRESCRIBED CONCRETE MIX - ST5:
   - MAXIMUM AGGREGATE SIZE - 20mm
   - CONSISTENCY CLASS - S1

3. IMMEDIATELY AFTER LAYING, CONCRETE SHALL BE PROTECTED FROM RAIN, RAPID TEMPERATURE CHANGE, FROST AND FROM DRYING OUT. ALSO MAINTAIN THE CONCRETE ABOVE 2° IN COLD WEATHER. THE METHODS USED SHALL BE IN ACCORDANCE WITH B.S. 5400, OR APPROVED BY THE ENGINEER.

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Rev	Description	Date	By	Chk	App
P2	UPDATED CLIENT DETAILS	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	04.12.20	LV	NA	JAG

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Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: GENERAL NOTES

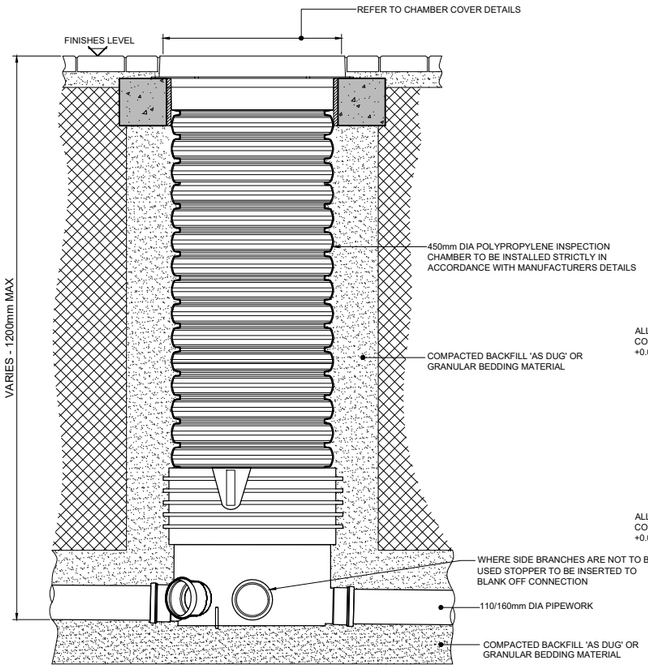
Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

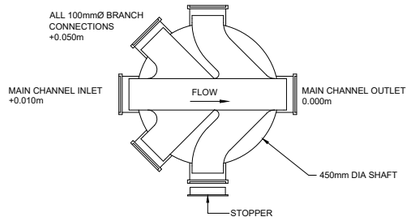
Job. no. 44466 | Scale@ A1: As Noted | Rev. P2

Project	Originator	Volume	Level	Type	Role	Number
IWEF	AWP	ZZ	XX	DR	C	3700

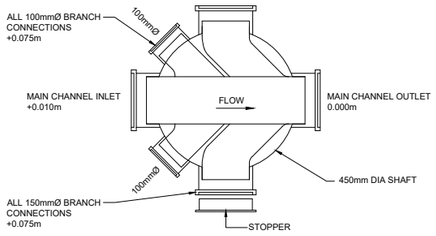
100mm at A1



SECTIONAL ELEVATION

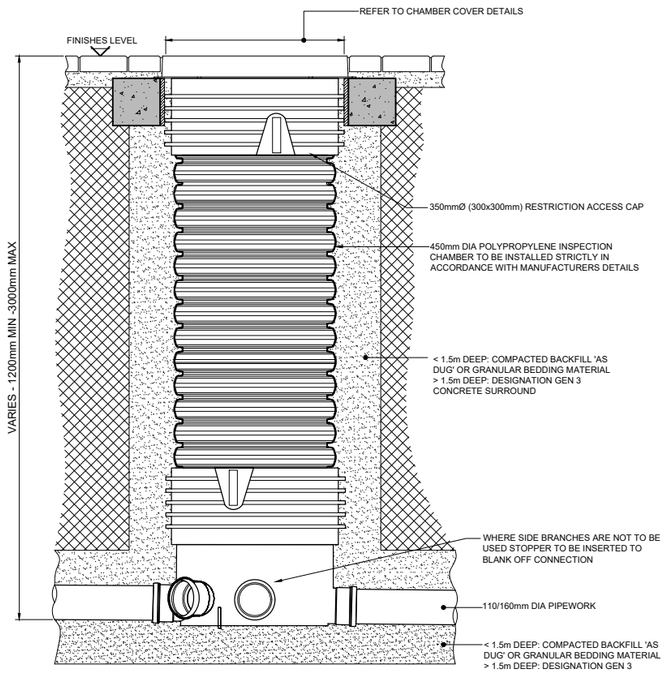


PLAN - CHAMBER
(100mm PIPEWORK)



PLAN - CHAMBER
(150mm PIPEWORK U.N.O)

NOTES:
[1]. ALL COVER LEVELS ARE APPROXIMATE ONLY & SHOULD BE SET TO SUIT FINAL SURFACING LEVELS ON SITE.
[2]. MANUFACTURERS STOPPER PIECES TO BE USED ON ALL UNUSED INLETS ON ALL INSPECTION CHAMBERS.
[3].THE MAIN THROUGH CHANNEL MUST BE USED ON ALL INSPECTION CHAMBERS.
[4]. MAXIMUM 45 DEGREE BENDS MAY BE USED ON ANY INSPECTION CHAMBER INLET OR OUTLET TO SUIT PIPE ORIENTATION ON SITE.
[5]. AWP SHOULD BE INFORMED OF ANY DEVIATIONS FROM THE CHAMBER BASE AS SHOWN ON AWP 'PLAN CHAMBER' DETAILS, AS THIS WILL EFFECT GRADIENTS AND INVERT LEVELS OF CHAMBERS AND PIPE RUNS



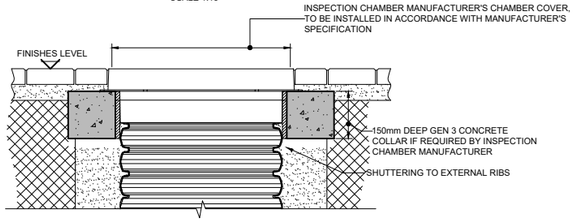
SECTIONAL ELEVATION

POLYPROPYLENE INSPECTION CHAMBER (PPIC)
MAXIMUM CHAMBER DEPTH 1.2m

SCALE 1:10

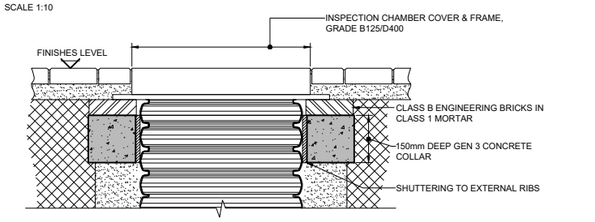
REDUCED ACCESS POLYPROPYLENE INSPECTION CHAMBER (PPIC)
CHAMBER DEPTH >1.2m < 3.0m

SCALE 1:10



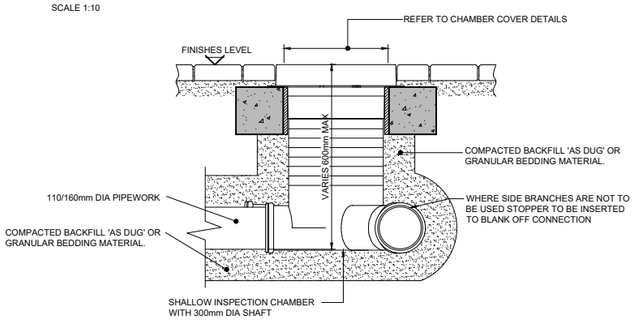
INSPECTION CHAMBER COVER DETAIL -
A15 GRADE: USE IN AREAS INACCESSIBLE TO VEHICLES ONLY

SCALE 1:10



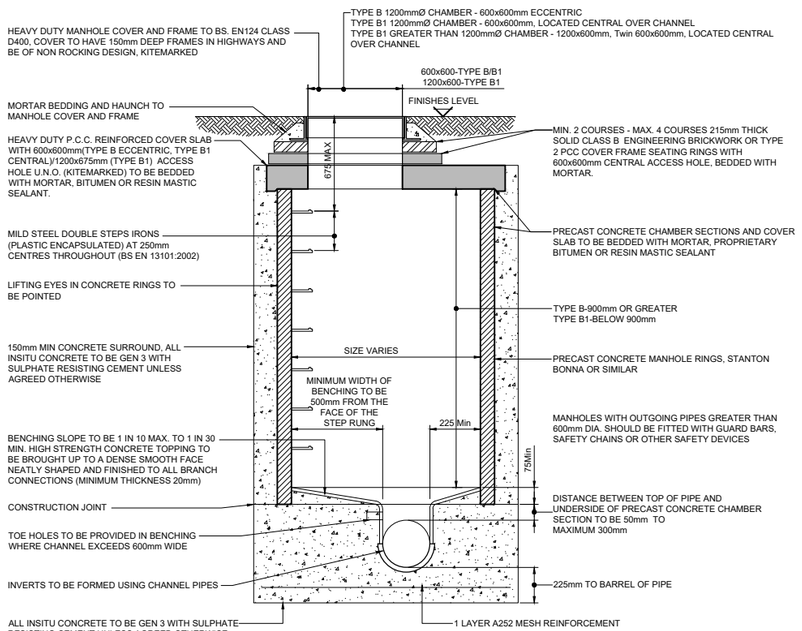
INSPECTION CHAMBER COVER DETAIL -
B125 GRADE: USE IN PRIVATE DRIVES
D400 GRADE: USE IN PRIVATE ROADS

SCALE 1:10



TYPICAL MINI ACCESS CHAMBER CONSTRUCTION DETAIL
MAXIMUM CHAMBER DEPTH 0.6m

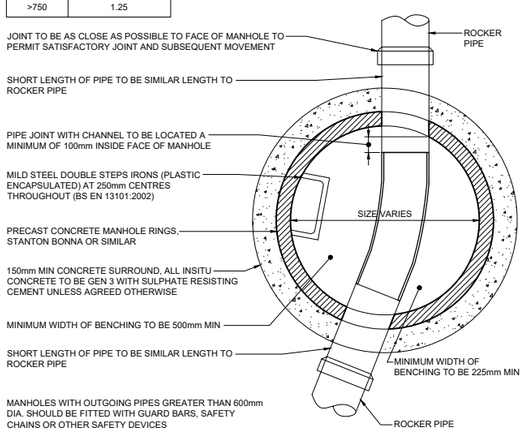
SCALE 1:10



SECTION
MANHOLE TYPE B - DEPTH 1.5-3.0m SOFFIT
MANHOLE TYPE B1 - DEPTH 1-1.5m SOFFIT

SCALE 1:20

ROCKER PIPE LENGTH	
NOM DIA (mm)	EFFECTIVE LENGTH (m)
150-600	0.60
601-750	1.00
>750	1.25



PLAN - TYPICAL

SCALE 1:20

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FOR GENERAL NOTES PLEASE REFER TO AWP DRAWING No. IWEF-AWP-ZZ-XX-DR-C-3700

Rev	Description	Date	By	Chk	App
P2	UPDATED CLIENT DETAILS	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	04.12.20	LV	NA	JAG

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Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: DRAINAGE DETAILS (SHEET 1)

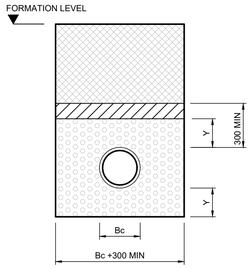
Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Job. no. 44466 | Scale@ A1: As Noted | Rev. P2

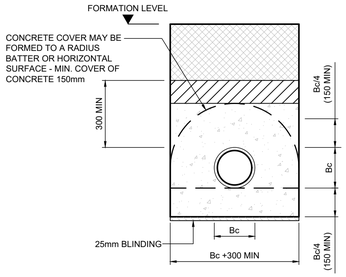
Project Originator Volume Level Type Role Number
IWEF - AWP - ZZ - XX - DR - C - 3701

100mm at A1



CLASS S BEDDING DETAIL

SCALE 1:20



CLASS Z CONCRETE BEDDING DETAIL

(EXTERNALLY AS PER NOTE 15 OF DRAINAGE NOTES)

SCALE 1:20

4/20 COARSE GRADED AGGREGATE GRADING TABLE	
SIEVE SIZE (mm)	PERCENTAGE PASSING (%)
40	100
31.5	98 - 100
20	90 - 99
10	25 - 70
4	0 - 15
2	0 - 5

TABLE 2: 4/20 COARSE GRADED AGGREGATE GRADING TABLE

NOMINAL PIPE DIA (mm)	SINGLE SIZED (mm)	GRADED (mm)
100	10	N/A
OVER 100 TO 150	10 OR 14	14 TO 5
OVER 150 TO 300	10,14 OR 20	14 TO 5 OR 20 TO 5
OVER 300 TO 525	14 OR 20	14 TO 5 OR 20 TO 5
GREATER THAN 525	14,20 OR 40	14 TO 5,20 TO 5 OR 40 TO 5

GRANULAR BEDDING MATERIAL TABLE.

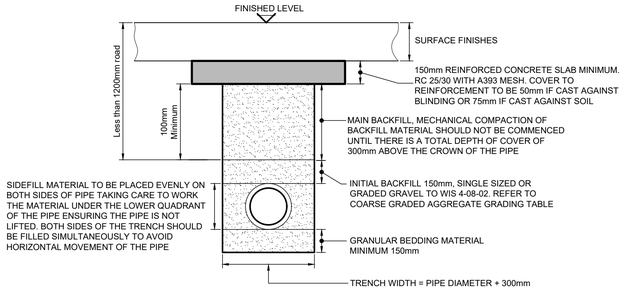
(ALL AGGREGATES TO BS EN 13242, PD 6682-6:2003 & BS EN 13055-2)

NOTES

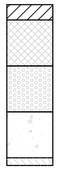
A) Bc = OUTSIDE DIAMETER OF PIPE BARREL.

B) Y = FOR UNIFORM SOILS:
SLEEVE JOINTED PIPES, MIN. 50mm OR 1/6Bc, WHICHEVER IS THE GREATER. SOCKETED PIPE, MIN. 100mm OR 1/6Bc, WHICHEVER IS THE GREATER UNDER BARRELS, NOT LESS THAN 50mm UNDER SOCKETS. FOR ROCK OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS, STONES OR OTHER IRREGULAR HARD SPOTS: SLEEVE JOINTED PIPES, MIN. 150mm OR 1/4Bc, WHICHEVER IS THE GREATER. SOCKETED PIPE, MIN. 200mm OR 1/4Bc, WHICHEVER IS THE GREATER UNDER BARRELS, NOT LESS THAN 150mm UNDER SOCKETS.

CONCRETE BED AND SURROUND TO BE DISCONTINUED AT EVERY PIPE JOINT (NOT TO EXCEED 5m) USING COMPRESSIBLE FILLER. COMPRESSIBLE FILLER TO BE 18mm THICK FOR PIPEWORK UPTO 450mm DIAMETER, FOR PIPES OVER 450mm FLEXCELL JOINTS TO BE 36mm THICK



PIPE BEDDING DETAIL KEY



SELECTED BACKFILL - SEE NOTE B2.

BACK FILL - TO STRUCTURAL ENGINEERS SPECIFICATION UNDER BUILDING & NOTES B3, B4 ELSEWHERE

GRANULAR MATERIAL - REFER TO GRANULAR BEDDING MATERIAL TABLE & NOTE B1

CONCRETE BEDDING - DESIGNATION GEN 3 - SEE NOTE B5.

CONCRETE BLINDING - DESIGNATION GEN 1 - SEE NOTE B5.

CONCRETE PROTECTION DETAIL - LATERAL DRAINS ONLY

BEDDING NOTES:

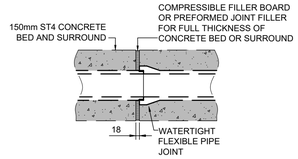
B1. PIPE BEDDING MATERIALS TO COMPLY GENERALLY WITH SHW - SERIES 500 - CLAUSE 503. GRANULAR BEDDING MATERIALS TO ALSO COMPLY WITH BS EN 13242 & THE GRANULAR BEDDING MATERIAL TABLE ON THIS DRAWING.

B2. SELECTED BACKFILL MATERIAL TO BE PROVIDED ABOVE THE PIPE SURROUND TO A HEIGHT OF 300mm MINIMUM ABOVE THE TOP OF THE PIPE. SELECTED BACKFILL MATERIAL TO BE CLASS 8 - LOWER TRENCH FILL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600 TABLE 6/1 & TO COMPRISE OF UNIFORM SOIL, FREE FROM STONES LARGER THAN 40mm, LUMPS OF CLAY OVER 100mm, TIMBER, FROZEN MATERIAL & VEGETABLE MATTER. SELECTED BACKFILL MATERIAL TO BE PLACED & COMPACTED IN LAYERS NOT EXCEEDING 150mm IN THICKNESS. SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A SUITABLE HARD GRANULAR MATERIAL SHALL BE USED.

B3. GENERAL BACKFILL TO DRAINAGE TRENCHES [OTHER THAN FILTER DRAINS] IN VEHICULAR TRAFFICKED AREAS ABOVE THE PIPE BEDDING & SELECTED BACKFILL SHALL BE CLASS 1, 2 OR 3 GENERAL FILL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600.

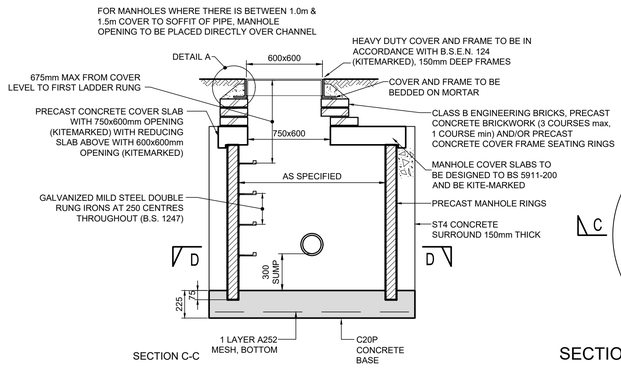
B4. GENERAL BACKFILL UNDER NON-VEHICULAR TRAFFICED AREAS TO BE SUITABLE AS-DUG MATERIAL COMPACTED IN ACCORDANCE WITH SHW - SERIES 600 IN LAYERS NOT EXCEEDING 225mm, EACH LAYER COMPACTED TO FORM A STABLE TRENCH BACKFILL, SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A HARD GRANULAR MATERIAL SHALL BE USED UP TO FORMATION LEVEL.

B5. ALL CONCRETE TO BE DESIGNATED CONCRETE TO CONFORM TO BS 8500-2.

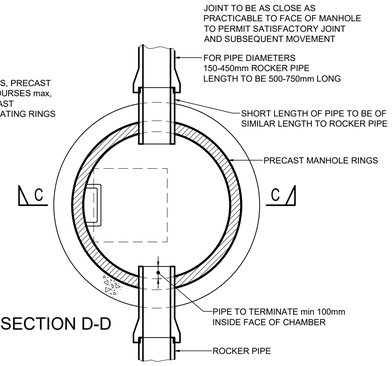


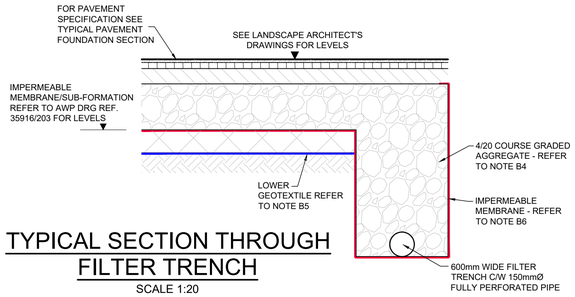
DETAIL OF EXPANSION JOINT FOR CONCRETE BED AND SURROUND

JOINTS TO BE AT 3m MAX CENTERS OR PIPE JOINTS WHICHEVER IS THE SMALLER.



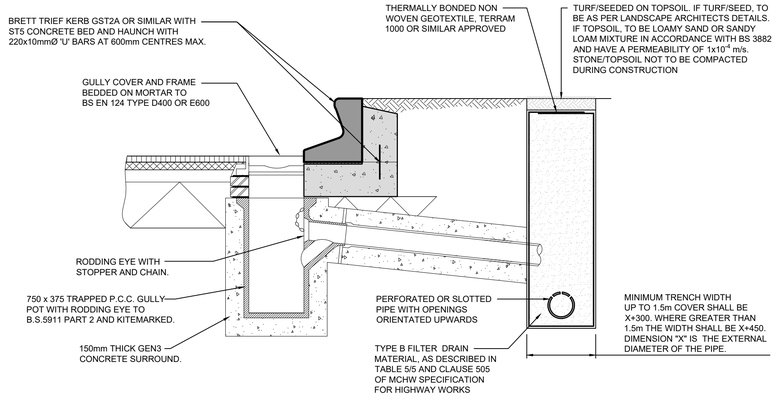
TYPICAL CATCHPIT MANHOLE



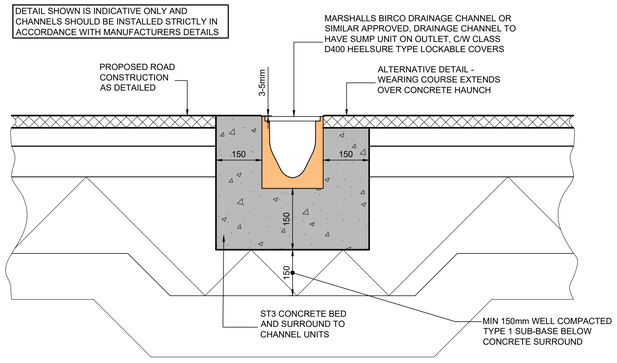


TYPICAL SECTION THROUGH FILTER TRENCH

SCALE 1:20



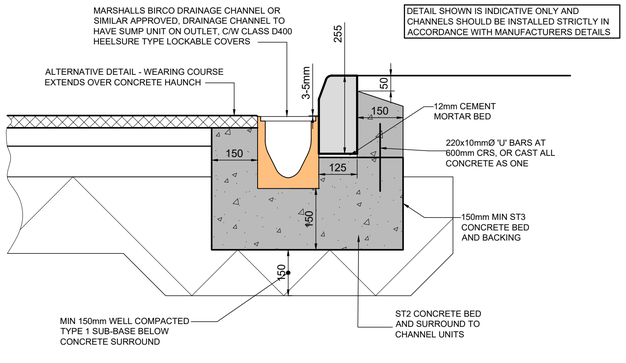
DETAIL SHOWN IS INDICATIVE ONLY AND CHANNELS SHOULD BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS DETAILS



TYPICAL CHANNEL CONSTRUCTION DETAIL

SCALE 1:10

DETAIL SHOWN IS INDICATIVE ONLY AND CHANNELS SHOULD BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS DETAILS



TYPICAL KERBSIDE CHANNEL CONSTRUCTION DETAIL

SCALE 1:10

100mm at A1

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Rev	Description	Date	By	Chk	App
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Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

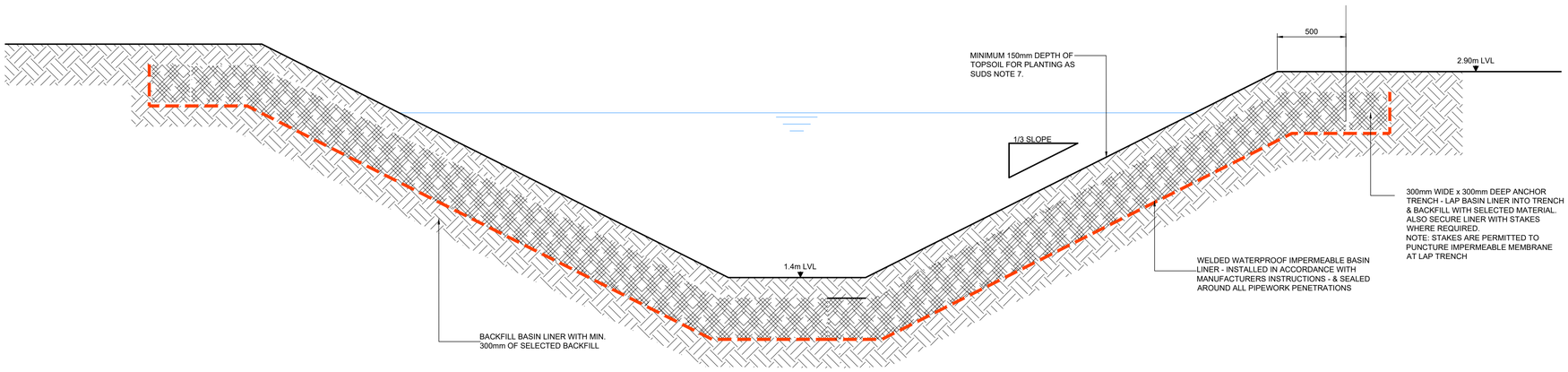
Drawing: DRAINAGE DETAILS (SHEET 2)

Role: CIVIL ENGINEER

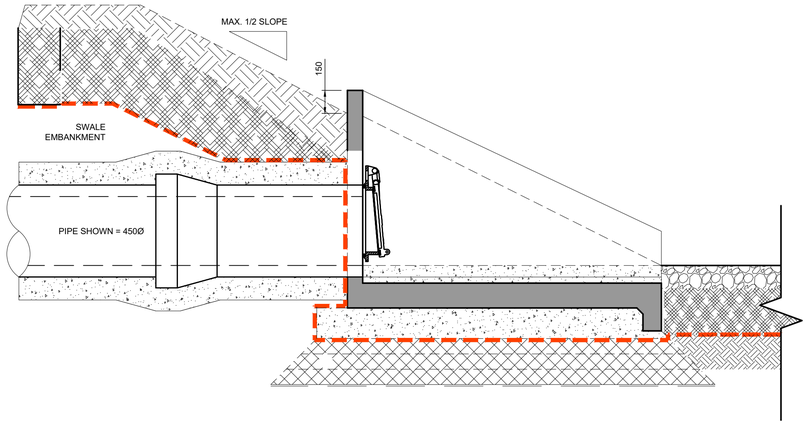
Drawing Status: FOR APPROVAL

Job. no. 44466 | Scale@ A1: As Noted | Rev. P2

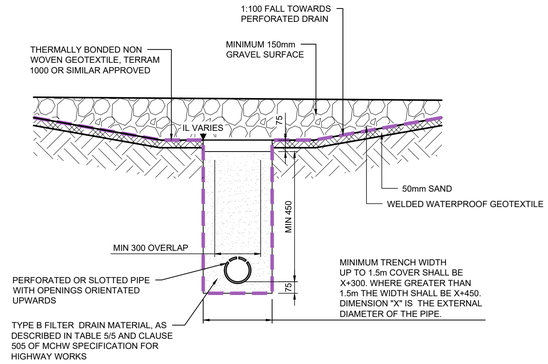
Project	Originator	Volume	Level	Type	Role	Number
IWEF	AWP	ZZ	XX	DR	C	3702



TYPICAL SECTION THROUGH PROPOSED DETENTION BASIN
(SCALE 1:20)



TYPICAL SECTION THROUGH HEADWALL
SCALE 1:20)



TYPICAL SECTION THROUGH PROPOSED GRAVEL YARD UNDERDRAIN
(SCALE 1:20)

100mm at A1

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Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: DRAINAGE DETAILS (SHEET 3)

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Job. no. 44466 | Scale@ A1: As Noted | Rev. P2

Project Originator Volume Level Type Role Number
IWEF - AWP - ZZ - XX - DR - C - 3703

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APPENDIX F

WinDES Simulation Outputs

Existing Network Details for Storm

* - Indicates pipe has been modified outside of System 1

	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
*	S1.000	7.188	0.161	44.6	0.139	5.00	0.600	o	450	Pipe/Conduit
*	S1.001	66.481	0.132	503.6	0.305	0.00	0.600	o	750	Pipe/Conduit
*	S1.002	53.297	0.107	498.1	0.401	0.00	0.600	o	750	Pipe/Conduit
*	S1.003	34.970	0.069	506.8	0.103	0.00	0.600	o	750	Pipe/Conduit
*	S2.000	119.829	0.238	503.5	0.525	5.00	0.600	o	525	Pipe/Conduit
*	S2.001	29.778	0.066	451.2	0.122	0.00	0.600	o	525	Pipe/Conduit
*	S2.002	76.051	0.145	524.5	0.000	0.00	0.600	o	525	Pipe/Conduit

	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
*	S1.000	1	3.700	2.400	0.850	3.700	2.239	1.011		1500
*	S1.001	2	3.700	1.939	1.011	3.700	1.807	1.143		1800
*	S1.002	3	3.700	1.807	1.143	3.700	1.700	1.250		1800
*	S1.003	4	3.700	1.700	1.250	3.700	1.631	1.319		1800
*	S2.000	5	3.700	2.305	0.870	3.700	2.067	1.108		1500
*	S2.001	6	3.700	2.067	1.108	3.700	2.001	1.174		1500
*	S2.002	7	3.700	2.001	1.174	3.700	1.856	1.319		1500

Existing Network Details for Storm

	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
	S1.004	27.119	0.131	207.0	0.000	0.00	0.600	o	750	Pipe/Conduit
	S3.000	7.246	0.014	517.6	0.362	5.00	0.600	o	525	Pipe/Conduit
*	S1.005	28.133	0.188	149.6	0.000	0.00	0.600	o	150	Pipe/Conduit
*	S1.006	18.205	0.121	150.5	0.000	0.00	0.600	o	150	Pipe/Conduit

	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	S1.004	8	3.700	1.631	1.319	3.700	1.500	1.450		1800
	S3.000	9	3.700	2.400	0.775	3.700	2.386	0.789		1500
*	S1.005	10	3.700	1.500	2.050	3.700	1.312	2.238		1500
*	S1.006	11	3.700	1.312	2.238	3.700	1.191	2.359	Pump	1500

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	3.700	1.300	Open Manhole	1500	S1.000	2.400	450				
S2	3.700	1.761	Open Manhole	1800	S1.001	1.939	750	S1.000	2.239	450	
S3	3.700	1.893	Open Manhole	1800	S1.002	1.807	750	S1.001	1.807	750	
S4	3.700	2.000	Open Manhole	1800	S1.003	1.700	750	S1.002	1.700	750	
S5	3.700	1.395	Open Manhole	1500	S2.000	2.305	525				
S6	3.700	1.633	Open Manhole	1500	S2.001	2.067	525	S2.000	2.067	525	
S7	3.700	1.699	Open Manhole	1500	S2.002	2.001	525	S2.001	2.001	525	
S8	3.700	2.069	Open Manhole	1800	S1.004	1.631	750	S1.003	1.631	750	
								S2.002	1.856	525	
S9	3.700	1.300	Open Manhole	1500	S3.000	2.400	525				
S10	3.700	2.200	Open Manhole	1500	S1.005	1.500	150	S1.004	1.500	750	
								S3.000	2.386	525	1261
S11	3.700	2.388	Open Manhole	1500	S1.006	1.312	150	S1.005	1.312	150	
SOF1	3.700	2.509	Open Manhole	0		OUTFALL		S1.006	1.191	150	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	520570.549	414355.742	520570.549	414355.742	Required	
S2	520576.647	414359.548	520576.647	414359.548	Required	
S3	520633.046	414394.745	520633.046	414394.745	Required	
S4	520678.261	414422.962	520678.261	414422.962	Required	
S5	520621.264	414297.748	520621.264	414297.748	Required	
S6	520722.921	414361.188	520722.921	414361.188	Required	
S7	520748.184	414376.953	520748.184	414376.953	Required	
S8	520707.928	414441.476	520707.928	414441.476	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S9	520734.769	414449.687	520734.769	414449.687	Required	
S10	520730.934	414455.834	520730.934	414455.834	Required	
S11	520716.043	414479.703	520716.043	414479.703	Required	
SOF1	520706.406	414495.148			No Entry	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	450	S1	3.700	2.400	0.850	Open Manhole	1500
S1.001	o	750	S2	3.700	1.939	1.011	Open Manhole	1800
S1.002	o	750	S3	3.700	1.807	1.143	Open Manhole	1800
S1.003	o	750	S4	3.700	1.700	1.250	Open Manhole	1800
S2.000	o	525	S5	3.700	2.305	0.870	Open Manhole	1500
S2.001	o	525	S6	3.700	2.067	1.108	Open Manhole	1500
S2.002	o	525	S7	3.700	2.001	1.174	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	7.188	44.6	S2	3.700	2.239	1.011	Open Manhole	1800
S1.001	66.481	503.6	S3	3.700	1.807	1.143	Open Manhole	1800
S1.002	53.297	498.1	S4	3.700	1.700	1.250	Open Manhole	1800
S1.003	34.970	506.8	S8	3.700	1.631	1.319	Open Manhole	1800
S2.000	119.829	503.5	S6	3.700	2.067	1.108	Open Manhole	1500
S2.001	29.778	451.2	S7	3.700	2.001	1.174	Open Manhole	1500
S2.002	76.051	524.5	S8	3.700	1.856	1.319	Open Manhole	1800

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.004	o	750	S8	3.700	1.631	1.319	Open Manhole	1800
S3.000	o	525	S9	3.700	2.400	0.775	Open Manhole	1500
S1.005	o	150	S10	3.700	1.500	2.050	Open Manhole	1500
S1.006	o	150	S11	3.700	1.312	2.238	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.004	27.119	207.0	S10	3.700	1.500	1.450	Open Manhole	1500
S3.000	7.246	517.6	S10	3.700	2.386	0.789	Open Manhole	1500
S1.005	28.133	149.6	S11	3.700	1.312	2.238	Open Manhole	1500
S1.006	18.205	150.5	SOF1	3.700	1.191	2.359	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.006	SOF1	3.700	1.191	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	18.600	Cv (Summer)	0.750
Return Period (years)	2	Ratio R	0.400	Cv (Winter)	0.840
Region	England and Wales	Profile Type	Summer	Storm Duration (mins)	30

Online Controls for Storm

Pump Manhole: S11, DS/PN: S1.006, Volume (m³): 4.7

Invert Level (m) 1.312

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.5000	0.600	5.5000	1.100	5.5000	1.600	5.5000	2.100	5.5000	2.600	5.5000
0.200	5.5000	0.700	5.5000	1.200	5.5000	1.700	5.5000	2.200	5.5000	2.700	5.5000
0.300	5.5000	0.800	5.5000	1.300	5.5000	1.800	5.5000	2.300	5.5000	2.800	5.5000
0.400	5.5000	0.900	5.5000	1.400	5.5000	1.900	5.5000	2.400	5.5000	2.900	5.5000
0.500	5.5000	1.000	5.5000	1.500	5.5000	2.000	5.5000	2.500	5.5000	3.000	5.5000

Storage Structures for Storm

Tank or Pond Manhole: S1, DS/PN: S1.000

Invert Level (m) 2.400

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	118.0	1.300	678.0

Tank or Pond Manhole: S10, DS/PN: S1.005

Invert Level (m) 1.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	70.0	0.900	229.0	0.910	282.0	2.200	1105.0

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.600 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DTS Status OFF Inertia Status ON
Analysis Timestep Fine DVD Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)
S1.000	S1	30 Winter	1	+0%	30/180 Winter				2.450	-0.400	0.000	0.03		
S1.001	S2	360 Winter	1	+0%	30/60 Winter				2.383	-0.306	0.000	0.02		

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	6.4	OK	
S1.001	S2	8.1	OK	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)
S1.002	S3	360 Winter	1	+0%	30/30 Winter				2.383	-0.174	0.000	0.02		
S1.003	S4	360 Winter	1	+0%	30/15 Winter				2.383	-0.067	0.000	0.02		
S2.000	S5	15 Winter	1	+0%	30/120 Winter				2.514	-0.316	0.000	0.29		
S2.001	S6	360 Winter	1	+0%	30/30 Winter				2.381	-0.211	0.000	0.07		
S2.002	S7	360 Winter	1	+0%	30/30 Summer				2.381	-0.145	0.000	0.06		
S1.004	S8	360 Winter	1	+0%	30/15 Summer				2.381	0.000	0.000	0.03		
S3.000	S9	15 Winter	1	+0%	30/240 Winter				2.611	-0.314	0.000	0.34		
S1.005	S10	360 Winter	1	+0%	1/15 Summer				2.367	0.717	0.000	0.45		
S1.006	S11	240 Winter	1	+0%	1/15 Summer				2.334	0.872	0.000	0.41		

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S3	11.5	OK	
S1.003	S4	9.7	OK	
S2.000	S5	58.2	OK	
S2.001	S6	12.5	OK	
S2.002	S7	11.9	OK	
S1.004	S8	16.0	OK	
S3.000	S9	46.6	OK	
S1.005	S10	6.2	SURCHARGED	
S1.006	S11	5.5	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.600 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DTS Status OFF Inertia Status ON
Analysis Timestep Fine DVD Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)
S1.000	S1	600 Winter	30	+0%	30/180 Winter				2.977	0.127	0.000	0.01		
S1.001	S2	600 Winter	30	+0%	30/60 Winter				2.977	0.288	0.000	0.02		

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	2.9	SURCHARGED	
S1.001	S2	9.8	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)
S1.002	S3	600 Winter	30	+0%	30/30 Winter				2.977	0.420	0.000	0.03		
S1.003	S4	600 Winter	30	+0%	30/15 Winter				2.977	0.527	0.000	0.04		
S2.000	S5	600 Winter	30	+0%	30/120 Winter				2.978	0.148	0.000	0.08		
S2.001	S6	600 Winter	30	+0%	30/30 Winter				2.978	0.386	0.000	0.10		
S2.002	S7	600 Winter	30	+0%	30/30 Summer				2.977	0.451	0.000	0.09		
S1.004	S8	600 Winter	30	+0%	30/15 Summer				2.977	0.596	0.000	0.05		
S3.000	S9	600 Winter	30	+0%	30/240 Winter				2.977	0.052	0.000	0.08		
S1.005	S10	600 Winter	30	+0%	1/15 Summer				2.977	1.327	0.000	0.46		
S1.006	S11	600 Winter	30	+0%	1/15 Summer				2.953	1.491	0.000	0.41		

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S3	15.6	SURCHARGED	
S1.003	S4	17.5	SURCHARGED	
S2.000	S5	15.5	SURCHARGED	
S2.001	S6	18.1	SURCHARGED	
S2.002	S7	17.2	SURCHARGED	
S1.004	S8	32.6	SURCHARGED	
S3.000	S9	10.5	SURCHARGED	
S1.005	S10	6.4	SURCHARGED	
S1.006	S11	5.5	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.600 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DTS Status OFF Inertia Status ON
Analysis Timestep Fine DVD Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)
S1.000	S1	960 Winter	100	+40%	30/180 Winter				3.549	0.699	0.000	0.01		
S1.001	S2	960 Winter	100	+40%	30/60 Winter				3.549	0.860	0.000	0.02		

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	2.2	FLOOD RISK	
S1.001	S2	7.4	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)
S1.002	S3	960 Winter	100	+40%	30/30 Winter				3.549	0.992	0.000	0.03		
S1.003	S4	960 Winter	100	+40%	30/15 Winter				3.549	1.099	0.000	0.03		
S2.000	S5	960 Winter	100	+40%	30/120 Winter				3.549	0.719	0.000	0.09		
S2.001	S6	960 Winter	100	+40%	30/30 Winter				3.550	0.958	0.000	0.12		
S2.002	S7	960 Winter	100	+40%	30/30 Summer				3.549	1.023	0.000	0.12		
S1.004	S8	960 Winter	100	+40%	30/15 Summer				3.549	1.168	0.000	0.06		
S3.000	S9	960 Winter	100	+40%	30/240 Winter				3.549	0.624	0.000	0.10		
S1.005	S10	960 Winter	100	+40%	1/15 Summer				3.548	1.898	0.000	0.42		
S1.006	S11	1440 Winter	100	+40%	1/15 Summer				3.552	2.090	0.000	0.41		

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S3	12.2	FLOOD RISK	
S1.003	S4	13.6	FLOOD RISK	
S2.000	S5	19.2	FLOOD RISK	
S2.001	S6	23.6	FLOOD RISK	
S2.002	S7	23.4	FLOOD RISK	
S1.004	S8	34.9	FLOOD RISK	
S3.000	S9	13.2	FLOOD RISK	
S1.005	S10	5.8	FLOOD RISK	
S1.006	S11	5.5	FLOOD RISK	

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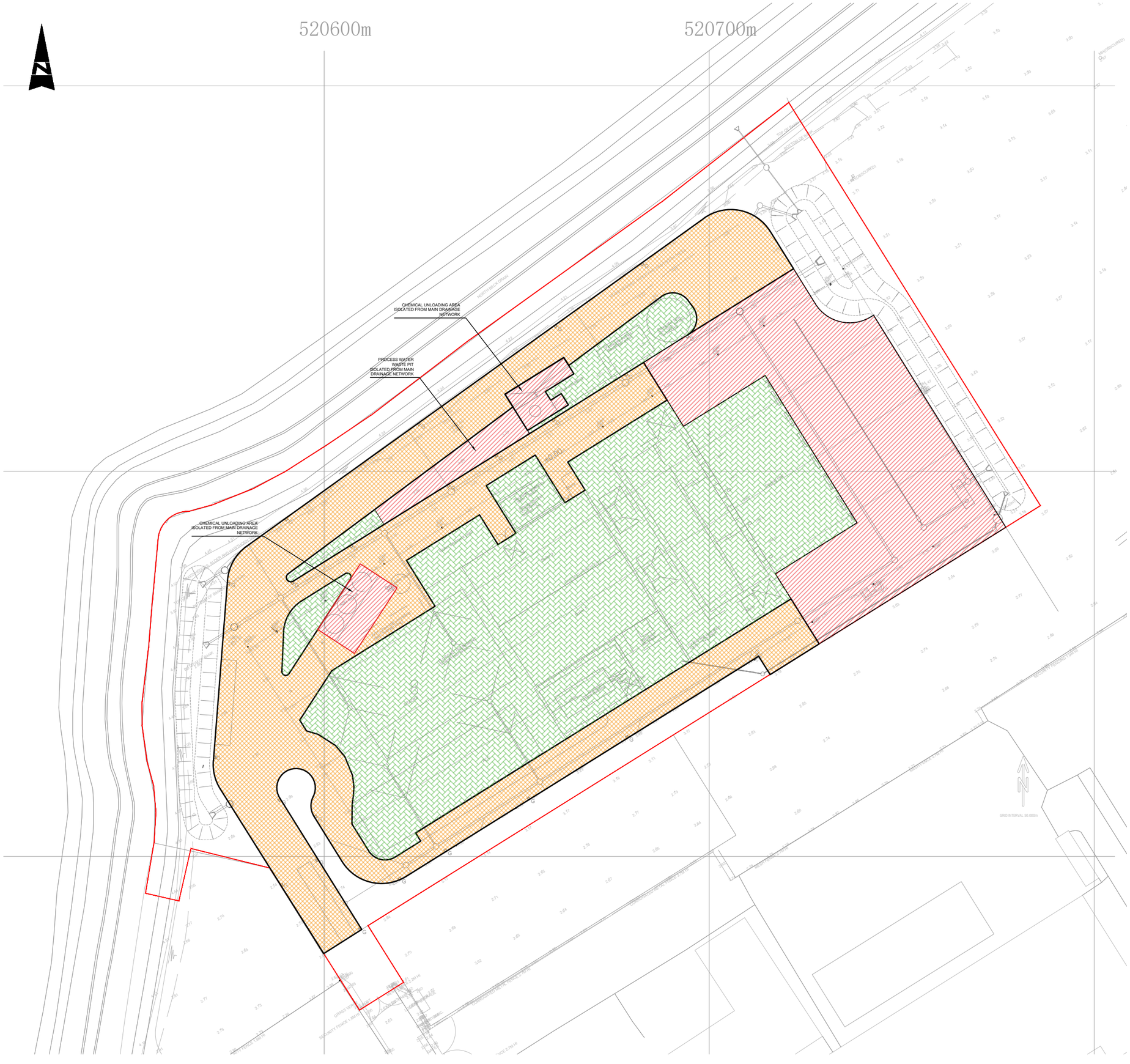
APPENDIX G

Land Use Pollution Index & SuDS Components Plan



NOTES:

1. THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE AND ENSURE THAT THE BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY, SUCH MATERIAL REMAINING THE THE PROPERTY OF THE CONTRACTOR ON COMPLETION, AND FOR ENSURING THAT THE WORKS AND ANY ADJACENT PROPERTIES ARE SAFE IN THE TEMPORARY CONDITION.

FOR GENERAL NOTES PLEASE REFER TO AWP DRAWING No. IWEF-AWP-ZZ-XX-DR-C-3700

- TIPPING HALL - HIGH RISK
- PERIMETER ROAD - MEDIUM RISK
- ROOF/GRAVEL YARDS - LOW RISK

Rev	Description	Date	By	Chk	App
P3	AMENDED TIPPING HALL RISK AREA	13.03.23	NA	-	-
P2	UPDATED SITE LAYOUT	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	08.12.20	NA	--	--

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Sheffield	T. 01142 440077
York	T. 01904 611594

Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: POLLUTION RISK AREAS

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Suitability Code:

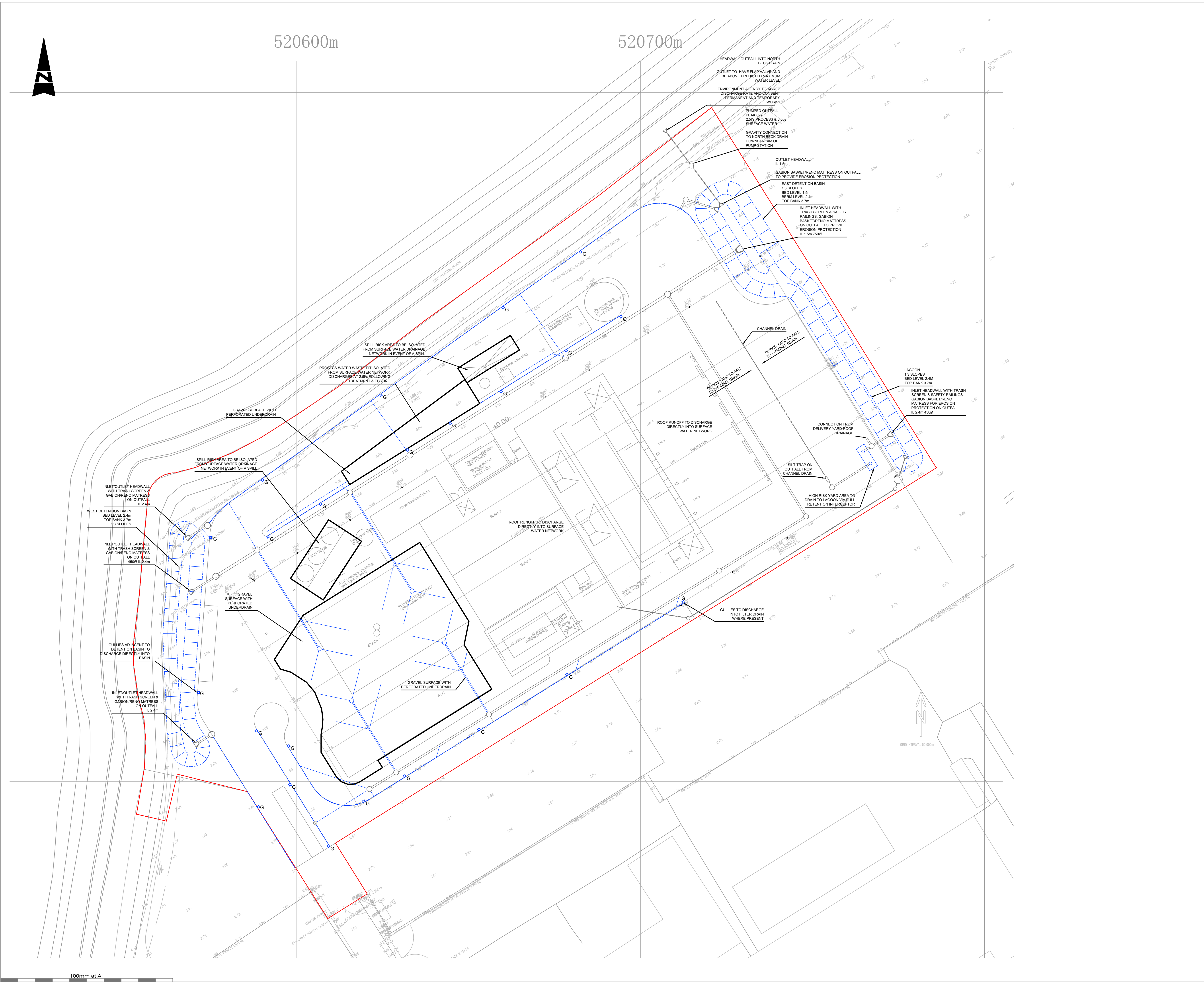
Job. no. 44466

Scale@ A1: 1:500

Rev. P3

Project	Originator	Volume	Level	Type	Role	Number
IWEF	AWP	ZZ	XX	DR	C	3100

100mm at A1



NOTES:

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FOR GENERAL NOTES PLEASE REFER TO AWP DRAWING No. IWEF-AWP-ZZ-XX-DR-C-3700

Rev	Description	Date	By	Chk	App
P2	UPDATED SITE LAYOUT	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	08.12.20	NA	-	-

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York	T. 01904 611594

Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: SUDS COMPONENTS

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Suitability Code:

Job. no. 44466 | Scale@ A1: 1:500 | Rev. P2

Project	Originator	Volume	Level	Type	Role	Number
IWEF	AWP	ZZ	XX	DR	C	3101

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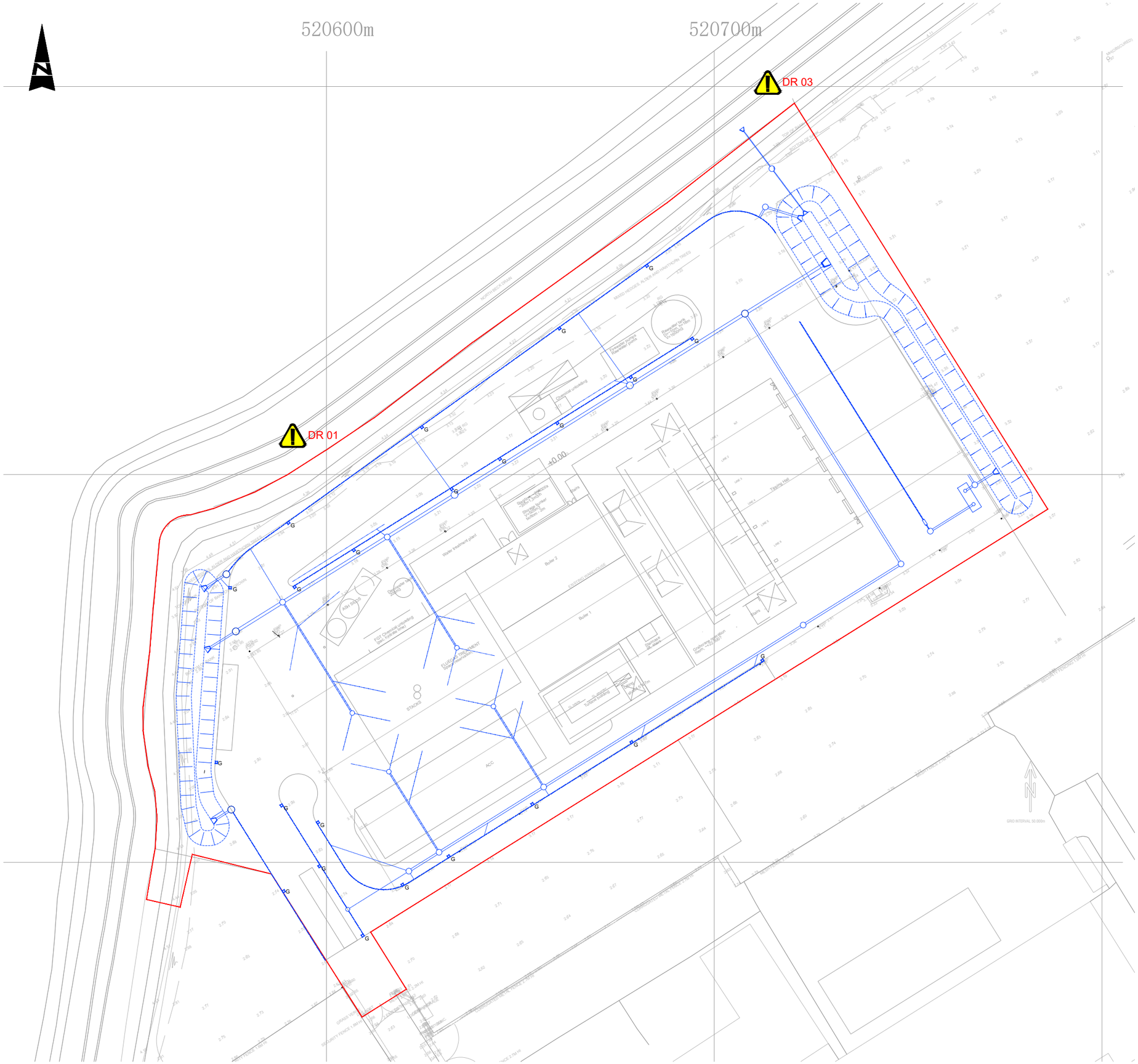
APPENDIX H

Residual Risk Plan



NOTES:

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FOR GENERAL NOTES PLEASE REFER TO AWP DRAWING No. IWEF-AWP-ZZ-XX-DR-C-3700

HEALTH & SAFETY RISKS

IN ADDITION TO THE STANDARD HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING RESIDUAL HEALTH AND SAFETY RISKS

DESIGN RISKS

DR 01	FINISHED LEVELS TO BE DESIGNED BY OTHERS
DR 02	REFER TO DRAWING IWEF-AWP-ZZ-XX-DR-C-3000 FOR INDICATIVE DRAINAGE AREAS. AWP TO BE INFORMED OF ANY CHANGE DESIGN TO BE CHECKED AND SUBJECT TO REDESIGN IF REQUIRED

CONSTRUCTION RISKS

CR 01	BURIED SERVICES - DAMAGE MAY RESULT IN ELECTROCUTION, GAS LEAK, EXPLOSION, WATER LEAK. OBTAIN ACCURATE LOCATIONS OF UNDERGROUND SERVICES PRIOR TO EXCAVATION.
CR 03	UNTREATED/POLLUTED WATER CAN CAUSE ILL HEALTH THROUGH WATERBORNE DISEASES. STAFF WORKING ON OR NEAR SEWERS/WATERCOURSES MUST BE AWARE OF THESE DISEASES.
CR 04	CONTAMINATED GROUND - SITE ASSESSMENT MUST BE CARRIED OUT TO DETERMINE RISK IF CONTAMINATED GROUND IS UNCOVERED.
CR 05	UNFORESEEN GROUND CONDITIONS - CONTRACTOR SHOULD CARRY OUT APPROPRIATE SURVEYS TO MINIMISE RISK OF ENCOUNTERING UNKNOWN STRUCTURES
CR 07	SERVICES ARE UNKNOWN WHETHER LIVE OR ABANDONED - ENSURE APPROPRIATE SURVEY DATA RECEIVED BEFORE WORKS COMMENCE
CR 08	CONSTRUCTION ADJACENT LIVE TRAFFIC - CONTACTOR TO PROVIDE APPROPRIATE PROTECTION AND BARRIERS TO SEPARATE THE CONSTRUCTION SITE FROM TRAFFIC.
CR 11	EXISTING RELICT FOUNDATIONS TO BE BROKEN, REMOVED AND DISPOSED OF AS REQUIRED

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING IN ACCORDANCE WITH THE REQUIREMENTS DEFINED IN THE CDM REGULATIONS.

Rev	Description	Date	By	Chk	App
P2	UPDATED SITE LAYOUT	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	08.12.20	NA	-	-

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Building Surveyors

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Scarborough T. 01723 865484
Sheffield T. 01142 440077
York T. 01904 611594

Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGCO UK Ltd

Drawing: RESIDUAL RISKS

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Suitability Code:

Job. no. 44466

Scale@ A1: 1:500

Rev. P2

Project	Originator	Volume	Level	Type	Role	Number
IWEF	AWP	ZZ	XX	DR	C	3102

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Road & Drainage Design
Site Investigations
Site Supervision
Structural Engineering
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Temporary Works
Topographic & Measured Surveys
Traffic Assessments

Quality Assurance Accreditation
ISO 9001 Registered firm
Certificate no. GB.02/07

Environmental Accreditation
ISO 14001Registered firm
Certificate no. GB.09/277b


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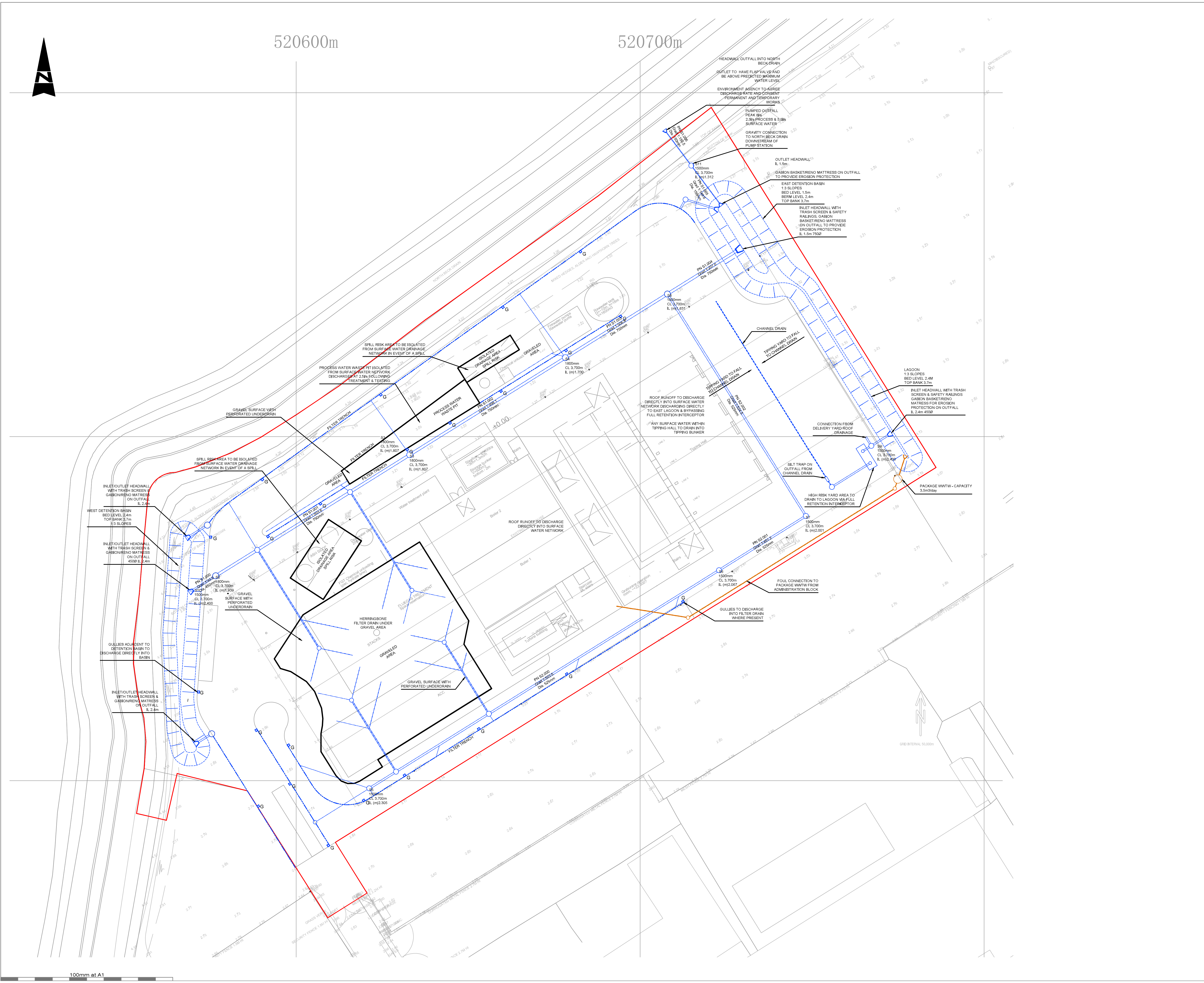
Discharges To Water

Appendix 2

1. **Surface Water Drains**
2. **Emission to Water**



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FOR GENERAL NOTES PLEASE REFER TO AWP DRAWING No. IWEF-AWP-ZZ-XX-DR-C-3700

SURFACE WATER SEWER
CHANNEL DRAIN
PERFORATED UNDERDRAIN
ROADSIDE FILTER DRAIN
SURFACE WATER ACCESS CHAMBER
SURFACE WATER PUMP STATION
ROAD GULLY
HEADWALL
FULL RETENTION INTERCEPTOR

Rev	Description	Date	By	Chk	App
P3	UPDATED TIPPING HALL DRAINAGE NOTES	13.03.23	NA	-	-
P2	REVISED SITE LAYOUT	31.01.23	NA	JC	JAG
P1	FIRST ISSUE	18.12.20	NA	--	--

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Project: IMMINGHAM WASTE TO ENERGY FACILITY
EUROPA WAY
STALLINGBOROUGH

Client: TEGGO UK Ltd

Drawing: PRELIMINARY SURFACE & FOUL WATER DRAINAGE LAYOUT

Role: CIVIL ENGINEER

Drawing Status: FOR APPROVAL

Suitability Code:

Job. no. 44466 | Scale@ A1: 1:500 | Rev. P3

Project - Originator - Volume - Level - Type - Role - Number

IWEF - AWP - ZZ - XX - DR - C - 3001

W 1
Main discharge point into Beck
maximum 8.1 l/s (29.16 m3/h)

W 3
Process Water
maximum 2.5 l/s (9.0 m3/h) (part of W1)

W 2
Karlgestor
(part of W1)

PRELIMINARY

A/M	ÄNDERUNG/MODIFICATION	DATUM/DATE	NAME	GEPR./CHECK	GES./APPR.
A	1st Issue	20221222	AK	RC	AD

KUNDE/PURCH.: ---
ORDER NR.: 1900100
Refer to protection notice ISO 16016
Schutzvermerk ISO 16016 beachten !)
ANLAGE/PLANT: EfW IMMINGHAM
BENENNUNG/TITLE
Plot Plan
Emissions to water
= &MLD
+N1
MASSSTAB/SCALE
approx 1:500

TEGCO
THE ENERGY GENERATION COMPANY GMBH
COMBUSTION
GASIFICATION

	DATUM/DATE	NAME
GEZ./DRAWN	20221222	Kraft
GEPR./CHECK		RC
GES./APPR.	Engg	AD

ISO / R 128
EUROPA

KKS	DAS/DCC	ZEICHN/NUMMER /DRAWING No.	REV.	BL./SH.	VON/OF
	1N & MLD	TEG1 TEB 292001 A			002/003

FILE DATE: 2022-03-24 FILE NAME: TEG1_MLD_TEB292001

Discharges To Water

Appendix 3

1. **Karlgestor BioDisc®**

Klargester BioDisc® Commercial Sewage Treatment Plant

Delivered as a single, packaged system, the Klargester BioDisc® RBC range (up to 300PE), offers low running costs due to its unique design and operational efficiencies.

Product Benefits

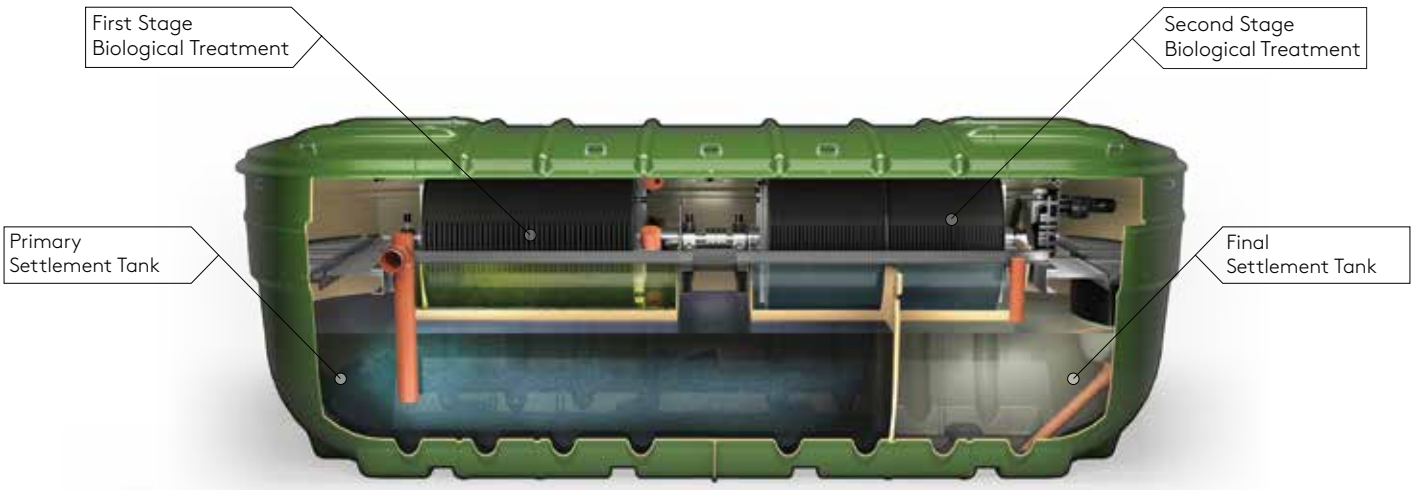
- Unique RBC technology.
- Tried and tested technology, offers robust and efficient water management treatment.
- Low running costs.
- Noise free.
- Fully removable lid for easy desludging.
- Fully packaged system, delivered direct on site.
- Bespoke technical support offered from our in-house technical teams.

Performance & Compliance

› Odour free – tested and fully approved in accordance with BSEN13725.

› Designed for applications selected in compliance with British Water Code of Practice Flows and Loads.

› 100% compliance with industry requirements across commercial sectors, including national and international regulations such as BS EN12255 and EN12566-3 (up to 50 PE).



01

Primary Settlement Tank

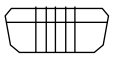
This is the initial stage of treatment and simply involves the retention of coarse solids present in raw sewage and wastewater for subsequent gradual breakdown. BioDisc® features one chamber to ensure efficient operation with a flow balancing facility.

02

First Stage Biological Treatment

The liquor and fine solids then flow into the first stage of Biological Treatment. A unique managed flow system ensures peak performance by smoothing variable loads.

Single Piece System



Technical Specifications

Model Reference	BD	BE	BF	BG	BH	BJ	BK	BL	BM	BN
Maximum Daily BOD (kg)	1.5	2.1	3	4.2	4.5	6	7.5	9	13.5	18
Maximum Daily Flow (m3)	5	7	10	14	15	20	25	30	45	60
Ø/Width (mm)	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
Length (mm)	3340	3340	4345	5235	7755	7755	7755	7755	10420	13100
Inlet Invert depth (mm)	600/1100	600/1100	600/1100	600/1100	600/1000	600/1000	600/1000	600/1000	600/1000	600/1000
Depth Below Inlet Invert (mm)	1820	1820	1820	1820	1790	1790	1790	1790	1790	1790
Outlet Invert Depth (mm)	1735	1735	1720	1720	1640	1640	1640	1640	1640	1640
Overall Height (mm)	2825/3325	2825/3325	2825/3325	2825/3325	2830/3230	2830/3230	2830/3230	2830/3230	2830/3230	2830/3230
Height to Rim of Cover (mm)	2485/2985	2485/2985	2485/2985	2485/2985	2490/2890	2490/2890	2490/2890	2490/2890	2490/2890	2490/2890
Empty Weight (kg)	1100/1200	1200/1300	1315/1465	1660/1810	3000/3020	3100/3120	3200/3220	3300/3320	4200/4250	5500/5650
Standard Power Supply	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase
Motor Rating - 1 Phase (Watts)	75	75	120	180	250	250	370	370	550	2 x 370
Full Load Current 1 Phase (amps)	1.1	1.1	1.3	1.6	1.5	1.5	2.35	2.35	2.8	2 x 2.35
Optional Power Supply	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase
Motor Rating - 3 Phase (Watts)	90	90	120	180	250	250	370	370	550	2 x 370
Full Load Current 3 Phase (amps)	0.38	0.38	0.42	0.63	0.88	0.88	1.35	1.35	2.8	2 x 1.35
Sludge Return Pump Rating (watts)	250	250	250	250	250	250	250	250	250	250

03

Second Stage Biological Treatment

The liquor is then fed forward at a controlled rate into Biological Treatment stage 2 for further cleaning. This process ensures the whole media area available is utilised ensuring maximum efficiency.

04

Final Settlement Tank

The surplus micro-organisms continuously slough off the discs and are carried forward to the final settlement where they settle out as a humus sludge, leaving a clear treated effluent to be discharged to ground or water course. The settled humus sludge is returned to the Primary Settlement Tank by the sludge return pump under timer control. The sludge return pump also removes any floating scum which helps to keep the final settlement tank working efficiently.