CONTENTS

INTRODUCTION

3.1 This section describes the development for which planning permission is sought. These development proposals have been formulated following site investigations and assessment of potential environmental impacts arising from the scheme. In this respect, regard has been given to previous assessments undertaken in connection with the outline planning application for B2/B8 use on, and adjoining the application site.

3.2 It should be noted that under Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 an ES should provide as a minimum "*information on the site, design and size of the development".* Accordingly, Section 3 of Volume 3 (Environmental Statement) also includes a description of the development and the associated processes to be undertaken.

3.3 In addition, the applicant and SLR have liaised closely with AE & E Inova[1], a leading thermal technology provider who has installed more than 400 plants around the world, with regard to the design and operation of the facility.

OVERVIEW OF THE DEVELOPMENT PROPOSALS

3.4 As set out in Section 1 above, planning permission is being sought for the establishment of an Energy Recovery Facility (ERF) on land at Kingswood Lakeside Business Park, Cannock.

3.5 The facility would accept some 400,000 tonnes per year of residual waste. All waste accepted at the ERF would be non-hazardous material, derived from commercial and industrial sources from the same general areas that are currently served by Poplars landfill, namely within Staffordshire, and the northern fringes of the Birmingham conurbation. The facility would also be able to accept residual municipal solid waste (MSW); however, the majority of the municipal waste in the area will be treated at the recently approved Four Ashes ERF facility.

3.6 The proposed ERF would comprise a modern energy from waste (EfW) plant which would use proven, highly regulated technology to extract energy from the residual wastes that remains after materials suitable for recycling and composting have been removed.

3.7 In order to demonstrate the acceptability of the development proposals, a comprehensive development scheme has been prepared and is described in this section. The scheme addresses the construction and operation of the ERF and ancillary infrastructure; it describes the physical nature of the buildings and infrastructure to be constructed within the site, and the processes to be undertaken once the ERF is commissioned. The development has been designed to ensure that the potential environmental impacts are avoided or minimised. This underlines the applicant's intentions

[1] http:// http://www.aee.co.at/products-services/energy-from-waste/

and responsibilities to conduct its activities as a responsible neighbour and in a manner which is sympathetic to local amenity and causes minimal disruption to the local community. In preparing the development scheme, consideration has been given to the following constraints:

- proximity of dwellings and the likely environmental impacts in terms of noise, dust and odour
- the landscape and visual impact of the facility
- transportation
- hydrology and hydrogeology
- ecological considerations in relation to off site designations
- features of cultural heritage importance surrounding the site

3.8 This section should be read in conjunction with the following drawings:

Drawing Reference	Drawing Title
KW 3/1	Site Layout – Roof Plan
KW 3/2	ERF Ground Floor Level
KW 3/3	ERF Upper Floor Plan
KW 3/4	Office Layout
KW 3/5	Longitudinal Section
KW 3/6	Cross Section
KW 3/7	South West Elevation
KW 3/8	South East Elevation
KW 3/9	North East Elevation
KW 3/10	North West Elevation
KW 3/11	Architectural Impression of Facility
KW 3/12	Gatehouse Detail
KW 3/13	Landscape Masterplan
KW 3/14	Section A1-A2
KW 3/15	Section B1-B2
KW 3/16	Section C1-C2
KW 3/17	Section D1-D2
KW 3/18	Section E1-E2

SITE LAYOUT

3.9 Drawing KW 3/1 illustrates the proposed layout of the facility, whilst Drawings KW 3/2 and KW 3/3 illustrate the internal arrangement of plant in plan and Drawings KW 3/5 and KW 3/6 show the internal arrangement in elevation. As noted in Section 2, the application site measures around 8 ha. Within this area, the development footprint (*i.e.* excluding peripheral landscaping works) measures around 5.3 ha, whilst the footprint of the ERF building occupies around 10,400m^2. Other land within the application site would be used for landscaping works to help integrate the ERF into its immediate surroundings.

3.10 The ERF building, being the main structure erected within the application site, would contain the following waste treatment process elements:

- waste reception hall with storage bunker, shredder and a waste feed system. The shredder would be used to break down any bulky waste received from Waste Transfer Stations which would otherwise clog or cause damage to the process equipment;
- boiler hall with grate, combustion chamber and a heat recovery boiler;
- turbine room with steam turbine for generating electricity and recovering heat energy;
- flue gas treatment hall with equipment to clean combustion gases;
- facility for discharging air pollution control (APC) residue silos and other ancillary equipment;
- two flue stacks to discharge the treated flue gasses into the atmosphere;
- ancillary areas, control room, Central Processing Unit (CPU) room, bulky and light storage areas and electrical room, workshops etc.

3.11 In addition to the above, provision would be made within a separate building for the following staff and visitor facilities:

- visitor centre to enable community participation and to encourage recycling and waste reduction in the county;
- office accommodation for the staff of the ERF;
- ancillary accommodation for staff welfare such as changing, showers etc.;

3.12 Outside of the main building, the following features would be provided:

- air cooled condensers (ACC) for cooling the recycling steam from the generating process;
- site access roads with drainage, lighting, footpaths and vehicle manoeuvring areas
- weighbridges and gatehouse, that allows adequate queuing length off the public highway. These facilities would be staffed when necessary;
- facilities for the recovery and processing of incinerator bottom ash (IBA)
- a crew drop-off shelter;
- electrical equipment to enable connection to the national grid;
- storage for the collection, recycling and rainwater runoff attenuation measures;
- a staff and visitors car park with space for a coach and minibus standing, together with covered cycle spaces to encourage a reduction in car use landscape and security fencing; and
- additional ecological habitats.

THE ERF BUILDING

Arrangement

3.13 All of the major elements associated with the handling of waste and generation of energy would be totally enclosed within a purpose-built new building that is appropriately designed for its surroundings. The main building would be around 164m in length and have a maximum width of 77m, being approximately rectangular in shape and orientated along a north-northwest to south-southeast axis within the application site. The curving roofline would result in the height of the building varying from around 16m to a maximum height of 47.4 metres. Drawings KW 3/7 to 3/10 illustrate the appearance of the ERF

3.14 Internally, the building can be divided into four zones:

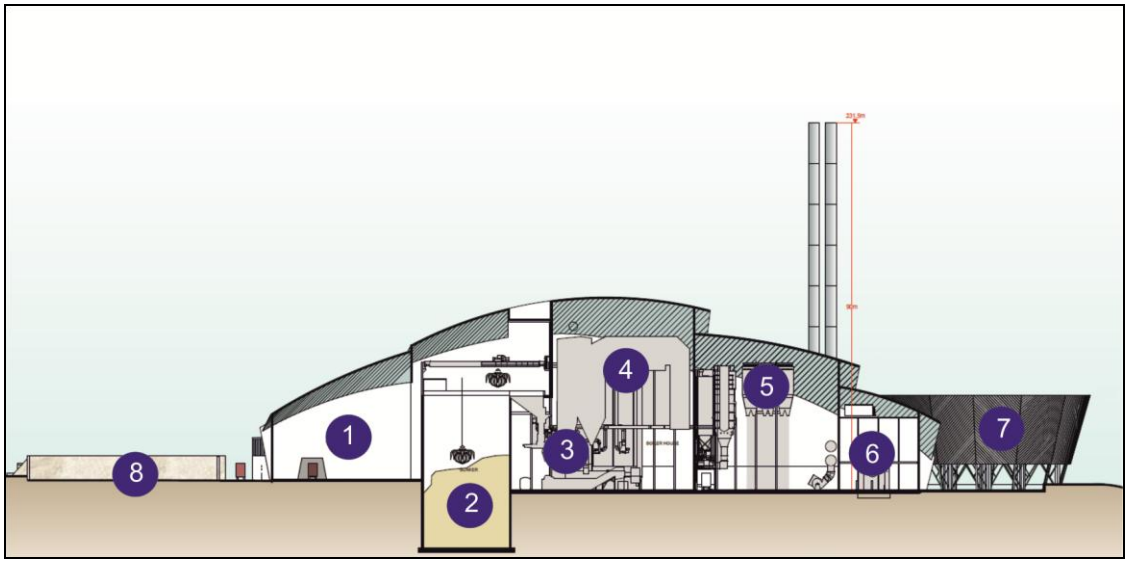
- waste reception ("tipping hall") and storage bunker;
- furnace and boiler
- turbine room (electricity generation); and
- flue gas treatment plant.

3.15 To the north-east of the main building, is the IBA maturation area. This area, which extends to approximately 1.1ha, is positively drained concrete hardstanding, bounded by a reinforced concrete push walls. Within the IBA maturation area would be a processing plant, comprising screens and conveyors, within an open fronted building, together with a wheel wash, surface water management lagoon and office accommodation.

3.16 Adjoining the western façade of the ERF building would be the office accommodation, visitor centre and welfare facilities, all housed within an architecturally designed two storey building.

3.17 Figure 3/1 below illustrates the internal arrangement of plant and main components in elevation. The northern part of the building contains the tipping hall **(1)** and associated bunker **(2)** (where all of the imported waste is unloaded), beyond which are the incinerator grate **(3)**, boiler **(4)**, flue gas treatment plant **(5)** and turbine room **(6)** (where electricity is generated). Outside of the building are the air cooled condensers **(7)** and IBA maturation area **(8)**. The ERF has been designed to accommodate two parallel process lines, each with a nominal throughput of 200,000tpa.

Figure 3/1
Cross Section



3.18 The facility would have two flue stacks, located adjacent to each other on the eastern side of the building. They have been designed to be slender and minimal in order to make them as visually unobtrusive as possible.

3.19 The height of the flue stacks has been determined by dispersion modelling using data from the technology provider (stack flow rates) and the architects (building design, location and dimensions). The stack height determination has been based upon a comparison of ground level concentrations with environmental assessment levels for oxides of nitrogen (NOx) and hexavalent chromium (Cr(VI)). These two pollutants have been chosen as indicators as they are typically emitted in the highest proportion of their environmental assessment levels.

3.20 Ground level concentrations decrease with increasing stack height and stack heights of less than 60m would result in exceedences of annual environmental assessment limits for these pollutants. Increasing the stack height to 80m removes the risk of such exceedences. A stack height of 90m is proposed in this facility to allow a safety factor and to increase the protection afforded to ground level receptors from atmospheric emissions from the ERF. This is considered further in Section 6 of this Volume.

3.21 The ACCs have been arranged to the south east of the ERF building within a separate sculptural object alongside the nested ERF form. Because of their prominent position both from the entrance and from the housing to the south, the air cooled condensers have been screened with a strong sculptural form that echoes the raking step lines on the ERF building. The inverted elliptical cone is composed with the flue to make a sculptural composition when seen from the entrance. The form of the ACC screen is further emphasised by the use of reflective standing seam cladding above 9m which is laid diagonally to give further movement. Although it is visually contained, the area under the ACCs is open, and the enclosure is not roofed, to ensure optimum air

circulation around the ACCs. Thus, the ACCs are concealed from view by use of a screened structure whilst maintaining the necessary air flow.

Design

3.22 The following paragraphs summarise the key components of the development. A more detailed description of the building, the design process and the site layout rationale is set out in a Design and Access Statement (Volume 2) which accompanies the planning application

Building Form

3.23 The design seeks to synthesize the functional requirements of the process technology and the need to enclose, drape and screen this, with the need to consider the visual impact on the local communities by providing an attractive, sustainable, environmentally friendly, exemplar waste management facility that fits well into its urban setting.

3.24 In striving to design a building harmonious with its site and surroundings, the ERF form has been conceived as a bold organic shape sweeping out of, yet being an integral part, the local landscape.

3.25 Given the size of the proposals, the aim is not to camouflage the structures, but to integrate them with the surrounding landscape setting, whilst at the same time celebrate the ERF's function. The architecture is therefore light, bright, accessible and sustainable, and rooted in the landscape and landform.

3.26 The shape emerges from a synergy between:

- a technical study of the options for the size and technology available to process the throughput capacity of the plant.
- the operational management requirements of the various activities and their location possibilities. This includes the operations of construction, access for regular and periodic maintenance and ultimately decommissioning.
- careful analysis of for the shaping options for the "wrapping" of the technology.

3.27 The shape naturally emerges from the plan form that encloses the process. This generates the curved facades, flowing roof curves and simple organic form. The enclosure of all the waste processes minimises emissions and provides residual noise attenuation. The building has been conceived as a nest of tables. This allows the height of the building to reduce in steps to meet the functional needs of the technology, and ensures that it is not unnecessarily high. The form opens up across the plateau creating an elegant, eye-catching composition; the flaring cylinder in the foreground contain the air cooled condensers, whilst the flues are the vertical pivot about which the sculptural forms are grounded. This creates a distinctive bold composition that is a positive statement of renewable energy.

3.28 The offices are a separate volume being elliptical in footprint with a butterfly roof. A covered way links the offices to the ERF at ground level, whilst at first floor level this link is enclosed, enabling a weatherproof connection between staff welfare facilities and the ERF.

3.29 Drawings KW 3/7 to KW 3/11 illustrate the external appearance of the facility, whilst Figures 3-2 to 3-5 below illustrate the architectural design of the facility in terms of its profile.

Figure 3-2
View of building looking south-west

Figure 3-3
View of building looking north east

Figure 3-4
View of building looking south-east

Figure 3-5
View of building looking north-west

Materials

3.30 The building materials have been chosen to ensure that practicality in terms of the operations is complemented by a sustainable approach to their selection and use. The materials also need to be able to do justice to the strong design concept when viewed from a distance and create interest at medium and short range. The building materials have been chosen to provide the following characteristics:

- maximum reliability and stringent weather tight performance at height.
- long life. (Manufactured products with a guarantee in excess of 25 years would be selected)
- economic and with the capacity to be used innovatively.
- sustainable materials that obtain high BREEAM credits
- light weight to enable components to be lifted into position by conventional cranes/lifting gear
- easily mechanically fixed to enable the frame to be clad rapidly
- to permit undercover working after erection to afford protection to the internal plant and machinery at the earliest opportunity.
- self-cleaning surfaces to reduce the frequency of maintenance.
- a high quality design appearance produced by the precision of material form and simplicity of detailing as indicated in the concept drawings.
- roof finishes to be glare free,
- translucent wall cladding to be glare free and provide diffused natural internal lighting to provide a good working environment for staff.
- ability to complement the strong concept when viewed from a distance, but with textures providing even more interest at medium and short range.
- modular in nature and systematic in construction allowing effective detailing and ensure high quality outcomes *e.g.* the air tightness of the external envelope of the offices and visitors centre component

Roof

3.31 An aluminium standing seam roof with a pre-patina finish is proposed for the ERF roof, such as “Kalzip Aluplus patina”, or similar. This material is ‘pre-weathered’ in the factory to achieve a consistent glare-free matt grey finish from the start. The material would be rolled on site in continuous lengths, thereby reducing the number of joins which could potentially cause future maintenance problems

Translucent Façades, Natural light

3.32 A key design principle is the provision of natural lighting for the operation of the plant and for the benefit of the workforce. Translucent cladding is provided in the chamfered zone of each “*nest*” between wall and roof. The translucent areas of the façade are designed to give an attractive finely graded appearance. The material, whilst translucent, limits the direct type of light spillage that is always associated with glass curtain walling. The material

used for all translucent panels would be Danpalon 16mm polycarbonate cladding system, or similar.

ERF Walls

3.33 Only one cladding material is proposed for the walls of the ERF; a standing seam type wall cladding, which would be laid to an angle matching the inclined ends of each of the nests. The standing seam would give a sleek striated texture to the walls that trapezoidal or sinusoidal sheet could not achieve. It is proposed that there is a subtle differences in the colour between the nests to enhance the 3 dimensional nature of the building form.

3.34 The joint between the angled sheets that occurs on the tallest nest, would be a refined sleek detail of converging seams. Openings in the cladding at ground level for articulated vehicles would be framed in heavy duty steel channel sections, to provide robust edge protection and prevent impact damage to the cladding.

3.35 The wall at the end of the turbine hall would be glazed with aluminium framed curtain walling, to provide 'glimpsed' views into the process area, to engage the local community and provide a degree of transparency, both literally and figuratively, to the energy recovery process.

3.36 The interstitial space between overlapping nests would be treated as a louvered ventilation zone, which could potentially provide fresh air in at the bottom of the boiler hall, and allow hot air to escape at the top of the boiler hall. If it is established that there is an excess of louver, then blanking plates could be fitted on the inside.

3.37 A silver metallic finish is proposed for the walls of the ERF. A metallic finish behaves in a semi reflective way, so it begins to suggest the tones of the surroundings within its base hue. This property would help the building sit sympathetically within its context through the changing seasons. Metallic silver is proposed to enhance the machine–like quality of the building and celebrate the technological aspects of the ERF. The specification on the drawings within this section should be referred to for further detail on materials and colours.

ACC Screen

3.38 A standing seam perforated mesh shall wrap the flaring cylinder that encloses the ACC's. The seams would be laid out in a herring bone pattern to catch the light and emphasize the dynamic, sculptural shape. Metallic silver is proposed for this perforated cladding, to maintain the familial resemblance between the various forms.

Flue Stack

3.39 It is proposed that the flues have a matt finish in a light grey blue such as Corus HPS200 'Albatross' or equivalent RAL colour. A matt finish will serve to minimise reflections off the flues, and the proposed colour would ensure

that there is minimal contrast against the sky, particularly in cloudy overcast weather conditions.

PERIPHERAL LANDSCAPING WORKS

Visual Mitigation

3.40 As noted from the Landscape and Visual Assessment (Section 7 of this Volume) the key landscape features in terms of visual mitigation are the earthworks and use of gabion walls to the periphery of the application site. It is not the intention to try and hide the building, as this would detract from its form; the main aim is to screen vehicle movements as the nature of this activity would attract the eye. The proposed landscape scheme for the facility is illustrated on Drawing KW 3/13. A large screen bank extending from the existing earthwork which surrounds the southern side application site rises to a maximum elevation of 150m AOD (approximately 6 m above adjacent ground level), this is shown on Section B1-B2 (Drawing KW 3/15). The screen landform is no less that 2 m above adjacent ground levels, this is in places achieved via use of Gabion walls where space is restricted. The height of the screen landform in combination with tree planting would provide an adequate screen to the peripheral road network within the application site. The initial effect of the tree planting would be enhanced through the use of larger sized 'standard trees' that would be planted along the crest of the features.

3.41 The use of internal gabion walls adjacent to the roads with an outer slope dropping down to the application site boundary has also been applied to the western boundary. This feature would serve to restrict views of vehicular movement, power export compound and IBA storage area from Leacroft Lake. This is illustrated by Section D1-D2 (Drawing KW 3/17) that illustrates the change in levels from Leacroft Lake though to the proposed development.

Landscape and Ecological Mitigation

3.42 Due to the current condition of the application site there are in effect no existing landscape features of value that would be lost; hence there is little scope for direct mitigation. The landscape scheme, which is illustrated on Drawing KW 3/13, would represent a marked improvement to the existing site condition, creating a series of habitat type of benefit to the local landscape

3.43 The key landscape features in terms of ecology include two new wildlife ponds, a small reed bed, an open shingle beach/pond margin suitable for use by little ringed plover, lowland heathland, species-rich grassland and new areas of native woodland. The rationale behind each of the key features is as follows;

- The creation of new reed bed, grassland and pond habitats would make a direct contribution to the relevant targets contained within the Staffordshire Local Biodiversity Plan (LBAP) and UK BAP.

- New areas of native woodland would be created to provide a screening function. Proposed species include hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), field maple (*Acer campestre*), oak (*Quercus robur*) and birch (*Betula pendula*).
- Areas of lowland heathland are proposed in mosaic with woodland and grassland habitats. The heathland would comprise of species such as heather (*Calluna vulgaris*), bell heather (*Erica cinerea*) and bilberry (*Vaccinium myrtilus*).
- Native Wildflower Grassland in the form of diverse dry grassland communities corresponding to the National Vegetation Classification MG5 would be created comprising of characteristic forb and grass species such as crested dog's tail (*Cynosurus cristatus*), common knapweed (*Centaurea nigra*), bird's foot trefoil (*Lotus corniculatus*), selfheal (*Prunella vulgaris*), meadow vetchling (*Lathyrus pratensis*) and ox-eye daisy (*Leucanthemum vulgare*).
- Water bodies would include a diverse marginal flora would be established along the margins of the ponds, although in other areas bare margins would be left. Species characteristic of the area and present at nearby Leacroft Lake include gypsywort (*Lycopus europaeus*), water mint (*Mentha palustris*), hard rush (*Juncus inflexus*), common bulrush (*Typha latifolia*), reed canary grass (*Phalaris arundinacea*) and yellow iris *(Iris pseudacorus*).
- *Shingle Beach Habitat* would be established and maintained via creation open areas of cobble and gravel substrates suitable for use by little ringed plover for breeding in close proximity to areas of water and grassland.
- Trees which are native and locally appropriate would be established mainly in the west of the site within mosaics of species-rich grassland and native low shrub planting. Species such as ash (Fraxinus excelsior), oak and willow (*Salix* sp) would be established at low density or in small groups.

3.44 The area of landscaping adjacent to the offices has been designed to compliment the architectural qualities of the building and structures creating an attractive accessible external space for employees and visitors. The use of ornamental grasses and bamboos add a sensory aspect, and would sit comfortably alongside the native plant communities.

SURFACE WATER MANAGEMENT

3.45 Surface water runoff would be managed in accordance with the principles of SUDS so that the rate of runoff would be no greater than the existing (pre-development) situation. Clean surface water (rainwater) from roofs would be captured and stored in tanks within the building for use in the process. Water from roadways would be passed via silt and oil interceptors to a surface water attenuation pond, prior to discharge from the application site (with Consent from the Environment Agency).

3.46 It is proposed that surface water runoff from the entire application site, excluding the incinerator bottom ash (IBA) storage and treatment area, would be routed to the attenuation pond in the south-east corner of the application

site. Runoff from the south-west corner of the application site would gravity drain to a pond in this corner of the application site which is a proposed permanent water resource for fire fighting. The fire water pond would over top, through a series of reed beds, ultimately discharging into the attenuation pond in the south-east corner of the application site.

3.47 Surface water runoff from the IBA storage and treatment area would potentially be loaded with suspended solids and would therefore discharge to a dedicated settlement pond prior to controlled discharge to the main attenuation pond in the south-east corner of the application site.

3.48 The outflow from the attenuation pond in the south-east of the site would be via the existing as-built drainage infrastructure to an existing attenuation pond to the south of the application site. Further details of the proposed site drainage scheme are presented in the Flood Risk Assessment (Appendix 10/2 within this Volume).

ACCESS

Vehicular Access

3.49 Site access would be off Cley Road, a recently constructed industrial estate road which links with Blakeney Way via a roundabout. Cley Road is approximately 200m in length orientated north to south; the northern end of the road terminates just to the north of Hickling Road. Hickling Road joins Cley Road via a standard T junction approximately 180m to the north of the junction with Orbital Way. Cley Road, in common with other roads in the area, was constructed recently in connection with the implementation of the outline planning permission for B1/B2/B8 development in the area. Further details of the highway network are provided in Section 8 of this Volume.

3.50 The site has been developed to minimise the occurrences where it is necessary for HGV paths to cross. This has led to the circulation being arranged in an anticlockwise ring around the IBA facility at the north of the site.

3.51 The site entrance would lead directly off Cley Road; as such it would be a natural extension to the current highway. From the site entrance the internal roadway, which would allow two way flow of HGV traffic, would follow the western and northern boundaries of the site to reach the reception area; comprising two weighbridges and gatehouse. From the reception area, the access road would split to provide access to the landfill site, or the ERF. For HGV traffic visiting the ERF, the access road becomes single width, following the northern and eastern boundaries, skirting the electrical compound. HGVs delivering waste would enter the tipping hall on the western façade, whilst HGVs collecting IBA or APC residues, or delivering reagents, would pass to the north of the ERF building. The access road continues along the eastern edge of the building before splitting again; waste/IBA HGVs would continue towards the exit weighbridge and site entrance, whilst reagent deliveries/APC residue exports would arc to the south to join a second access road, which runs along the southern edge of the site, and access the ERF, again on the western façade, but at the southern end of the building.

3.52 The second access road, referred to above, would also provide access to the office/visitor centre; visitors/staff would turn left shortly after entering the site and follow the road to the parking court, skirting to the south of the attenuation pond and ACCs, crossing a reed bed via a bridge. This access road would be dual lane, allowing two way flow of traffic.

Pedestrian Access

3.53 The main external pedestrian access to the ERF would be from Blakeney Way along the public pavement through a secure pedestrian turnstile at the entrance that can accommodate wheelchairs and disabled persons. From this point, a mostly flat footpath is provided along side the visitors access road, leading to the Offices and Visitor Centre. This footpath would be designed to wheelchair standards of gradient with non-slip surfaces and level rest areas. The pedestrian access winds though an attractively landscaped area following the shortest route from the entrance.

ANCILLARY DEVELOPMENT

3.54 As set out above, any development of this nature would be subject to a range of ancillary uses including offices, control rooms, welfare facilities and car-parking. These are illustrated on Drawing KW 3/1.

Proposed Office/Visitor Centre

3.55 The offices and visitor centre are arranged over two main floors. The entrance level would be at 143m AOD and comprises reception, visitor centre and exhibition space, a meeting room for 40 people with audio visual capability, two smaller dual-use seminar rooms, café, visitors' toilets, and vertical circulation. Access directly into the ERF would be by a covered but open walkway. The gross area of the ground floor accommodation would be 530 $m^{2.}$

3.56 On the first floor level (at 147m AOD) would be the ERF general office space, individual office space for managerial personnel, office staff wc facilities, as well as the locker areas and mess facility for ERF staff. The gross area of the first floor accommodation would also be 530$m^{2.}$ The welfare facilities would be arranged with separate 'clean' and 'dirty' ends, and would be provided with lockers and showers at the interface, to allow the offices to be maintained in a safe and clean condition. This upper level communicates with the technology, control room and workshops via a vertical core within the Boiler Hall.

3.57 By virtue of the fact that the office is a separate volume and smaller in scale than the ERF, it will bring detailed interest to the near views that contrast with the large form and scale of the main façade. Metal cladding would again be used for the offices, but would be dark grey zinc with a slightly more handmade character. A material such as Rheinzink standing seam is proposed with accented vertical seams and staggered horizontal laps. Visual accents are provided by reflective *brise soliel* and string courses, and by

blocks of strong colour in the exhibition area. Aluminium framed powder coated windows to ground and first floor would be arranged in continuous bands, with opening sections incorporated to promote natural cross ventilation.

3.58 Drawing KW 3/4 illustrates the internal layout of the office accommodation.

Weighbridge and Gatehouse

3.59 As illustrated on Drawing KW 3/1, three weighbridges would be installed at the site. Two weighbridges would be located adjacent to each other along the northern boundary; these would weigh all incoming HGVs and outgoing HGVs that have deposited waste within the landfill site. The third weighbridge would be located on an access road immediately to the south of the IBA maturation area; this weighbridge would weigh HGVs leaving the ERF.

3.60 The weighbridges would be standard single decked, pit mounted units, approximately 18m in length and 3m in width. Between the weighbridges would be a single storey gatehouse, having a footprint of 11.1m by 3.3m, and being approximately 4.65m in height at the front and 4m at the rear. Internally, the gatehouse would provide the office accommodation, kitchen area, store/server/CCTV room and a WC. Drawing KW 3/12 provides details of the proposed gatehouse.

Crew Drop-off Shelter

3.61 The crew drop-off shelter would be located on the western side of the access road, approximately 100m to the north of the site entrance. This would be a small shelter (akin to a bus shelter) together with a WC, together with a lay-by for a HGV to pull in.

IBA Facility

3.62 IBA would be matured, treated and stored on site, for subsequent sale to the construction industry for use as a secondary aggregate in road construction. The total IBA area provided is 11,295 sq m. The IBA maturation area is enclosed by a 6m high concrete push wall. It is open, apart from the pre-treatment area, which is an open fronted building, having a footprint of 45m x 37m and a height of 11m, sloping to 9m at the rear of the building. The IBA perimeter wall is a retaining wall along the north side of the enclosure, thereby integrating it into the landform.

3.63 There is provision within IBA area for a small office and welfare facility from which to run the operations. Connections for power, data and water are provided, as well as mean to discharge foul water. Parking is provided within the main car park for up to a maximum of 8 IBA staff.

Electrical Compound

3.64 To allow for the electricity generated by the ERF to be exported from the site, it is necessary to install electrical equipment to "*step up*" the voltage to the

local grid voltage. The fenced compound, which would be 1808m^2 in extent, would contain a transformer sited on a reinforced concrete hardstanding (bunded area) with a minimum 2m safety distance between the transformer and security fence. An additional external area would be allocated for the Distribution Network Operator (DNO) metering breaker with all client side switchgear and control being located within the incinerator building.

3.65 The compound would be surrounded by a combination of concrete walls (in common with the adjacent IBA area and secure fence.

Lighting

3.66 External lighting within the site would be required to ensure the safety of manoeuvring vehicles and pedestrians around the site. Lighting would also enhance the security of the site. The main areas where lighting would be necessary are as follows:

- adjacent to roadways, footpaths and vehicle manoeuvring areas. This would include all site roads and hardstandings within the site and the weighbridge area;
- above doorways; and
- on the façade of the building.

3.67 There are no proposals for floodlighting the ERF, or for high level lighting.

3.68 Lighting of roadways and footpaths would be designed to ensure that there was no 'glare' or light trespass. In this respect, regard would be given to guidance provided by the Institution of Lighting Engineers[2] and the Good Planning Guide (GPG) 10 "*Lighting in the Countryside*".

3.69 Lighting would be fluorescent down lighters, affixed to poles, or the building façade, and positioned horizontally with no upward tilt. Lighting units would be fitted with a time clock or photo cell to allow for automatic and manual operation.

3.70 'Bulkhead' style lighting units would be affixed to the façade of the building above all pedestrian exits. Again these units would be directed downwards and baffles/shields used to limit light glare.

Parking

3.71 The parking court would be located to the west of the office accommodation, being at a nominal elevation of around 143m AOD. As set out above, it is reached via a two lane access road which would have separate access from near to the site entrance so as to separate private vehicles from the vast majority of HGVs.

[2] Guidance Notes for the Reduction of Obtrusive Light (GN01) (2005). http://www.ile.org.uk/uploads/File/02_lightreduction.pdf

3.72 Parking provision at the site has been devised in line with car parking standards and guidelines operating in the Staffordshire area.

3.73 The parking court is entirely separated from the lorry circulation routes. There would be 48 car parking spaces at the site, 4 of which would be larger spaces specifically designated accessible parking spaces for use by blue badge holders only. These spaces are adjacent to the front entrance. The ratio of provision, (8%), exceeds the requirements of BS8300 of 5%. The accessible spaces will permit easy access to the side and rear of the parked car.

3.74 A turning circle/parking area is provided for a visitor's coach or minibus standing.

3.75 The parking court and pathways to the offices and Visitor Centre are formed using concrete paving blocks in attractive grid patterns with contrasting colours and textures as is considered appropriate.

3.76 In order to encourage staff to cycle to work covered cycle storage for 14 bicycles would be provided for cyclists adjacent to the offices.

Fencing and Security

3.77 The security to be provided has been designed on the following principles:

- establish a secure observable line remote from the building to ensure that the building and its operations are safe from objects thrown over the fence.
- a system that is able to detect intrusion into this secure line
- it shall co-ordinate with Biffa's Emergency planning guidelines.
- a system that is able to respond to any intrusion rapidly and effectively in order to prevent any of the threats mentioned above

3.78 The proposed security would therefore consist of the following components

1. Physical barrier at site perimeter in the form of a boundary fence with guard wire
2. Adequate external lighting to enable good operation of selected CCTV system.
3. CCTV system to detect breach of the boundary line and subsequent location of intrusion
4. A 24/7 security guard presence on site, conducting patrols and monitoring CCTV system, and capable of calling upon a rapid response backup

Boundary fence treatment

3.79 The operational area of the site would be provided with a secure boundary treatment. The location of the boundary enclosure is shown on Drawing KW 3/1. This would comprise a 2.4m tall non-climb plastic coated weld mesh fence on polyester powder coated standards.

3.80 There would be two securable gates in the boundary enclosure as follows:

- Main entrance into the site
- Securing access to the landfill site to the north

Main entrance

3.81 The entrance would be capable of being securely shut. The opening would be suitable for two HGV vehicles to pass safely side by side, approximately 8m clear gate opening width. The gates would be side hinged gates with wheels supporting the opening edge to reduce possible sag on the hinge of each gate. The wheels would run on steel tracks set marginally down into the surface of the road. Because the gates would be in the open position for most of the time, each leaf would be capable of being secured in the open position. There would be a separate gate in the boundary fence for safe passage of bicycles and pedestrians.

Access to Poplars Landfill Site

3.82 The opening would be suitable for two HGV vehicles to pass safely side by side, approximately 8m clear gate opening width. The gates would again be side hinged gates with wheels supporting the opening edge.

CONSTRUCTION

General

3.83 Following an initial period of design, procurement and manufacturing of plant equipment, construction activities would be scheduled to meet the delivery and sequencing requirements for the installation of the main items of process equipment. In general terms, construction would commence with enabling and preparation works to provide suitable access and laydown areas for temporary accommodation and plant and materials storage. The enabling works would also include for the provision of power, drainage and communications necessary for the duration of the construction phase. The general sequencing of civil engineering and building works would be subject to the contractor's detailed proposals, the following is intended to provide a typical approach:-

i) Site clearance and enabling works
ii) Excavation and concreting works for waste reception pit
iii) Construct floor slab in tipping hall area

iv) Construction of general foundations and boiler slab together with boiler floor slab area to provide laydown area for plant delivery
v) Construct turbine hall
vi) Construct air cooled condenser area
vii) Construct bottom ash area
viii) Construct foundations for flue gas treatment area
ix) Construct internal plant and electrical rooms
x) Construct administrative and office/welfare facilities
xi) Installation of process equipment coordinated with erection of steel superstructure and cladding
xii) Mechanical and electrical fit-out
xiii) Commissioning of plant and equipment
xiv) External works to include drainage, services, general pavements/hardstandings and site entrance works
xv) Landscaping works

3.84 Main items of plant which are likely to be required during the construction phase would include:-

i) Excavators
ii) Dozers
iii) Craneage (some with high lifting capacities)
iv) Telescopic handlers
v) Dumpers/general earthmoving vehicles
vi) Concrete delivery wagons and concrete pumps
vii) Low-loaders and plant equipment delivery vehicles

Construction Compound

3.85 To facilitate the construction phase, it would be necessary to establish a construction compound. This would comprise:

- Office, canteen and welfare accommodation (in the form of portable modular style buildings), which, to save space, would be two storey (i.e. two modules stacked vertically) with external metal steps;
- portable style secure storage buildings;
- bunded/dual skinned Fuel tanks and oil storage;
- separate containers for office, canteen and construction wastes (construction wastes would be segregated wherever possible)
- car parking;
- security gatehouse.

3.86 The compound would be located at the north-eastern part of the site, within the proposed IBA maturation area. In addition to the compound, areas would be required for lay down and storage of construction materials.

3.87 The compound area would be securely fenced and gated.

Access

3.88 During the construction period, all access to the site would be gained off Blakeney Way via Cley Road and the existing entrance. Temporary signage would be erected within the site to direct traffic.

Operating Hours

3.89 Construction operations would generally take place between the following hours:

- 0700 - 1900 Monday to Friday
- 0700 - 1600 Saturday

3.90 However, as is normal in construction projects such as this, some specific operations must be completed once started, such as concrete pouring for the bunker construction. Such operations may therefore have to be continued outside those hours/days, together with any necessary emergency works.

3.91 There would be no construction works on Sundays or Public Holidays.

3.92 It is envisaged that non-intrusive activities (such as electrical installations, plumbing and similar activities) would be undertaken outside of these hours in order to minimise overall construction time. HGV movements associated with such activities would be insignificant.

Duration

3.93 The construction period for the scheme is likely to take up to three years. It is anticipated that all parking and functions associated with this phase would be accommodated within the application site.

OPERATIONAL DEVELOPMENT

Introduction

3.94 The operation of an ERF plant consists of five key elements:

- waste reception;
- combustion;
- energy recovery;
- flue gas treatment;
- residues Handling

3.95 This process would be contained within two production lines that would operate side-by-side.

The Energy Recovery Process

3.96 The following paragraphs provide an overview of the process. A more detailed account is provided in Section 3 of Volume 3 (the ES).

Waste Reception

3.97 Previously sorted waste would be delivered via the site entrance off Ashby Road to a dedicated handling area using bulk transfer (from transfer stations) and refuse collection vehicles (RCV's). All vehicles delivering residual waste would be weighed when entering the site and proceed to a vehicle delivery and tipping hall via a one way internal road system, where they would back up and discharge the waste into a pit or storage hopper. From here waste would be transferred to the two parallel process lines and to each combustion chamber via dedicated feed chute and airlock section using grab cranes.

3.98 The cranes would also be used to mix and break-up the incoming materials to ensure homogeneity of feed to the combustion chambers. A shredder is provided to process any bulky household waste received in the hoppers and to reduce material to an appropriate size before returning shredded materials to the hoppers for processing.

3.99 Air would be extracted from the waste reception hall and used as waste combustion air which helps control odours arising in this area. This reception area would be enclosed with access doors and air louvers to manage traffic and air movements.

Combustion

3.100 Combustion takes place in two stages, with primary combustion undertaken on a moving mechanical grate to promote the mixing of burning/unburnt wastes. The combustion gas from the primary stage is heated further in the secondary combustion chamber to reach the specified minimum temperature of 850^{0}C for a minimum of two seconds. The burnt waste from primary combustion on the moving grate is removed as an ash.

Energy Recovery

3.101 The heat from combustion of the waste is recovered initially to form steam and ultimately as electrical energy. The heat that is produced is recovered within a waste heat boiler to form high pressure steam, which is used to drive turbines to generate electricity. A proportion of this site generated energy would be used within the facility itself, but the majority would be exported to the National Grid.

3.102 The design of the heat recovery boiler is particularly suited to waste combustion and incorporates facilities to minimise dust carry-over and for online cleaning through rapping systems and soot blowers to minimise maintenance impacts. Dust collected from the boilers is discharged as fly ash and collected with the flue gas treatment residues.

3.103 The power generation and auxiliary equipment provided include turbine/generator sets, air condensers and a facility with the potential to extract further value from the partially cooled steam or hot water after it has been through the turbines. This could be used to provide Combined Heat and Power (CHP) for homes and businesses within a reasonable proximity to the site.

3.104 If the surplus heat is exploited through the implementation of a district heating scheme, the overall efficiency figure of the facility can be increased. The generation of CHP therefore represents a considerable environmental benefit.

Flue Gas Treatment

3.105 An air pollution control system forming an integral part of the plant will enable operation at any load within the design limits treating all flue gas prior to emission such that human health and amenity guidelines on emissions are not exceeded; Emission limits would meet stringent Waste Incineration Directive standards, which would be enforced by the Environment Agency.

3.106 The flue gas treatment would be a semi-dry process, managed through a combination of processes to control the emission of oxides of Nitrogen (NOx); neutralisation of acid gases; dioxin reduction; and dust removal.

3.107 Residues collected in the flue gas treatment process are collected in hoppers prior to be exported from the site for further treatment/disposal.

Residue Handling

3.108 Three main waste residues would be generated through the process.

- "*Incinerator Bottom Ash*" (IBA) from the grate combustion unit (which amounts to approximately 25% of input material) would be exported off site for use as a secondary aggregate;
- *Ferrous metals* are separated from the IBA by electromagnetic separators. The quantity of metal that can be recovered from the IBA is typically around 2 to 5% depending on the waste feedstock.
- "*Fly ash*" from the heat recovery system would be collected and combined with the flue gas treatment residues (APC residues) which amount to around 3% of the waste input, would be exported from the site for disposal at a suitably permitted facility.

3.109 Therefore, of the total inputs to the facility, residues which can not be re-used or recycled account for just 3%.

Duration

3.110 The facility has a design life of at least 25 years.

Operating Hours

3.111 The facility would operate on a continuous basis, 24 hours a day, 7 days a week throughout the year, operating for a total of 365 days per year. Allowing for routine maintenance and annual shutdowns for insurance inspections the plant would be available for a minimum 90% of this time.

3.112 There are currently no restrictions on the operating hours of other premises within the Lakeside Business Park. In view of this, the delivery of waste to the facility would occur throughout the 24 hour period; however, it is anticipated that around 80% to 90% of deliveries would be during the period 0600 hours to 2200 hours.

WASTE FLOWS

3.113 The proposed ERF has been designed to accept up to 400,000t per annum of residual non-hazardous waste, which would be divided between two process lines. A two-line plant provides operational flexibility during periods of maintenance, enabling one line to be shut down whilst the second line continues to operate.

3.114 Waste would either be directly delivered in refuse collection vehicles (RCVs) or bulked up at a Transfer Station before being delivered to the ERF.

3.115 Exports from the site would comprise IBA, APC residues and metals. These would all be exported in bulk, with APC residues exported in sealed bulk powder tankers.

3.116 Details of HGV movements are set out in Section 8 below (Table 8/10).

EMPLOYMENT

3.117 During the construction phase, it is estimated that the development could provide employment opportunities for around 200 workers.

3.118 During the operational phase, the facility would provide direct employment for around 38 to 40 staff on a shift basis. Staff would be employed in a number of roles within the site, including: weighbridge operation, facility operation, clerical and administration staff as well as plant management. There would also be a need for temporary and contract workers for periodic maintenance and other irregular tasks.