

DESCRIPTION OF DEVELOPMENT 3

3.0 DESCRIPTION OF DEVELOPMENT

General

3.1 This section provides a description of the development proposals at Ardley Waste Management Facility.

3.2 Below is a list of the main elements of the **Energy from Waste Facility** comprising:

- waste reception hall with storage bunker, shredder and a waste feed system;
- boiler hall with a grate, combustion chamber and a heat recovery boiler;
- turbine hall with steam turbine for generating electricity;
- flue gas treatment hall with equipment to clean combustion gases;
- facility for discharging and loading air pollution control (APC) residue silos and other ancillary equipment;
- two chimney stacks to discharge the treated flue gases into the atmosphere;
- an incinerator bottom ash facility to enable pre-treatment storage, treatment, metal recovery, long-term storage, sealed loading and transportation of ash;
- an air-cooled condenser for cooling and recycling steam from the generating process;
- ancillary areas, control room, Central Processing Unit (CPU) room, bulky and light storage areas and electrical room, workshops, etc.
- a Visitor Centre to enable community participation and the encouragement of recycling and waste reduction in the County;
- offices for the staff of the EfW facility;
- ancillary accommodation for welfare, changing rooms, showers etc;
- a staff and visitor's car park, coach and mini bus standing and cycle racks;
- a double weighbridge with gatehouse;
- storage for the collection, recycling and rain water run off attenuation measures;
- site access roads with lighting, footpaths and vehicle manoeuvring areas;
- site profiling to provide a platform at 100m AOD for the EfW facility;
- new site access.

Landfill

- the continuation of landfilling operations with the same waste types as at present and landfill gas utilisation with consequent amendments to the phasing and final landfill restoration landform; and retention of gas utilisation plant.

HWRC

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- improvements to HWRC

EfW Facility

- 3.3 The EfW facility will be located in the south eastern corner of the site (see site boundary plan DWG NO 2 VOLUME 2) with the landfill and surface water attenuation features designed around it. The actual floor level of the proposed EfW facility has been located close to the base of the mineral workings at 100m AOD to maximise the benefits of screening provided by the existing mineral void. The base level of the waste bunker is set at -12.5m below base 87.5m AOD.
- 3.4 The design team has considered the appearance of the EfW facility in relation to the site and surroundings and the views of it from local areas.
- 3.5 The overall size of the facility is 229.0m long, varying from 70.0m to 38.0m wide and from 70.0m to 29.0m in height to the apex of the main roof and 36m to the apex of the fin from a base platform level set at 100m AOD. The chimney stack is 82m above base level at 182m AOD.
- 3.6 The incinerator bottom ash recycling facility is 176m long and 60m wide and will provide processing and storage capacity for the anticipated 75,000 tpa of recycled aggregate that will be generated by the EfW facility.
- 3.7 More detail on how the design has evolved is featured within the Design and Access Statement which accompanies the planning application (VOLUME 1).

EfW Facility Operation

- 3.8 The EfW facility will operate as follows;
- **Waste Reception:** The residual waste will be discharged into the waste bunker before being transferred to the process lines and combustion chambers;
 - **Combustion:** Combustion takes place in two stages, with primary combustion undertaken on a moving mechanical grate to promote the mixing of burning/unburnt wastes. The burnt waste from primary combustion on the moving grate is removed as an ash;
 - **Energy Recovery:** The heat from combustion of the waste is recovered initially to form steam and ultimately as electrical energy at approximately 24 mega watts. The power generation and auxiliary equipment ALSO has the potential to provide heating or process heat for homes and businesses within reasonable proximity to the site (See Appendix 4 Energy Plan);
 - **Flue Gas Treatment:** 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 gases prior to emission such that human health and amenity guidelines on emissions are not exceeded;

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- **Residue Handling:** Of the waste material that is introduced to the EfW facility process, three main waste residues would be generated. Incinerator bottom ash, from the grate combustion unit (which amounts to approximately 25% of input material) would be recycled on site using mobile plant to produce secondary aggregate for subsequent sale into the local market. Ferrous metals recovered from the bottom ash would also be recovered and sold as scrap. Fly ash from the heat recovery system would be collected, combined with the flue gas treatment residues and taken off site in sealed tankers for disposal at a hazardous landfill near Cheltenham.

Visitor Centre

- 3.9 The Visitor Centre will have dual use meeting rooms and an audio-visual seminar room on the second floor, with views over the Oxfordshire countryside. It is envisaged that the Visitor Centre will provide an opening to promote the importance of waste and recycling to all ages of the community. An opportunity also exists to utilise and show off the historic landscape in which the EfW facility will sit. Dinosaur footprints have been found on the site and opportunities to develop this pre-historic interest would be utilised through the Visitor Centre.
- 3.10 The use of the Visitor Centre would be available by appointment only.

Ancillary offices and other significant buildings

- 3.11 The offices and Visitor Centre will be linked with the workshops, storage and control rooms of the EfW facility. The offices will be arranged on three floors to accommodate the following:
- **ground floor:** EfW facility welfare provision and ancillary accommodation (Gross Area 450m²);
 - **first floor:** EfW Facility offices providing reception area, general office space and individual office space for managerial personnel (Gross Area 450m²);
 - **second floor:** Visitors Centre comprising a reception and exhibition space, viewing gallery and refreshment facilities, a seminar room for 40 people, two meeting rooms and toilets (Gross Area 450m²).
- 3.12 The offices will be provided with a Café.
- 3.13 The use of natural light and ventilation has been taken into consideration in the design of the offices, to help create a pleasant and energy efficient environment for the workers and visitors.
- 3.14 Disabled access will be part of the integral design and will meet the standards required by the Commission for Architecture and the Built Environment (CABE).

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The Air-Cooled Condenser

- 3.15 The air-cooled condenser (ACC) has been set at right angles to the EfW facility in its most efficient configuration. The ACC will be located at the north eastern end of the EfW facility and draped with a 'Champagne' coloured perforated screen.

Chimney Stack

- 3.16 The Chimney Stack is separate from the main EfW facility unit. It has been designed with twin flue stack which will be light grey in colour.

Materials

- 3.17 The following materials are proposed for the EfW facility and associated buildings and works:
- **Aluminium roof:** A Kalzip (Stucco embossed) aluminium standing seam roof;
 - **Translucent cladding to roof and walls:** Danpalon in pale sea green colour 16mm 1040 reverse fixed;
 - **Vertical Walls:** Corus Prisma steel sinusoidal sheeting laid vertically, colour metallic silver to match Kalzip standing seam roof;
 - **ACC Screen Cladding:** Perforated Kalzip stucco embossed suspended over ACC by plant manufacturer with integral wind wall in Corus Prisma steel sinusoidal sheeting laid vertically Straw;
 - **Office Roof:** Kalzip (Stucco embossed) aluminium;
 - **Office Walls:** Kingspan KS 1000MR
 - **Parking and Pathways:** It is intended that these will be formed using concrete paving blocks in attractive grid patterns with contrasting colours and textures;
 - **Gatehouse and Weighbridge:** the materials reflect the main EfW Facility.

Construction

- 3.18 Groundworks would commence in 2011 to create the platform to facilitate the EfW facility which will be constructed at 100m AOD. Construction of the EfW facility is programmed for a two year period between 2011 and 2013 with the facility operational by the final quarter of 2013.

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Landfill Operation

- 3.19 The existing landfill at Ardley accepts in the region of 300,000 tpa of municipal, commercial and industrial waste (50,000 tonnes municipal and 250,000 tonnes industrial and commercial). Current permitted voidspace at Ardley is estimated at 2.65 million tonnes.
- 3.20 As part of the proposed development, the approved landfill contours will be re-modelled to recover voidspace lost to the EfW facility, and to provide additional screening from the north. The revised phasing plans for the landfill identify that there will be a loss of approximately 600,000 tonnes of void space as result of the EfW facility. The modifications to approved landfill levels have been proposed to maximise screening and minimise landfill void lost to the location of the EfW facility. The proposed new contours include a 5m high increase to the southern landfill from 122m AOD to 127m AOD. The northern section of the landfill is permitted to a post settlement height of 128m AOD so there would not be an increase in the height of the landfill overall.
- 3.21 The revised landfill landform has an estimated 10 year life from 2009 with completion in 2019. This is based on an EfW facility not becoming operational until the final quarter of 2013, when it is assumed that landfill inputs will decrease to 200,000 tpa and would be a mix of industrial and commercial waste (including asbestos) and inerts. This gives the proposed landfill an estimated completion date of 2019.
- 3.22 The existing landfill gas plant and leachate treatment facilities already on site will be retained unchanged to serve the proposed development (see drawing number 3/14 VOLUME 2).

Surface Water Management

- 3.23 Revising the landfill contours to accommodate the EfW facility requires a suitable surface water management scheme, to avoid excess discharge into the Gagle Brook (see Chapter 9 – Water Environment). Sufficient water attenuation lagoons have therefore been included in the overall design.
- 3.24 Water has collected within the south-eastern corner of the mineral void and levels of ground water are known to be high in the locality. Surface water control measures are required around the proposed EfW facility to intercept runoff from the landfill and ensure the area of the proposed building is not prone to flooding.

HWRC Operation

- 3.25 The existing Household Waste Recycling Centre (HWRC) operates a split level site with five skip bays at the lower operational area of the site and nine parking spaces on the upper public area. As a result of the space to be created by re-locating the landfill offices and weighbridge to the new southern access, it is proposed to extend the HWRC to provide a further four skip bays

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and six additional public parking spaces. The proposed works are shown in the associated plans folder (See VOLUME 2) and will involve:

- construction of new reinforced concrete retaining walls to tie into existing;
- relocation of site offices;
- removal of the site weighbridges and foundations;
- construction of new concrete hardstanding;
- additional site drainage, fencing and bollards;
- new site signage and road markings.

Landfill Restoration Introduction

- 3.25 The accommodation of the EfW facility and ancillary developments will require amendments to the approved restoration scheme around the periphery of the EfW facility. The proposed development presents the chance to improve on the permitted restoration scheme and integrate the EfW facility into the landscape to a much greater degree than would otherwise be possible.
- 3.26 The main aim of the amended restoration scheme is the creation of a landform and land uses which maintain and enhance the landscape character and ecological value of the site, whilst mitigating the visual impact of the EfW facility.
- 3.27 The amended restoration scheme has a number of objectives;
- the continued restoration and management of the existing landfill development;
 - the design of the proposed landfill landform and its integration into the existing completed landfill landform;
 - the design of the proposed landfill land uses (including seeding, hedgerows and woodland planting) and their short and long term management;
 - the more detailed design of the proposed building setting in terms of style and relationship to the proposed buildings;
 - the more intensive and detailed management required to ensure the successful establishment of the landscape setting of the building; and
 - treatment of the application area boundary, and how this merges with the surrounding landscape character.

Restoration Context

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The Planning and Design Context

3.28 A number of documents are available that provide guidance for the proposed restoration of the application site. Those referred to include the following:

- Mineral Planning Guidance: The reclamation of Mineral Workings (MPG 7);
- Amenity Reclamation of Mineral Workings (DoE, HMSO 1992);
- Good practice guide for the handling of soils: Farming and Rural Conservation Agency, Cambridge, April 2000;
- Soil Forming Materials: Their use in Land Reclamation (DETR, October 1999);
- The Oxfordshire Wildlife and Landscape Study (OWLS), <http://owls.oxfordshire.gov.uk>;
- Conservation Target Report, <http://oxfordshire.gov.uk>; and
- Rights of Way Improvement Plan, <http://oxfordshire.gov.uk>.

3.29 MPG 7 states that;

“40 In preparing a planning application for either a new site or any significant extension to an existing working, the applicant/operator should develop a site-specific landscape strategy, which includes:

- defining the key landscape opportunities and constraints;*
- considering potential directions of working, significant waste material locations, degrees of visual exposure etc;*
- identifying the need for additional screening during operations;*
- identifying proposed after-uses and preferred character for the restored landscape.”*

3.30 Good practice would be followed with regard to restoration works and soil handling procedures.

3.31 The site is located within the ‘Wooded Estate-lands’ landscape type as identified by the OWLS landscape assessment. This identifies the existing key characteristics as:

- Rolling topography with localised steep slopes;
- Large blocks of ancient woodland and mixed plantations of variable sizes;
- Large parklands and mansion houses;
- A regularly shaped field pattern dominated by arable fields; and
- Small villages with strong vernacular character.

3.32 Detail on the landscape strategy for the ‘Wooded Estate-lands’ is set out in Appendix 6 :

Restoration Objectives

3.33 The general restoration objectives for the site are as follows;

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- successfully merge and integrate the proposed new landfill landform with the existing landfill landform;
- integrate surface water management for the landfill and built development into the overall landscape design;
- ensure ground water conflicts are avoided or resolved;
- take consideration of existing landfill phasing and ensure any revisions are practical;
- design revised landfill landform to maximise EfW facility building screening potential;
- include native woodland planting to boost long term screening levels;
- ensure final landfill restoration design is in character with field pattern and scale of the surrounding landscape; and
- use biodiversity and existing ecological management aims as basis for range of final land uses.

3.34 The proposed restoration scheme is shown on Drawing 3/10 (SEE VOLUME 2). This scheme has been designed to meet all the objectives outlined above.

Vegetation and Habitat Creation Details

3.35 The proposed vegetation types found throughout the various restoration areas can be divided into the following habitats:

- Existing landfill areas – agricultural grassland;
- Existing landfill areas – woodland planting;
- Species rich neutral grassland;
- Conservation based limestone grassland;
- Seasonally wet grassland;
- Ground water infiltration features;
- Wetland margins and ephemeral pond habitats;
- Lined pond features;
- Newt pond management;
- Hibernacular habitats;
- Species rich hedgerow planting;
- Short rotation coppice;
- Native woodland planting;
- Amenity grassland habitat around EfW facility buildings;
- Climbing plants;
- Amenity shrub and tree planting; and
- Amenity woodland planting.

Each type of habitat is illustrated on the detailed restoration plan 3/10 (SEE VOLUME 2) and would be constructed and managed using the basic specifications outlined in Appendix 6 Landscape and Visual (SEE VOLUME 4 TECHNICAL APPENDICS)

Access Arrangements

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- 3.36 A new access road located off of the B430 is proposed to ensure the increase of traffic movements is appropriately facilitated.
- 3.37 The proposed site access would be located in the south west corner of the site and would incorporate a ghost right turn lane. The proposed road would run along the southern boundary of the site all the way down to the south eastern corner where the EfW facility sits. The proposed access to the EfW facility site is defined by road design requirements. The road connection from the access point to the proposed EfW facility building is required to drop in level from around 110m AOD to the base level of 100m AOD. Infill material is required along the line of the site road to raise it above the level of the existing mineral void, especially towards the access point on the B430. This fill material needs to be well consolidated inert fill to form a sufficient base for site road construction.
- 3.38 The existing site access to the north will be retained to provide access to the HWRC and the new access will serve the EfW facility and Landfill.
- 3.39 The proposed access has been designed in compliance with relevant design guidance as contained within TD42/95 and, in particular to the guidelines pertaining to visibility at the junction.

Hours of Operation

- 3.40 The proposed EfW facility operation would be a continuous 24 hour operation, however waste deliveries will be restricted to the following hours:
- 0700 to 2000 hours Monday to Sunday.
- 3.41 The hours of operation of the landfill will remain as permitted, as follows:
- 0700 to 1800 Monday to Friday
 - 0700 to 1300 Saturdays
 - Specific exceptions for receiving waste from the HWRC site
- 3.42 The hours of operation of the HWRC will also remain as currently permitted, which are:
- 0830 to 1730 Monday to Friday
 - 0830 to 1600 Saturdays
 - 1000 to 1600 Sundays

Employment

- 3.43 The proposed EfW facility would create in the region of 40 new full time posts. Employment at the landfill and HWRC would remain as existing (10).