4. THE PROPOSED DEVELOPMENT

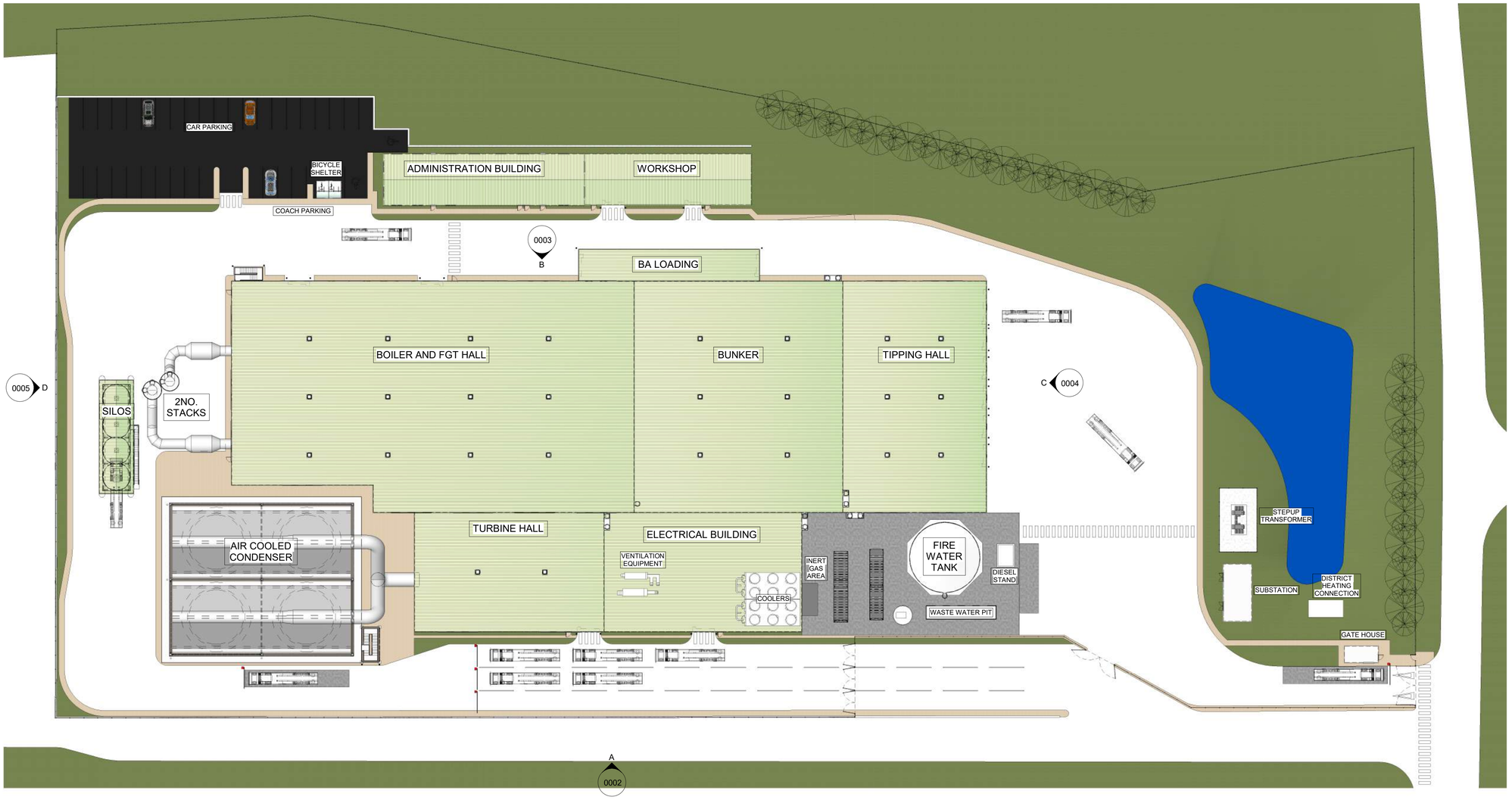
4.1 Overview

The Proposed Development comprises a full planning application to NCC for construction of an Energy Recovery Facility comprising proven combustion technology with an education and visitor centre, access, landscaping and associated works. The Proposed Development will treat RDF and residual material and will generate up to 23 MWe. The key features of the proposal are as follows:

- All of the processes and materials will be contained within sealed buildings, with the tipping and bunker halls operated under negative pressure.
- The development accords with the waste hierarchy as materials that are suitable for recycling will be removed from the process.
- The development retains the dedicated education centre that was included as part of the Consented Development.
- When operational the proposed facility will generate 25 full-time equivalent (FTE) jobs.

The proposed layout of buildings and other facilities are shown in **Figure 4.1.**

Figure 4.1



1 Site Plan
1 : 400

P1	First Issue	CL		25.01.19
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SCALE @ A1 1 : 400	ISSUING OFFICE Leeds	MSJ PROJECT NUMBER 218097
STATUS S2	PURPOSE OF ISSUE INFORMATION	

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PROJECT

Energy Recovery Centre, Shelton Road

TITLE

Site Plan

CLIENT

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218097-0001	P1

4.2 Description of Technology and Process

The proposed facility utilises proven combustion technology which will be operated through a number of key elements as follows.

4.2.1 Waste Feedstock

The installation will process up to 260,000 tonnes per annum (tpa) of RDF and residual material..

4.2.2 Reception and Preparation

The fuel for the facility will be a combination of RDF and/or suitably sourced, commercial and household wastes. All fuel will be delivered directly into a sealed tipping hall within the building (operated under negative pressure). The fuel will be offloaded directly into the feedstock bunker, with any oversized items being removed (using the overhead crane), for storage prior to further treatment or disposal at a suitably licensed facility. Any non-conforming wastes that are found will be rejected in accordance with the Site waste rejection procedures.

4.2.3 Feedstock Bunker and Hopper

The facility will have either one single or two independent operating lines, for the EIA a worst-case of the two operating lines has been assumed. The following description is of a single line in the double line option, although the description is also applicable to the single line variant.

Material within the feedstock bunker will be managed by overhead cranes (or a single crane). It will be placed into a feed hopper which will seal the feedstock bunker from the boiler house. The hopper will deliver fuel to a ram feeder system that will control the rate at which fuel will enter the moving grate system where thermal treatment will take place in controlled conditions to ensure efficient energy recovery.

4.2.4 Boiler, Turbine Hall and Air-cooled Condenser

The combustion chamber will provide optimum heat distribution and heat extraction which will be used to heat water to produce superheated steam in a boiler. The steam from the boiler will pass into the turbine and generator set which will convert the heat energy in the steam into electricity, which will then be exported to the grid or the local private wire network, less any electricity that is used in the operation of the plant.

The twin-stream design would afford process flexibility in periods of reduced production during plant maintenance periods, whilst the single line approach would significantly reduce the required capital expenditure required. The decision on which option to adopt is primarily driven by commercial and operability considerations and there are no material environmental differences between the two. The gross electricity production is expected to be up to 23 MWe, in either case.

A secondary connection will also be incorporated into the turbine to allow steam to be extracted for district heating purposes (via a steam/hot water heat exchanger) within the proposed private heat network to local businesses, i.e., the plant will be Combined Heat and Power (CHP) ‘ready’. An air-cooled condenser (ACC) will then convert remaining low grade steam, exhausted from the turbine, back into liquid which will then be recycled back into the boilers to minimise water usage through the process.

4.2.5 Gas Treatment

The flue gas treatment (FGT) process will comprise multi-element abatement technology in line with current Best Available Techniques (BAT). Emissions to air will be monitored though a continuous emissions monitoring system (CEMS).

4.2.1 Grid Connection

The facility will be connected to the national grid via the existing Corby 132/33kV sub-station. The temporary works necessary to provide the connection are commensurate with those routinely carried out by service providers and are therefore considered unlikely to give rise to any potentially significant effects.

4.2.2 Hours of Operation

The facility will operate 24-hours per day, 365 days per annum with planned maintenance outages of up to 760 hours (32 days) per annum.

4.3 Buildings and Structures

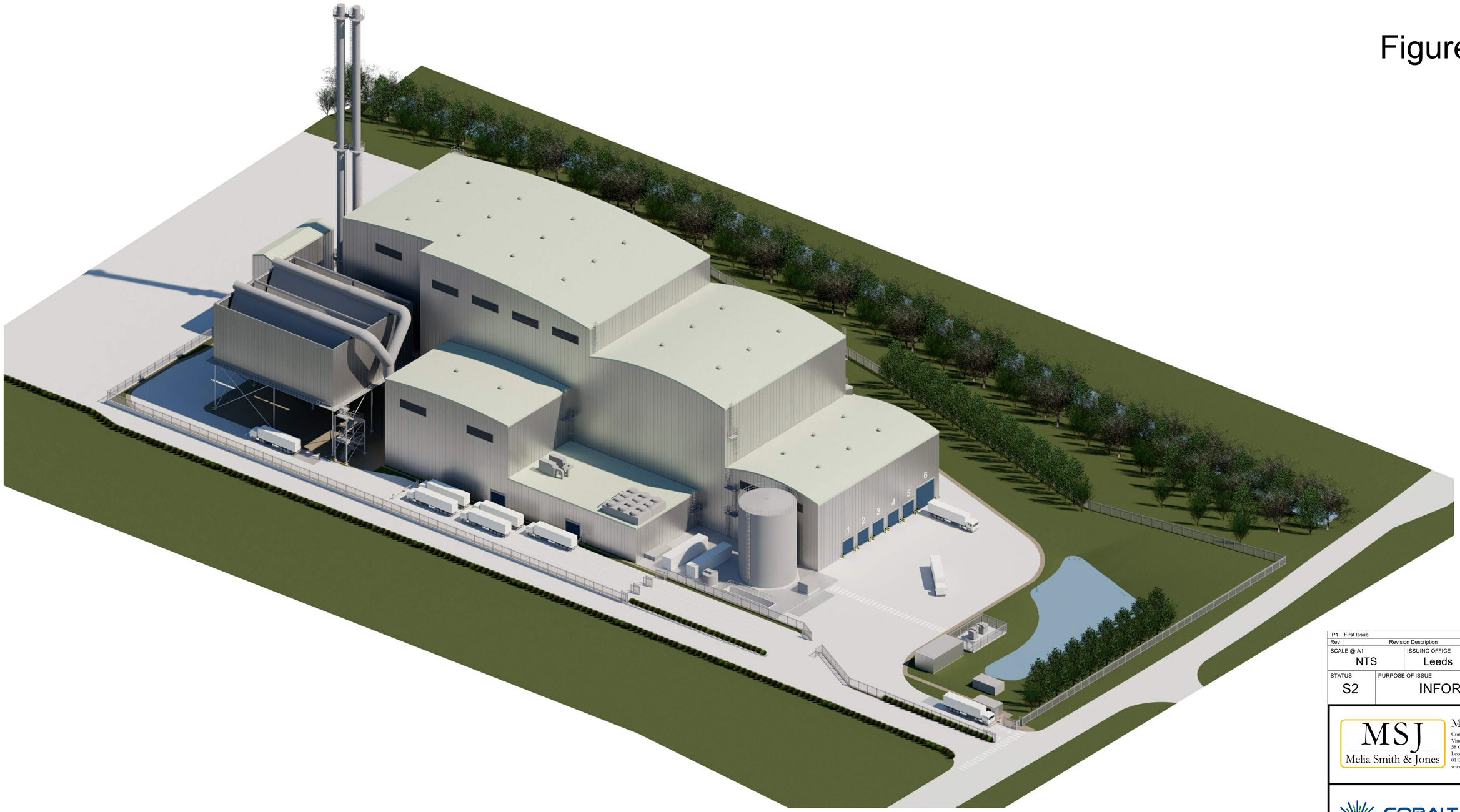
The facility has five main process buildings (the tipping hall, bunker hall, boiler and FGT hall, turbine hall and electrical building), with a further two smaller ancillary buildings (air pollution control (APCR) residues loading, bottom ash loading). The ACC is separated from the main building envelope, as are the two 75 m flues. Although one building envelope, this building will be staggered in height according to internal operational requirements. An administration building, workshop, security gatehouse building and a number of ancillary structures (e.g. fire water tank, transformers etc.), will also be separate from the main building. The heights of the main building structures are included in **Table 4.2** and shown on **Figures 4.2** and **4.3**.

Table 4.2 Main Building Dimensions

Building	Height (m above finished ground level)	Length (m)	Width (m)
Boiler & FGT Hall	At tallest point: 39.5	At maximum point: 69.5	At maximum point: 40.0
Bunker Hall	At tallest point: 32.5	At maximum point: 36.0	At maximum point: 40.0
Tipping Hall	At tallest point: 18.0	At maximum point: 25.0	At maximum point: 40.0
Turbine Hall	At tallest point: 21.5	At maximum point: 32.6	At maximum point: 20.6
ACC Building	At tallest point 25	At maximum point 31.8	At maximum point 26.4
Electrical Building	At tallest point: 8.2	At maximum point: 34.1	At maximum point: 20.6
APCR Loading	At tallest point: 21.5	At maximum point: 19.6	At maximum point: 6.0
Bottom Ash Loading	At tallest point: 10.0	At maximum point: 31.25	At maximum point: 6.0
Stack/Flue	2 x 75m	N/A	N/A
Administration Building	11.05	35	9
Workshop	4.1	29	9

* Finished ground level is approximately 106m AOD.

Figure 4.2



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PROJECT

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Shelton Road

TITLE

3D Views

CLIENT

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218097-0006	P1

Figure 4.3

A South Elevation
NTS

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Rev	Revision Description		By	Chk Date

SCALE @ A1 NTS	ISSUING OFFICE Leeds	MSJ PROJECT NUMBER 218097
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PROJECT
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TITLE
Building Elevations Sheet 1 of 4

CLIENT
Cobalt Limited

DRAWING NUMBER	REV
218097-0002	P1

Figure 4.3

B North Elevation
NTS

P1	First Issue		CL	25.01.19
Rev	Revision Description		By Chk	Date

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PROJECT

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Shelton Road

TITLE

Building Elevations Sheet 2 of 4

CLIENT

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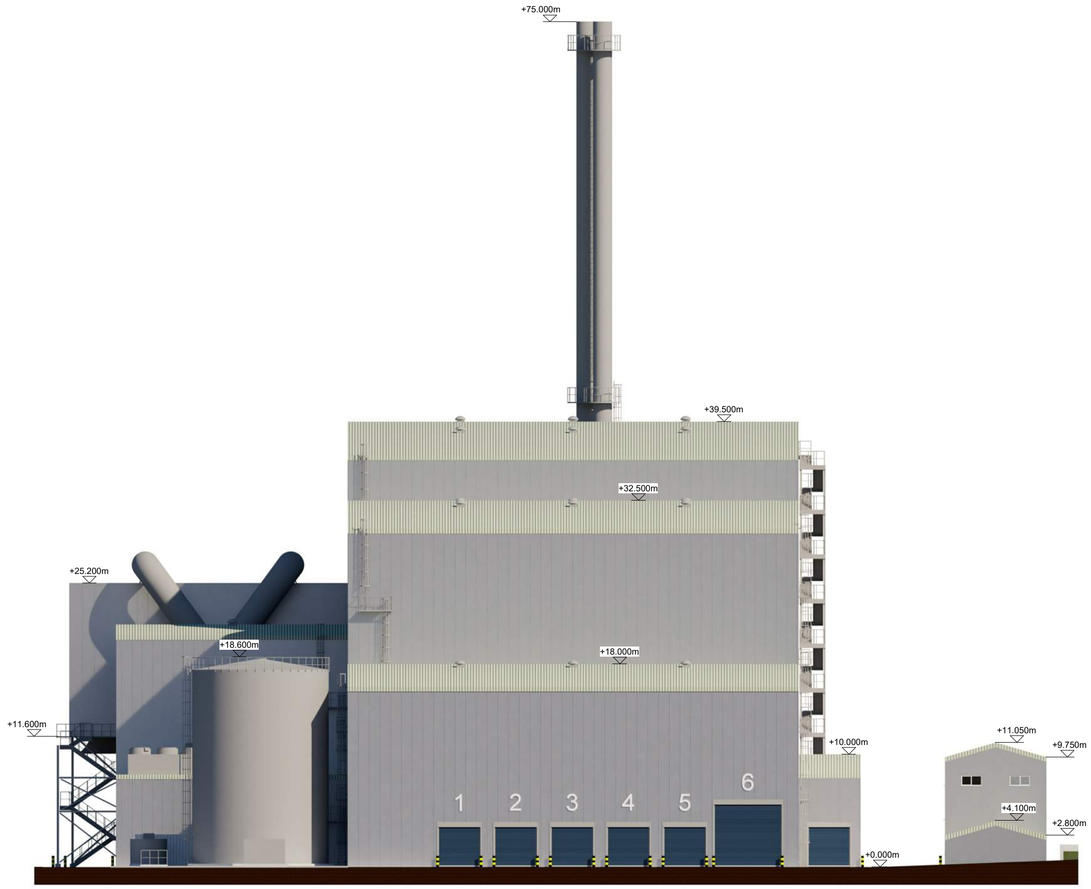
DRAWING NUMBER	REV
218097-0003	P1

Figure 4.3



C East Elevation
NTS

P1	First Issue	CL		25.01.19
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SCALE @ A1	ISSUING OFFICE	MSJ PROJECT NUMBER
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PROJECT

Energy Recovery Centre,
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TITLE

Building Elevations Sheet 3 of 4

CLIENT

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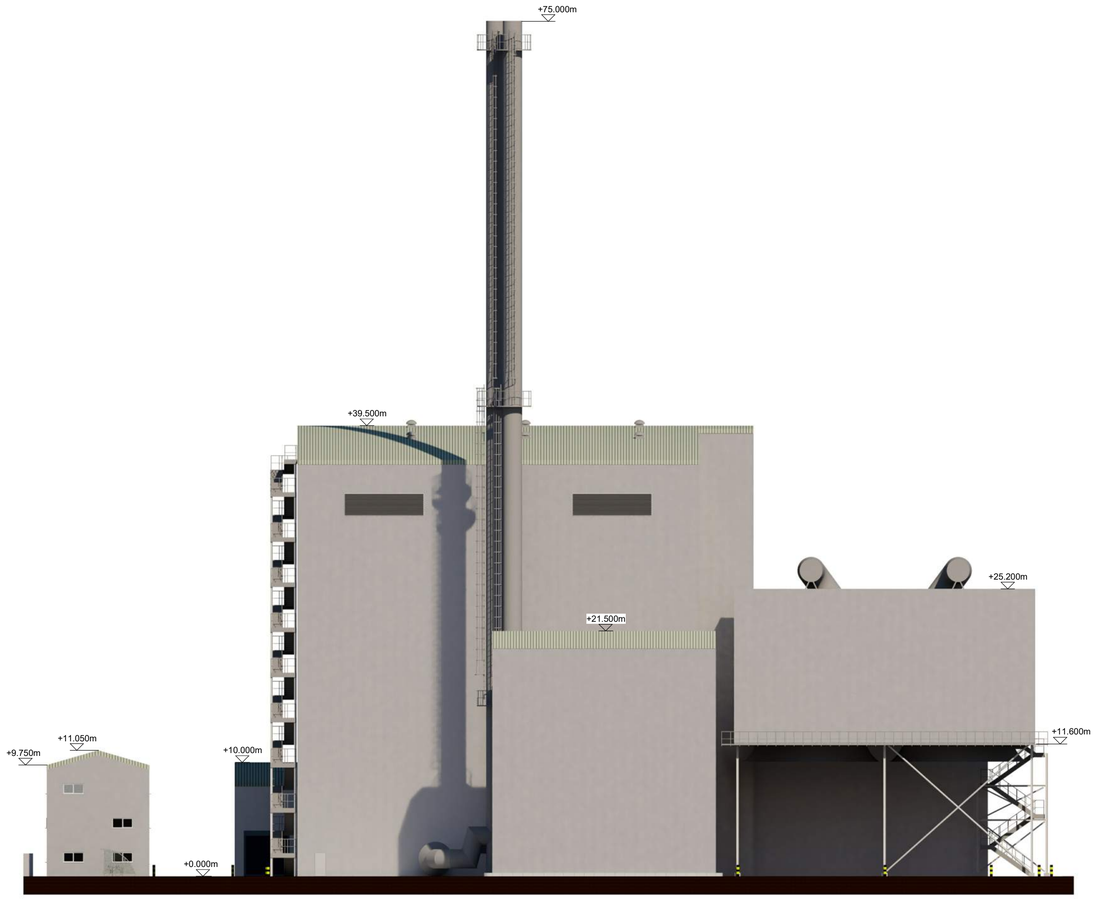
DRAWING NUMBER	REV
218097-0004	P1

Figure 4.3



D West Elevation
NTS

P1	First Issue		CL	25.01.19
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TITLE

Building Elevations Sheet 4 of 4

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DRAWING NUMBER	REV
218097-0005	P1

4.3.1 Building Materials

The buildings will be clad with insulated box profile cladding, or similar system, vertical walls having a stucco embossed aluminium finish. Roofs will use a light green shade, with all roller shutter doors being mid blue.

The ACC windshield will be of the same material as the main building walls.

4.4 Access

The means of access has been designed with safety in mind for all users.

Vehicles entering and leaving the Site will be segregated by a raised kerb and palisade security fencing. All heavy good vehicles (HGVs) entering the Site will enter a barrier-operated processing area where they will be released one at a time onto the entry weighbridge. A bypass lane will be provided, with barrier control, for staff vehicles entering the Site. All commercial vehicles leaving the Site will do so via the exit weighbridge adjacent to the gatehouse.

The layout has been designed to allow for vehicles to queue without affecting internal manoeuvres at the tipping hall, or preventing staff vehicles from leaving safely. It is important to note, however, that queuing is not expected to be a regular occurrence so this is a precautious design provision. Staff leaving in vehicles will not be required to use the weighbridge so a dedicated bypass lane is included in the exit design. Finally, a segregated pedestrian path will be provided across the Site access and into the Site or HGV holding area, with another from the gatehouse, directly around the perimeter roads to the Administration and Workshop Buildings, and a carpark for up to 36 vehicles will be provided for employees.

Shelton Road is an industrial estate road and is therefore considered suitable to accommodate additional increases in HGV movements as it has been designed for this purpose.

4.5 Drainage

A non-infiltration pond or basin with a surface area of 1,143 m^2 at a depth of 1 m with 1:3 side slopes was included in the Consented Development and is enough to control a range of rainfall scenarios on-Site. A non-infiltration basin which accommodates the same rainfall capacity with a surface area of 788 m^2 and depth of 1.6 m, is included as part of the Proposed Development. Infiltration drainage attenuation methods are not available to the Site due to the impermeable capping (see Section 2.4).

4.6 Landscaping

The proposed landscaping will include retention of the existing grassland alongside the northern border of the Site, which will be supplemented with planting of native grassland species. The trees along the eastern boundary will also be protected. Species rich grassland and ephemeral species will be planted around the attenuation pond and new trees also planted in this area. The proposed landscaping arrangement is shown in **Figure 4.4.**

4.6.1 Lighting

The Site is not located within a light sensitive area, being set within the context of an existing industrial estate with street lighting along both sides of Shelton Road.

There will be no direct illumination of the external faces of completed buildings, chimneys or external areas of the Proposed Development. A scheme will be submitted for approval by the planning authority that demonstrates how light pollution is to be controlled, the position, height, type and power of each light and the need in safety and security terms, and the circumstances in which the light shall be activated.

In general terms the facility will be lit by a series of external building-mounted and pole-mounted directional lighting, generally in accordance with the guidelines in **Table 4.3**.

Figure 4.4

New native species hedgerow
150 metres long, to be plnated as two staggered rows.
The first row to be set 1.5 m in from the kerb line. 500 mm spacing between rows and plants.
All plants to be bare root transplants 600 - 800 mm high, notch planted into the existing sward.

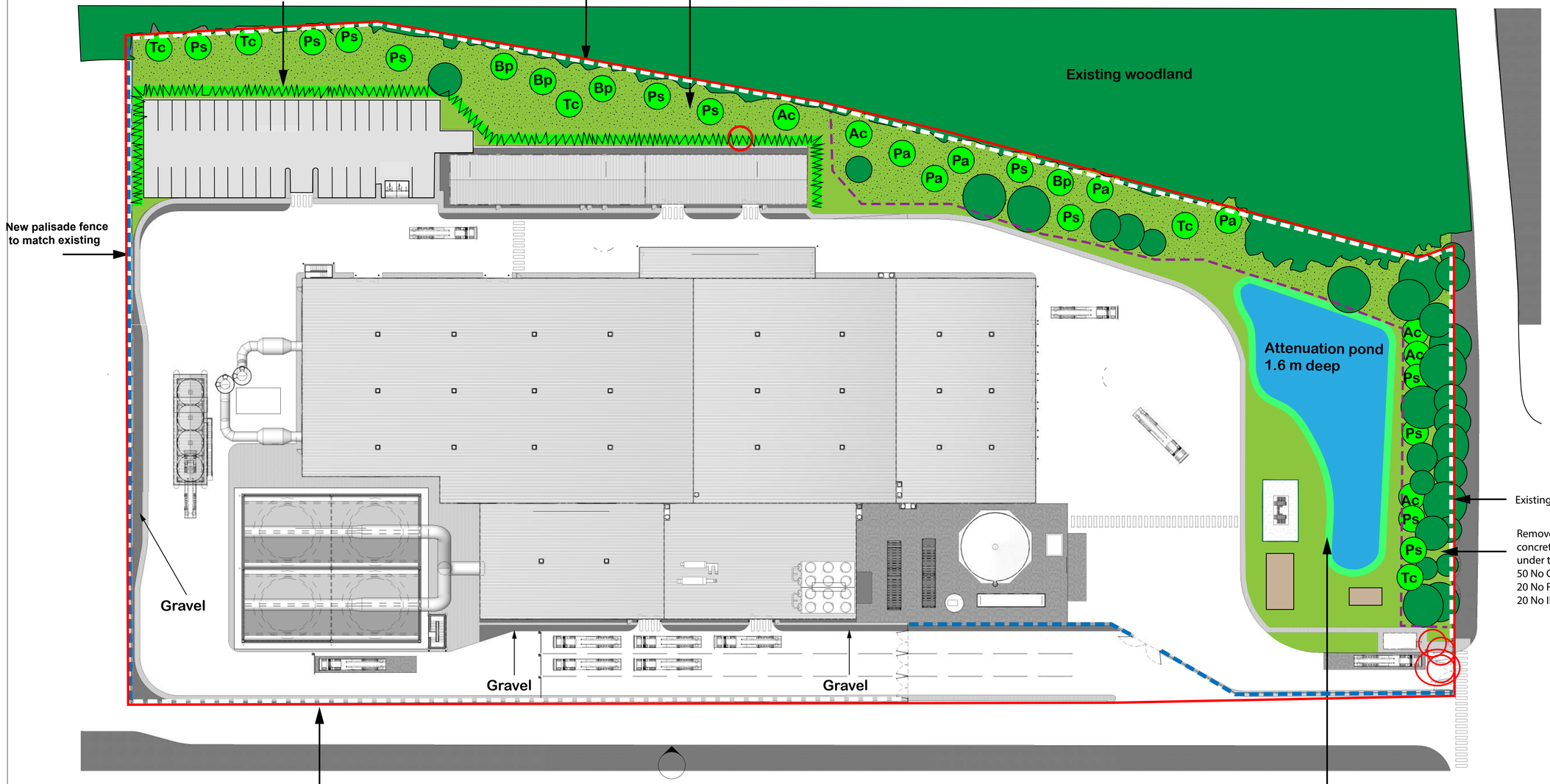
150 No Acer campestre (field maple)
150 No Corylus avellana (hazel)
150 No Crataegus monogyna (hawthorn)
50 No Cornus sanquinea (cornus)
50 No Ligustrum vulgare (wild privet)
50 No Prunus spinosa (blackthorn)

The following native species to be supplieed as cell grown plug plants to be planted in random naturalistic groups within the existing sward:

50 No Centaurea nigra
50 No Dipsacus fullonum
100 No Primula vulgaris
100 No Primula veris
100 No Silene dioica

Establishment of wildflower meadow

Following construction remove all waste and deleterious construction materials and alleviate compaction. Make up grades with subsoil from the site and rotovate 50 mm depth of BS Standard General Purpose Topsoil into the top 100 mm of the subsoil. Allow to lie fallow for one month, then kill emergent growth with glyphosate herbicide prayed in accordance with the manufacturer's instructions by a qualified operative. Re-cultivate the top layer to a fine tilth. Sow with Emorsgate EM2 general purpose meadow mix at a rate of 5 gms per square metre. Only sow in warm moist conditions such as mid spring or early autumn. In the first year keep mown in the height range 50 – 100 mm. In the second year allow to grow uncut until late June/early July. Strim down both newly seeded and existing grass areas and leave the arisings on site for a week to shed seed. Then rake up arisings and remove from site. Keep mown in the height range 50 – 100 mm until October, then leave uncut until next June/July and repeat annually. Remove pernicious weeds such as ragwort or thistles by cultivation. Scarify and re-seed and bare patches.



Existing grass retained

Proposed species rich grassland

Existing tree retained

Tree to be removed

Tc — Proposed tree planting

Proposed native species hedge planting

Proposed tree and grassland protection

Marginal planting to the attenuation pond

Existing palisade fence retained

Remove rubbish, dumped concrete and macadam from under the trees and plant
50 No Corylus avellana 60 - 80 cm transplants
20 No Ribes rubrum 40 - 60 cm transplants
20 No Ilex aquifolium (2 Litre containers) among the trees

N

0 5 10 15 20 25 M

Existing palisdae fencing retained or replaced with similar

Tree planting

The following selected standard trees shall be planted at the locations indicated.

Ac – *Acer campestre* (Field maple) Selected Standard 10 -12 cm 3.00 – 3.50 m high Container grown

Bp – *Betula pendula* (Birch) Selected Standard 10 -12 cm 3.00 – 3.50 m high Container grown

Ps - *Pinus sylvatica* (Scots Pine) 1.0 – 1.5 m high Container grown

Pa – *Prunus avium* (Cherry) Selected Standard 10 -12 cm 3.00 – 3.50 m high Container grown

Tc – *Tilia cordata* (Small leaved lime) Selected Standard 10 -12 cm 3.00 – 3.50 m high Container grown

At each location a tree pit 500 mm wider than the root ball shall be excavated and back filled with 80% BS Standard General Purpose Topsoil and 20% PAS 100 compliant compost. Trees to be staked with a single 75 mm stake with two ties and spacers.

Marginal planting

The following plants shall be planted in random groups on the typical water line as determined by the invert level of the outflow pipe.

20 No *Alisma plantago* (Water Plantain) bare root bundle

30 No *Butomus umbellatus* (Pink flowering rush) 1 Litre basket

30 No *Caltha palustric* (Marsh marigold) 2 Litre basket

20 No *Carex riparia* (Greater pond sedge) 1 Litre basket

30 No *Iris psuedacorus* (Yellow Flag) 2 Litre basket

20 No *Mentha aqualtica* (Water mint) Bare root bundle.

Remove all baskets on planting and remove from site.

sightline LANDSCAPE

Corby Energy from Waste, Shelton Road, Corby

Planting Plan

Drawing: 317_PP_01_V3

Scale: 1:400 @ A1

Date: 21.02.19

Table 4.3 Lighting Guidelines

Type	Guidelines
External lighting	Pole-mounted lighting will be provided on all external roads and the car park. Additionally, some items of external equipment will have maintenance and access ways requiring illumination, such as the ACC unit. Wherever possible luminaires will be placed to provide safe use of the access ways at a height no greater than 3 m above the access way level. The lighting will be controlled by time switch. A master photocell will be located externally on the roof of one the buildings on Site, out of any shadow. The trigger level on the photocell will be adjustable.
Building perimeters	Additional building lighting will be installed where necessary to provide safe maintenance and access.
Aircraft warning lighting	The flue stack will be provided with obstruction beacons in line with Civil Aviation Authority requirements.

4.7 Control of Accidents and Hazards

The Proposed Development will not include any large inventories of hazardous material that could be released in the event of a natural disaster, as the facility will only use pre-sorted RDF and residual materials and fuel gas residues and reagents will be appropriately managed. The facility will not accept hazardous or clinical waste.

No explosive materials are planned to be accepted in the fuel delivered to the plant and bunker crane operators are trained to be vigilant so as to remove the occasional potentially explosive item (e.g. gas bottle) that makes it through a delivery. Generally, municipal wastes are damp and there is very limited potential for explosion associated with dusts generated inside the facility. Dust suppression will be provided in reception halls where necessary. Overall there is an extremely limited risk of an explosion. Any potential explosions from such materials will be small in scale and have negligible off site impact.

The facility's construction materials, operating procedures, fire detection systems and control measures will all meet relevant fire protection specifications. These specifications have been developed over many years in conjunction with the insurance industry and developments can only obtain insurance if they have been built and operated to the highest standard. Additionally, a Fire Prevention Plan will be submitted and approved as part of the Environmental Permit application. The risk of a fire occurring from the Proposed Development is very low and the scale of any potential fire will be small and have negligible off site impact.

4.8 Differences between the Proposed and Consented Developments

As described in section 1.1 of this ES, the Proposed Development retains many aspects and principles of the Consented Development however, the change in technology requires an increase in building height and the footprint of the building will be reduced as a result. **Table 4.4** highlights the main differences between the Proposed Development and the Consented Development.

Table 4.4 Differences between Consented and Proposed Developments

	Consented Development 16/00028/WASFUL	Proposed Development
Technology	Advanced Thermal Treatment Materials Recovery Facility	Proven combustion technology.
Quantum of Material	195,000 tpa of RDF and Municipal Solid Waste (MSW)	260,000 tpa of RDF and residual waste
Power generated	16 MWe	Up to 23 MWe
Building specification	Up to 22 m height.	Up to 39.5 m height.
Flue	Three 45 m flues	Two 75 m flues