



## Replacement Lakeside EfW and HTI Facilities

Design and access statement

June 2019

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**CROWTHER**  
ASSOCIATES

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## REPLACEMENT LAKESIDE EfW and HTI FACILITIES

### Design and Access Statement



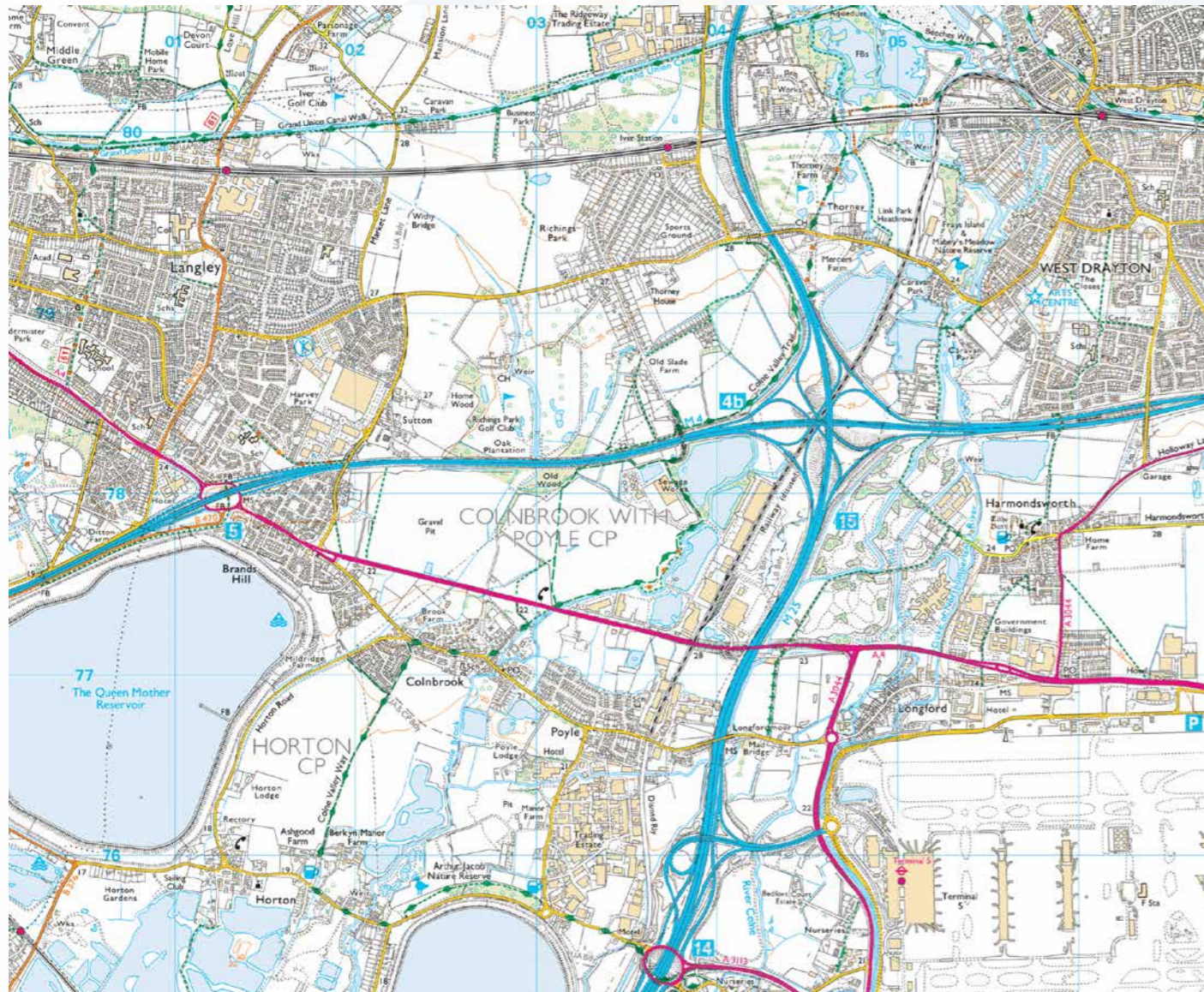
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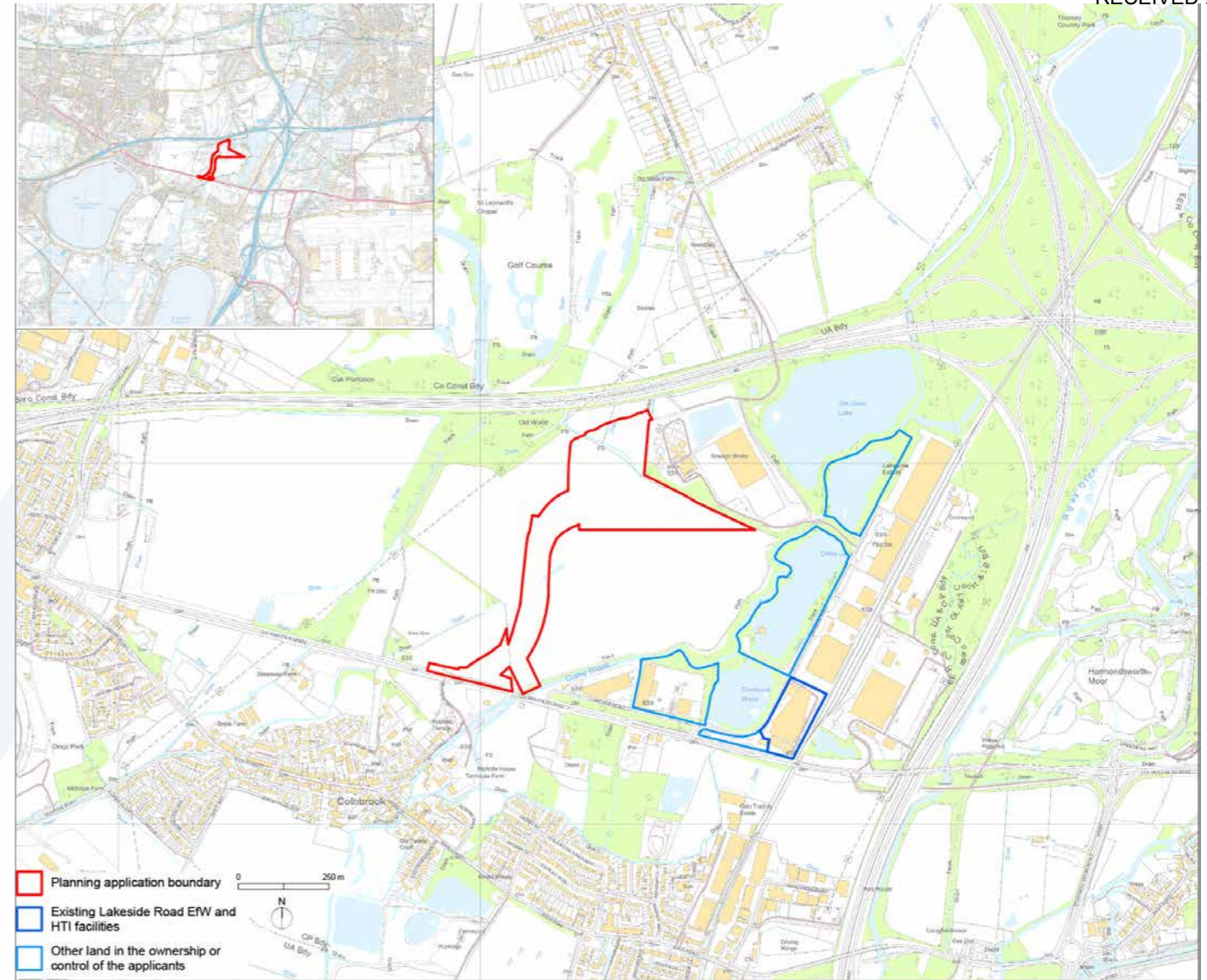
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# 1. Introduction

- 1.1. Lakeside EfW Ltd is a joint venture between Grundon Waste Management and Viridor, the joint owners and operators of the EfW facility, and Grundon Waste Management which is the sole owner and operator of the HTI facility.
- 1.2. The expansion plans of Heathrow Airport Ltd (HAL) include the provision of a third runway to the north of the existing runway. These plans require the demolition of the existing Lakeside Energy from Waste facility (EfW) and High Temperature Incinerator (HTI) at Colbrook, Slough.
- 1.3. Grundon Waste Management and Viridor are proposing to replace the existing facilities at a new site, west of the Iver South Sludge Dewatering Centre and approximately 600m to the North West of its current location.



DS001 Location plan



DS002 Site plan red line

- 1.4. This planning application is for construction and operation of a replacement energy from waste facility and high temperature incinerator including ancillary buildings and structures, provision of a new access road and new junction with the A4, and temporary construction compound.



DS003 Perspective of existing EfW

## 2. Document Purpose and Project Background

2.1. The purpose of this Design and Access Statement is to provide details of:

- The context of the proposed site
- The design solution - Design of the buildings and plant
- The relationship of the proposal to the existing site and wider landscape and environment

2.2. The Design and Access Statement explains the principles and content of the proposed layout, scale and materials to be used for the replacement facilities. It documents the evolution of the design and illustrates the design solution. The concept, architecture, operation, form and function of the facilities are also described. Landscape and visual impacts are considered in extensive detail within the Environmental Statement (ES) submitted with the planning application.

2.3. This Design and Access Statement accompanies the planning application submitted under the Town and Country Planning Act 1990 (as amended) for the proposed facilities. Other accompanying documents include the planning application supporting statement (Planning Statement), the Environmental Statement (including technical appendices) covering all relevant environmental aspects, architectural drawings and visuals, landscape proposals, plant technical information and a Non-Technical Summary.

2.4. The overall design aim is:

- To take the existing plant design and enhance its architectural quality where possible
- To take the existing form and integrate it into its new location whilst meeting the operational needs of the facilities
- To create an efficient structure which thereby creates an economic and sustainable solution
- Careful selection of materials which balance sustainability and life cycle factors

2.5. The Design and Access Statement illustrates the manner in which this has been achieved. In preparing this document consideration has been given to the following item:

- Town & Country Planning (Development Management Procedure) (England) Order 2015/595 Regulation 9(3)

2.6. Design and Access Statements provide the opportunity for developers and designers to demonstrate work they undertake, and allow them to show how they are meeting, or will meet the various obligations placed on them by legislation and policy. Typically, it is advised that Design and Access Statements should:

- (a) Explain the design principles and concepts that have been applied to the development;

(b) Demonstrate the steps taken to appraise the context of the development and how the design of the development takes that context into account;

(c) Explain the policy adopted as to access, and how policies relating to access in relevant local development documents have been taken into account;

(d) State what, if any, consultation has been undertaken on issues relating to access to the development and what account has been taken of the outcome of any such consultation;

(e) Explain how any specific issues which might affect access to the development have been addressed.

### The Operators

2.7. Viridor is a recycling, renewable energy and waste management company in the United Kingdom, owned by Pennon Group focused on the water and waste management industries.

2.8. Grundon Waste Management is a family owned company, founded in 1929 by Stephen Grundon, which has grown from a local aggregate supply business into the largest privately owned waste management group in the UK. Grundon Waste Management Ltd (Grundon) is involved in a wide range of waste collection, recycling, treatment and disposal services.

2.9. Since January 2010, Grundon, in a Joint Venture with waste management company Viridor called Lakeside Energy from Waste Ltd has operated the existing Energy from Waste facility, located in Colnbrook, Berkshire. The plant is capable of recovering energy from over 440,000 tonnes of residual waste per year from local authorities and businesses to generate up to 40 MW of electricity.

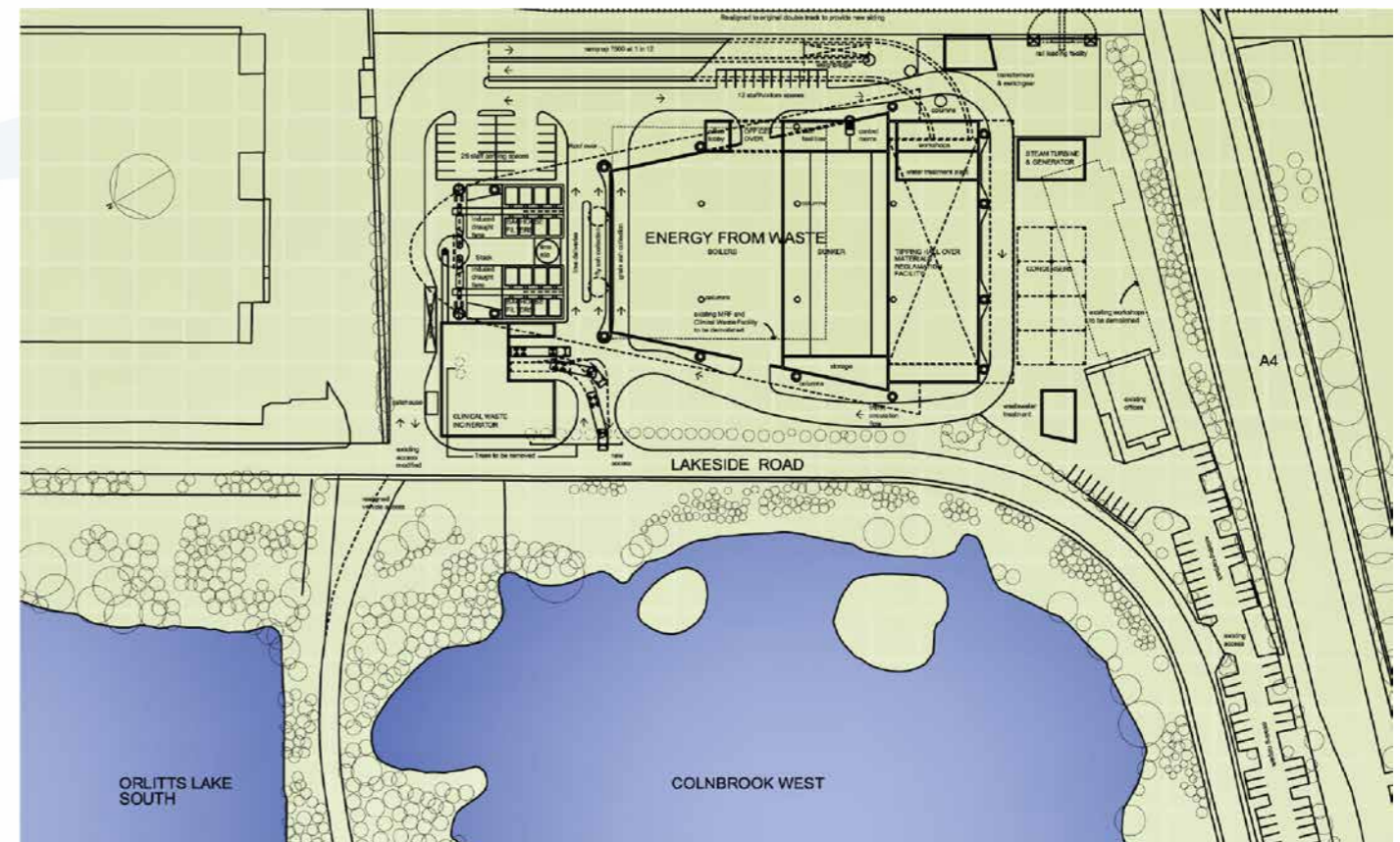
2.10. Grundon Waste Management also solely own and operate a High Temperature Incinerator which is located next to the main EFW building on the same site which treats up to 10,000tpa of clinical / hazardous waste from NHS Hospitals, medical and other establishments.

## Existing Colnbrook Plant

- 2.11. Figure DS004-DS0005 illustrates the existing Lakeside EfW plant at Colnbrook, Berkshire. This is a 440,000 tonne capacity facility that takes residual waste from local authorities and businesses from various London boroughs as well as east Berkshire, Buckinghamshire and Surrey. The facility became operational in January 2010 and generates 40 MW of electricity, of which 37 MW are exported to the national grid. The plant takes waste that is not capable of being reused, composted or recycled and generates electricity.
- 2.12. The design of the building evolved through a thorough understanding of the landscape context of the site, which is industrial, but also related to adjacent artificial lakes created as a result of gravel extraction. The presence of the nearby Heathrow Airport and both the M4 and M25 motorways also had a big influence on the design ethos, with the large curved roof responding to the need to minimise the visual impact of the built form. This, combined with the hooped treatment of the stack, resulted in a design which reduces the building's impact on the landscape and surrounding area and ensures that although large, the building itself does not appear overly massive in its setting. Light coloured and flat cladding was used to reflect the building in the water of the lakes, while glazed areas on the opposite façade were used in a similar manner to again reflect, and break up the bulk of the building and its access ramp to the tipping hall. By using textured masonry blockwork to the base of the building further visual interest and variety has been introduced, together with providing a rooted base from which the main portion of the building can spring from.
- 2.13. The existing plant has become an identifiable landmark and it is considered that a similar approach should apply to the new site as the key environmental considerations along with the context are broadly similar, being that the proposal is within 600m of the original building.



DS004 Axonometric of existing EfW



DS005 - Site Plan of existing EfW

### 3. Site Analysis

#### Site Specific Key Considerations

3.1. Site specific key considerations include the following:

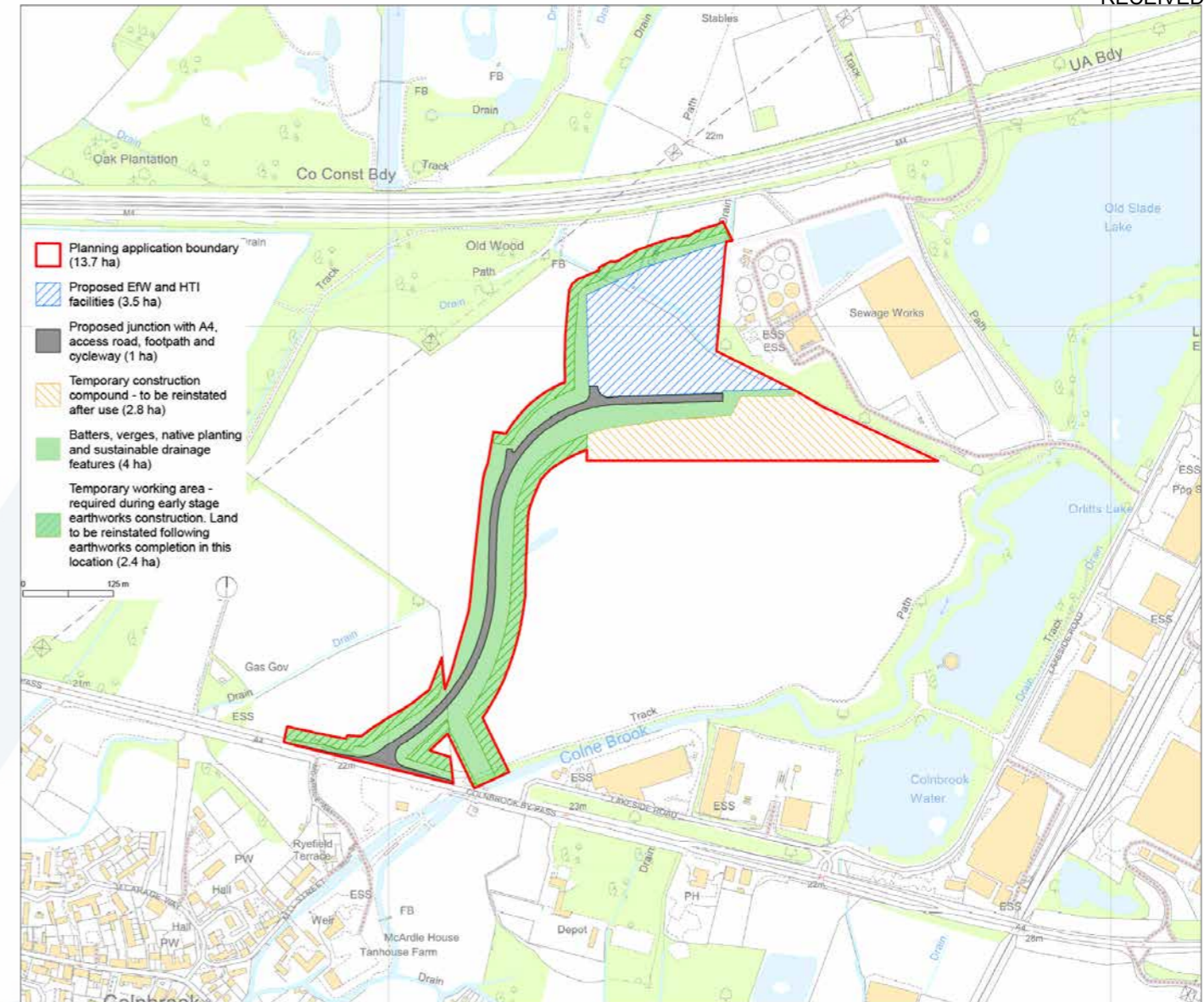
- Site
- 'The landscape character of the site'
- Site topography – Level and location of the proposed site
- Orientation of the site together with the shape and proportion of the site
- Taking advantage of existing tree stands for visual and acoustic screening
- Existing adjacent buildings and structures
- These site specific considerations influenced the site layout, building orientation and massing

3.2. A number of alternative sites were considered. Please refer to the Alternative Sites Assessment report.

#### Site Details

- 13.7 ha Planning application boundary comprises:
- 3.5 ha for the EfW and HTI facilities
- 1 ha for the junction with the A4 Colnbrook by-pass, access road, foot path and cycleway
- 4 ha for batters, grass verges, native planting and sustainable drainage features
- 2.4 ha temporary working area (required during the early stages of earthworks / construction only (land to be reinstated following completion of earthworks in these locations)
- 2.8 ha temporary construction compound that will be reinstated after use

3.3. The proposed 13.7 ha development site is located approximately 600 m to the north west of the existing Lakeside EfW and HTI facility at Colnbrook, Slough (figure DS006).



DS006 - Proposed site plan with temporary compound and access road highlighted

3.4. The site will be accessed via a new road off the A4 Colnbrook by-pass (approximately 650m to the west of the existing Lakeside Road junction) and the proposed temporary construction compound for the development will be situated immediately south of the main replacement EfW and HTI site.

3.5. The topography of the main site generally slopes down from the south west to the drainage ditch which crosses diagonally from the south east to the north west. The north east part of the main site is flat. The south east of the site is approximately 26 m AOD and the north eastern extent of the site is approximately 21 m AOD, a difference of 5m.



DS007 - Site Panaramic from public footpath to the west



DS008 - Site panoramic from east

3.6. There are a number of small buildings / temporary structures near the northern site boundary, which are associated with the shooting club that currently occupies part of the site. The southern half of the main EfW and HTI site and the temporary construction compound comprise part of the restored Tanhouse Farm landfill, which was licensed between 1975 and 1991 to take liquid sludge, industrial and inert material. The restored landfill is currently used for open grazing land. The proposed access road also traverses the landfill / open grazing land along its length, until it meets the A4 Colnbrook by-pass.

DS009 - Entrance into shooting club



DS010 - View into shooting club from footpath 2a



3.7. Beyond the scrub and open grassland used by the clay shooting club, which extends beyond the northern boundary of the proposed main EfW and HTI site, is a public right of way (bridleway 2a), a tree belt, the M4 motorway and beyond this, more scrub / open grassland and the Richings Park Golf Club.

DS011 - Private road leading to TW sludge works



DS012 - Private road into TW sludge works



3.8. Thames Water's Iver South Sludge Dewatering Centre is situated to the immediate east of the main EfW and HTI site and temporary construction compound, and beyond this are the Colne Brook, the public bridleway (No 2a) and a public footpath (6a), a series of four lakes, Lakeside Road (a private road), a number of large-scale industrial units (including the existing Lakeside facilities), the Colnbrook Branch Line and the M25.

3.9. To the south of the main EfW and HTI site and the temporary construction compound, the restored landfill / open grazing land extends south, as far as the Colnbrook and the A4 Colnbrook by-pass. Beyond the by-pass is a mix of scrub and business uses (vehicle parking, café and depots) and then the residential areas of Colnbrook and Poyle.

3.10. Restored landfill / open grazing land, a section of bridleway 2a and an area of mature trees known as Old Wood, are located to the west of the main site and temporary construction compound. To the west of the proposed access road is landfill / open grazing land, electricity pylons and beyond this, Biffa's restored Colnbrook landfill, which extends almost to Sutton Lane in Brands Hill.

DS013 - Public Footpath 2a facing site boundary



DS014 - Public Footpath 2a looking west



3.11. Heathrow Airport is situated approximately 2 km to the south east of the proposed EfW and HTI site. The Civil Aviation Authority (CAA) is responsible for the implementation of the Public Safety Zone (PSZ) around Heathrow Airport. PSZs are areas of land at the ends of the runways at the busiest airports, within which development is restricted in order to control the number of people on the ground at risk of death or injury in the event of an aircraft accident on take-off or landing. The PSZ for Heathrow Airport has recently been remodelled by the CAA to reflect the proposed expansion plans and provision of a third runway. The proposed site for the replacement EfW and HTI is outside of the remodelled PSZ.

### Site Appraisal

3.12. The site of the main replacement EfW and HTI facilities currently comprises a mixture of scrub / open grassland, mature trees and restored landfill which is being used for open grazing and a shooting club. The proposed access road and temporary construction compound are also located on the landfill / open grazing land.

3.13. Electricity pylons run close to the western boundary of a short section of the proposed access road. The Richings Park Clay Shooting Club currently operates on the northern half of the main replacement EfW and HTI site and there are a couple of small buildings / structures near the northern boundary associated with this use.

3.14. A sludge dewatering centre is located immediately to the east of the main EfW and HTI site and the temporary construction compound, and beyond this are large scale industrial land uses, including the existing Lakeside EfW and HTI facilities. The land to the south of the main site is restored landfill / open grazing land, and the land further west is also restored landfill. To the north is grassland with the M4 motorway beyond.

3.15. Bridleway 2a is situated to the north and west of the main EfW and HTI site. To the east (close to the north east corner of the sludge dewatering centre) the bridleway takes a southerly course, adjacent to the Colne Brook, it also connects with a footpath that goes north, across the M4. To the west of the main site, the bridleway follows a southerly course until it connects with the A4 Colnbrook bypass.

3.16. A public right of way (bridleway 2a) runs close to the main EfW and HTI site's northern and western edges. The amenity of this route is heavily affected by the presence of the M4 immediately to the north and Heathrow Airport to the south west. The nearest existing residential dwellings are approximately 400m from the main replacement EfW and HTI site boundary and approximately 140m from the proposed new access road on the A4.



DS016 - View towards northern boundary from site



DS017 - View from Public Footpath 2 over M4 looking south-west

DS015 - View towards northern boundary from site



### Site History and Surrounding Context

3.17. A review of historic mapping shows the northern part of the main replacement EfW and HTI site to have been in agricultural use. However, the southern part of the main site, the temporary construction compound and the access road lies within a historic landfill, which infilled previous sand / gravel workings from the late 1960s. To the east of the site is the Iver South Sludge Dewatering Centre, with the existing Lakeside EfW and HTI facilities beyond to the south east. The Iver South centre first appears on the 1932 Ordnance Survey mapping (named at this time as Iver Sewage Works).

3.18. There are no areas of outstanding natural beauty in the vicinity of the site. The site is not covered by any landscape designation and there are no footpaths within the main replacement EfW and HTI site itself, although a public right of way (bridleway 2a) runs along the main site's northern and western edges and will cross the route of the proposed access road.

3.19. The southern part of the main EfW and HTI site, the access road and temporary construction compound is landfilled, which forms part of a 7m high dome shape.

3.20. Colnbrook is the closest conservation area to the site, located approximately 70m to the south of the access road junction with the A4 Colnbrook by-pass.

3.21. There are three further conservation areas, approximately 2 km to the south east, east and north east. There is a scheduled monument (two concentric ditches showing as a cropmark) approximately 2 km to the north east of the main site.

3.22. The main sensitive visual receptors in the area are the existing residential properties at Brands Hill to the west, Colnbrook and Polye to the south and south west, properties along Old Slade Lane to the north and users of local footpaths and bridleways.

3.23. To the south east of the site beyond the Thames Water Iver South Sludge Dewatering Centre is Lakeside Road which has a number of storage, distribution and light industrial buildings including DHL Heathrow Flight Assembly Centre and Lakeside Logistic Centre. Further east, accessed off the A4 is the Wilson James Colnbrook Logistic Centre building, and further north the Aggregate Industries Asphalt plant which is characterised by large scale industrial storage silos, conveyor and building structures.

DS020 - DHL distribution centre on Lakeside Road



DS021 - View to existing EfW on Lakeside Rd



DS022 - Aerial view of existing EfW plant from south west



DS018 - View towards Aggregate Industries from PROW06



DS019 - View towards Aggregate Industries from PROW06



## 4. Amount of Development

### Design Principle – Brief

- 4.1. The proposed EfW/HTI is a like for like replacement for the existing Lakeside EfW/HTI and will be owned and operated by Lakeside EfW Ltd. The replacement will therefore continue to provide for circa 440,000 tonnes per annum of residual municipal solid waste and commercial and industrial waste, and up to 10,000 tonnes per annum of clinical and other similar wastes.
- 4.2. The main components of the proposals are the EfW, the HTI, the external ancillary buildings, parking, landscape, traffic circulation and the new access road. The EW elements include:
- Tipping, (reception), hall and storage bunker
  - Waste handling and feed hoppers
  - Moving grate furnaces
  - Bottom ash handling system
  - Boilers, steam turbines powering electricity generators, and air cooled condensers
  - Provision of steam off-takes on the turbines for heat export – subject to suitable heat customer being identified.
  - Air Pollution Control (APC) residue pre-treatment
  - Control room
  - Stack
  - An administration and amenities facility
  - 2no. Gatehouse with two weighbridges and associated structure

### Design Development

- 4.3. The design principles have largely been determined by the need to replicate the existing plant on a like for like basis, but also by current sustainability, energy conservation and waste management policies and the relationship of the proposed EfW facilities with the site. These factors have informed the design process.
- 4.4. The proposed site is slightly larger than the current site which has allowed the design to become more energy efficient in terms of relationships between buildings. By locating the turbine building closer to the main boiler, heat lost has been minimised as the existing EfW plant had to re-route the high temperature steam back through the building and out under the tipping hall.

- 4.5. The proposed EfW building has marginally increased in footprint to provide a building envelope for the competitive tender process for the main plant, that allows a number of plant manufacturers/providers to bid for the scheme, however the proposed plant building remains the same height as the existing EfW.
- 4.6. The HTI building has been closely integrated into the new scheme as opposed to being a separate element as it is currently.
- 4.7. It was important for the design of the other buildings on site to be informed by the architecture of the main EfW building to provide a consistent design language throughout the site. The use of materials such as split face blockwork and metal cladding alongside design cues from the form of the main building, such as the curved roof shapes and curved walls in plan and elevation inform the designs of these ancillary structures. This holistic design approach for the buildings across the site provides a more harmonious form for the structures.
- 4.8. The design was also informed by researching examples of analogous Energy from Waste facilities to provide an understanding of the current types of materials, forms and palettes of colours which are used in exemplar plant buildings of a comparable scale and use.



DS023 - Ardley ERF



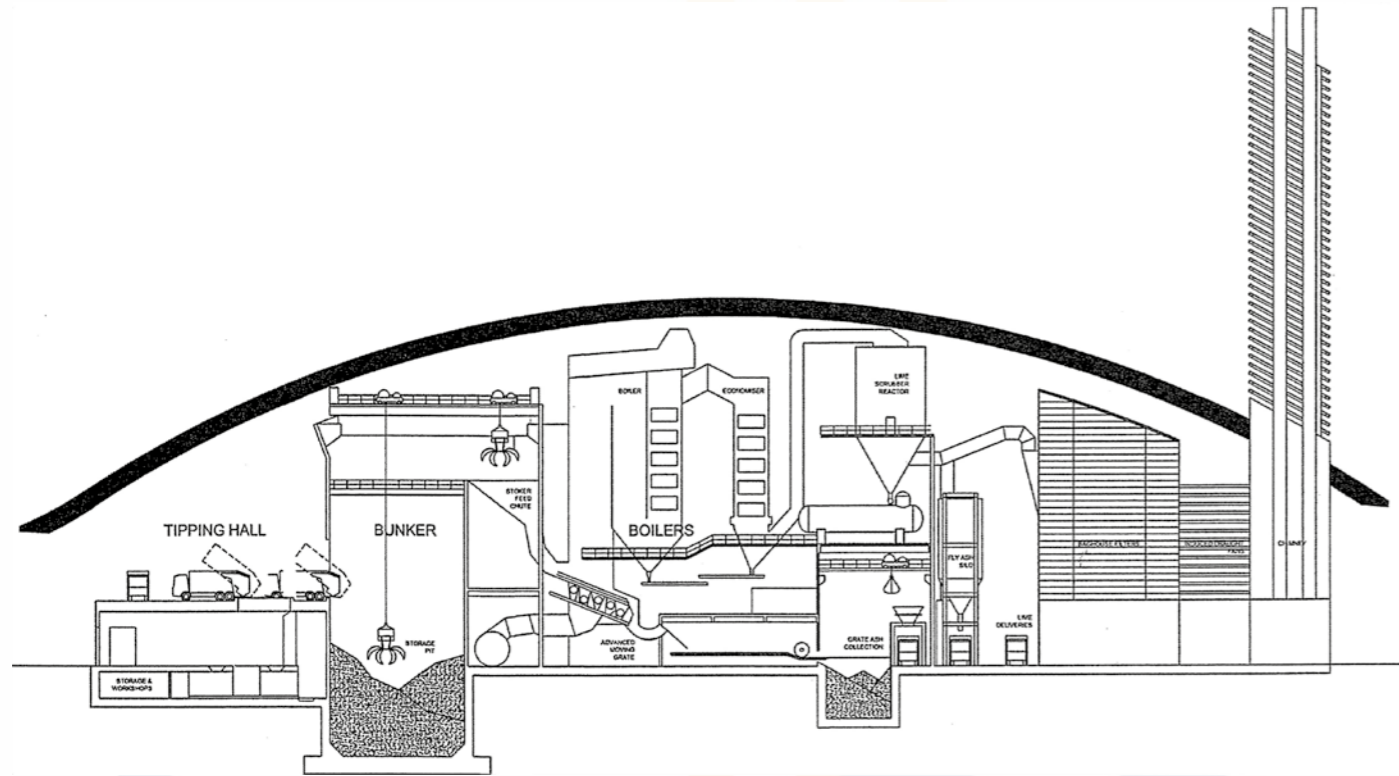
DS024 - Dunbar ERF



DS025 - Newhaven EfW

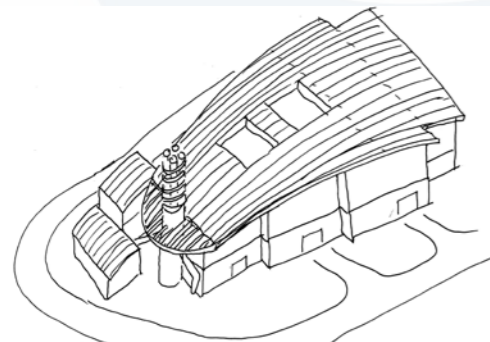
## Evolution of the Design

4.9. A key design driver which heavily influenced the evolution of the original scheme was its surroundings. The curved roof profile was seen as being less obtrusive within the landscape context compared to other architectural forms. This approach is still relevant and was implemented accordingly. The basic form of the main EfW building was derived by striking a line around the cross section of the required plant on the longer side of the main EfW building. This form was then further refined to provide the final sinuous form.

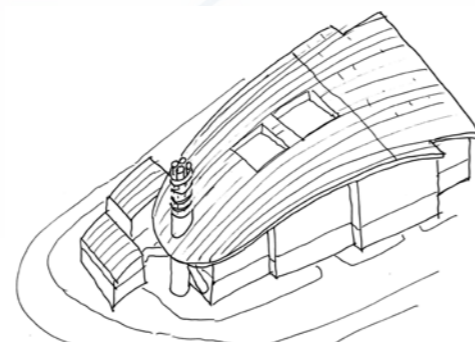


DS026 - Cross section profile

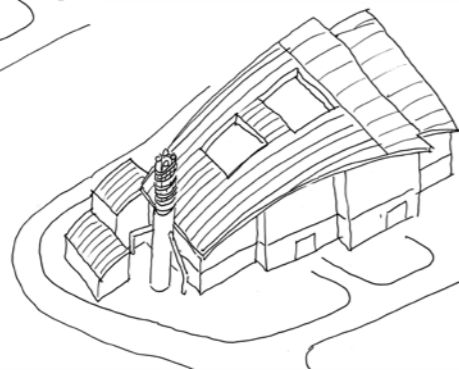
4.10. Fig.DS027 to Fig.DS029 show initial roof massing studies and the relationship between the main plant and the HTI.



DS027 - Roof massing option 01



DS028 - Roof massing option 02

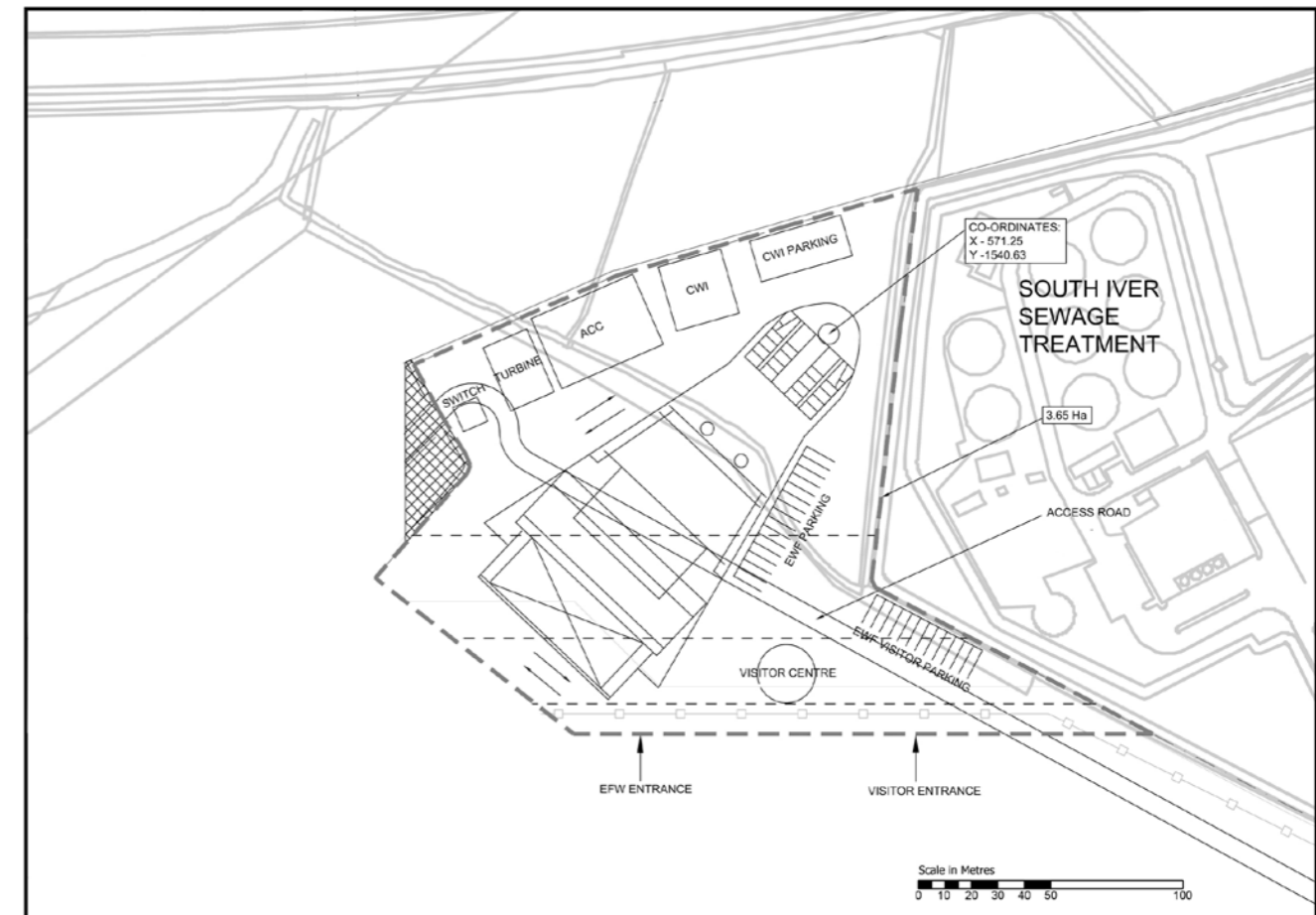


DS029 - Roof massing option 03

4.11. It is paramount that the design should try to fit in and work within the site contours. The final forms evolved through working closely with the structural engineers in finding a geometry that was suitable, not only in terms of buildability, but also to be engaging and aesthetically pleasing.

4.12. It was also important to contain all the main EfW individual elements in one cohesive design and to ensure that the scheme did not have unnecessary spread or clutter.

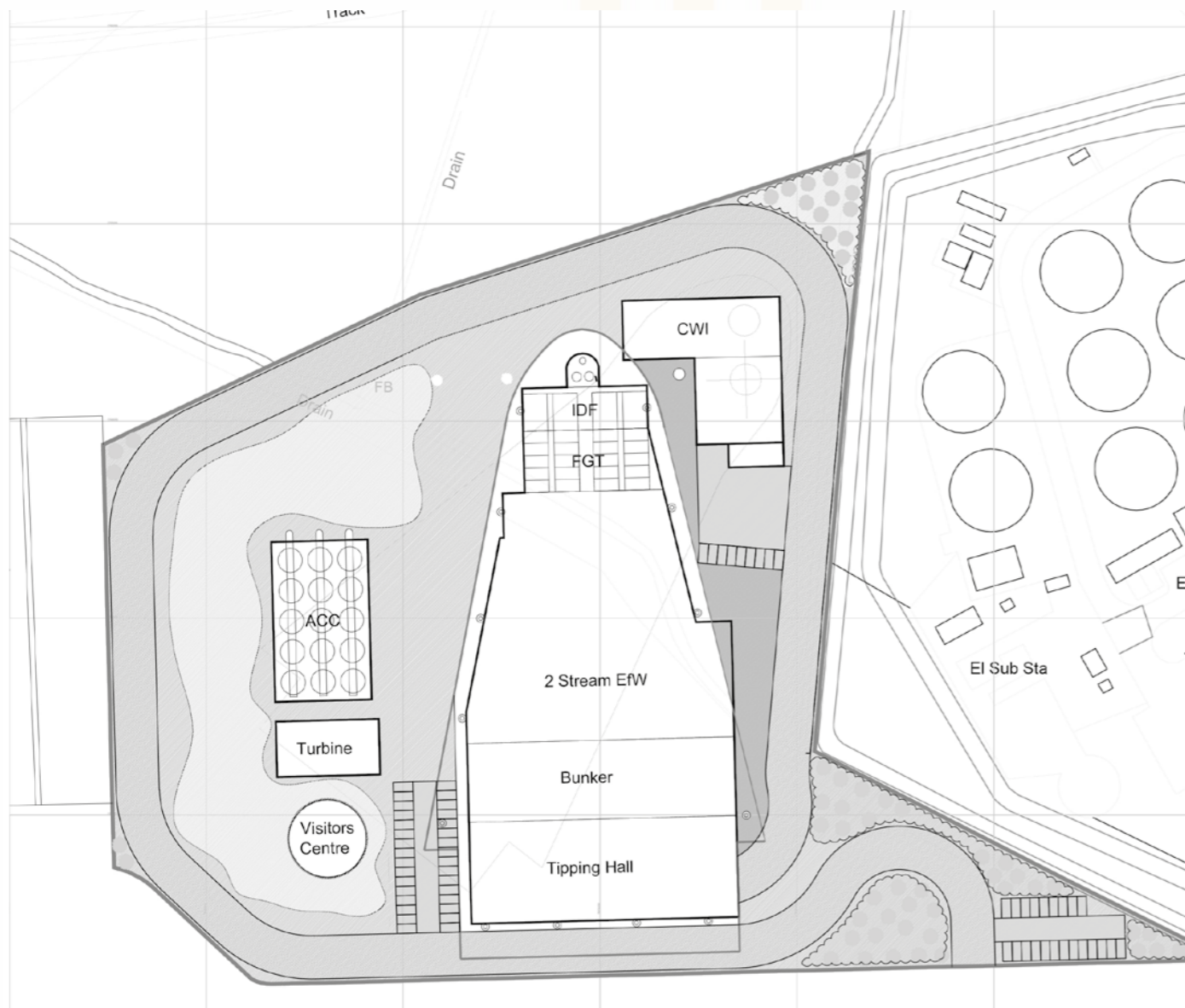
4.13. Various site layout options were explored. The initial design proposal showed the plant running on a north-east to south-west axis with ancillary structures placed along the northern boundary. We considered that this site layout was not efficient in terms of movement and resulted in poor spatial relationships between the various elements. It would also be difficult to have a rationalised transport route around the plant to serve the various elements. (Fig:DS030)



DS030 - Site layout option 01

4.14. These two considerations, relationship between buildings and rationalisation of transport routes, became the key principles in the design in terms of their form and setting out on site. The available area of the site is maximised and allows for the placement of ancillary buildings in a more regimented layout by orientating the building North-South, and locating it closer to the built up structures of Thames Water Sludge Dewatering Centre, with an access route around the perimeter.

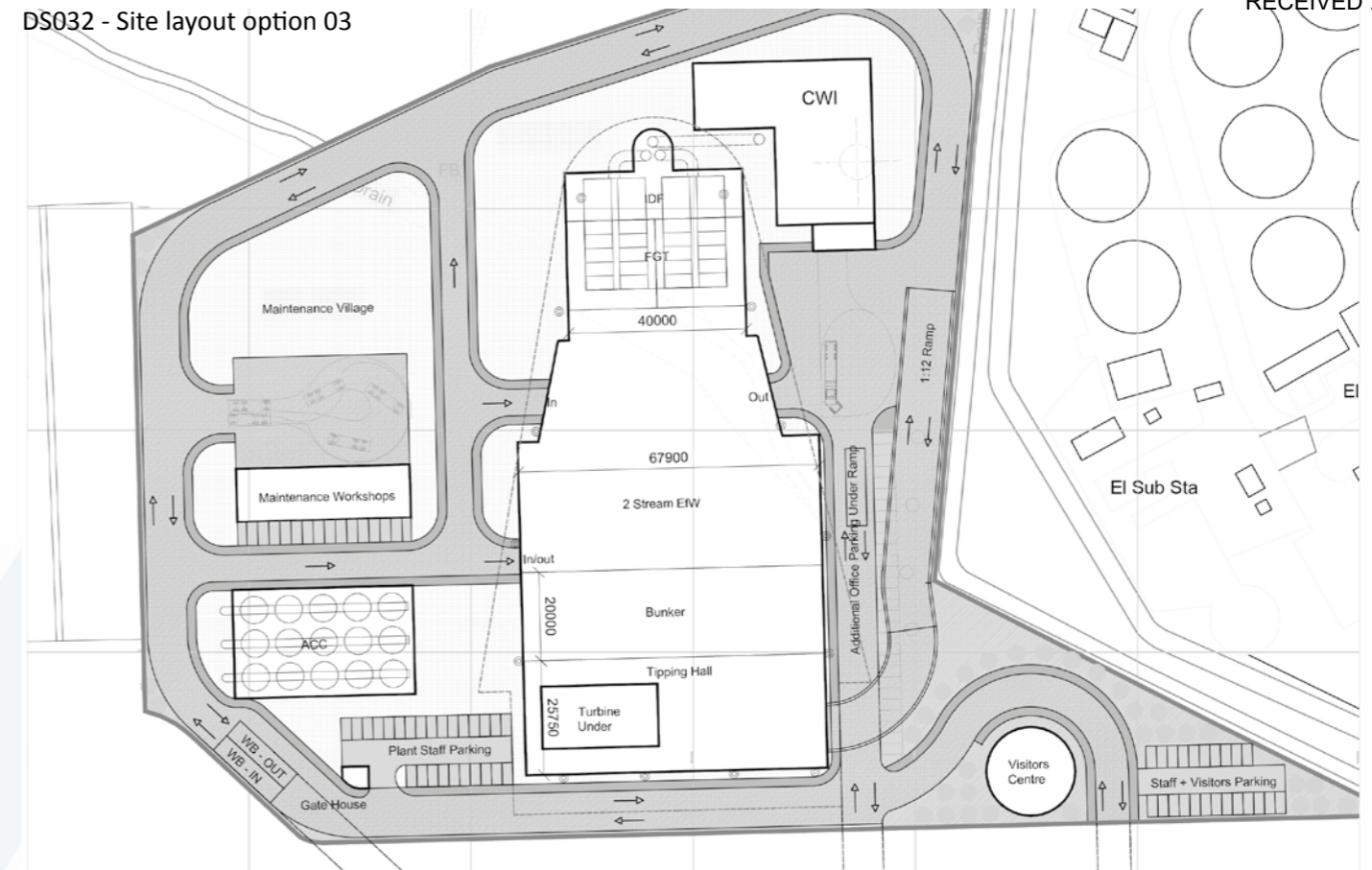
4.15. Functionally, the high temperature incinerator (HTI) building needs to be located near the end of the main EfW process so that it can share the same vertical stack. The turbine hall and ACC need to be located adjacent to the boilers in order to maximise the energy efficiency of the plant. Design option shown in Fig.DS031 shows all these principles with the addition of the visitors centre located on a new man-made lake forming a buffer between the perimeter and the main plant. Having a north-south orientation for the plant also minimise the outline of the main EfW building when viewed from Richings Park to the north, and Colnbrook to the south.



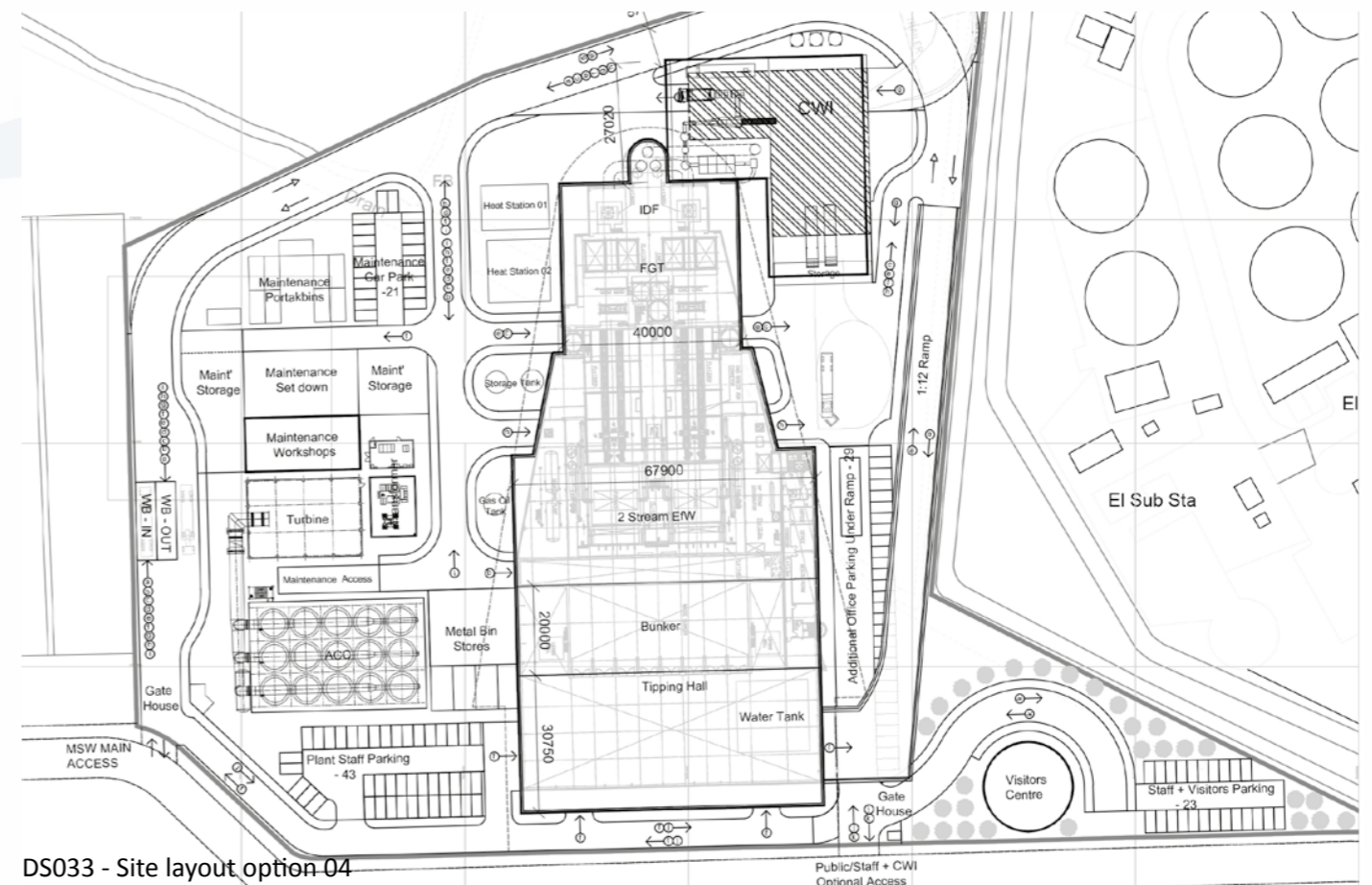
DS031 - Site layout option 02

4.16. The brief from the client was expanded from the original scheme to include additional ancillary buildings such as a maintenance workshop, and a 'maintenance village' which comprises dedicated site accommodation for maintenance contractors. Traffic flows around the plant were also considered to allow vehicles to enter the main plant building in a number of locations for chemical deliveries, removal of both bottom ash and APCR and to utilise an access ramp up to the tipping hall. The visitors centre was removed from the lake in the previous design iteration and located to the south-east corner of the site in order to separate heavy and light traffic routes. Refer to Fig: DS032.

DS032 - Site layout option 03

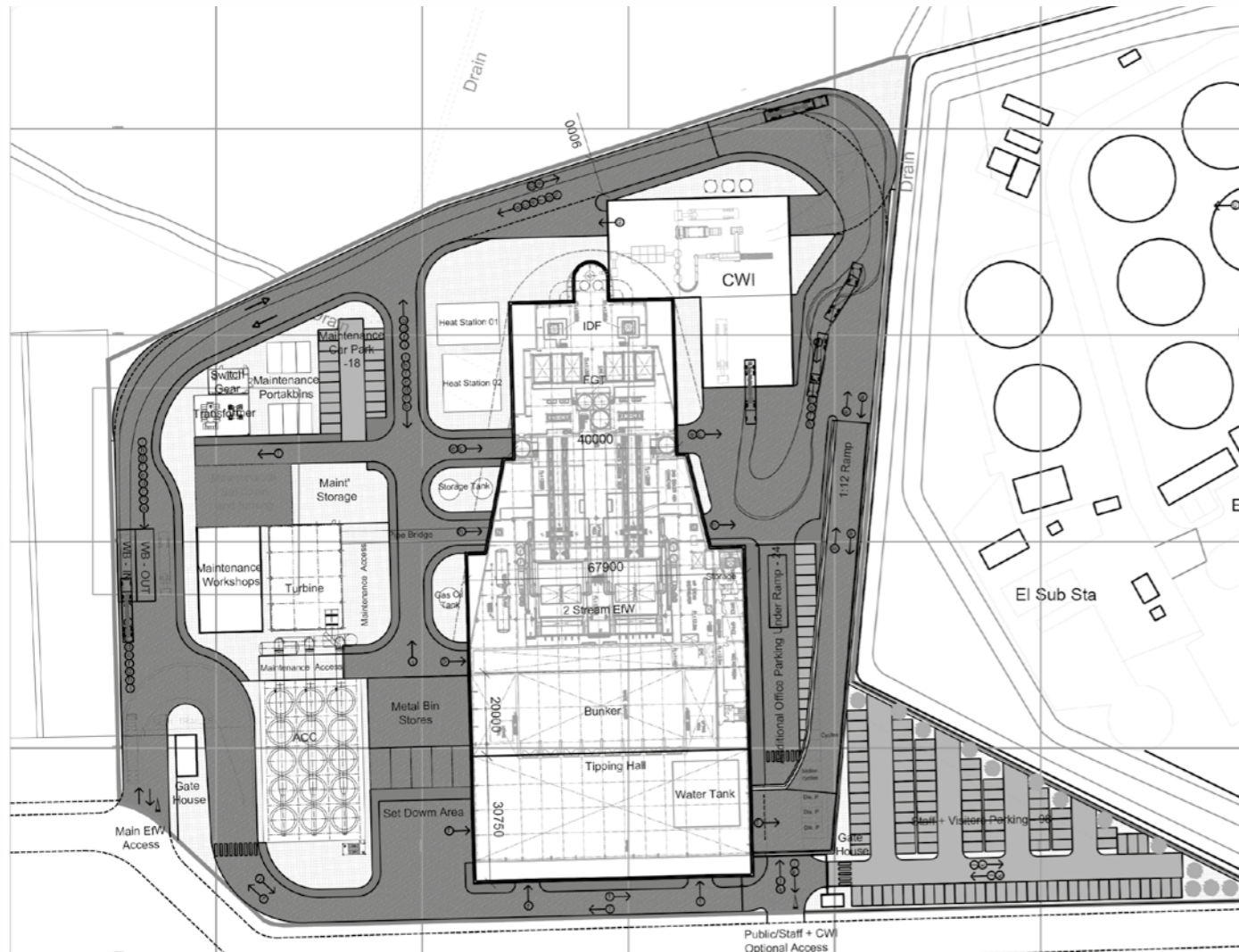


4.17. Fig. DS033 further refined the site plan in terms of the client brief and access routes around the buildings. The principal main entrance was re-located to the corner of the site to suit the proposed access road direction of flow and the HTI was more closely integrated into the main plant.



DS033 - Site layout option 04

4.18. Fig. DS034 rotated the ACC to run north to south aligned with the turbine building. The maintenance workshop was relocated adjacent to the turbine hall with a drop down area and storage yard located between it and the maintenance village. The education/visitors centre was relocated to be incorporated into the main building within the office accommodation on the ground floor due to a requirement from the client to bring the location of the proposed education centre in line with their other plants and facilities.



DS034 - Site layout option 05

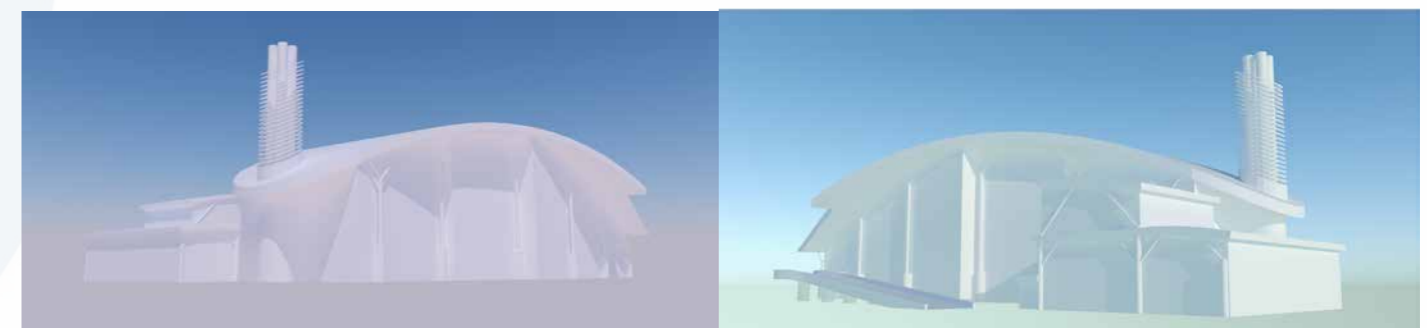
4.19. By evaluating the site, technical processes and constraints/opportunities, the final siting and orientation of the plant is directly informed by its site context. The application site was visited jointly with landscape experts to identify landscape and visual opportunities and constraints. These were fundamental in informing the location of the building and creating the rationale for the design approach.

4.20. The design was developed so the main plant outline was as small as possible when viewed from the villages of Colnbrook, Iver and Richings Park whilst taking into account site constraints of the existing tree line and M4. The noisier elements (air-blast condensers) on the site were located to the west, furthest away from properties along Old Slade Lane.

4.21. As described above, various other locations within the site boundary were explored and evaluated during the design phase, but it became apparent that the final location chosen was the most logical in achieving our set aims.

4.22. As stated, various building forms were investigated during the design process and it quickly became apparent that a curved building profile would offer the best solution in relation to the context.

4.23. These curved forms were explored and evaluated in terms of visual impact, aesthetic quality, and volume in relation to the plant. The design was constantly refined to ensure that the proposed building form was structurally and also economically viable by ongoing consultation with Fitchner, who are the plant and technical specialist for the scheme.

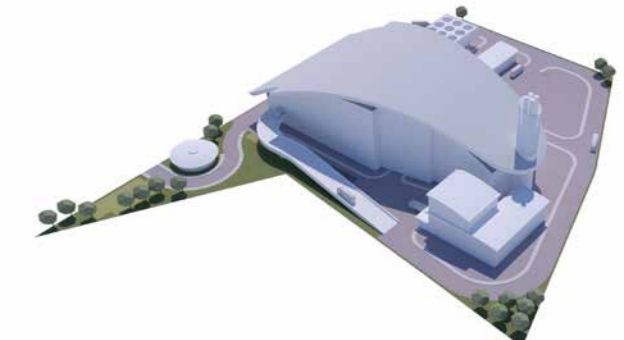


DS035 - 3d massing option 01

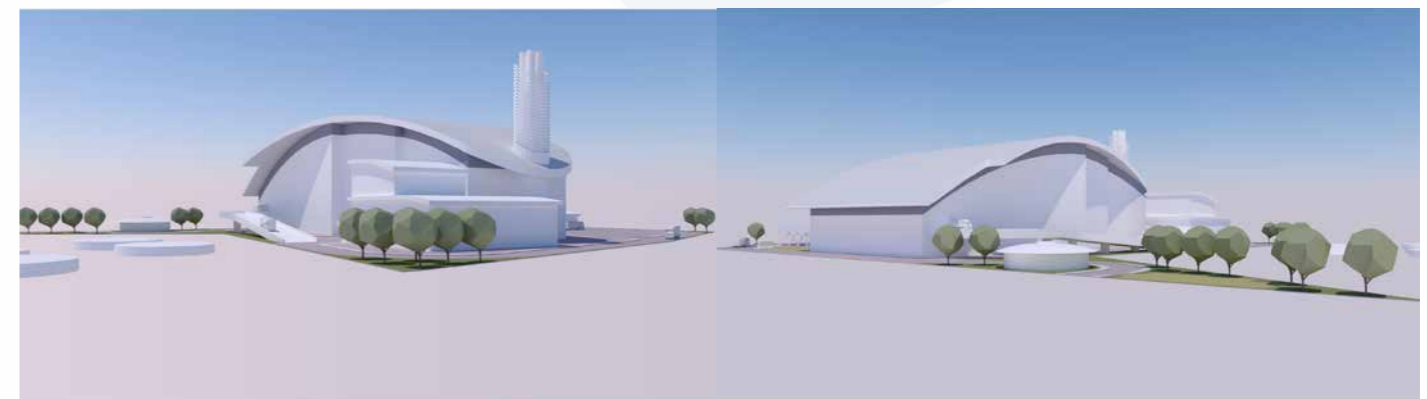
DS036 - 3d massing option 02



DS037 - 3d axonometric south-west

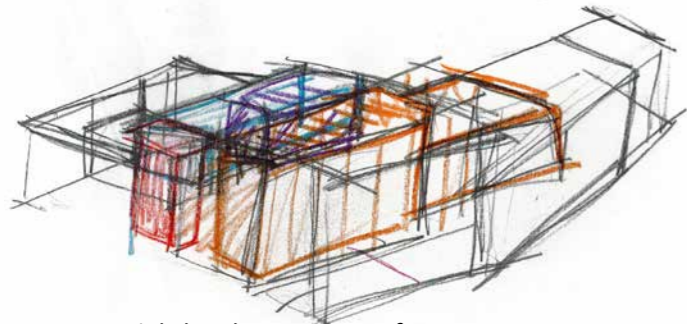


DS038 - 3d axonometric north-east

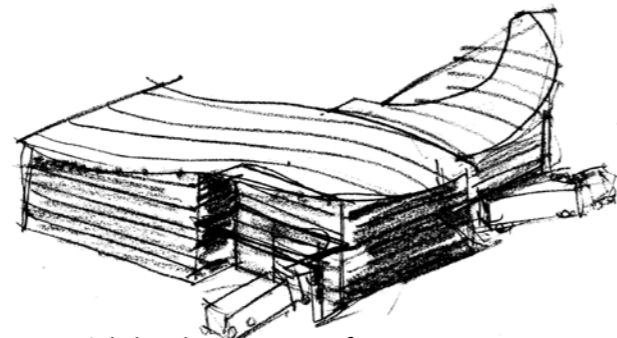


DS039- 3d perspective south-west

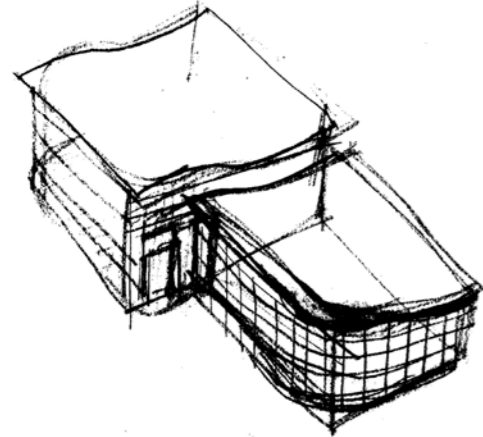
DS040- 3d perspective south-east



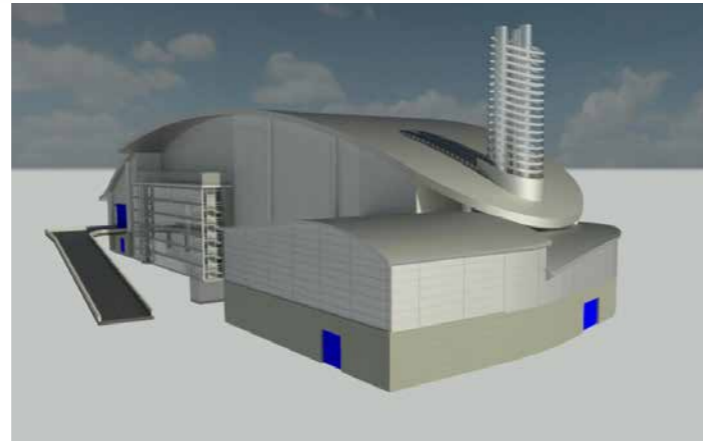
DS041- Initial sketch massing 01 for HTI



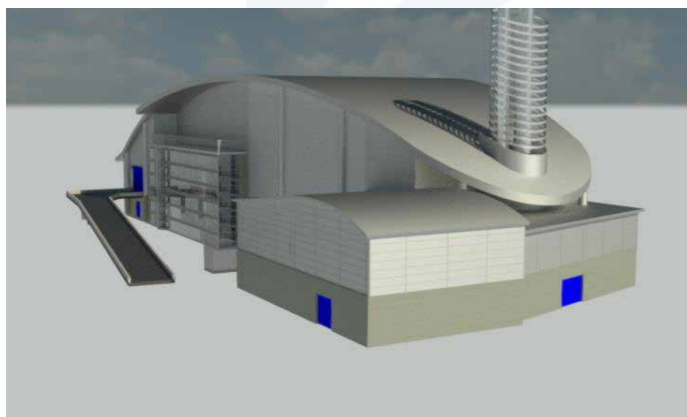
DS042- Initial sketch massing 02 for HTI



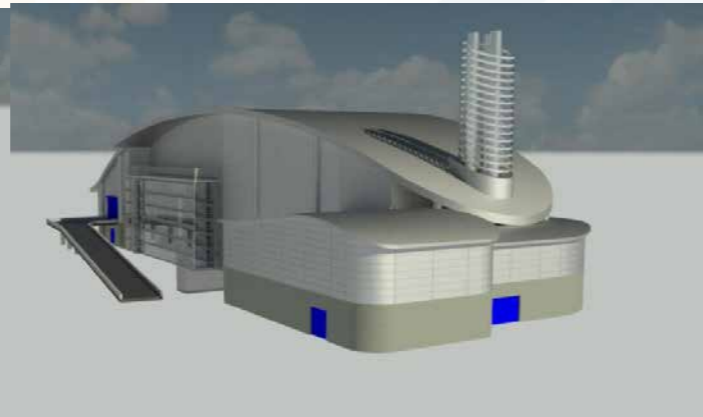
DS043- Initial sketch massing 03 for HTI



DS044- 3D sketch massing 01 for HTI roof junction



DS045- 3D sketch massing 02 for HTI roof junction



DS046- 3D sketch massing 03 for HTI roof junction

## HTI Building

4.24. The design of the HTI building was developed closely alongside the main plant, because as well as being adjacent with roof forms overlapping and a significantly sized structure in its own right, it also shares design elements such as use of the same chimney stack. The client also sought to examine other plant technology within the HTI which meant that the footprint and shape needed to be increased to accommodate this technology. This provided a design opportunity to allow the design to be more closely integrated into the main plant by replicating various radii from the main plant building in plan and curved elements including the sinuous roof profile in section. Various iterations of the HTI were explored and refined to arrive at a form that satisfies the functional requirements and also provides a harmonious, integrated form.

## The development comprises:

### Main EfW plant building:

4.25. This building contains:

- Tipping hall
  - Waste bunker
  - Furnaces (2, twin stream)
  - Steam boilers (2, twin stream)
  - Flue gas cleaning plant (2, twin stream)
  - Induced draft fans (2, twin stream)
  - Chimney stacks (2, twin stream)
  - EfW Ground Floor (excluding office) - 7555 m<sup>2</sup>  
(First Floor Tipping Hall - 2,245 m<sup>2</sup>)
  - Management offices, staff facilities, laboratories and testing facility  
Office GF (incl. Ed-Centre) - 475 m<sup>2</sup>  
Office 1-4 - 1400 m<sup>2</sup> (4x 350 m<sup>2</sup>)  
5<sup>th</sup> Floor Control Room - 533 m<sup>2</sup>
- Total amount of development (GIA): 12,283 m<sup>2</sup>**

### High temperature incinerator (HTI):

4.26. This building adjoins the main EfW plant and contains:

- Reception area
- Loading Bay
- Control room
- Workers amenity provision
- Incineration furnace
- Flue gas cleaning plant
- Induced draft fans
- Chimney stack, contained within main EfW stack structure
- Wheeled Skip Storage

**Total amount of development (GIA): 4550m<sup>2</sup>**

### Ancillary Building/Structures:

4.27. Other building's on site include:

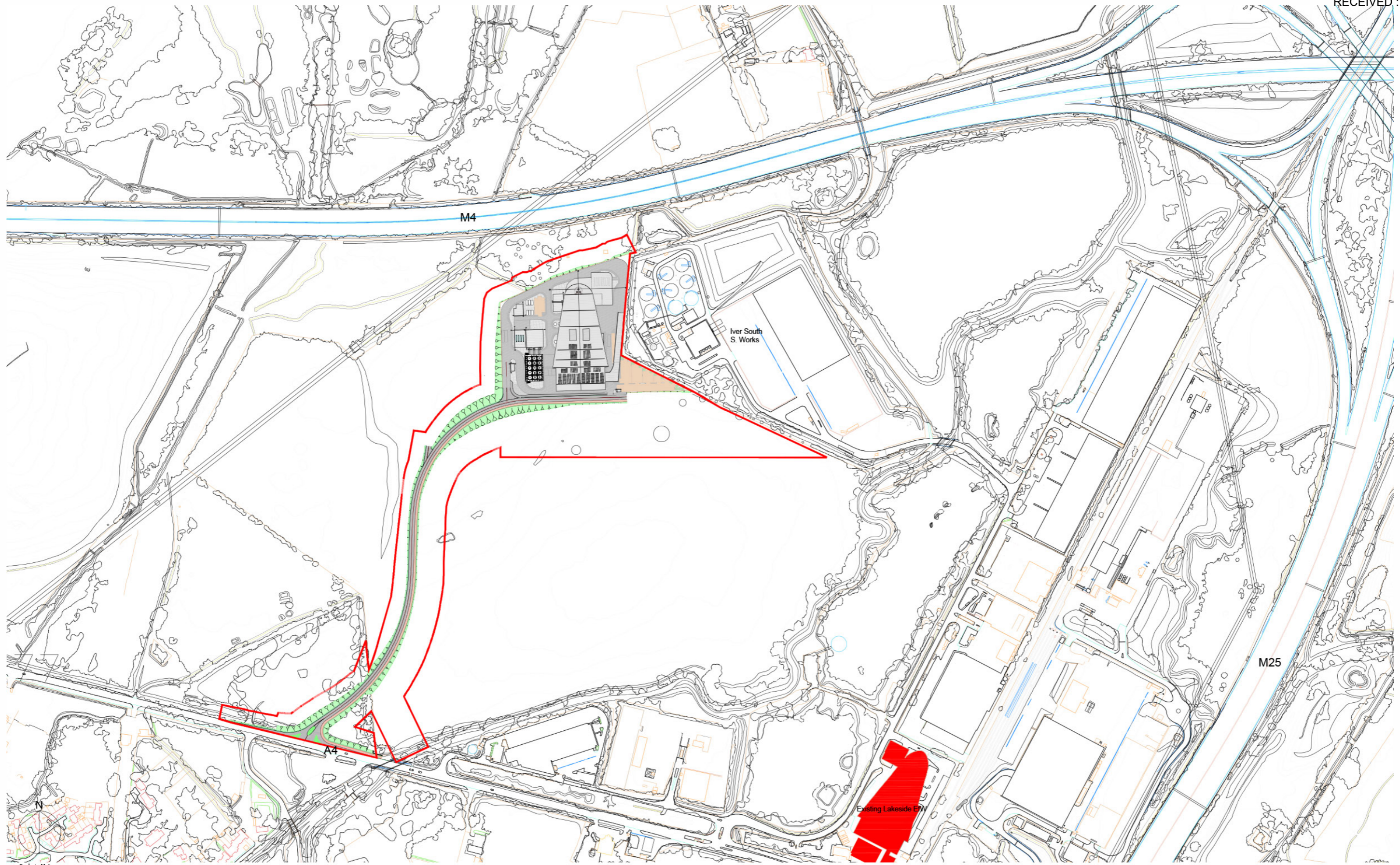
- Air cooled condenser: GIA 1065m<sup>2</sup>
- Steam turbine and electricity generator building: GIA 600m<sup>2</sup>
- Maintenance workshops: GIA 361m<sup>2</sup>
- Heat station building 01: GIA 132.5m<sup>2</sup>
- Heat station buildings 02: GIA 163.25m<sup>2</sup>
- Gate house 01: GIA 47m<sup>2</sup>
- Gate house 02: GIA 13.5m<sup>2</sup>
- Transformer and switchgear housing: GIA 177.5m<sup>2</sup>
- External storage tanks: Varies
- Access Road from A4 is approximately 820m in length, 7.3 wide with 3m cycle path/pedestrian path to the side

4.28. The final design solution is illustrated on the following figures DS048 to DS059.

4.29. The facility will be equipped as noted in the Environmental Statement.

DS047 - South east perspective from car park





Scale in Metres  
0 50 100 200



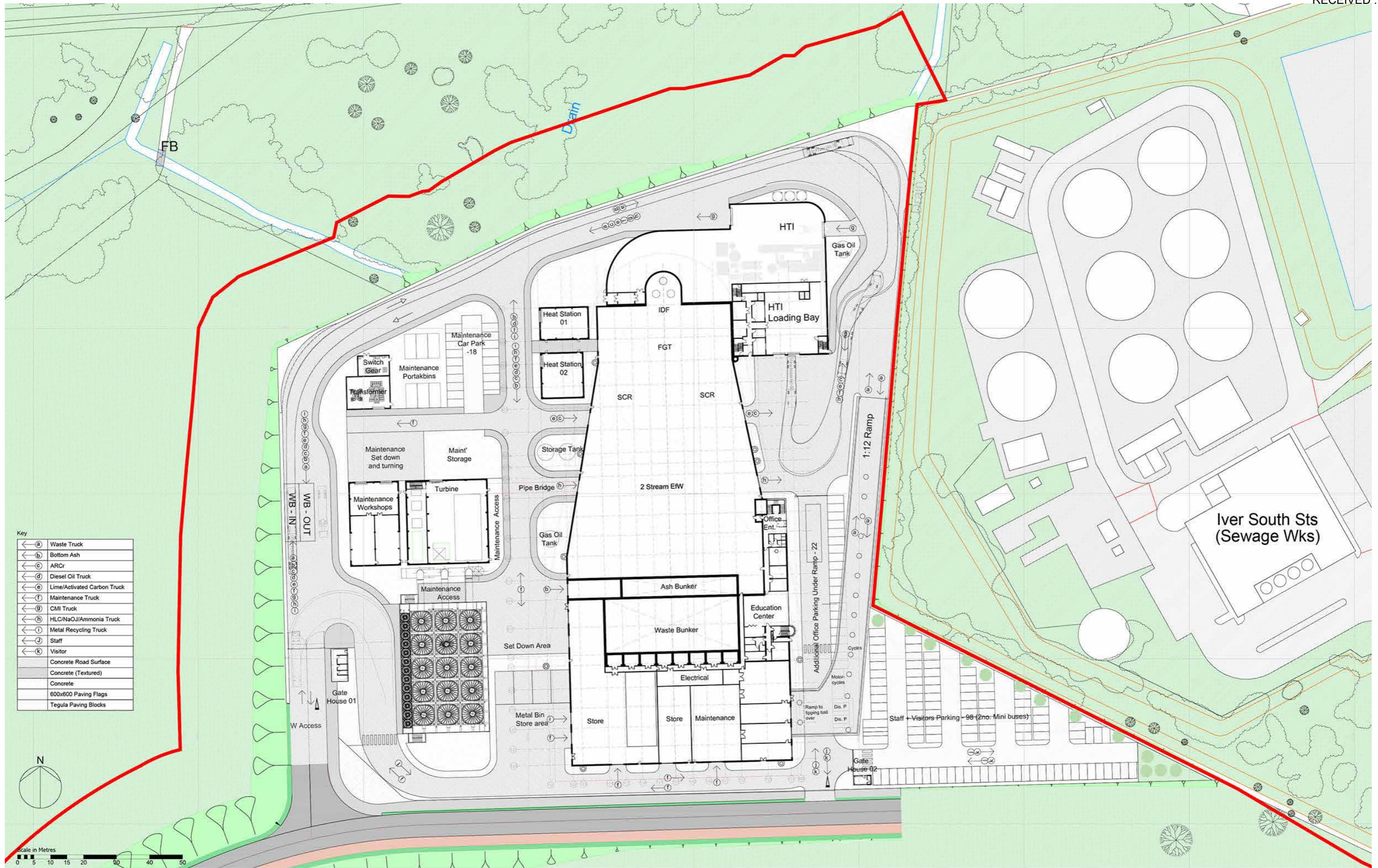
Drawing name

Proposed Site Plan  
Energy from Waste

Client Lakeside EfW Ltd	Orig Project number C1816	Drawing number CCA - SL - XX - DR - A - 101	Suitability S1	Rev. B
Project Name Lakeside 2	Scale 1:2500@A1	First Issue Date May 2019	Drawn by JJ	Checked MC
			Revision date 10/05/2019	



DS048- C1816-CAA-SL-XX-DR-A-101



Key

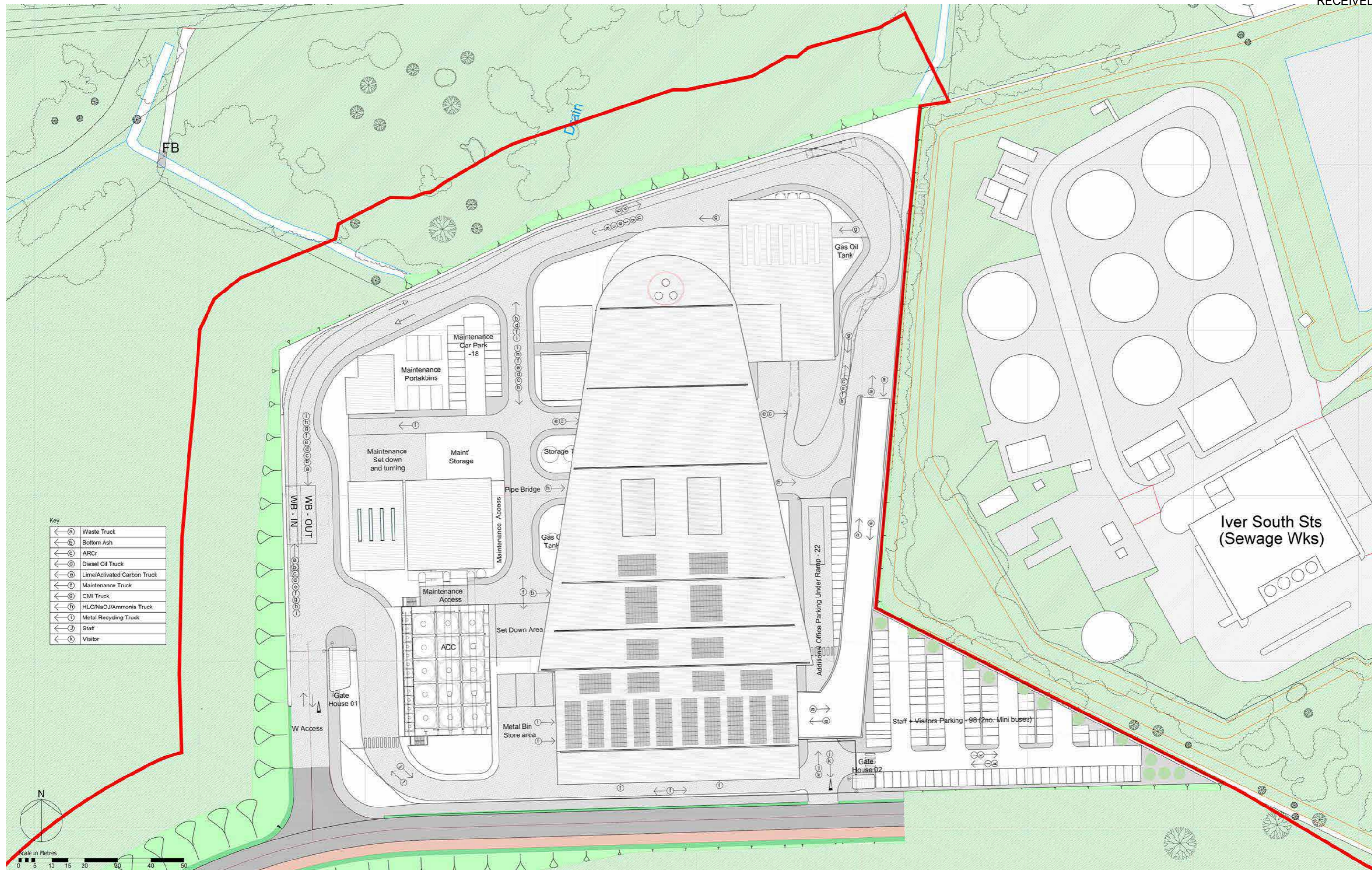
a	Waste Truck
b	Bottom Ash
c	ARCr
d	Diesel Oil Truck
e	Lime/Activated Carbon Truck
f	Maintenance Truck
g	CMI Truck
h	HLC/NaOJ/Ammonia Truck
i	Metal Recycling Truck
j	Staff
k	Visitor
	Concrete Road Surface
	Concrete (Textured)
	Concrete
	800x600 Paving Flags
	Tegula Paving Blocks



Drawing name: **Proposed Site Layout Energy from Waste**

Client <b>Lakeside Ew Ltd</b>	Orig Project number <b>C1816</b>	Drawing number <b>CCA - SL - XX - DR - A - 102</b>	Suitability <b>S1</b>	Rev <b>C</b>
Project Name <b>Lakeside 2</b>	Scale <b>1:500@A1</b>	First Issue Date <b>Oct 2018</b>	Drawn by <b>JJ</b>	Checked <b>MC</b>
			Revision date <b>10/05/2019</b>	

DS049- C1816-CAA-SL-XX-DR-A-102



Key

(a)	Waste Truck
(b)	Bottom Ash
(c)	ARCr
(d)	Diesel Oil Truck
(e)	Lime/Activated Carbon Truck
(f)	Maintenance Truck
(g)	CMI Truck
(h)	HLC/NaOJ/Ammonia Truck
(i)	Metal Recycling Truck
(j)	Staff
(k)	Visitor

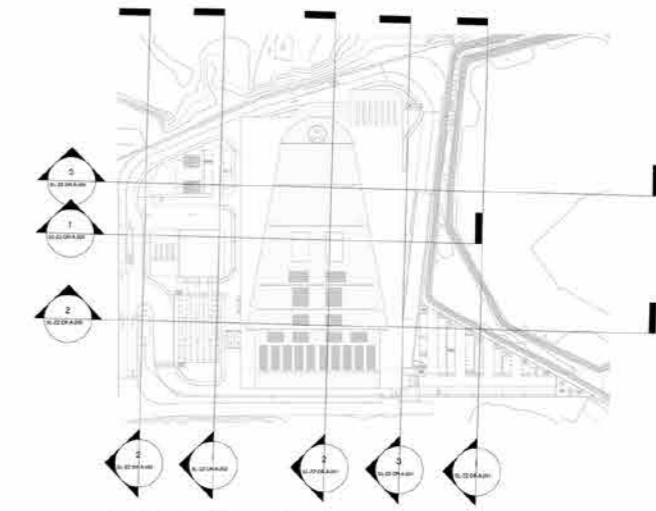


Drawing name

**Proposed Site Roof Layout**  
Energy from Waste

Client Lakeside Ew Ltd	Orig Project number C1816	Drawing number CCA - SL - XX - DR - A - 103	Suitability S1	Rev. B
Project Name Lakeside 2	Scale 1:500@A1	First Issue Date Oct 2018	Drawn by JJ	Checked MC
			Revision date 10/05/2019	

DS050- C1816-CAA-SL-XX-DR-A-103

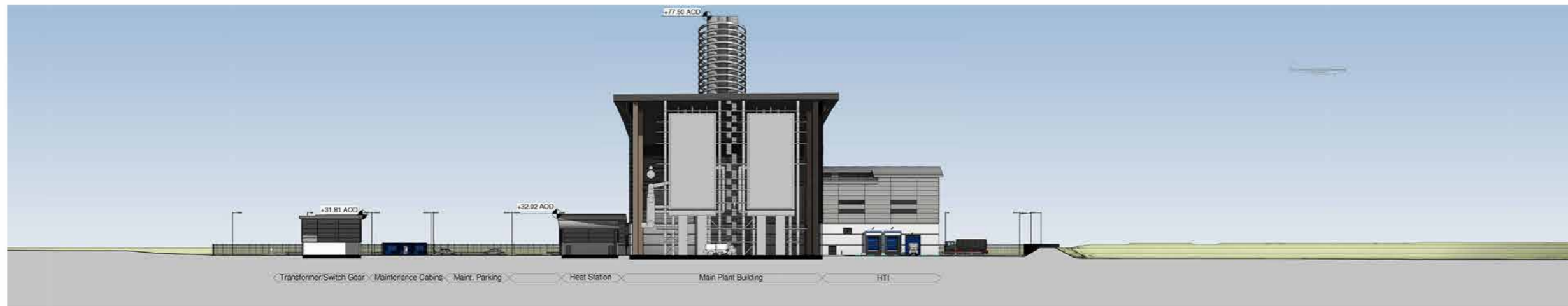


Site Sections Key Plan  
1 : 2000

1 Section 1  
1 : 500



2 Section 2  
1 : 500

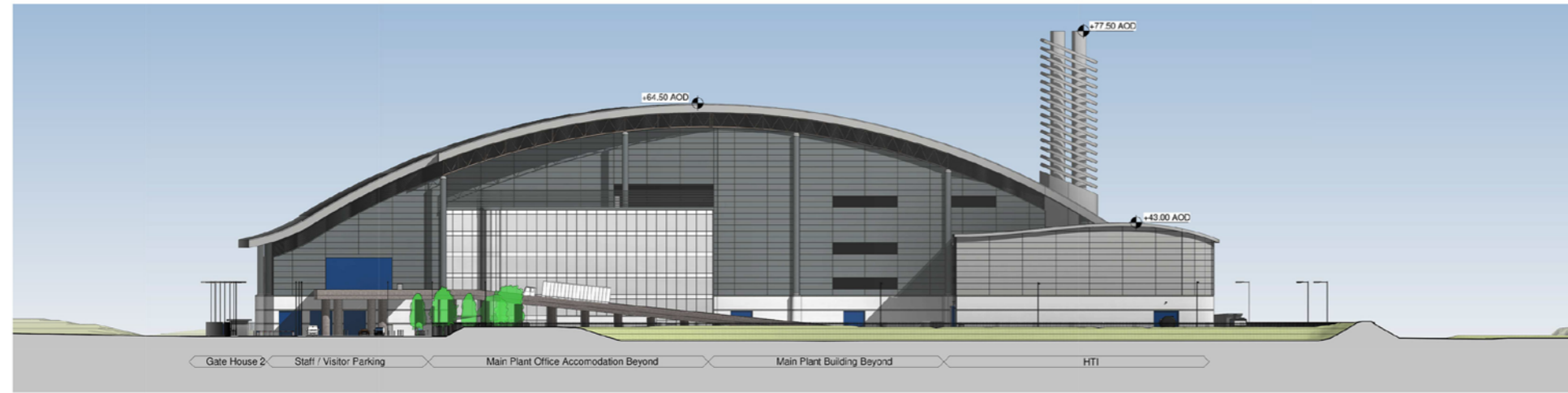


3 Section 3  
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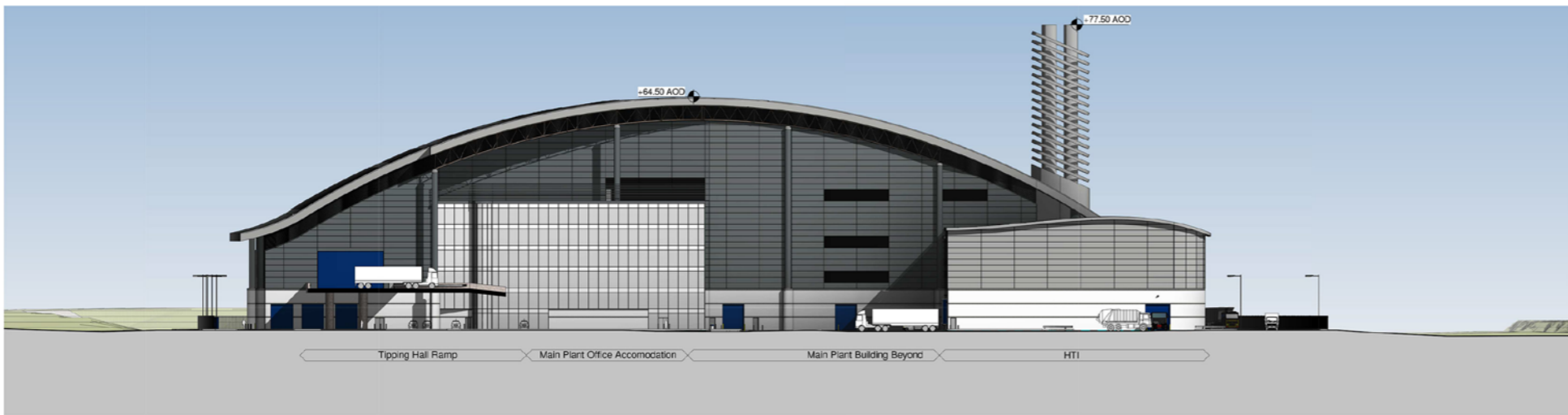


Drawing name  
Site Sections Sheet 1

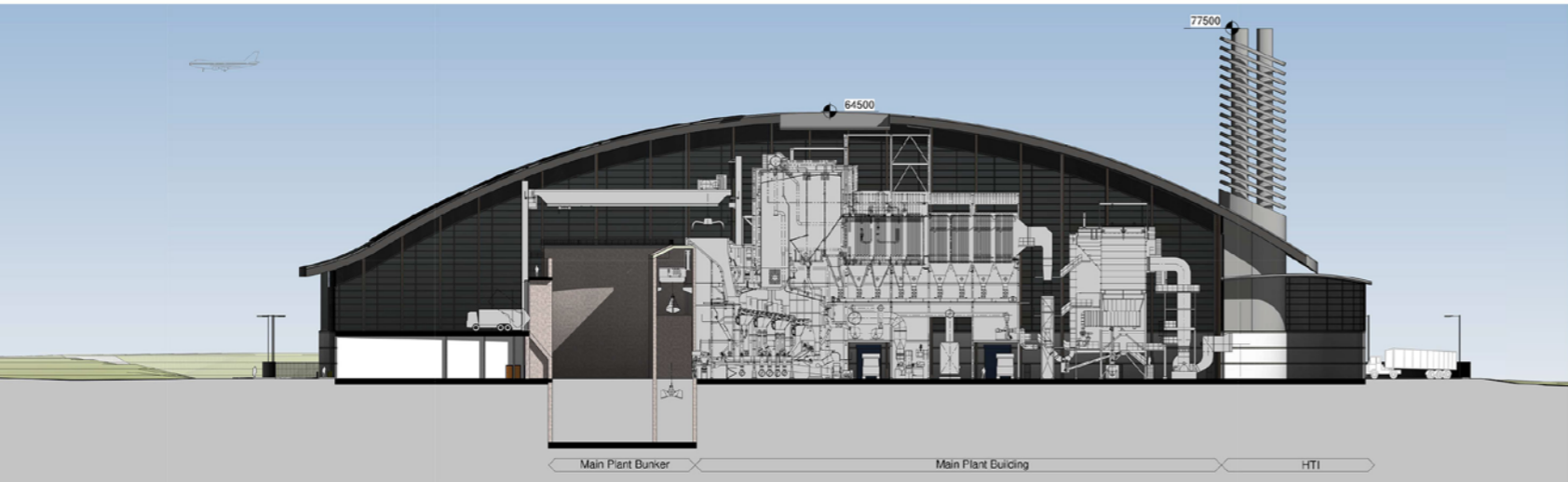
Client Lakeside EFW	Org Project number C1816	Drawing number C1816 - CAA - SL - ZZ - DR - A - 200	Suitability S1	Rev A
Project Name Lakeside 2	Scale As indicated	First Issue Date 10/05/19	Drawn by SH	Check by JJ
			Revision date 17/05/19	



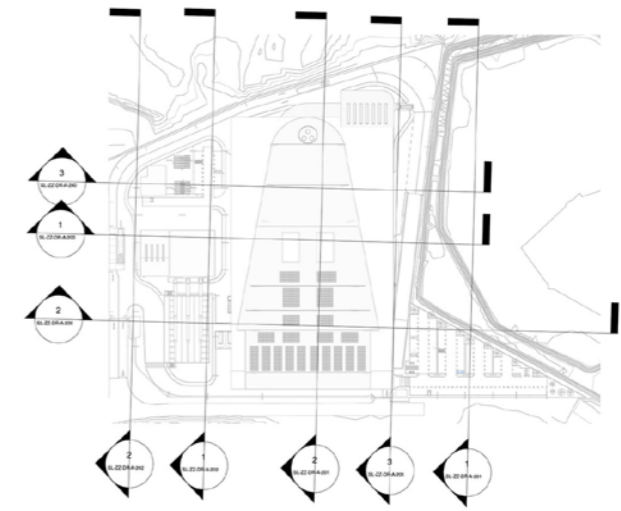
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**3 Section 5**  
1 : 500



**2 Section 6**  
1 : 500



**Site Sections Key Plan**  
1 : 2000



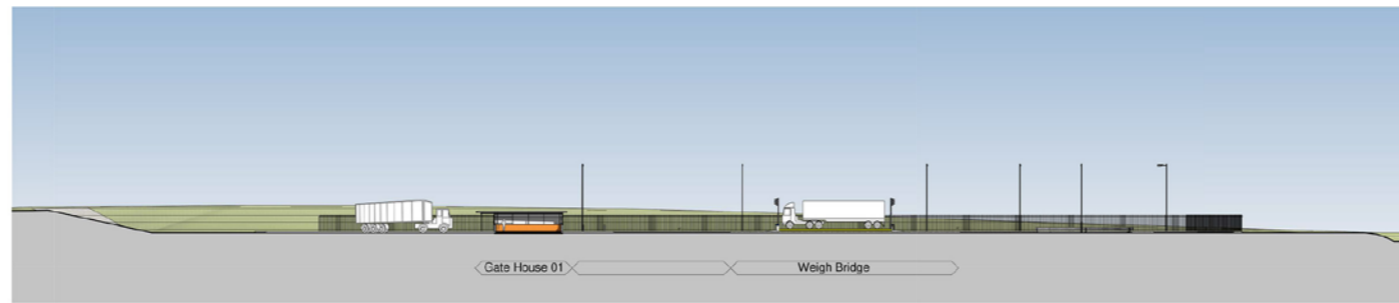
Drawing name  
Site Sections Sheet 2

Client Lakeside EFW	Org Project number C1816	Drawing number C1816 - CAA - SL - ZZ - DR - A - 201	Suitability S1	Rev A
Project Name Lakeside 2	Scale As indicated	First Issue Date 10/05/19	Drawn by SH	Check by JJ
			Revision date 17/05/19	

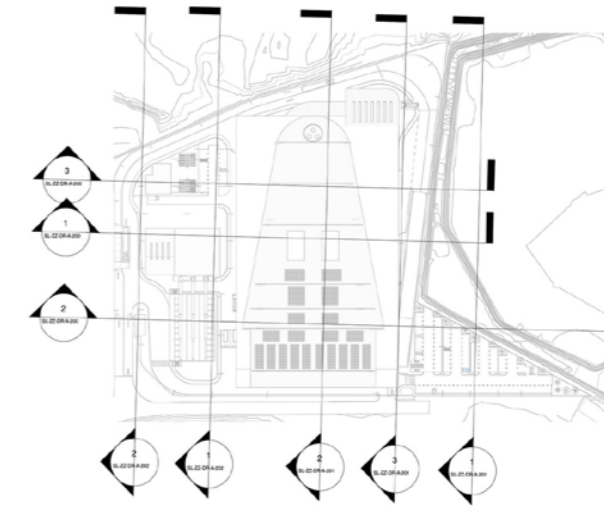
DS052- C1816-CAA-SL-XX-DR-A-201



1 Section 7  
1 : 500

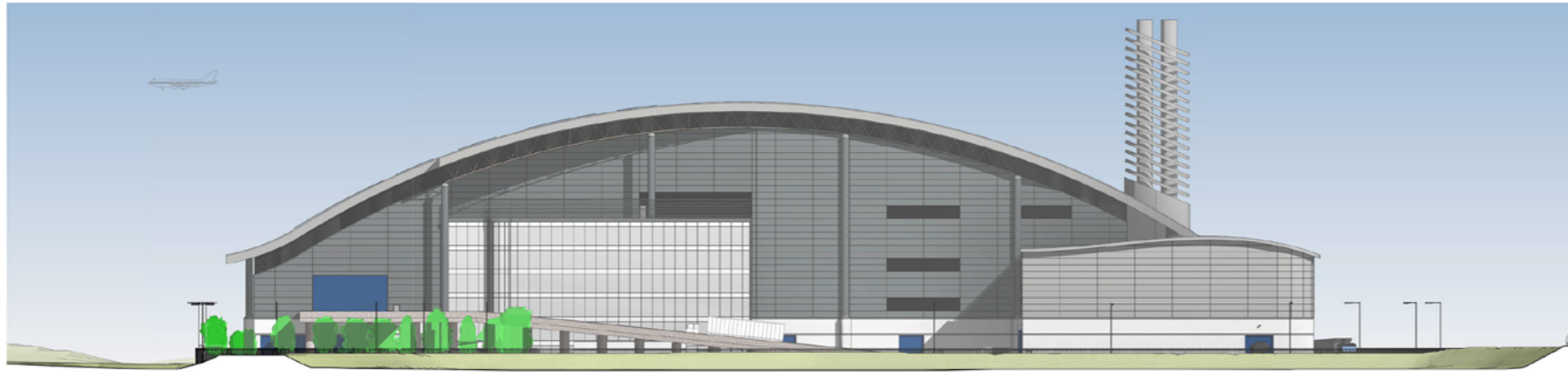
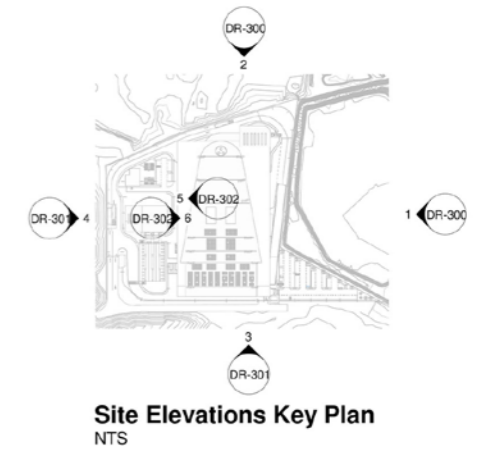


2 Section 8  
1 : 500

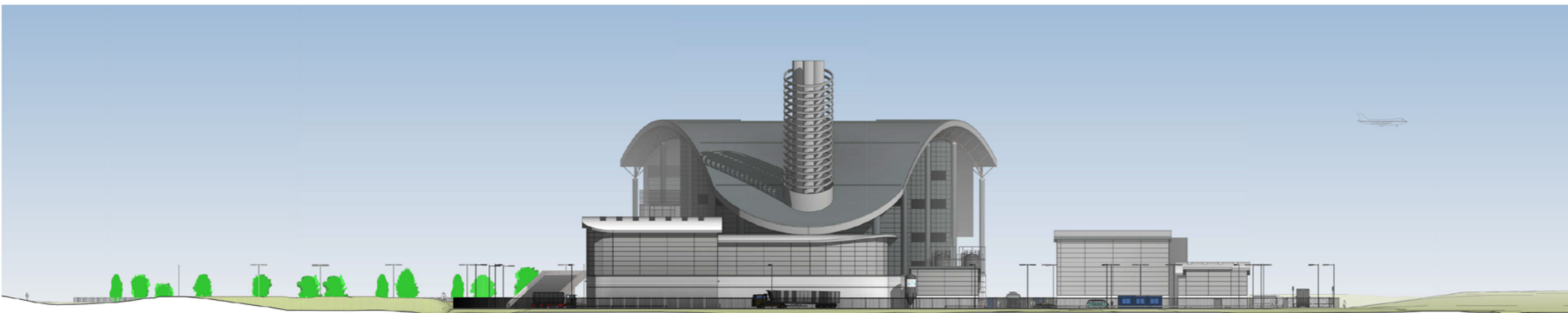


Site Sections Key Plan  
1 : 2000





**1 East Site Elevation**  
1 : 500



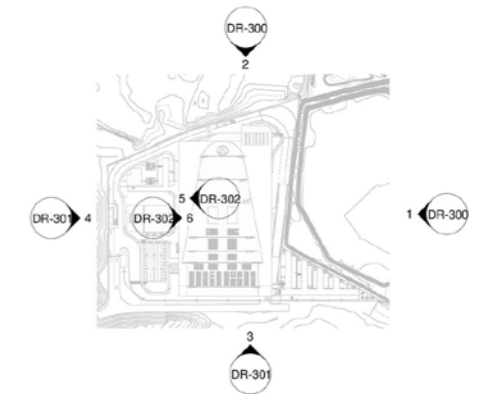
**2 North Site Elevation**  
1 : 500



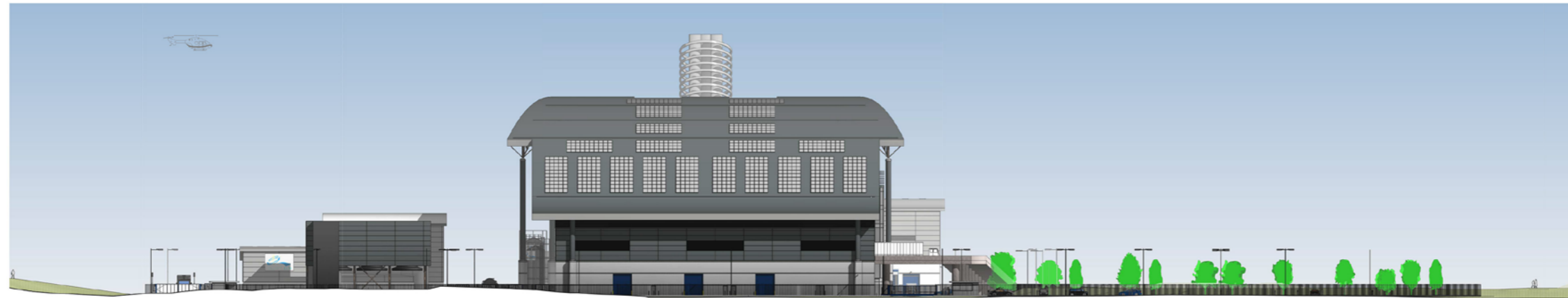
Drawing name  
Site Elevations

Client Lakeside EFW	Org Project number C1816	Drawing number C1816 - CAA - SL - ZZ - DR - A - 300	Suitability S1	Rev A
Project Name Lakeside 2	Scale As indicated	First Issue Date 10/05/19	Drawn by SH	Check by JJ
			Revision date 17/05/19	

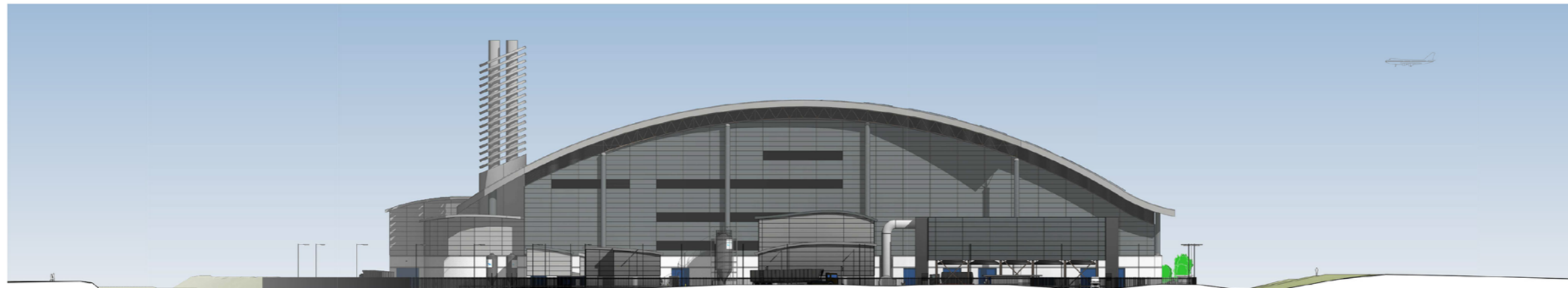
DS054- C1816-CAA-SL-XX-DR-A-300



**Site Elevations Key Plan**  
NTS



**3 South Site Elevation**  
1 : 500

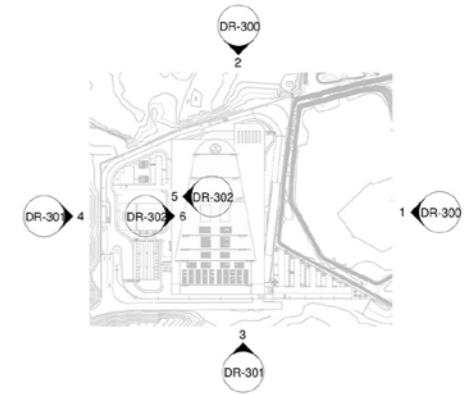


**4 West Site Elevation**  
1 : 500



 CROWTHER ASSOCIATES ARCHITECTS LLP PELHAM HOUSE, 25 PELHAM SQUARE, BRIGHTON, BN1 4ET T: 01273 696535 www.crowtherassociates.co.uk	Drawing name Site Elevations Sheet 2		Client Lakeside EFW	Org Project number C1816	Drawing number C1816 - CAA - SL - ZZ - DR - A - 301	Suitability S1	Rev A	
	Project Name Lakeside 2	Scale As indicated	First Issue Date 10/05/19	Drawn by SH	Check by JJ	Revision date 17/05/19		

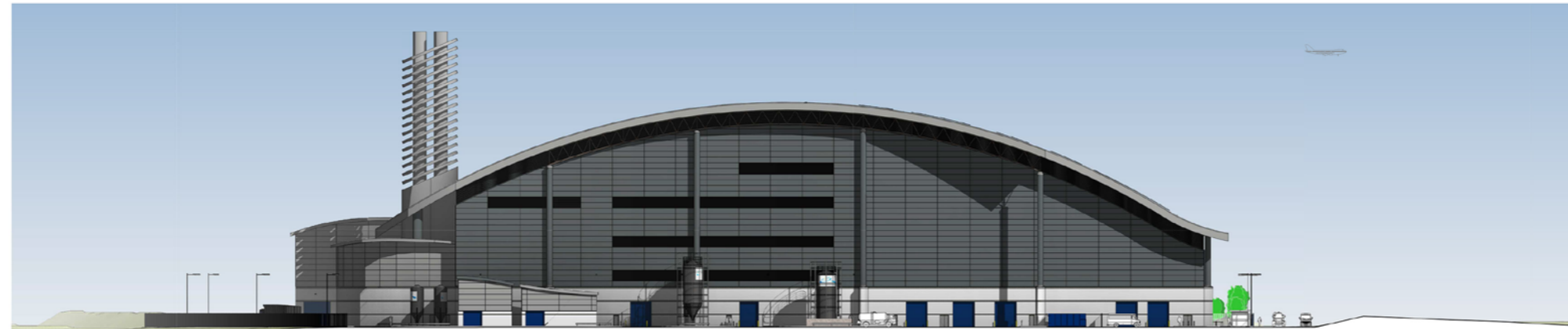
DS055- C1816-CAA-SL-XX-DR-A-301



**Site Elevations Key Plan**  
NTS



**5 East Site Elevation Internal**  
1 : 500



**6 West Site Elevation Internal**  
1 : 500



Drawing name  
Site Elevations Internal Street

Client Lakeside EFW	Org Project number C1816	Drawing number C1816 - CAA - SL - ZZ - DR - A - 302	Suitability S1	Rev A
Project Name Lakeside 2	Scale As indicated	First Issue Date 10/05/19	Drawn by SH	Check by JJ
			Revision date 17/05/19	

DS056- C1816-CAA-SL-XX-DR-A-302

## 5. Proposed Use

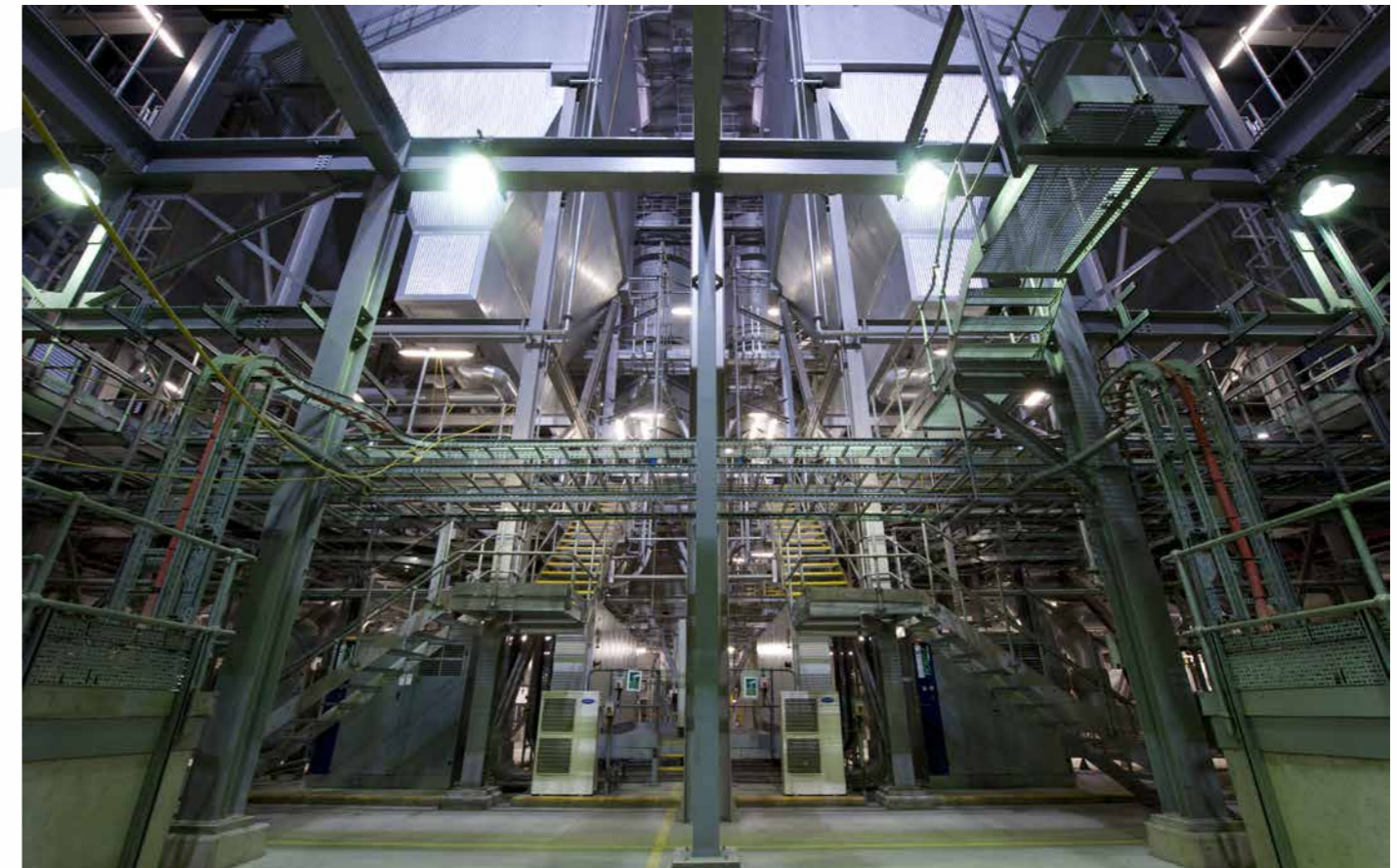
### EfW and HTI Proposal

- 5.1. The proposal is to construct a twin stream waste incinerator to reduce the volume of non-recyclable waste and generate electrical power. The incinerator will utilise well established mass burn technology and the most up to date pollution control equipment.
- 5.2. The proposal is also to construct a High Temperature Incinerator intended to process difficult and hazardous waste.
- 5.3. The proposal is for the replacement of the existing Lakeside EfW and HTI facilities off Lakeside Road. The throughput of the replacement EfW facilities will be 440,000 tonnes per annum (tpa). Similarly, the throughput of the replacement HTI will stay at around 10,000 tpa. Current energy generation is approximately 40 MW (gross power), with 37 MW exported. The replacement facilities are expected to be more efficient and have a gross output of up to 44 MW and export approximately 39 MW.
- 5.4. The proposal involves a like-for-like replacement of the facilities in terms of size, mass, height and building materials. The design of the replacement EfW building will be very similar to the existing Lakeside EfW, with the slightly larger HTI building situated immediately adjacent to the north east of the replacement EfW building, as opposed to the north west on the existing site. Other, relatively small scale ancillary buildings and structures (such as the air-cooled condensers, steam turbine, heat stations, maintenance workshops, maintenance village and the gate house) will be positioned to the west of the main EfW building. Car parking for staff and visitors will be situated both to the east and to the north west of the main EfW building.
- 5.5. Access to the site will be gained from a new access road and junction off the A4 Colnbrook by-pass, approximately 650m west of the existing Lakeside Road junction. A temporary construction compound will be located immediately south of the main replacement EfW and HTI site.
- 5.6. The existing EfW and HTI facilities has operated well within its Pollution Prevention and Control (England and Wales) Regulations 2000 permit since the facilities were commissioned in 2009. The replacement EfW and HTI facilities will employ improved air pollution abatement technology and comply with any new regulations such as the new BAT-AEL (December 2018) draft document, which is aiming to reduce elements such as oxides of nitrogen amongst others. As a result of installing improved abatement technology it will also be possible to reduce the stack height from 75m at the existing facilities, to 55m for the replacement facilities.

- 5.7. The existing EfW and HTI facility includes the Lakeside Education Centre, which is situated at Orlitts Lake. An education facility will be provided within the replaced EfW building and therefore educational tours / visitors will continue to be accommodated.



DS057 - South east axonometric



DS058 -Internal view of existing plant

## 6. Layout

- 6.1. The site layout has been carefully considered and planned as part of the design process.
- 6.2. The final site layout is shown as Fig DS049 and an aerial photograph of the proposed scheme is provided below in Fig DS059.



DS059 -Aerial photograph of proposed EfW

- 6.3. The layout of the main elements of the facilities have been considered with regard to the relationship between buildings and public and private spaces within and around the site.
- 6.4. The site is approached through a new access road which will have a new junction off the A4 to the south.

DS060 -Perspective view of main EfW entrance



- 6.5. The scheme main entrance is located to the south-west and is primarily for HGV's, tipper trucks and maintenance vehicles and consists of a gatehouse and two weighbridges incorporating controlled barrier access are present on the entrance and exit routes. A secondary access located to the south-east is for staff and visitor parking as well as an optional HTI access which also has a small gate house and weighbridge. Parking is also provided for disabled users, motorbikes and 2no. minibuses.



DS061 -Perspective view of staff and visitors EfW entrance

- 6.6. Upon entering the site the waste vehicles will be weighed via the weighbridge and then make their way around the perimeter road which will provide access to the ramp and then up to the tipping hall. Once the load is transferred into the bunker the waste truck will make it to the exit back along the same route and via a 2<sup>nd</sup> weighbridge.



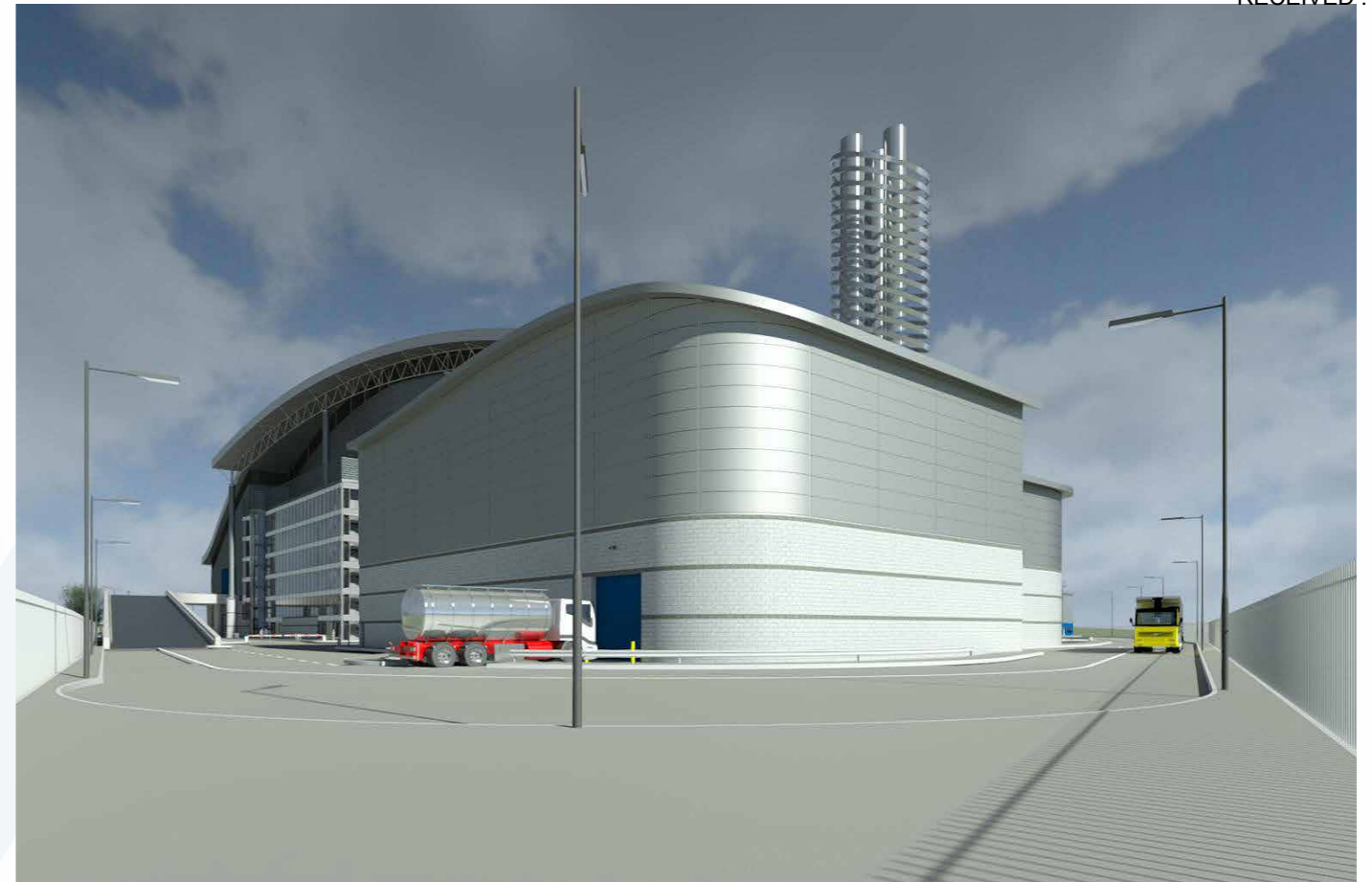
DS062 -Perspective view of main weighbridge

- 6.7. Within the site, the layout seeks to maximise the segregation of members of the public and workforce from potentially dangerous conflicts with large refuse vehicles.
- 6.8. Entry into the site is by means of security gates controlled by security personnel and/or CCTV surveillance cameras from the new access road off the A4 to the south.



DS063 -Perspective view towards EfW building between maintenance and transformer/switch gear buildings

6.9. The internal road system allows other vehicles to access their respective destinations such as the APCr and bottom ash removal vehicle, diesel oil and lime/activated carbon deliveries in a controlled manner.



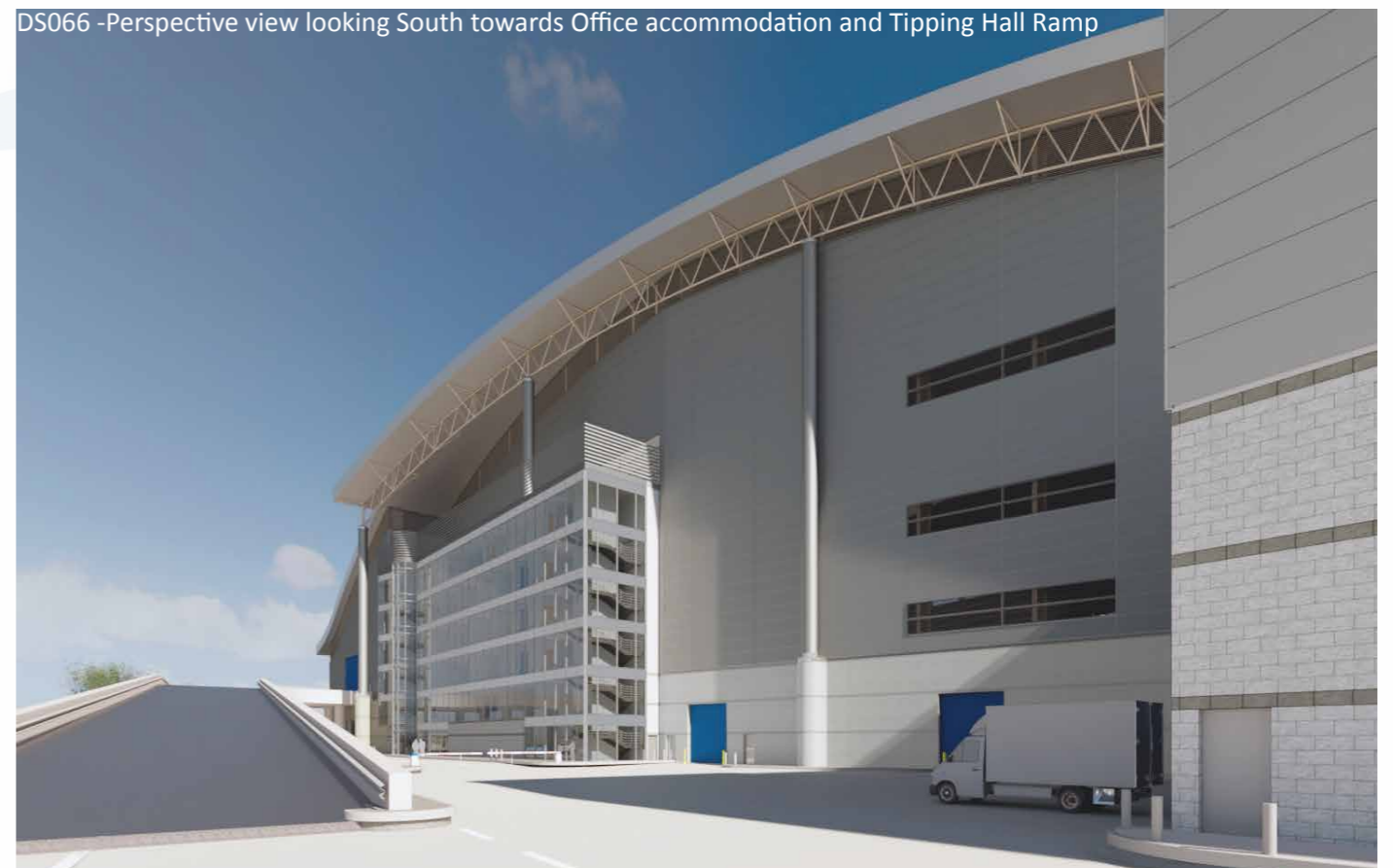
DS065 -Perspective view looking south east towards HTI building and tipping hall ramp

6.11. The waste management process commences at the southern end of the building and works towards the northern end. This process is set by the technical requirements of the plant design.



DS064 -Perspective view looking south between EfW building and turbine hall building

6.10. Vehicles for the HTI have an optional secondary route, however, it is envisioned that during normal working practice these will use the same perimeter road as the main EfW waste trucks, but will turn off, before the ramp, into a turning area in order to make deliveries to the loading dock of the HTI building.



DS066 -Perspective view looking South towards Office accommodation and Tipping Hall Ramp

6.12. The tallest portion of the building is that over the boiler house, at 42m, this being set by the size of the equipment housed within it.

6.13. Air cooled condensers are located in a separate structure.

6.14. The flue stack is located at the end of the process. Its height, of 55m, is set by technical requirements and it has been assessed by HAL in respect to aircraft safety parameters.

6.15. Site administration and welfare facilities are located within the building.

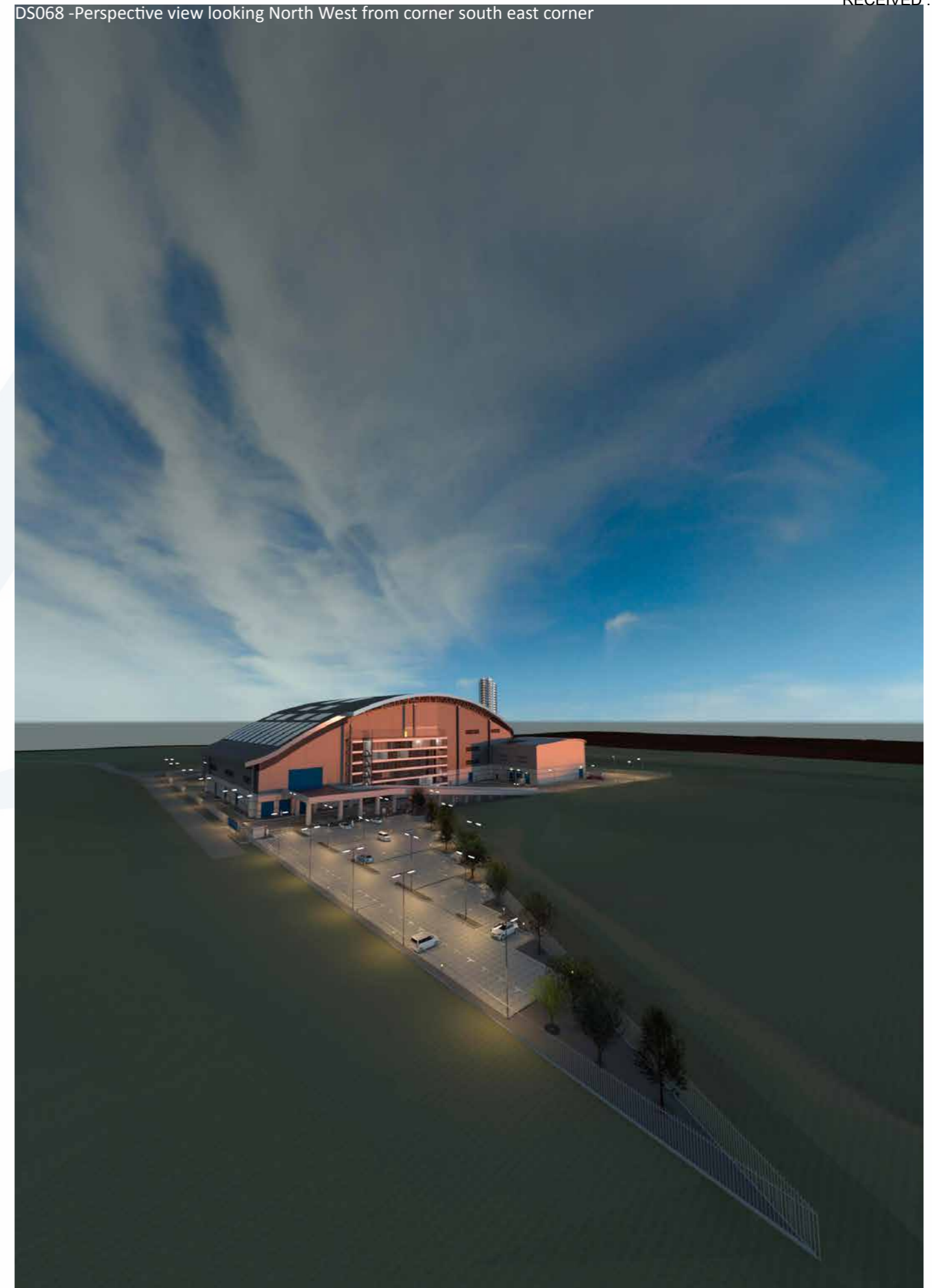
6.16. The building is located on the site close to the northern boundary in order that the existing trees can provide some screening to the development from the M4 and areas to the north.

6.17. The site will be enclosed by a 2.4m high security fence and access will be controlled through lockable gates adjacent to manned gatehouses.

DS067 -Perspective view looking North towards Office accommodation from top of tipping hall ramp



DS068 -Perspective view looking North West from corner south east corner



## 7. Scale

### Architecture - Scale of the Proposal

- 7.1. The scale of the proposed is mainly dictated by the size of the plant. The proposal is a like for like replacement of the existing EfW plant, however, it has been necessary to increase the footprint slightly to allow for a competitive tendering process between plant manufacturers.
- 7.2. Elevations and indicative heights are shown in figures DS054 to DS056.
- 7.3. Elevations and 3D images of the proposal were drafted as part of the design process.
- 7.4. The size of the facilities is reflected in the general size and layout of the plant and equipment required to provide the capacity stated for dealing with waste and so enable an efficient contribution to be made to the provision of electricity, heat and power for the area.
- 7.5. The envelope of the building follows closely the cross section of the engineering and technical plant.



DS069 - Perspective view looking south west from north east corner

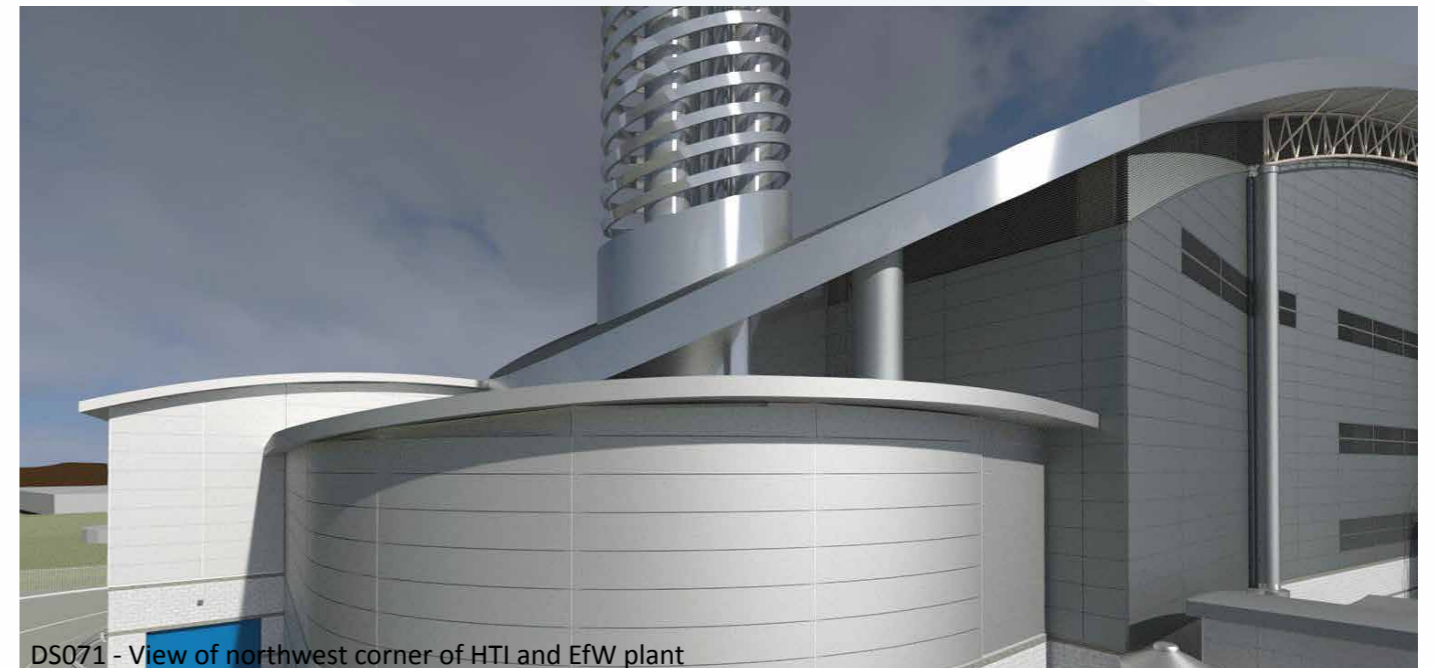
### Architecture - Building Form

- 7.6. The building mass forms a sculpted enclosure to the equipment within, and responds in a positive manner to the layout and disposition of the plant.
- 7.7. The curved form of the roof elements have been chosen to soften the silhouette and general outline of the building. This introduces aesthetically pleasing shapes not generally associated with conventional industrial buildings and factories.



DS070 - East elevation side profile

- 7.8. The proposed EfW building looks to more closely incorporate the HTI facility compared to the existing EfW plant and have more similar design elements and shared setting out on plan and in section. An example of this shared design language would be the dimension of the radius curves in plan of the external walls relating directly to the radius of the main building's stack and the radius of the curve of the external curved walls.
- 7.9. The sinuous curve of the EfW roof is mirrored on the HTI although in proportion to the smaller building. This roof was then developed through a number of iterations to satisfy various requirements such as the roof of the EfW having to overlap the HTI whilst the HTI height also defined by the plant equipment within, therefore the double curve was adjusted to satisfy this criterion among others.



DS071 - View of northwest corner of HTI and EfW plant

7.10. The plinth and metal cladding zones are directly comparable to the main EfW building to further cement this interdependent relationship.

7.11. The main EfW building is 42m in height, 150m in length and tapers from 75m wide to 40m. The chimney stack is 55m above ground level. The HTI is 'L' shaped 67 m x 47. m and with the tops of the lower and higher roofs at 16 and 20m high respectively. The single flue from the HTI is incorporated into the main EfW stack design.

7.12. Building heights of other structures are:

- Maintenance workshops: 15.250 m x 25.600 m x 10.450m
- ACC: 26.200m x 39.200m x 15.500m
- Turbine house: 24.845m x 25.600m x 17.400m
- Other ancillary buildings range from 3 m to 9m in height

7.13. The heights of the buildings have been designed to enclose the technical plant. In the case of the EfW building this height is necessary to enclose the two boilers.

7.14. The height of the stack of 55m, has been calculated after extensive 3 dimensional modelling, to optimise flue gas dispersion and has been tested by HAL as part of the aircraft safety assessment process.

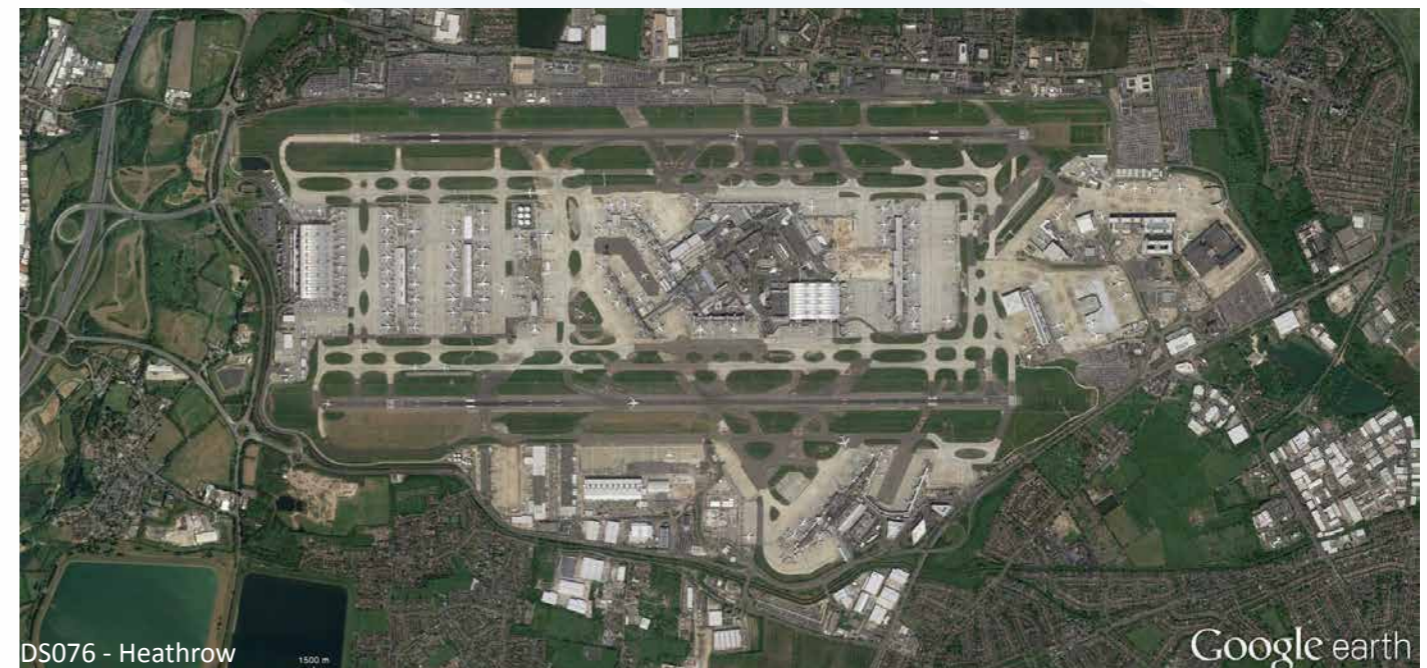


DS072 - Perspective view looking to north east from south east corner



7.15. The natural topography of the surrounding land is largely flat and featureless however there are a number of large manmade structures near the site notably:

- Heathrow Terminal 5 building 2.5 km distant and 40m high
- Queen Mother reservoir 1.75 km distant and 30m high
- The M4/M25, junction 5, 1.0 km distant and 35m high
- Aggregate Industries Buildings 750m away to the east



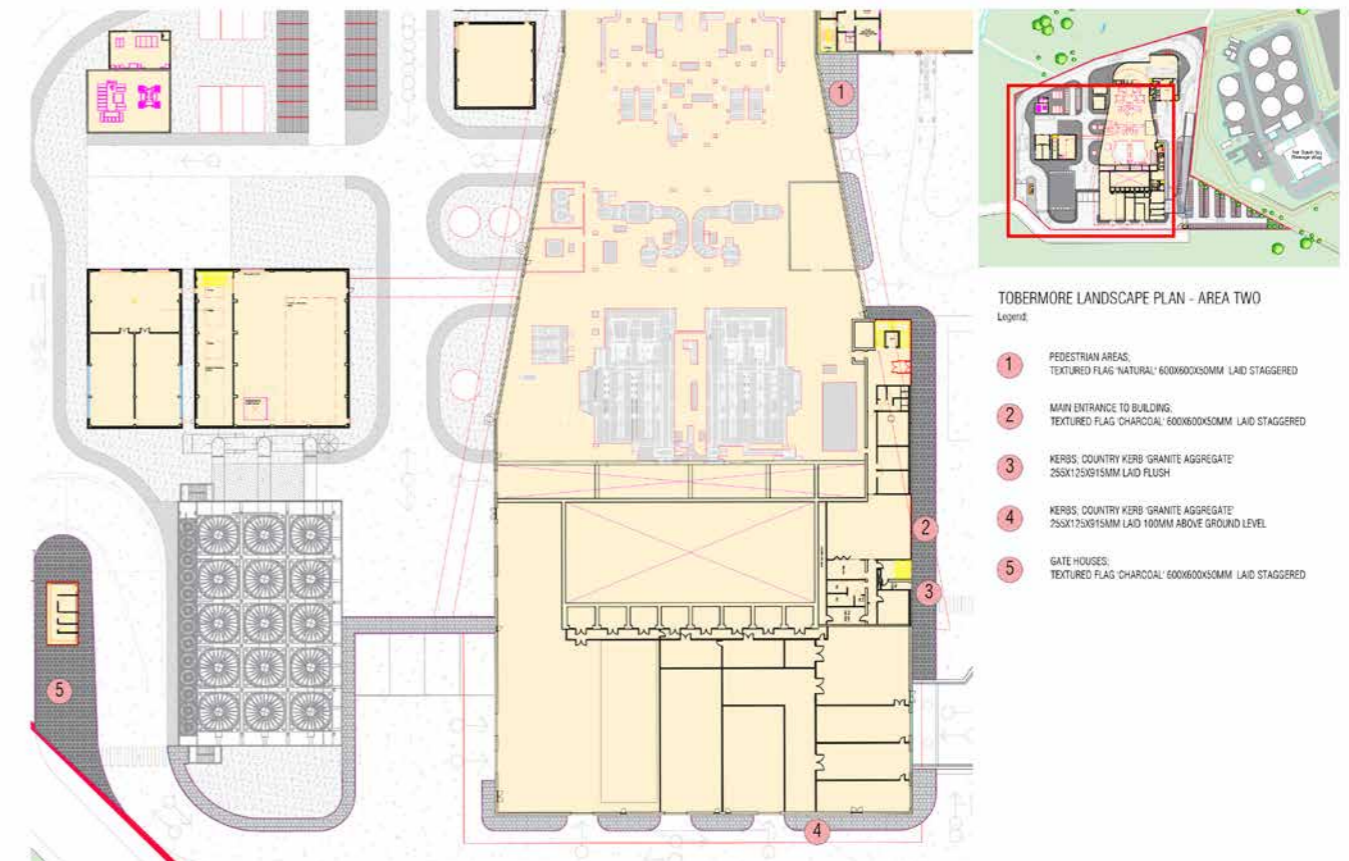
DS076 - Heathrow

## 8. Landscaping

- 8.1. The integration of the proposed scheme within the surrounding landscape is paramount to a successful design. There are opportunities outside the site boundary and along the access road to have soft landscaping, however, due to the industrial nature of the main plant itself, hard landscaping is proposed within the site.
- 8.2. The proposal will see the site levelled to 22.5m AOD (it currently ranges from approximately 21.5m AOD in the north to approximately 25.9m AOD in the south) and the loss of the majority of existing trees and areas of scrub vegetation within the site area. It is proposed to fence off any mature trees within the proposed temporary construction compound during site preparation and construction activities in accordance with BS 5837: 2012.
- 8.3. Due to the nature of the facility, soft landscaping within the confines of the site raises issues to do with safety, maintenance and suitability, therefore the options are limited, however, we are proposing that there will be an element of soft planting within the staff and visitors car parking
- 8.4. Tree planting consisting of oak and alder where space is available along the northern boundary of the car park. Planting around the north and western site boundaries will include new native planting such as willow, hazel, field maple, spindle, alder, dogwood, holly and blackthorn. Fruit bearing trees will be kept to a minimum due to the proximity of Heathrow Airport.
- 8.5. Grass verges will be provided on either side of the proposed new access road from the new junction with the A4.
- 8.6. In terms of hard landscaping, pedestrian pavements around the facilities are to be 600x600 paving flags in natural finish and car parking areas are to be tegula concrete set paving in natural and charcoal finish. The access road around the site is to be high performance asphalt suitable for HGV use, with concrete hardstanding areas and other pavements are to be asphalt.
- 8.7. The street lights around the site have been carefully considered. Down-lighting fittings have selected for approach roads, footpaths and parking areas, to avoid light pollution and not unduly affect the operations of Heathrow Airport. Refer to separate lighting scheme report.
- 8.8. The detailed landscape planting scheme for the site is illustrated in figure DS079.



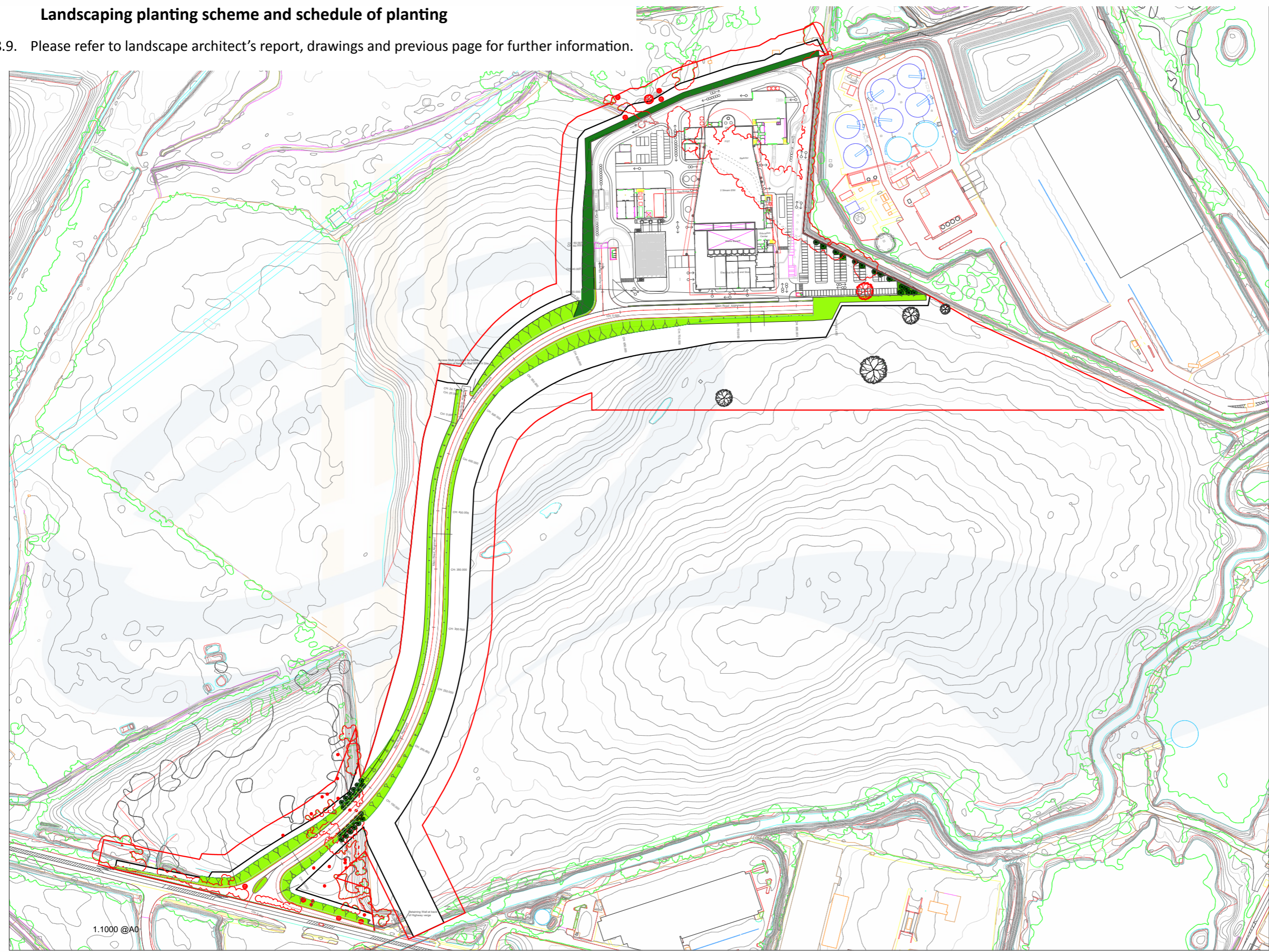
DS077 - Car park hard landscaping



DS078 - Paving around main plant and gate house

**Landscaping planting scheme and schedule of planting**

8.9. Please refer to landscape architect's report, drawings and previous page for further information.



- Permanent site boundary
- Application site boundary
- Proposed trees
- Retained trees
- Removed trees
- Removed planting
- Proposed native planting mix
- Proposed grass seeding
- Proposed shrub planting

Replacement EfW and HTI Facilities  
Lakeside EfW Ltd

Landscape Proposals  
Figure 3.13

Drawn by	Checked by	Issued by
HA	NE	
227705	As shown/BAD	June 2019
TOP: 227705/LA/L03002		

Based upon the 2017 Ordnance Survey Mastermap vector data with the permission of the Ordnance Survey (inland of the Mean Low Water Office). © Crown copyright. Terence O'Rourke Ltd. Licence No. 100018865.

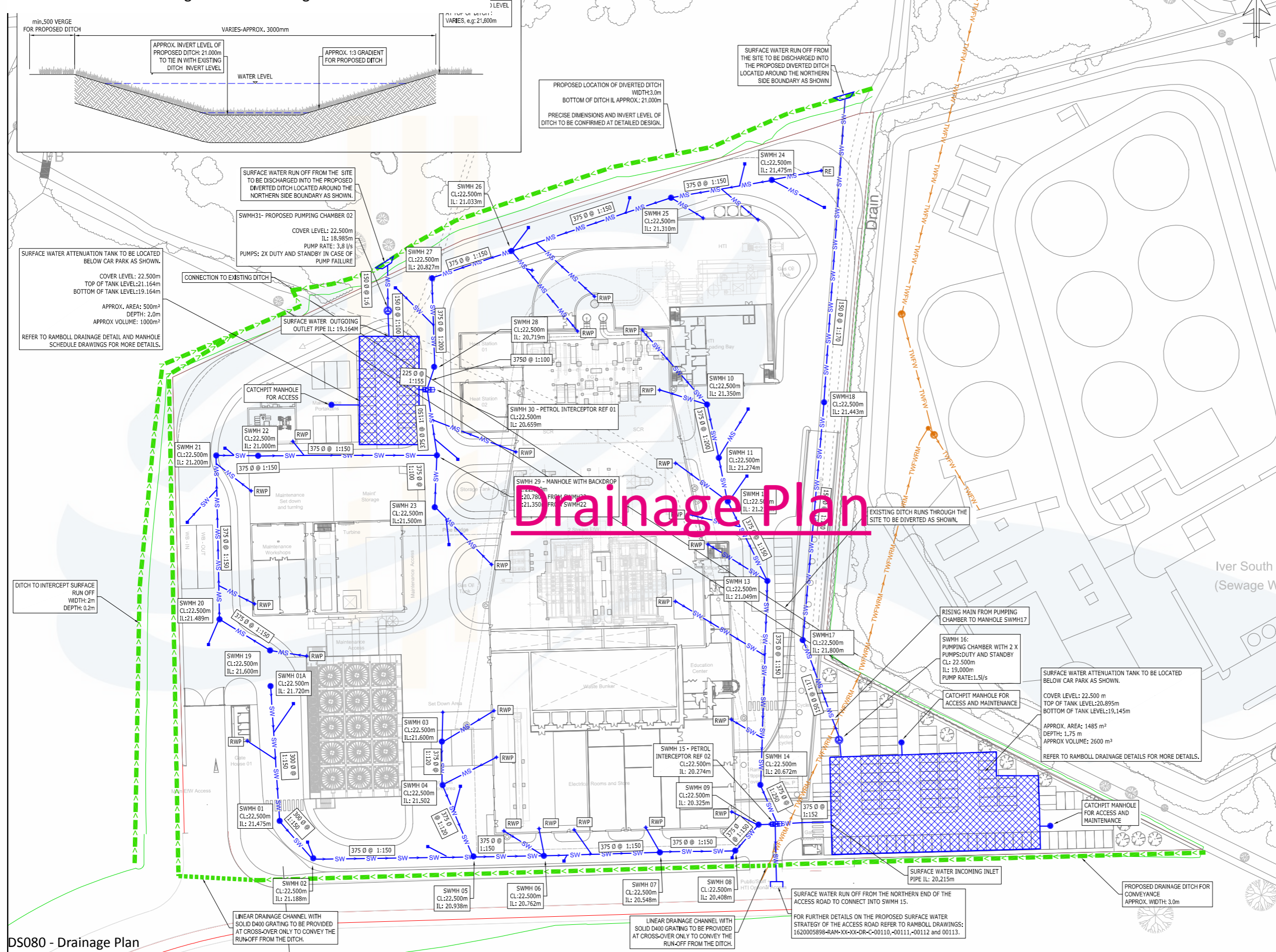


1:1000 @A0

DS079 - Landscape plan

**Drainage**

8.10. Please refer to drainage scheme drawings for further information.



Notes

1. THIS DRAWING IS NOT TO BE SCALED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL AND M&E DRAWINGS.
3. THIS IS NOT AN INSTALLATION DRAWING NOR A CO-ORDINATION DRAWING.
4. THIS DRAWING IS BASED ON,
  - CROWTHER ARCHITECTS DRAWING C1816-CAA-SL-XX-DR-A-102 REVISION B, DATED 10.05.2019.
  - HEP AERIAL SURVEY DATED NOVEMBER 2018.
5. ALL BELOW GROUND DRAINAGE PIPES, BELOW STRUCTURAL SLAB TO BE CAST IRON PIPES OF 100mm IN DIAMETER LAID AT 1:40 UNLESS NOTED OTHERWISE.
6. ALL EXTERNAL BELOW GROUND DRAINAGE PIPES TO BE CONCRETE PIPES AND ALL INTERNAL PIPES TO BE CAST IRON.
7. PRECISE LOCATION OF FOUL AND SURFACE WATER DOWN POINTS TO BE PROVIDED BY MEP ENGINEERS/OTHERS IN NEXT DESIGN STAGE.
8. FOR STANDARD DRAINAGE DETAILS REFER TO RAMBOLL DRAWINGS REF: 1620005898-RAM-XX-XX-DR-C-00400 AND 1620005898-RAM-XX-XX-DR-C-00401.
9. FOR MANHOLE SCHEDULE REFER TO RAMBOLL DRAWING REF: 1620005898-RAM-XX-XX-DR-C-00200.

- KEY:
- TWFWM — EXISTING THAMES WATER FOUL WATER DRAIN
  - TWFWRM — EXISTING THAMES WATER FOUL WATER RISING MAIN
  - SW — SURFACE WATER DRAINAGE PIPE
  - >>>> — PROPOSED DITCH
  - >>>> — PROPOSED LINEAR DRAINAGE CHANNEL
  - — EXISTING THAMES WATER FOUL WATER MANHOLE
  - — SURFACE WATER DRAINAGE MANHOLE
  - G — SURFACE WATER DRAINAGE GULLY
  - ⊕ RWP — RAIN WATER DOWN POINT
  - ⊕ — SURFACE WATER PUMPING CHAMBER
  - ⊕ — CLASS 1- PETROL INTERCEPTOR
  - ⊕ RE — EXTERNAL RODDING EYE

Rev	Description	Date	By	App
P02	PRELIMINARY ISSUE	31.05 2019	MES	DS
P01	PRELIMINARY ISSUE	10.05 2019	MES	DS

Rev	Description	Date	By	App
P02	PRELIMINARY ISSUE	31.05 2019	MES	DS
P01	PRELIMINARY ISSUE	10.05 2019	MES	DS

**PRELIMINARY**

**REPLACEMENT OF LAKESIDE EFW AND HTI**

**RAMBOLL**

tel: 020 7631 5291 london@ramboll.co.uk  
www.ramboll.co.uk

**GENERAL ARRANGEMENT EFW SITE PROPOSED SURFACE WATER LAYOUT**

Project No:	Scale (@A1):	Drawn:	Date:
1620005898	1:500	MES	MAY 2019
Drawing No:			Rev:
RAM-XX-XX-DR-C-00100			P02

DS080 - Drainage Plan

**Relationship to surrounding area**

8.11. The visual impact assessment shows the proposal from a number of views and shows that the impact it has is actually less in comparison to the existing plant due to its lower stack height.

8.12. The visual impact assessment further highlights that the combination of vegetation and contours/levels obscure a large proportion of the EFW facilities from a number of views (VP1 and VP3) and a direct view is only available in close proximity to the plant, most noticeable from bridlway 2 (VP12) and from the A4 Colnbrook bypass.

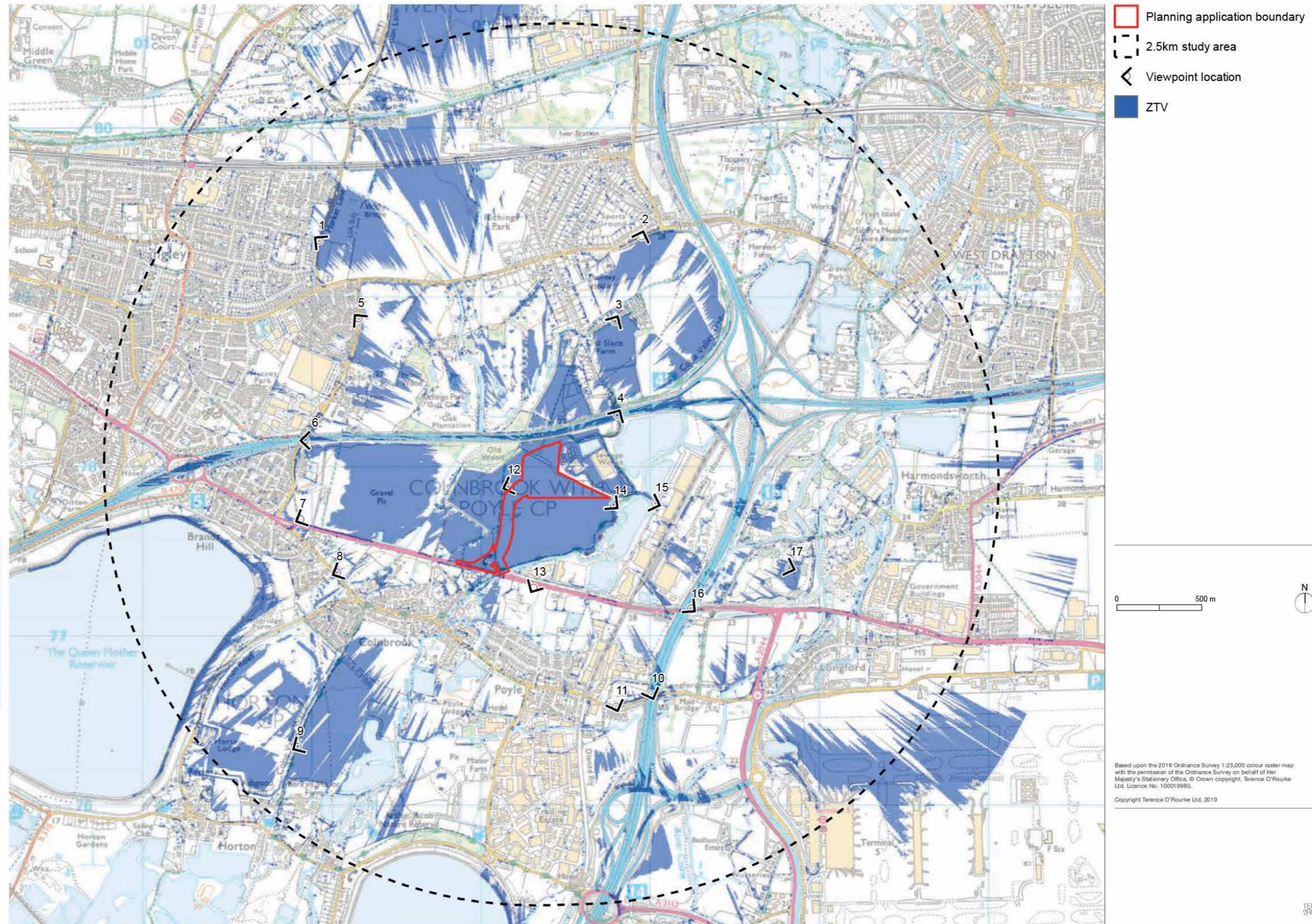


Figure 10.14 Viewpoint locations





OS ref: 502043, 179336 Direction of view: SE Principal dist: 522mm Camera: EOS 6D  
Eye level: 27m AOD Horizontal field of view: 90° Camera height: 1.6m AGL Lens: 50mm

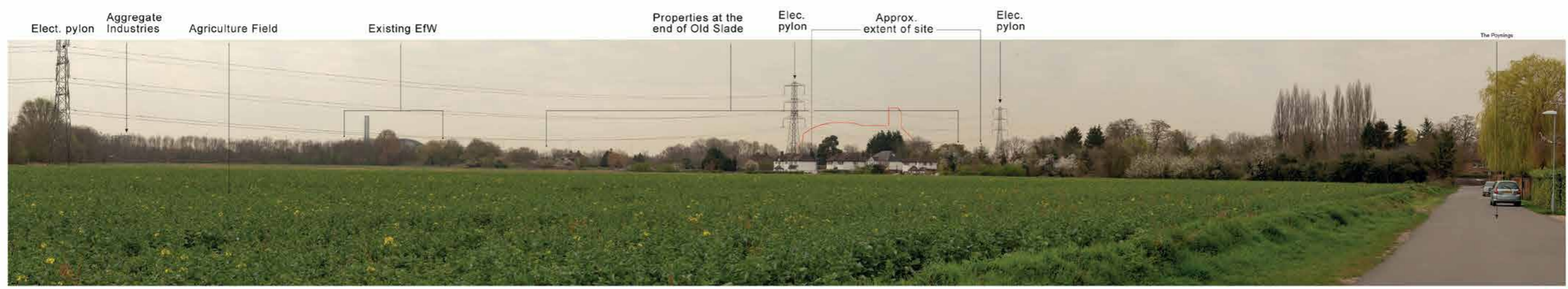
Winter Date&time: 11/02/19 10:18

View looking south east from junction of Meadfield Road / Market Lane,  
toward existing EFW and site

Figure 10.32 Wireframe 1



DS082 - View point 01

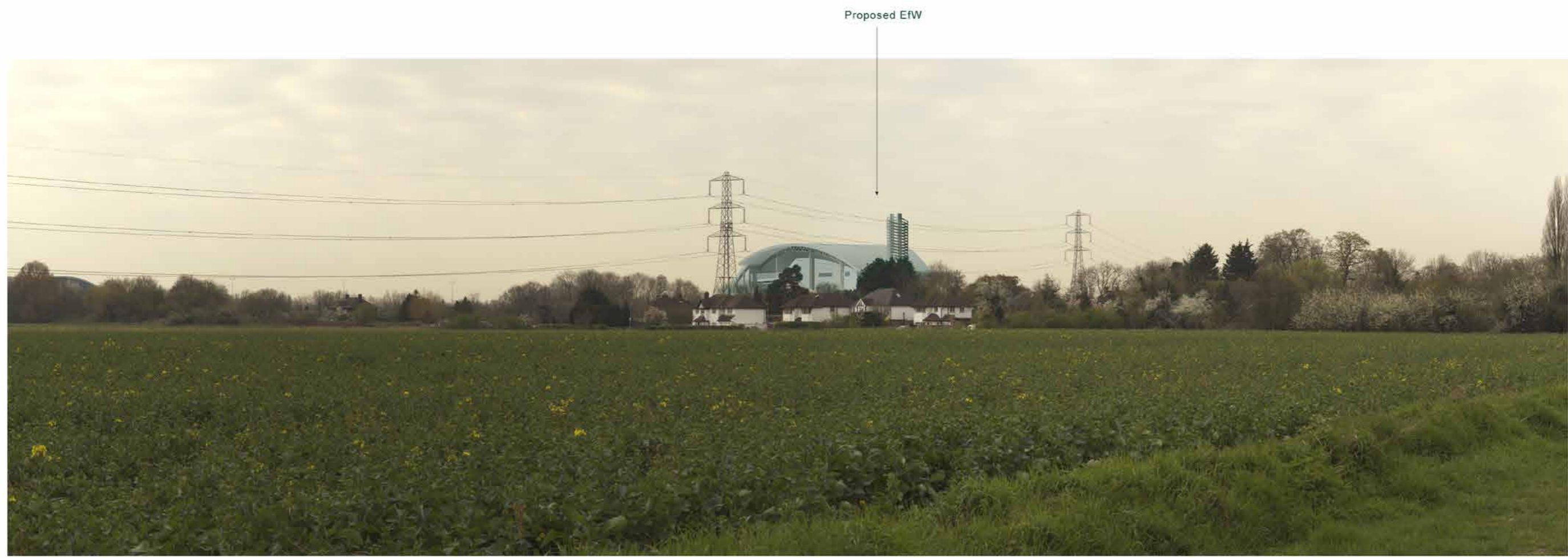


OS ref: 503797, 178862 Direction of view: SW Principal dist: 522mm Camera: EOS 6D  
 Eye level: 22.5m ACD Horizontal field of view: 90° Camera height: 1.6m AGL Lens: 50mm

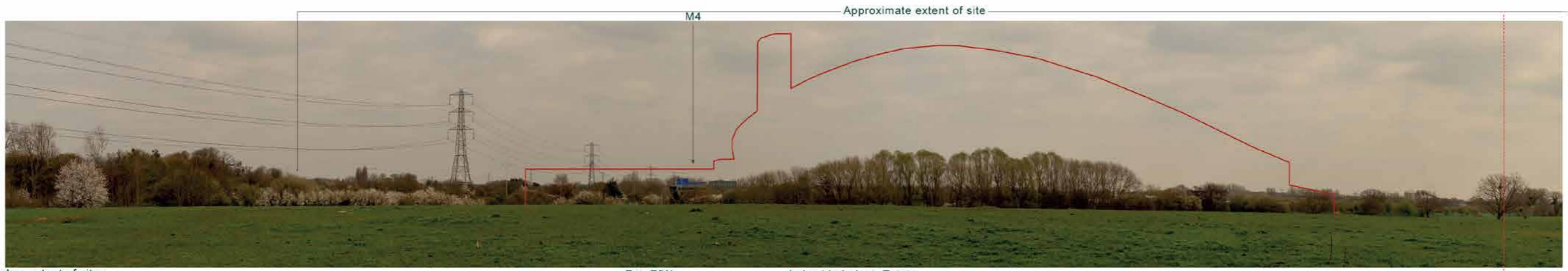
Winter Date&time: 11/02/19 11:05

View from The Poynings looking south west toward the existing EfW / Lakeside Industrial Estate and proposed site, over arable fields

Figure 10.33 Wireframe 2



DS083 - View point 03



OS ref: 503156, 177881 Direction of view: E Principal dist: 522mm Camera: EOS 6D  
Eye level: 20m ACD Horizontal field of view: 180° Camera height: 1.6m AGL Lens: 50mm Winter Date&time: 11/02/19 15:23

View from Colbrook and Poyle 2A public right of way looking east toward site and Lakeside Industrial Estate

Figure 10.34 Wireframe 3



DS084 - View point 12

## 9. Appearance of the development:



Fig.DS085 photo of existing plant across lake

- 9.1. The design of the existing building features a unique curved profile form for the main building and an innovative design of the stack(s) with concentric stiffening rings.
- 9.2. The existing building has become an iconic well-known local landmark.
- 9.3. The replacement EfW plant is located 600m to the north-west of the current plant and has been designed to emulate and expand on the architecturally successful design of the existing EfW plant.
- 9.4. The main elements of the new design are the curved profile of the main building and a similar proportioned iconic design to the existing chimney stack.
- 9.5. Developments in plant technology have resulted in some minor changes to the design of the new building.

- 9.6. Flue gases generated from the combustion process are to be cleaned before being released into the atmosphere to the appropriate standards required to protect human health and the environment, and FGT systems are designed to comply with the requirements of the Waste Incineration BAT reference document. This will increase the width of the new building at the narrow northern end from 30 to 40m and permitted a reduction in chimney stack height from 75m to 55m above ground level.



DS086 - West elevation view

- 9.7. It has been possible to improve the energy efficiency of the plant by locating the electricity generating turbine closer to the boilers thus shortening the length of the high temperature steam pipe.
- 9.8. The (small) increase in width of the plant is contained within the curved roof shape, however the separate columns of the existing EfW building have been incorporated in the external walls.
- 9.9. The revised column design helps to visually break up the large expanse of cladding thus helping to reduce the scale.



DS087 - West elevation night view

## Materials selected and the proposed colour scheme

- 9.10. Although the EfW and associated structures are of necessity scaled to the size of the equipment it contains, the materials chosen are intended to be relatable to the human scale, for example with the use of standard sized split faced blockwork and a shared cladding module of approximately one metre high used throughout the project. These materials have also been selected with low light reflectivity in consideration of factors such as glare, due to the location and proximity to both the M4 and Heathrow Airport.
- 9.11. The main buildings sit on a plinth of split faced blockwork familiar in classical architecture as a rusticated podium. This is a feature of many buildings where there is a functional requirement for durability and security at lower levels. The proposed material is 215x440x100mm split face blockwork in 'Natural White' with polished 'Slate Grey' banding.
- 9.12. Above the podium is a flat metal panel cladding system from Eurobond G series architectural cladding system (Colour: Sirius Ral 9006), the modules being 1.0 x 6m, a common and familiar proportioned element.
- 9.13. The rusticated podium and panel cladding system are intended to reduce the potentially monolithic scale of other cladding systems, and ensure that this building appears well grounded in the landscape.
- 9.14. The 55m stack features concentric rings which not only help to brace the three flues but visually increase the width of the stack which helps to reduce its apparent height. It is painted matt grey - Ral 9006 to reduce visual impact against the sky.
- 9.15. Proposed roof is to be Euroseam Roof from Euroclad (400mm wide profile) with Organic Patina Aluminium standing seam ('dull' finish to reduce reflectivity).
- 9.16. The main office façade is to be a Shueco FWS 60 Curtain walling system with grey infill panels at floor zones glazing system.
- 9.17. Louvres are to be colour-coated steel to Ral:7012.
- 9.18. Colour accents and relief are provided by the main tipping hall's doors and ground floor roller shutter doors which are to be coloured mid blue - Ral: 5010 and matt grey – Ral: 9006 for all other doors.



DS088 - Cladding and curtain walling



DS089 - Split face blockwork in 'Natural White'



DS090 - 215x440 blocks with polished banding



DS091 - Polished 'Slate Grey' banding



DS092 - 600x600 slab paving in natural and charcoal



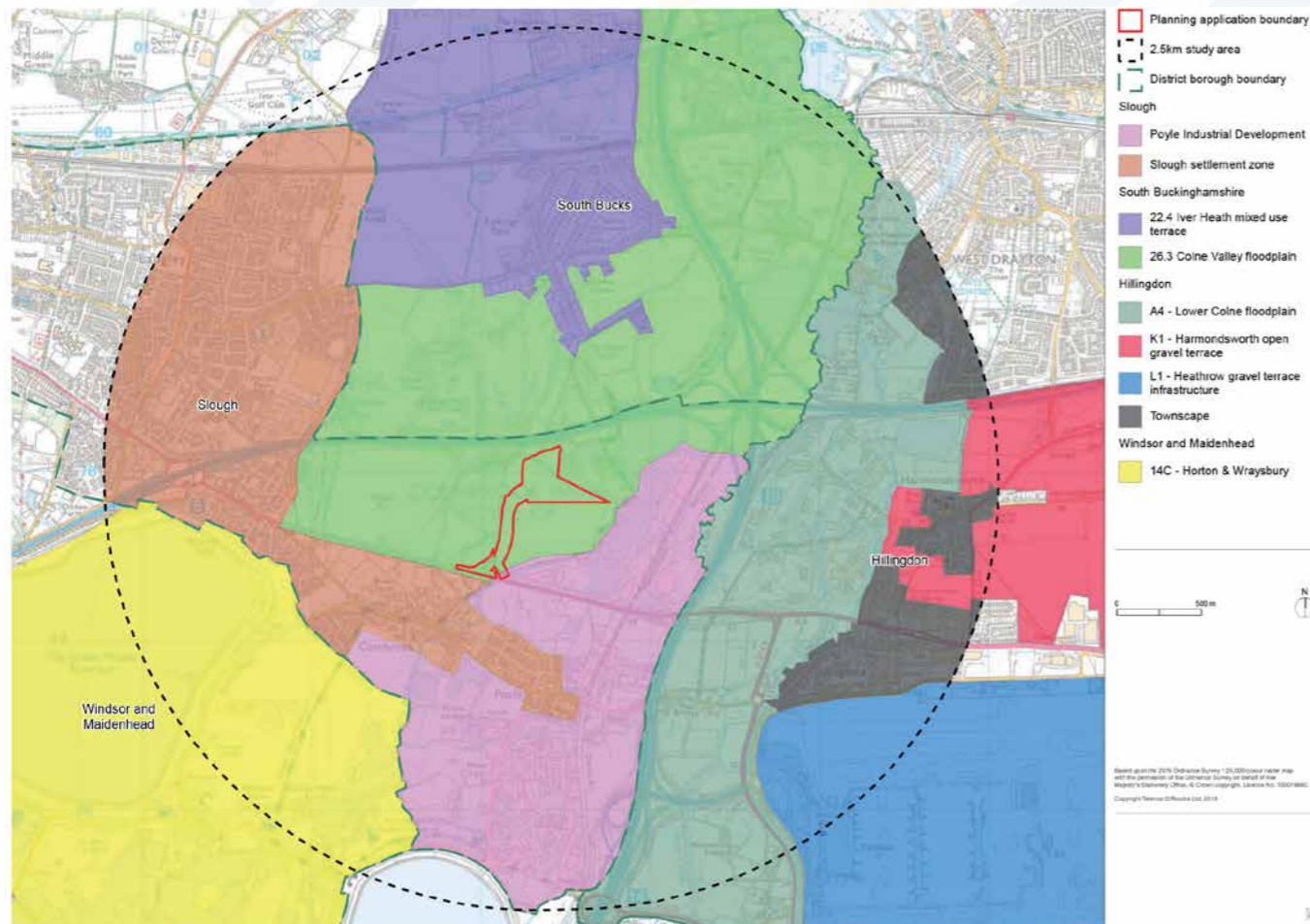
DS093 - Tegula concrete set paving in natural and charcoal

## 10. Context

### Physical context:

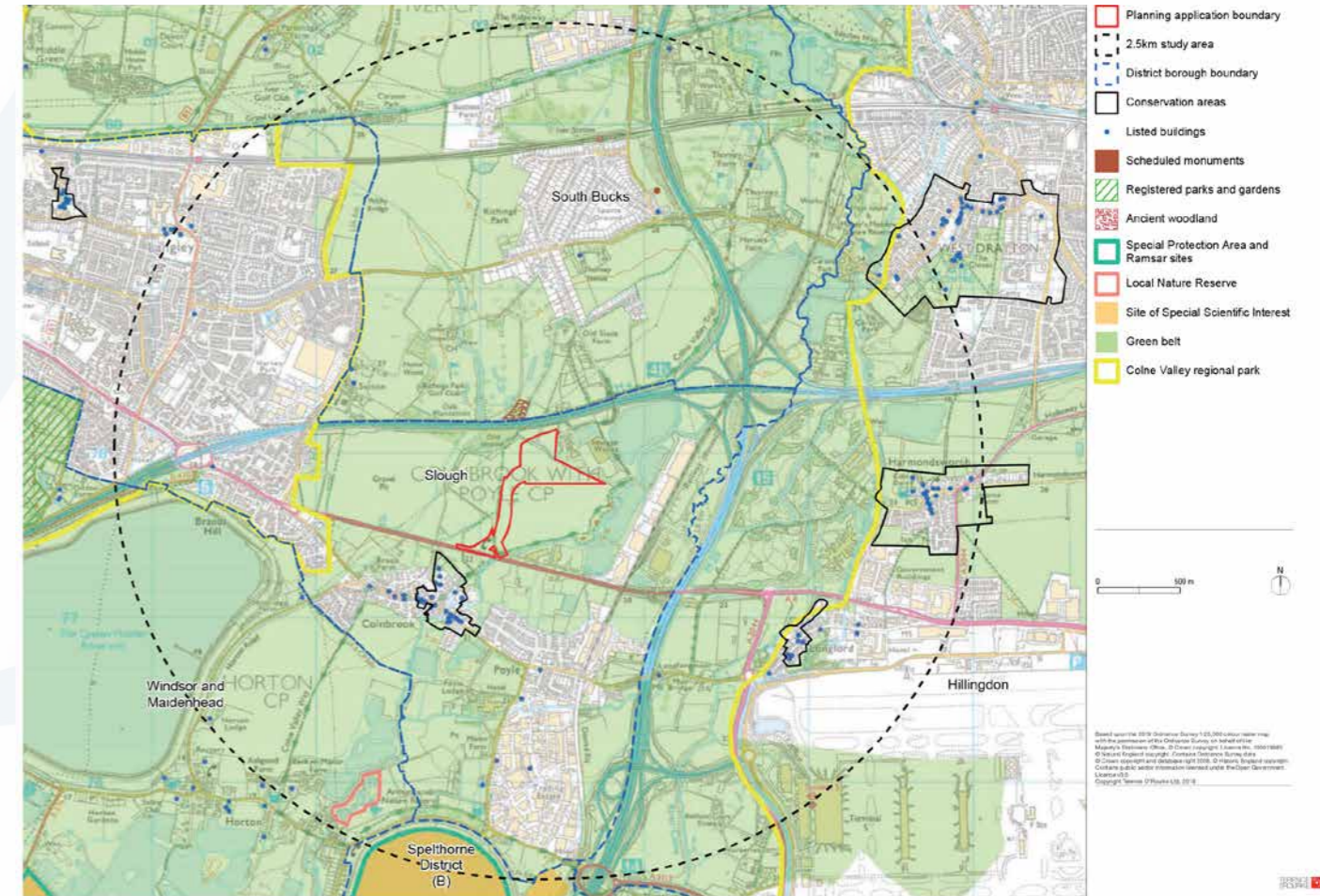
- 10.1. The proposed site is situated approx. 60m to the south of the M4 motorway and 1km east of the M4/M25 flyover junction. The site is adversely affected by noise and other impacts generated by traffic on the M4 motorway.
- 10.2. M4 traffic numbers, count 48582, junction 5 to 4B were 146,847 average daily flow vehicles in 2017.
- 10.3. The site is approximately 1.5km to the north of the current Heathrow Airport northern runway flight path and it is estimated to be less than 0.5km from the proposed third runway flight path.
- 10.4. Adjoining the proposed site to the east is the Thames Water Iver South Sludge Dewatering Centre (sewage works).
- 10.5. The southern half of the site is located on part of the restored Tanhouse Farm landfill which was operational from 1975 to 1991 taking liquid sludge, industrial and inert material.

### DS094 - Landscape character



## Social Context

- 10.6. Currently the land is used for grazing animals and partly used by the Richings Park Clay Shooting Club.
- 10.7. Further north, across the M4 motorway is situated the Richings Park Golf Club. The nearest tee is approximately 250m north from the site and the club house is approximately 900m to the North West.
- 10.8. The closest residential property is approximately 400m to the north east of the site.



### DS095 - Landscape designations

- 10.9. The area currently accommodates a mix of economic uses. Benefiting from the significant transport infrastructure close by consisting of Heathrow Airport, the M25 and M4 motorways – accessible from the M25/M4 interchange and the A4 Bath Road, there are a number of warehouses and distribution depots which provide economic activities and employment. The existing EfW, HTI and MRF also provide employment opportunities.
- 10.10. The dominant economic driver in the area is Heathrow Airport which employs 76,000 people and supports a large number of jobs in hospitality, catering and servicing.

10.11. The existing EfW plant handles 26,000 tonnes p.a. of waste generated by Heathrow Airport and employs 70 people for the local area.

### How Local Context has Influenced the Design:

10.12. The proximity of the Thames Water's Iver South Sludge Dewatering Centre to the east and the area further beyond, including the Aggregate Industries works, is characterised by large industrial warehouses, tall vertical structures and storage silos and directly to the north is the M4 motorway. As a result, the large industrial nature of an EfW plant is of a similar scale as its immediate context to the east.

10.13. Siting the building directly adjacent to the Thames Water's Iver South Sludge Dewatering Centre keeps the main built mass closer to the industrial area. The smaller structures are placed to the west in order to form a transition from the open landscape area to the south and west up the larger mass of the main EfW plant.

10.14. The curved roof profile which runs from north to south axis also introduces a lower element directly on the site boundary and the open landscape beyond.

10.15. The proposed 42m high main EfW building is located approximately 500m north of the aircraft flight path in certain wind conditions a box like design may cause pockets of undesirable air turbulence and vortices. The curved profile of the EfW building is intended to mitigate this possible effect.

### Opportunities, constraints and conflicting issues:

10.16. Opportunities:

- Re-addressing the site layout will enable the main plant to operate more efficiently. This is due to the relocated turbine hall and ACC units being closer to the boilers which will reduce heat loss.
- A dedicated access road from the A4 into the new proposed plant will reduce the amount of traffic using the existing shared access junction into the Colnbrook industrial area.
- Stricter emission controls mean that the new plant will and have lower emissions.

10.17. Constraints:

- The area is restored landfill / open grazing and as a result the site clean-up will have to be extensive due to the excavations that will be required for the main bunker and foundation. The proposed site is located within the lower contours range which will minimise the clean-up required.

10.18. Conflicting Issues:

- By relocating the Energy from Waste plant further north-west by 600 metres it has moved further away from the residential area of Colnbrook but closer to the residential areas of Richings Park and Iver. This combined with stricter emissions standards from the Environmental Agency means that additional technology will have to be employed to ensure that these stricter standards are met and that the emissions are within safe operating levels

## 11. Access

### 11.1. Access to buildings, spaces and transport:

- Vehicular access is via a new road linking the plant to the A4 Colnbrook Bypass.
- A Public Right of Way (bridle way 2a) passes to the north and west of the site and provides a pedestrian route connecting through to Richings Park (north) and Colnbrook Village (south). The new access road will be designed to incorporate a cycle lane.
- There is a public bus stop opposite Lakeside Road, with buses available from Slough, Windsor and Bracknell.

### Access for Emergency Services:

11.2. Emergency access will be via A4 by the new access road which will lead directly onto the site and the perimeter road. From here, it is possible to reach any of the buildings on site and the main EfW has full access to its perimeter. A dry riser will be located at key points and a water tank is provided on site under the main tipping hall, suitable sized, for firefighting purposes.

11.3. It is also possible to gain alternative access via the staff/visitors access in case the main entrance is blocked or compromised.

### Main EfW Building

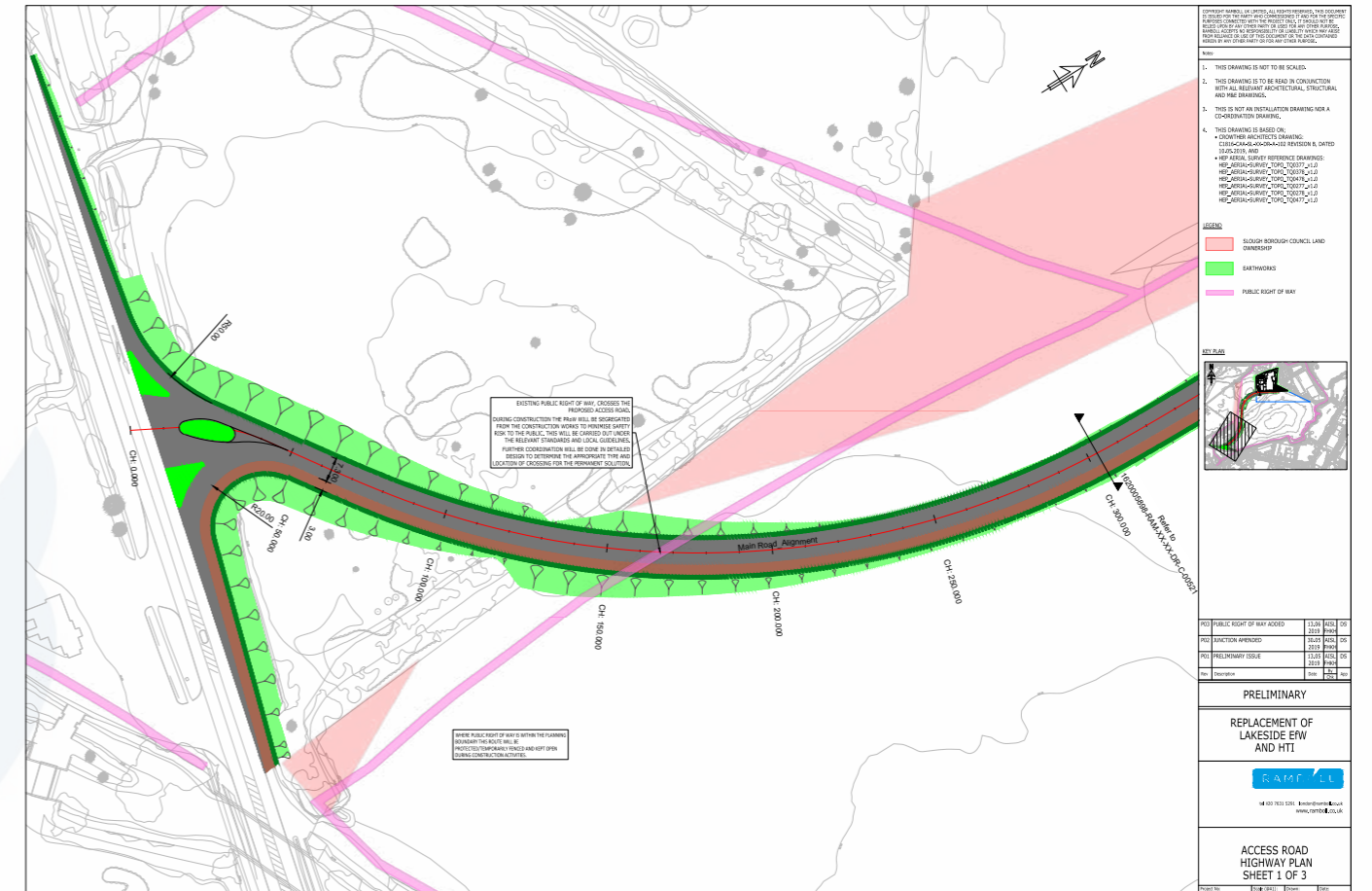
11.4. The main plant building has level access into the office area and the backup area from the main car park, with each main staff area being provided with an 8 person, fully disabled accessible lift serving all staff floor levels within the building. Disabled toilets to AD Part M1 Paragraph 5.10/Diagram 18 are also provided in the two main staff areas. All access stairs are also designed to be used by the ambulant disabled as AD Part M1 Paragraph 1.27-1.33. All internal doors openings are to meet the requirement of ADM1 Paragraph 7.5/Table 4.

### Connection of the Site to Infrastructure

11.5. Power and other infrastructure supplies exist in the area to serve Thames Water Sludge Dewatering Centre and the industrial site to the east, however it will be necessary to have a sustainable drainage system for the whole development.

11.6. Electricity produced by the facility will be fed into the national grid; a grid connectivity study will confirm the route for the associated connection, however, notwithstanding, there is a line of high voltage pylons directly north of the site.

### 11.7. Potential for exporting heat to the service area or other potential heat off-takers is being investigated.



DS096 - Proposed access road junction with A4



DS097 - Proposed access road junction with EfW entrances

## 12. Summary

- 12.1. The design process has addressed the technical requirements of the replacement facilities together with the appearance of the buildings and access issues.
- 12.2. The facilities have been designed to provide an economic functional form and layout with an arrangement of main building components that brings integrity to the overall design.
- 12.3. The proposed external colour palette to include light and dark hues for walls and pale greys for the roof and stack will assist in reducing visual intrusion.
- 12.4. The stack will be painted matt grey to help it to blend in with the background sky. It is also to be fitted with hoops as shown to reduce its visual vertical presence. This is a device used successfully at the original Lakeside EfW facility in Colnbrook where the slightly increased perceived width of the stack has the effect of diminishing the apparent height.
- 12.5. Within the given site the facility is orientated on a north/south axis. This positions the 55m stack as far as possible from the flight path on to the proposed third runway. The aircraft safety aspect of this location has been modelled by NATS.
- 12.6. The stack heights and position have been modelled to confirm adequate gas dispersion.
- 12.7. Access to the site is via a new road and cycle path from the A4 Colnbrook bypass.
- 12.8. The scale, form and materials proposed have been considered to reflect those of the existing plant which this new proposed facility replaces.
- 12.9. The siting and design of the building respond positively to the landscape context and also the technical requirements of the process involved.



DS098 - Perspective view looking north west from south east corner