# FORD ENERGY RECOVERY FACILITY AND WASTE SORTING AND TRANSFER FACILITY, FORD CIRCULAR TECHNOLOGY PARK

# 16 Summary tables

## Introduction

16.1 This chapter summarises the findings of the EIA. A comprehensive assessment has been undertaken of the potential environmental effects arising from the proposed development. Where possible, measures have been incorporated into the development proposals to prevent or reduce the potential for adverse environmental effects. These primary mitigation measures are an integral part of the design and were taken into account in the impact assessments. The primary mitigation measures are summarised in table 16.1.

16.2 Measures to help mitigate adverse effects identified during the assessment process have also been proposed for some of the environmental topics. These secondary mitigation measures are summarised in table 16.2.

16.3 The residual effects, i.e. the significant effects remaining after mitigation, are summarised in table 16.3. The measures envisaged for monitoring adverse effects are set out in table 16.4.

## Table 16.1: Primary mitigation measures

| Design description / detail / operational measure | Environmental issue addressed / avoided / reduced or environmental benefit |
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| A design approach was taken to minimise the volume and massing of the ERF facility and in so doing sought to minimise its visual impact when viewed from key views | Reduced visual impact |
| Initial design studies explored various site layouts including different orientations for the main process areas. These were considered against the site constraints, characteristics and need to provide a high quality and operationally efficient design solution. The L-shaped arrangement of the main process building and its 45 degree rotation upon the site has been adopted to maximise the area available for landscaped bunding in those areas closest to nearby receptors and public rights of way, to best shield internal operations and vehicle movements, to break down the overall scale of the main building and to use the main building massing to best shield the ACCs from nearby receptors. | Reduced visual / noise / amenity impact |
| A 'twin' stream rather than a 'single' stream ERF plant was selected in order to minimise the height of the boiler hall. | Reduced visual impact |
| To further minimise overall building height, it was decided that areas of the ERF building would be set as far below ground level as groundwater levels would allow (i.e. – 1.5 m below ground level (finished floor level), with the exception of the bunker hall, which will be at -3 m below ground level (finished floor level)). | Reduced visual impact |
| A 'form follows function' design approach was adopted to ensure that the building envelope would be volumetrically efficient ensuring that the overall scale of the ERF would be minimised. | Reduced visual impact |
| The overall shapes of the ERF and the WSTF, are treated as refined cubic forms. In the case of the ERF a series of interlocking cubic forms make up the overall ERF. The principle high level roofs of both are enclosed behind parapet walls to ensure safe service access to roof areas for personnel and to help visually shield much of the rooftop photovoltaics and equipment from view. | Reduced visual impact |
| Maintaining a refined appearance has been a key objective in order to best mitigate the visual impact of the ERF building. The extent of louvres and glazing at high level have been minimised both to avoid interrupting the visual continuity of these facades, but also to reduce the shadowing that such features generate on what are, mostly, uninterrupted expanses of cladding and which would otherwise draw the eye to the upper parts of the building. | Reduced visual impact |
| The scale of the other buildings and external equipment are all lower in height and are, mostly, largely visually shielded by the perimeter landscaped bunds. | Reduced visual impact |

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| The stacks will be a significant feature, read against the sky and will be the only feature of the proposed development seen from many areas. For that reason, the stacks are played down in their form and colour and are designed as twin slender columns to best minimise their appearance.<br>The required access ladder has been located between them to minimise its impact from nearby views, as has the upper gantry which spans between rather than around the outer edge of the stacks to remain discreet and minimise the casting of shadow on the top of the stacks. The light neutral colour of the stacks ensures they best blend with the sky. | Reduced visual impact |
| A range of cladding materials have been considered in developing the design. A metal cladding system has been selected in order to achieve a light reflective finish which would best mitigate the overall scale and appearance of the buildings.<br>Aluminium standing seam cladding has been selected for several reasons: its matt metallic 'silver' appearance is light and reflective enough to be responsive to different lighting conditions and therefore will best blend the building with a background of sky and its matt finish avoids light reflections and reduces glare. | Reduced visual impact |
| The low-pitched roofs will be of metal cladding and laid to a minimum pitch of 1.5 degrees. Perimeter parapet walls will provide safe and permanent perimeter guarding for service personnel accessing the building's roof plates, and help visually screen less prominent roof mounted equipment and access hatches etc. | Reduced visual impact |
| All high level areas of glazing will be fitted with blind systems which will close during the hours of darkness to prevent internal lighting being visible from surrounding areas. | Reduced visual and lighting impacts |
| The road arrangement at the site has been designed to avoid the need for HGV reversing as much as possible, with predominantly one-way systems, and drive through arrangements for some areas of the site. | Reduced noise impact |
| A flint faced cutting and recessed pond is included in the side of the landform bund adjacent to the site's western boundary to mark the alignment of the former canal route, and a change in paving colour (blue) and texture within the site's car park to mark its alignment at the eastern end of the site.<br>In addition, the proposed development will include the following measures<br>• The reception area will have educational displays – some of which will reflect the aviation history of the site between 1917 and 1959 along with audio visual presentations<br>• Educational resources envisaged will focus a proportion of their resource on the transport history of the canal and aviation importance of the site<br>• The rectangular pond proposed in the break in the landscape bund on the western site boundary will have a basic heritage interpretation board installed adjacent to it, equipped with a QR code that allows further information and | Recognition and awareness raising of the cultural heritage of the site |

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| visualisations about the development and the history of the site to be explored. This will be produced in conjunction with any interested local history group(s)<br>• Opportunities either with local schools or the local history groups to get them involved in a local community art installation and design project will be explored | |
| Southerly facing photovoltaic (PV) solar panels will be mounted to the flat / low pitch roofs covering the reception hall, bunker hall and boiler / flue gas treatment enclosures and will provide for an area of 3,360m$^2$. The flat / low pitched roof to the WSTF will also be fitted with approximately 1140 m$^2$ of PV solar panels. Such an array is expected to generate between 663 - 745 MWh per annum and will therefore make a further contribution to renewable energy generation at the site | Renewable energy generation |
| Although a wide range of sustainable drainage system (SuDS) techniques were considered, there are very few methods that would be practically feasible and suitable due to the extensive built footprint within the site boundary and its geological and hydrogeological setting. Specifically, considering the high potential groundwater levels and contamination at the site in conjunction with its location within a high vulnerability zone on a Principal aquifer. Infiltration was therefore not considered to be a viable option. Lined, below ground cellular storage tanks, with an impermeable membrane to avoid potential groundwater ingress, was considered most practical at the site, together with rainwater harvesting.<br>At ground level it is proposed that surface water runoff is collected via rainwater down pipes and external hardstanding areas, passed through oil interceptors and silt traps and then directed via gravity into one of four lined, below ground cellular storage tanks, with impermeable membranes to avoid potential groundwater ingress. The surface water will then flow through a light liquid separator and be discharged at greenfield runoff rates into the unnamed land drain to the east of the site, using the existing outfall (NGR 500095 103414). If required, oversized pipes will supplement the attenuation tanks. The proposed attenuation storage systems will be located in the north, north eastern and eastern parts of the site.<br>The proposed attenuation system will provide 2,400 m$^3$ of attenuation storage volume, which has been designed to contain the 1-in-30 year critical storm event, including 40% allowance for climate change without causing any flooding to the site. Any exceedance flows beyond the 1-in-30 year critical storm event will be managed on site by allowing shallow ponding (i.e. approximately 150 mm average depth) in particular external hardstanding areas. This will ensure there is no increase in flood risk downstream as a result of the proposed development.<br>At the lower ground level it is proposed that water will be attenuated in an open 0.3 m surface water storage zone situated at the contractors laydown area and under the air condenser units and pumped up to the wider drainage system at ground level at a rate of 50 l/s. The surface water pumping system will be located beneath the air cooled condensers at 5 m bgl. The volume of storage will accommodate up to 650 m$^3$. An additional channel drain collection system with surface water ponding to a volume of 190 m$^3$ is incorporated at this level to accommodate additional storage in the event of pump failure. Additional assessment has been undertaken for the complete power and pump failure for a prolonged period and as the internal floor area is not sensitive to floodwaters entering the building, then standing water to a depth of 150 mm inside the building structure as well as the surrounding external areas is considered acceptable in a worst-case scenario. Water | Avoidance of surface water pollution and avoidance of flooding both on and off site |

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| quality monitoring stations are to be installed as part of the proposal to monitor the chemical composition of runoff from the site. | |
| A detailed maintenance regime will be put in place for the drainage system by the site management team, including regular inspections, removal of sediment and debris and repair as necessary. | Avoidance of surface water pollution and avoidance of flooding both on and off site |
| Rainwater harvesting tanks will also be installed in the ERF and WSTF buildings to collect rainwater from building roof areas. This water will be used on site to support site activities / processes where appropriate (e.g. toilets, washing HGVs, irrigate landscaped areas, etc.). The below ground cellular storage tank beneath the car park in the north east of the site is proposed to provide additional storage in the form of an enlarged sump that will feed an irrigation network for the soft landscaping features. | Sustainable use of water resource |
| In the event of a fire, all fire water generated will be diverted to the WSTF area and contained until it can be collected and tankered off site for appropriate disposal. An emergency penstock valve (or similar) will be shut to prevent water leaving the site. | Avoid off-site pollution |
| The 85m stacks will be situated towards the centre of the site. The height of the stacks was determined following detailed air dispersion modelling designed to determine the safe height for emissions. | Protection of human health and avoidance of deterioration in local air quality |
| Parking for all ERF and WSTF employees, visitors and maintenance contractors provided on site to avoid off-site parking issues. | Avoid car parking issues off site |
| All car parking spaces will be provided with electric charging points to encourage the uptake of electric vehicles. | Reduced greenhouse gas emissions and minimising vulnerability to climate change |
| Five car parking spaces for mobility impaired users are provided on site (four by the ERF and one by the WSTF). | Ensure site is accessible for mobility impaired users |
| Thirty-two secure spaces for bicycles will also be provided on site for use by staff and visitors. | Encourage sustainable travel – reduced greenhouse gas emissions and minimising vulnerability to climate change |
| The steam turbine generator will utilise high pressure steam from water heated by the combustion processes and generate approximately 31 MW of electrical power, of which approximately 28 MW will be exported to the local electrical distribution network (equivalent of powering approximately 68,250 homes). | Generation of reduced carbon energy |
| The proposals will be able to export up to 10 MWth of heat in the form of steam or hot water in the future, should off-site users be identified and secured through appropriate contractual arrangements and with the required off site infrastructure. | Opportunities for CHP |

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| Under normal operations there will not be any liquid process emissions from the ERF. Where practicable, waste waters generated from the process will be re-used / recycled within the facilities. Process effluents and wash down waters collected from internal process areas will be collected in a process effluent system and stored within a dirty water pit ready for re-use. | Reduced need for off-site wastewater treatment |
| The lighting design is based on the use of appropriate lighting to provide safe working conditions in all areas of the development area, whilst minimising light pollution and the visual impact on the local environment using lighting guidance for the external environment and obtrusive light. All lights will produce zero upward light pollution and have low glare reflector systems, which help to minimise the amount of glow, glare and flicker. | Reduced light pollution and visual impact |
| The single footpath public right of way that exists just within the north eastern site boundary will not be physically affected by the development. | Avoid access impacts on public rights of way |
| Planting and embankments are proposed to assist in breaking up the proposed building mass and provide a degree of screening to the ground level activity.<br>There will be a Paladin security fence which will run around the perimeter of the site. Inside of the fence to the north and west there will be a wide strip of wildflower grass on crushed concrete substrate to provide a rich habitat for wildlife. Bordering the wildflower grass strip will be a low height flint gabion wall, which will form the bottom of the proposed bund slopes. On top of the gabion wall will be a native hedgerow, reflecting the local character along rural lanes and also connecting existing vegetation in the east to the west through an ecological corridor. There will also be sections of scrub planting on the lower slopes behind the hedgerow to enhance the ecological value.<br>Two areas of meadow grass will be created on the north west and eastern corners of the site, with mature specimen trees added to create attractive features for walkers on the public rights of way to the north east and south west of the site, as well as enhancing the biodiversity of the site.<br>The proposed bund which contains the facility on the west, east and north boundaries, will extend from the low gabion flint wall up to an 8 m terrace on the north east and west corners and 4 m along the northern boundary. The slopes will be planted with native woodland, which as it matures will tie into the wider tree cover in surrounding views and soften views of the facility. The bund will drop to ground level in the south. There is a proposed wooden acoustic fence that will run around the top of the bund, which will be stained in a colour similar to the facility cladding to minimise its appearance. On the terraces feathered trees will be planted further softening the acoustic fence from northern views on completion.<br>In the north west corner of the site there will be wildflower grass on the internal slope to provide an attractive outlook from the administrative building, along with a small break out area with seating connected by a bridge from the building. The internal gabion retaining structure will be planted with trailing plants to soften the walls' appearance. | Reduced visual impact, enhanced biodiversity on site, reduced noise impact |

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| A further area of meadow will be created within a strip of land between the security fence and the acoustic fence along the southern boundary. Where there is sufficient space, specimen trees (Ornamental pears and Fastigiate Oaks) will also be planted within this strip. There are additional areas of meadow grass at the entrance and tree planting where possible to create an attractive entrance to the site. | |
| The proposed design will lead to a 763% net gain in the biodiversity value of habitats at the site and a 390% net gain in the biodiversity value of hedgerows at the site. This is achieved through the proposed habitat mitigation (i.e. conservation grassland / open meadow, scrub and species-rich native hedgerow) together with a number of proposed enhancements (i.e. pollinator rich grassland, native mixed woodland (young tree planting), ground based green walls, specimen tree planting, wildlife pond, bat boxes, bird boxes and bug hotels). See information below. | Enhanced biodiversity on site |
| The proposed habitat mitigation planting scheme for the site, will result in the creation of an additional 1.66 ha of habitat compared to baseline levels. Furthermore, the habitats created will be of higher biodiversity value than the existing habitats.<br>Conservation grassland will be sown on the bunds surrounding the development. Emorsgate EH1 and EG1will be used. EH1 contains wildflowers and grasses that are tolerant of semi-shade and is suitable for sowing beneath newly planted or established hedges and on woodland edges, rides and glades. In this instance it will be sown below newly created scrubby areas. EG1 will be sown into open meadow areas due to its mix favouring sunny and dry conditions.<br>Scrub will be planted on the bunds surrounding the development. The planting mix will include, 15% Guelder rose (*Viburnum opulus*), 20% Wayfaring tree (*Viburnum lantana*), 15% elder (*Sambucus nigra*), 5% *Rubus fruticosus*, 5% dog rose (*Rosa canina*), 20% blackthorn (*Prunus spinosa*) and 20% spindle (*Euonymus europaeus*).<br>A native species-rich hedgerow will be planted along the base of the northern site bund with the planting consisting of the following native species- 15% hazel (*Corylus avellana*), 65% hawthorn (*Crataegus monogyna)*, 5% crab apple (*Malus sylvestris*), 5% blackthorn, 5% dogrose and 5% guelder rose. | Enhanced biodiversity on site |
| In addition to the mitigation habitats to be created on site, additional habitat and species-specific features will be created and installed to provide enhancements for the site:<br>Pollinator rich grassland - BFS 14- Brownfield site mix to be sown along northern access track to provide a native species rich mix of flowering plants for pollinator species. (0.37 ha).<br>Native mixed woodland (young trees planted) - Woodland planting of young trees. Includes a native woodland mix and species to form screening of the building in strategic areas. Mix consists of- 5% field maple (*Acer campestre*), 20% alder (*Alnus glutinosa*), 12.5% silver birch (*Betula pendula*), 2.5% hornbeam (*Carpinus betulus*), 2.5% dogwood (*Cornus sanguinea*), 17.5% hazel, 6% hawthorn, 2.5% crab apple, 12.5% aspen (*Populus tremula*), 2.5% blackthorn, 5% English oak (*Quercus robur*), 1.5% dog rose, 5% crack willow (*Salix fragilis*) and 5% rowan (*Sorbus aucuparia*). (0.83ha).<br>Ground based green walls - Gabion walls to be planted up with 25% ivy (*Hedera helix*). (360 m). | Enhanced biodiversity on site |

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| Specimen tree planting - The following tree species will be planted along the southern boundary and in the eastern end of the site- Callery pear (*Pyrus Chanticleer*) x10, English oak 'Koster' (*Quercus robur* 'Koster') x14 and another 27 standard English oak. (0.1 ha).<br>Wildlife pond - A wildlife pond will be installed in the centre of the western boundary of the site. This serves dual purpose, paying reference to the canal that used to run through the site and providing a water resource for a variety of species. The pond will be planted with native aquatic vegetation. (0.01 ha)<br>Bat boxes - A total of five bat boxes will be integrated into the walls of site buildings. Schwegler 2FR connected tubes will be the most likely model. (5 boxes).<br>Bird boxes - A total of fifteen bird boxes will be installed around the site. These will include swift (*Apus apus*) boxes, house sparrow (*Passer domesticus*) terraces, grey and pied wagtail boxes on gabion walls and boxes for a variety of passerines integrated into the buildings and installed on trees. (15 boxes).<br>Bug hotels - Five bug hotels will be installed on site. These will be installed in sunny locations along the eastern boundary of the site. (5 hotels). | |
| The ERF building will include a multi-functional meeting / seminar room with capacity for accommodating visitors too. The facility will provide the opportunity to promote the importance of sustainable waste management to all ages of the community. | Visitor opportunities – improved awareness and understanding of waste management issues |
| The facilities will use LED lighting, which will reduce electricity use. | Reduced greenhouse gas emissions and minimising vulnerability to climate change |
| The facilities will be built in accordance with the requirements of the prevailing Building Regulations in relation to target emission rates of CO2 and target fabric energy efficiency rates. | Reduced greenhouse gas emissions and minimising vulnerability to climate change |
| The ERF will be designed to meet the requirements of the Industrial Emissions Directive (IED). The combustion control system will regulate the combustion conditions, and thereby minimise the levels of pollutants and particulates in the flue gas before flue gas treatment (FGT). Combustion chambers, casings, ducts, and ancillary equipment will be maintained under a negative pressure to prevent the release of gases. During operation, the temperature in the combustion chamber will be continuously monitored and recorded to demonstrate compliance with the requirements of the IED. The combustion control system will be an automated system, including monitoring of the steam flow, oxygen content, temperature conditions of the grate, modification of the waste feed rates and the control of primary and secondary air. | Protection of health and avoidance of deterioration in local air quality |
| Flue gases generated from the combustion process will be cleaned before being released into the atmosphere to the appropriate standards required to protect human health and the environment. The FGT system will be designed to comply with current legislation, meeting the requirements of the Environment Agency guidance on risk assessments for | Protection of health and avoidance of deterioration in local air quality |

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| environmental permits and the Industrial Emissions Directive (IED). In accordance with Article 15, paragraph 2 of the IED, emission limit values must be based on best available techniques (BAT). The BAT-associated emissions levels (BAT-AELs) are included in the BAT Reference document (BREF) on Waste Incineration. A final version of the BREF was published in December 2019 and from there on the recommendations of the BREF have become enforceable through Environmental Permits. The FGT system will therefore be designed to ensure that the facility operates well within the BAT-AELs and IED 30-minute average limits. | |
| Emissions from the stacks will be continuously monitored using continuous emission monitoring systems (CEMSs) and reported in accordance with the Environment Agency's (EA) requirements for the operation of the facility. Sampling and analysis of all pollutants will be carried out to the European Committee for Standardisation (CEN) or equivalent standards (e.g. the International Organisation for Standardisation (ISO), national or international standards). This will ensure the provision of data of an equivalent scientific quality. The CEMS will provide the information necessary for the ERF's automatic control system to ensure safe and efficient operation, it will warn the operator if any emissions deviate from predefined ranges and it will provide a record of emissions and events for the purposes of demonstrating regulatory compliance. | Protection of health and avoidance of deterioration in local air quality |
| The ERF process will result in two separate ash streams: IBA and FGT residues. IBA is a recyclable non-hazardous waste. Like other similar facilities (e.g. the Lakeside energy from waste (EfW) plant at Colnbrook, Slough) the IBA will, subject to contract, be transported to a company in Brentford where it will be used to make sustainable aggregates suitable for construction projects and road construction. 100% of the bottom ash from the proposed facility will be used for secondary aggregate production. The FGT residue is classed as a hazardous waste due to its elevated pH and requires either treatment or specialist landfill disposal. The FGT residue generated at the Ford ERF will be sent for treatment by OCO Technology Ltd (one of the applicants, Grundon Waste Management Limited, is both a major supporter and investor in OCO Technology Ltd) and used to create a lightweight, high quality, sustainable carbon-negative aggregate which is used to make carbon negative building blocks as well as in other construction material products. The FGT residue will be removed from site in enclosed tankers thereby minimising the chance of spillage and dust emissions. | Reduced waste, reduced greenhouse gas emissions and minimising vulnerability to climate change |
| Oversize and ferrous material will also be separated from the IBA stream on site and collected separately. It may be possible to achieve some degree of metal recovery and / or use as aggregate from the oversize material through off-site processing. The ferrous material will be recycled off-site. | Reduced waste / good waste management |
| Raw materials required for ERF process operations (including hydrated lime, PAC, ammonia, water treatment chemicals and fuel oil as well as others) will be stored appropriately in sealed silos / bunded tanks in order to minimise the risks of contamination to process and surface water. Bunded tanks / bunded controlled areas will have a volume of 110% of stored capacity. | Avoidance of water and ground pollution |

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| Due to the proposed nature of operations at the site there is potential for a range of spillages involving significantly different materials. A number of spill procedures will be produced for each potential spillage event identified, including spillage of raw material inputs to the ERF, ready use consumables and waste material outputs. Suitable and sufficient equipment will be maintained at both the ERF and WSTF (such as spill kits) in order to deal with the predicted scale of possible spillages of material. Staff will receive training in the use of the spill kits and will regularly practise as part of the normal operation of the facility. Under all circumstances, priority will be given to the potential environmental and health and safety impacts of spillages. Engineering controls will be employed where these would reduce the potential for spillage (or minimise the impact of spillage) e.g. bunded areas for fuel storage above ground. | Avoidance of water and ground pollution |
| Procedures and training will be put in place for dealing with abnormal operating conditions at the ERF (e.g. failure of an auxiliary burner, FGT bag, CEMS or electricity supply). The ERF will be designed to avoid the need for regular shutdowns but if any incident is likely to endanger personnel, or there is a risk of serious damage to the facilities, or a complete power failure, an emergency shutdown will be instigated. | Efficient emergency shutdowns will avoid the potential for water, ground and air pollution. High standards of health and safety will be maintained for staff and visitors. |
| The ERF and WSTF will be equipped with comprehensive fire protection and detection systems which will comply with the requirements of the National Fire Protection Association's recommended practice for fire protection for electricity generating plants and high voltage direct current converter stations (NFPA 850) and also in accordance with Fire Prevention Plan guidance as set out by the Environment Agency. Any fire water generated will be retained on site until it can be collected and taken for treatment at a suitable facility. | Avoidance of water and ground pollution |
| The ERF and WSTF will include the following odour and dust controls:<br>• The proposed ERF will be designed in accordance with the requirements of Environment Agency Guidance Note H4: Odour. The ERF will include a number of controls to minimise odour during normal and abnormal operation.<br>• All wastes received at the ERF will be unloaded inside an enclosed waste reception hall.<br>• The waste reception hall and waste bunker area will be retained at negative pressure.<br>• Air from the waste bunker area will be used as combustion air within the process.<br>• The negative pressure within the waste reception areas will minimise odorous emissions escaping from the building.<br>• During normal operation of the ERF, regular inspections will be undertaken to monitor for odour and will include the following:<br>  • Olfactory checks for odour in the waste reception areas and external installation boundary | Protection of air quality and avoidance of odour and dust nuisance issues |

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| • Monitoring the positions of doors and louvres (such as keeping doors shut when no waste deliveries are occurring)<br>• Monitoring combustion air flow, with odorous air extracted via the boiler and the stacks<br>• During periods of shutdown, the frequency of the above inspections would be extended, including monitoring combustion air flow if the induced draft fan operation can be maintained, for instance during periods of maintenance.<br>• During shutdown, a daily 'sniff test' and inspection around the boundary of the ERF would be conducted.<br>• During normal operation, bunker management procedures will be employed to avoid the development of anaerobic conditions and decomposition in the waste bunker, which could generate further odorous emissions. These management procedures will include the frequent mixing and rotation of waste to ensure regular and well distributed turnover of waste. During periods of shutdown, the bunker management procedures would not normally be implemented, to avoid the generation of odorous emissions especially when waste volumes within the bunker are low.<br>• Prior to periods of planned maintenance, bunker management procedures will reduce the amount of material in the bunker before shutdown. In the event of an extended unplanned shutdown, it is very unlikely that both steams will be subject to an unplanned shutdown at the same time. Therefore, potentially odorous air within the waste bunker will continue to be used as combustion air, providing negative pressure within the waste reception area. However, in the unlikely event that odour is detected beyond the site boundary, a backloading facility will enable waste to be unloaded from the bunker for transfer off-site to a suitably licensed waste management facility.<br>• All wastes received at the WSTF will be unloaded and stored within the main process building. There will not be any external storage of waste associated with the WSTF (The only exception being the quarantine bay which is located next to the WSTF offices).<br>• Regular inspections will be undertaken at the WSTF to monitor for odour and will include the following:<br>• Olfactory checks for odour in the waste reception areas and at identified points at the site boundary<br>• Monitoring the positions of louvres (e.g. keeping doors shut when no waste deliveries or transfers are occurring)<br>• A first-in, first-out approach will be adopted to waste delivered to the WSTF, with incoming waste being stored within the WSTF.<br>• Of the wastes which will be received at the WSTF, there will only be two types of waste which would generate odour – mixed municipal, commercial and industrial waste (referred to as general waste) and food waste. Under normal operation general waste will be transferred to the ERF, therefore this waste will be stored at the WSTF for less than 48 | |

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| hours and food waste will be stored at the WSTF for up to 1 week prior to transfer to a suitably licensed waste management facility for processing<br>• The storage times for these waste streams will ensure that potentially odorous waste will not be permitted to deteriorate on-site. During periods when the WSTF is not in operation (i.e. no waste deliveries or transfers are occurring), all doors to the waste storage areas within the WSTF will be kept shut.<br>• Should an extended period of shutdown of the WSTF be foreseen, waste management procedures will reduce the amount of material left in the storage bays prior to shutdown.<br>• If odour is deemed to be a problem in the event of an extended unplanned shutdown, provisions will be in place for the waste to be unloaded from the storage bays and transferred off-site to a suitably licensed waste management facility.<br>• Potential emissions of dust and fumes from the ERF bottom ash discharger will be minimised by the quenching process and storage systems proposed.<br>• As part of ongoing occupational health protection dust level checks will be carried out on a regular basis in operational areas of the ERF where high dust levels may be present. This will provide an early warning of increasing dust levels, at which point action will be taken to reduce dust levels.<br>• Dust emissions from the WSTF will be minimal as all waste materials will be contained within the building.<br>• Doors to the WSTF will be shut when the facility is not open and the movement of waste throughout the building will be minimised where possible.<br>• As a precaution, however, a rotary atomiser will be installed within the WSTF to provide dust suppression. This system will be fed from a mains water supply and will be in use during normal working hours.<br>• The site access road will be properly maintained, and regular checks will be carried out on road conditions.<br>• Cleaning will be carried out as necessary.<br>• Vehicles will also be checked prior to leaving the site to ensure that they are clear of loose waste and that their loads are secure.<br>• The operation of the ERF will be regulated by the Environment Agency under the conditions of an Environmental Permit. This will include conditions to control dust and odour emissions from the site. | |
| Noise control measures included at the proposed site include:<br>• The majority of plant equipment with potential to create noise will be housed inside the main ERF and WSTF buildings and will include measures to contain noise from the noisiest elements. Within the ERF high levels of acoustic insulation will be installed around the turbines and generator sets. Other potentially noisy equipment such as fans and motors will also be insulated. | Prevention / avoidance of excessive noise emissions |

| Design description / detail / operational measure | Environmental issue addressed / avoided / reduced or environmental benefit |
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| • The site has been designed to provide sufficient distance between the low speed fans on the ERF's ACCs and surrounding noise receptors. The ACCs are also proposed in a location that takes advantage of the barrier effects of the ERF and WSTF buildings in relation to noise sensitive receptors located (or potentially located) to the north and west of the site.<br>• A combination of landscaped bunding and 2.4 – 5 m high acoustic fencing will be installed between the operational area of the site and the site boundary. A 2.4 m timber acoustic fence will be positioned along the top of the proposed landscaped bunds to the north west side, north side and north east side of the site. A further 5 m high stretch will extend from the bottom of the north eastern bund to the south east corner of the site. A 3 m high timber acoustic fence is proposed on top of the lower south westerly bund and will peel off running flat along the site's south easterly perimeter.<br>• All unloading and loading of vehicles will be undertaken inside the ERF and WSTF buildings and vehicle access for delivery of waste or collection of ash or recyclable materials will be restricted to normal working hours. Both the ERF and WSTF have been designed to include one-way vehicle circulation systems, which also reduces the need for reversing vehicles and reversing alarms.<br>• Mobile plant for the site will comply with the most up-to-date standards, including noise emissions. All mobile plant will be operated and maintained in accordance with the manufacturer's instructions. Mobile plant that does not comply with the agreed operating noise limits will be taken out of service until compliance is achieved. Mobile plant movements at night will also be limited.<br>• Noise level checks will be carried out on a regular basis in operational areas of the ERF where high noise levels may be present. Early warning of increasing noise levels will result in a noise reduction or mitigation programme.<br>• Continuous on-site monitoring is not proposed during the operational phase of the facility. However, commissioning measurements will be completed to demonstrate compliance with the predicted plant and activity noise emission levels. | |
| Pest control measures to be implemented at the site include:<br>• Waste delivered for disposal will only be stored in designated areas and any spillage of waste will be recovered in accordance with specific, time limited procedures. This will reduce the potential for feeding patterns to be established by vermin and therefore discourages infestation. The design of the waste bunker for the ERF will ensure that the bunker is watertight, and this will prevent access to the contained waste by burrowing pests such as rats or squirrels. The bunker will be enclosed and under cover thereby reducing access to waste for birds and the tipping hall have been designed so as to eliminate roosting points for birds.<br>• Routine cleaning and good housekeeping at both the ERF and the WSTF will reduce the potential for the facilities to provide an attractive environment for vermin and this will be implemented through the maintenance | Avoidance of health / hygiene issues and general nuisance |

| Design description / detail / operational measure | Environmental issue addressed / avoided / reduced or environmental benefit |
|---|---|
| programmes. In the event that pests are identified, an action plan will be developed to eliminate or reduce the potential for nuisance to neighbours.<br>• Daily visual checks will be undertaken of the WSTF waste storage areas and ERF tipping hall / waste bunker area, as well as the access road and the site generally. If pests are reported appropriate measures will be taken and pest control specialists utilised where necessary. In addition to these measures, the ERF tipping hall and the WSTF tipping bays will be washed periodically and standard pest control methods will be implemented. | |
| Litter control measures:<br>• All vehicles carrying waste into or out of the ERF and WSTF will be covered or sheeted, thereby ensuring the potential for litter to escape is minimised.<br>• The delivery and storage of all waste within buildings on site further minimises the potential for wind-blown litter to occur.<br>• A daily check will also be made to key areas of the site (e.g. the tipping hall) to identify any build-up of waste. | Avoidance of nuisance |
| The ERF will operate 24 hours a day, seven days a week, though there will be periods of annual maintenance when waste processing is reduced. The majority of deliveries and collections will be received / made between 06:00 and 20:00 hours Mondays to Fridays and 08:00 and 18:00 hours on Saturdays. The WSTF will also operate from 06:00 to 20:00 Mondays to Fridays, 08:00 to 18:00 on Saturdays. | Prevention of noisy activities during quieter periods of the night |
| All vehicles will access the proposed ERF and WSTF from Ford Road. No HGV vehicles will be permitted to leave or access the site to / from the northern stretch of Ford Road. This will apply during operation and construction. | Restrict HGV movements to the south of Ford Road |
| Ford EfW Limited and Grundon Waste Management Limited have already established a Local Liaison Committee and will continue to meet on a regular basis to discuss the proposed development. It is intended that the group will meet during all stages of the proposed development, including: construction, commissioning and the start of operations and continue for as long as there is an interest. The liaison committee will provide the opportunity for those in the local community to raise any potential issues or queries. It will also provide a forum for community stakeholders to be informed and consulted regarding site operations and procedures. Liaison group members will include local parish councils, locally elected representatives of the community, as well as representatives of the Environment Agency, WSCC, Arun District Council and other stakeholders as appropriate. | Building good community relations with neighbours and good avenues of communication. |
| The existing WTS is currently certified to ISO50001 Energy Management System and also has a Competence Management System in place. It is intended that the proposed WSTF will also be certified to those standards and in addition be certified to ISO14001 Environmental Management System, ISO9001 Quality Management System and ISO45001 Health and Safety Management. The ERF will also be accredited to ISO14001 Environmental Management System, ISO9001 Quality | Demonstrates commitment to protecting all facets of the local environment (air quality, noise, water, ground conditions, traffic, etc.). |

| Design description / detail / operational measure | Environmental issue addressed / avoided / reduced or environmental benefit |
|---|---|
| Management System and ISO45001 Health and Safety Management, thus indicating Ford EfW Limited's aim to achieve the highest practical standards of quality, safety, occupational health, environmental control and performance at the proposed site. | |
| Operation of the ERF gives rise to an estimated net carbon benefit of approximately 48,000 tCO2e per annum when compared to sending the existing waste to landfill. It is also anticipated for there to be a carbon reduction associated with the development of the WSTF when compared to the existing WTS, due to the reduced transport and the recovery of recyclates from the incoming waste. In addition, the fitting of 4,500 $m^2$ of photovoltaic panels across the south facing roofs of both the ERF and WSTF buildings will contribute to the renewable energy production of the proposed development.<br>The proposed development will require an Environmental Permit (EP) to operate. In accordance with the EP requirements, the applicants will be required to ensure the proposed development is designed with a high level of energy efficiency and to use energy and water efficiently, including maintaining records of their consumption within the process.<br>The heat export capacity of the proposed ERF ensures that as soon as there are heat offtake agreements in place, the proposed development can be a provider of heat to the local community/local businesses and further offset carbon emissions from alternative heat sources. The export of heat in the form of hot water or steam, and periodic reviews of the viability of CHP implementation are requirements of the EP.<br>The proposed development will be operated to ISO 14001 certification. This is the international standard for environmental management systems (EMS), which will provide the proposed development with a framework for making policy and process changes that help improve its environmental performance. The EMS will require the applicant to set objectives and targets to reduce the environmental impacts associated with operation of the proposed development.<br>The design includes an electric vehicle charging point in each car parking space on site. This encourages and provides the opportunity for staff or visitors to use electric vehicles.<br>The proposed lighting scheme adopts LED luminaires, which offer significant energy savings and provide a high degree of optical control.<br>Bottom ash from the ERF will be used to make aggregates suitable for construction and road projects, while the flue gas treatment residues (FGT residues) will be recycled into carbon negative aggregate (or Manufactured LimeStone (M-LS)) that can be used to make carbon negative building blocks. | Minimises greenhouse gas emissions |
| The proposals will include the following embedded measures or operational procedures that will improve the project's resilience to climate change:<br>• The provision of a sustainable drainage system - this includes reuse of waste process water generated from site activities. | Improves resilience of the proposed development to climate change |

| Design description / detail / operational measure | Environmental issue addressed / avoided / reduced or environmental benefit |
|---|---|
| • The drainage system provides surface runoff disposal to the ground (infiltration) and there is also attenuation storage provided to restrict surface water run off generated across roofs and hardstanding. It includes a 40% allowance for climate change. The attenuation storage also includes a 40% allowance for climate change.<br>• Groundwater risk has been considered within the design and taken into account in the drainage strategy for the site (see Technical Appendix G).<br>• The proposed development has been designed to withstand increases in temperature - the main process building is required to be well ventilated to deal with the heat generated within certain process areas and the buildings and process systems are designed with movement joists, which account for expansion and shrinkage in fluctuating temperatures.<br>• The building will be designed structurally to tolerate increasing storm patterns, including higher winds. Part of the structural design for the building wind loading studies will be carried out which include a safety factor which is sufficient to allow for these strong winds.<br>• Preventative measures including regular inspections of the buildings will occur to identify and fix any damage to the buildings before it can develop onto a hazard.<br>• National health and safety standards will be followed, and the Risk Assessment Method Statement (RAMS) will be developed for all works around site.<br>• To mitigate risk to workers who are required to climb one of the stacks, wind speeds will be checked prior to activities to ensure they are not at dangerous levels. and workers will be required to be within a hooped ladder and be connected with a safety harness.<br>• The proposed development has a five day contingency plan, to account for any halt in feedstock availability. The waste bunker has the capacity for five days' worth of waste storage; there are over five days of APCr residues maintained on site; and there is sufficient storage capacity for over five days of IBA and APCr storage. Therefore, the proposed development will be able to continue normal operations for five days.<br>• The proposed development has been designed so that the grid connection and associated cables are underground. This protects them from any above ground damage from storm or wind events and the cables are designed to be resilient to water and so would not be impacted by any flooding events. | |

## Table 16.2: Secondary mitigation measures

| Potential effect | Mitigation |
|---|---|
| | ***Air quality, odour and dust*** |
| Dust generation during construction | A range of measures will be implemented through the construction environmental management plan (CEMP). Appropriate measures for a site of this size include the following:<br>• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager<br>• Develop and implement a dust management plan (DMP) which may include measures to control other emissions, approved by the local authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site<br>• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken<br>• Make the complaints log available to the local authority when asked<br>• Carry out regular site inspections to monitor compliance with the DMP, record inspection results and make an inspection log available to the local authority when asked<br>• Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period<br>• Avoid site runoff of water or mud<br>• Cover, seed or fence stockpiles to prevent wind whipping<br>• Ensure all vehicles switch off engines when stationary - no idling vehicles<br>• Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable<br>• Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate<br>• Avoid bonfires and burning of waste materials<br>• Avoid scabbling (roughening of concrete surfaces) if possible<br>• Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place<br>• Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground |

| Potential effect | Mitigation |
|---|---|
| | • Avoid explosive blasting, using appropriate manual or mechanical alternatives<br>• Bag and remove any biological debris or damp down such materials before demolition |
| ***Climate change*** | |
| No secondary mitigation measures required | |
| ***Health*** | |
| No secondary mitigation measures required | |
| ***Community and social effects*** | |
| No secondary mitigation measures required | |
| ***Cultural heritage*** | |
| Impact on archaeology / geo-archaeology during construction | A programme of investigation is proposed (preservation by record is a sufficient and policy-recognised form of mitigation). The geoarchaeological desk based assessment and deposit model produced by Archaeology South-East (Technical Appendix F) has shown several metres of possible geo-archaeologically significant deposits present at depth across the site. The report recommends that a series of geoarchaeological test pits are dug to properly evaluate the nature of these deposits, assess the extent of preservation and to map them in detail across the site. Test pitting will allow deposits to be assessed for the potential to contain artefacts, ecofacts, and palaeoenvironmental material and inform whether further work will be required before development.<br>The construction phasing programme and sequencing will allow for any further requirement such as any geotechnical engineering investigation. If deemed necessary, such targeted work could be the subject of a geoarchaeological method statement, or written scheme of investigation (WSI) in consultation with WSCC Archaeology, to ensure that borehole samples and the location of test pits produce soil samples and information for archaeological and geoarchaeology interest, as well as for engineering or hydrological purposes.<br>Should geoarchaeological remains be present and assuming that they are of low (local) significance and a design solution cannot be implemented to ensure their preservation in situ, further mitigation works such as a programme of archaeological excavation and recording, along with post-excavation paleoenvironmental assessment and dating, may be required to ensure the preservation by record of any threatened remains.<br>Any agreed archaeological investigation at the site will, by its very nature, be a destructive process, but the benefit to the current body of knowledge for this site will be effectively filled through the material and artefact assemblage uncovered. This approach is in line with best practice and the code of practice as set out by the Chartered Institute of Archaeologists. It will ensure that the archaeological resource at the site will be properly safeguarded and preserved by record a proportionate response to its likely significance. |
| ***Ground conditions and the water environment*** | |
| Effects on ground conditions and the | The construction of the proposed development will be carried out in line with a construction environmental management plan (CEMP) which will include best practice measures to manage potential effects associated with ground conditions and the water environment. An outline CEMP is provided in |

| Potential effect | Mitigation |
|---|---|
| water environment during construction | technical appendix L. The measures will include the preparation of a pollutants, water and sediment management protocol to inform construction works, which will set out measures such as the following:<br>• Minimise storage of hazardous chemicals on site and, where storage is necessary, use anti-pollution measures such as bunded trays or leak-proof containers<br>• Use designated refuelling sites, located away from open water<br>• Any cleaning materials or chemicals used during the construction phase are not to be hazardous to the water environment<br>• No storage of potentially contaminating materials in areas liable to water inundation<br>• Use of electrical power, rather than diesel, where possible<br>• Design of construction methods to minimise disturbance to, and mobilisation of, sediment<br>• Controlled washing down of plant while on site<br>• Implementation of piling design with tight quality assurance / quality controls<br>• Oil spill kits to be kept on site, and site staff trained in their use<br>• Minimisation of dewatering requirements by programming excavation works to be as short as possible. The need for an environmental permit to undertake dewatering will be established and the necessary applications made as required<br>• Development of a waste soils management strategy<br>• Development of a materials management strategy<br>• Development of an asbestos management and health and safety plan (if necessary)<br>Based on current knowledge of the site's level of contamination, it is anticipated that standard personal protective equipment will be sufficient to provide protection to ground workers, although asbestos may need a specific protocol and equipment, should it be found on site.<br>Construction works will be carried out in accordance with the Environment Agency's (2007) *Pollution Prevention Guideline 5: Works and Maintenance on or Near Water.* While this document is no longer officially supported by the EA, it is still considered to be representative of good practice within the UK.<br>Prior to groundwater dewatering, the following steps will be taken:<br>• Liaison with the Environment Agency at pre-application stage for abstraction licensing and discharge consent<br>• Site-specific hydrogeological site investigation<br>• Hydrogeological calculations based on the site investigation to better delineate expected abstraction rates<br>• Determination of suitable route to discharge abstracted water<br>• Application for groundwater abstraction licence |

| Potential effect | Mitigation |
|---|---|
| | • Application for discharge consent from the Environment Agency, for which a surface water flood risk assessment and assessment of water quality impacts are likely to be required<br>• If necessary, design remediation to treat groundwater and reduce contamination to an acceptable concentration prior to discharge<br>• Design of discharge system<br>• Provision of strategy for monitoring of water quality, groundwater level and surface water flow pre, during and post abstraction<br>Detailed procedures for the handling and haulage of demolition and construction waste will be developed once further design and survey work has been completed, the nature of the waste material is fully understood and routes for recycling and disposal of waste material are established. All procedures will adopt best practice and ensure that materials are safely handled whilst fully mitigating any risk of pollution to the environment or any contamination, which may jeopardise effective reuse or recycling. |
| Effects on ground conditions and the water environment – construction and post-construction | In addition to the CEMP referred to above, further work and monitoring will be undertaken pre, during and post-construction in order to ensure that no residual risks associated with ground conditions remain once the proposed development is constructed. This work includes:<br>• An intrusive ground investigation (including a contaminated land interpretative report) to determine the presence and composition of any on-site contamination and the potential for off-site sources to have affected the site. Any significant contamination identified through appropriate risk assessment will be remediated where needed to mitigate the impacts on identified receptors. Design and completion of intrusive investigation and assessment will be in accordance with appropriate Eurocodes, British Standards and current UK guidance<br>• A separate UXO desk study / risk assessment for the site by a UXO specialist, in advance of intrusive works being undertaken at the site<br>• A remediation strategy report, depending upon the results of the intrusive ground investigation<br>• Completion of a foundation works risk assessment, in accordance with EA standards, prior to construction to inform the potential risks associated with foundation types under consideration or to identify mitigation measures that may be needed<br>• A Materials Management Plan (MMP) (where site won materials are sought for reuse) in accordance with the provisions of the CL:AIRE document, *The Definition of Waste: Development Code of Practice, Version 2,* March 2011<br>• A programme of long-term groundwater monitoring in line with any foundation works programme, including excavation and construction of the waste bunker. The long-term water monitoring will also include surface water monitoring of the nearest ditch and the River Arun, due to site discharge into these features<br>• Standard design measures for below ground structures constructed in groundwater such as piles, for example, by the provision of granular conveyance routes and drainage blankets where necessary to maintain groundwater flow rates to be approximately equivalent to that pre-development (although unlikely to be required)<br>• Compliance with environmental permits where needed to undertake the dewatering works<br>• Following groundworks and construction at the site, a verification report will be prepared to document the successful completion of the development and will include a detailed audit trail to ensure that the implementation of any required remedial measures was in accordance with the remediation strategy. |

| Potential effect | Mitigation |
|---|---|
| ***Landscape and visual effects*** | |
| No secondary mitigation measures possible | |
| ***Natural heritage*** | |
| Effects on ecology off-site | There are no predicted impacts on off-site ecological receptors during the construction phase, however, following a standard safe working plan for the works is good general practice. This prevents any impacts on adjacent and nearby receptors, even if of low value. The following methods will be employed as good working practice:<br>• Cover, seed or fence stockpiles to prevent wind whipping<br>• Erect solid screens or barriers around dusty activities or the site boundary at least as high as any stockpile on site<br>• Avoid site run-off of water or mud<br>• Ensure an adequate supply of water on site for dust suppression<br>• Ensure the use of quiet working methods, the most suitable plant and reasonable hours of working for noisy operations, where reasonably practicable<br>• Screen plant to reduce noise by increasing the distance between the source and the receiver<br>• Close acoustic covers to engines when they are in use or idling<br>• Protect storage areas and vehicle refuelling / maintenance areas with an impervious base and provide impermeable bunds of an adequate capacity around tanks containing potential pollutants<br>• Use drip trays and regular maintenance checks for construction plant<br>• Avoid working at night during the summer months |
| Effects on nesting birds during construction | To prevent the disturbance of nesting birds, the following methods for site clearance will be employed:<br>• Vegetation will be removed outside of the breeding bird season, between October and February, or<br>• Vegetation can be removed during the breeding bird season if preceded by a nesting bird check by a suitably experienced ecologist. Any nests that are recorded must be left with a 5 m exclusion zone around them until all of the chicks have fledged. For some species this may be up to five weeks |
| Biodiversity enhancements on-site | All mitigation and enhancement habitat will be included in a landscape and ecological management plan (LEMP) for the site, which will specify the long term management strategy for the proposed habitats, to ensure they reach their target condition and are maintained at that condition. It is anticipated that the LEMP would be secured through condition. |

| Potential effect | Mitigation |
|---|---|
| | ***Noise and vibration*** |
| Noise effects during construction | Best Practical Means (BPM) as defined by the Control of Pollution Act 1974, will be implemented as part of the working methodology. This will serve to minimise the noise and vibration effects at receptors nearest to the construction works. The reduction in noise levels provided through the implementation of BPM will vary depending on the nature of the works. Typical BPM measures which will be considered, where reasonably practical, include:<br>• Programming noisy works so that these do not occur during Saturday working hours of 13:00-19:00<br>• Plan working hours to take account of the effects of noise and vibration upon persons in areas surrounding site operations and upon persons working on-site<br>• Where reasonably practicable, adopt quiet working methods, using plant with lower noise emissions<br>• Where reasonably practicable, adopt working methods that minimise vibration generation<br>• Locate plant away from noise and vibration sensitive receptors, where feasible<br>• Use silenced and well-maintained plant conforming with the relevant EU directives relating to noise and vibration<br>• Avoid unnecessary revving of engines and switch off equipment when not required<br>• Keep internal haul routes well maintained<br>• Start-up plant and vehicles sequentially rather than all together<br>• Carry out regular inspections of noise mitigation measures to ensure integrity is maintained at all times<br>• Provide briefings for all site-based personnel so that noise and vibration issues are understood, and mitigation measures are adhered to<br>• Manage plant movement to take account of surrounding receptors, as far as is reasonably practicable<br>If work is required to extend into periods beyond the agreed hours, separate authorisation will be requested from with the local authority.<br>The construction area will be surrounded by standard site hoarding. |
| | ***Traffic and transport*** |
| Traffic effects during construction | The outline construction environmental management plan (CEMP) provided in Technical Appendix L seeks to minimise the impact of the construction of the proposed development on the local area. Once a contractor is appointed in due course the outline CEMP will be reviewed and updated in line with the construction programme and include details of the following:<br>• Preferred hours of deliveries and removals (out of peak hours)<br>• Agreed construction traffic routing<br>• Road cleaning facility provisioning<br>• Off-loading and storage areas<br>• Personnel and vehicle segregation<br>• Equipment e.g. temporary fencing, signage etc.<br>• Site inductions<br>Construction workers will be encouraged to use public transport services, where feasible. |

| Potential effect | Mitigation |
|---|---|
| | The detailed CEMP will also consider the safety of other road users, pedestrians and cyclists. |

## Table 16.3: Significant residual effects

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|---|---|---|---|---|---|
| ***Air quality, odour and dust*** | | | | | | |
| No residual air quality, odour and dust effects | | | | | | |
| ***Climate change*** | | | | | | |
| Net carbon reduction of approximately 48,102 $tCO_2e$ per annum for the ERF when compared to the baseline. Therefore, over the lifetime of the development (assumed to be 25 years) the net carbon reduction of the proposed development will be approximately 1,202,550 $tCO_2e$ compared to the baseline | - | - | Beneficial | Long term | Significant | Absolute |
| ***Health*** | | | | | | |
| No residual health effects | | | | | | |
| ***Community and social effects*** | | | | | | |
| No residual community and social effects | | | | | | |
| ***Cultural heritage*** | | | | | | |
| Knowledge gained through archaeological and geoarchaeological investigations | Low | Large | Beneficial | Permanent | Moderate | Absolute |
| Place Farm (LB1); changes to the contribution of the setting to the significance of the listed building through the presence of construction activity | High | Medium- small | Adverse | Temporary | Moderate | Reasonable |
| St Andrew's Church, Ford (LB3); effects of the presence of construction activity on the wider setting of the listed building | High | Small | Adverse | Temporary | Slight-moderate | Reasonable |
| Portsmouth-Arundel Canal enhanced awareness and appreciation | Low | Large | Beneficial | Permanent | Moderate | Absolute |

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|---|---|---|---|---|---|
| Place Farm (LB1) changes to the contribution of the setting to the significance of the listed buidlings through the presence, scale and character of the development | High | Medium | Adverse | Permanent | Substantial | Reasonable |
| St Andrew's Church (LB3) effects of the completed development on the setting of the listed building | High | Small | Adverse | Permanent | Moderate | Reasonable |
| St. Mary's Church Yapton (LB7); effects of the completed development on the setting of the listed building | High | Small-negligible | Adverse | Permanent | Slight-moderate | Reasonable |
| ***Ground conditions and the water environment*** | | | | | | |
| No residual ground condition and water environment effects | | | | | | |
| ***Landscape and visual effects*** | | | | | | |
| *Landscape effects* | | | | | | |
| L2<br>North of Yapton Coastal Plain (29) character area | Low-medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| L3<br>Middle Arun Valley Floor (34) character area | Medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| L4<br>Climping Lower Coastal Plain (31) character area | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| L5<br>Bilsham Coastal Plain (30) character area | Low-medium | Medium | Adverse | Permanent | Slight-Moderate | Reasonable |
| L7 Tortington Arun Valley Sides (32) character area | Medium-High | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| L9 Binsted Upper Coastal Plain character area (26) remaining parts of Binsted Park/Wood character area (27) remaining outside the SDNP and Withy Rife (28) | Medium-High | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| L10 Lyminster Arun Valley Sides (37) character area | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|---|---|---|---|---|---|
| L11 West of Yapton Coastal Plain (21), Ryebank Rife (18) and Flansham/Middleton Fringe Coastal Plain (20) character areas | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| L12 Barnham Yapton Coastal Plain (22) | Low-medium | Small-medium | Adverse | Permanent | Slight-moderate | Reasonable |
| L16 SDNP LCA G4 Major Chalk Valley Sides | Medium-high | Small | Adverse | Permanent | Slight-moderate | Reasonable |
| L17 SDNP LCA R1 Upper Coastal Plain | High | Small-medium | Adverse | Permanent | Moderate | Reasonable |
| *Visual effects* | | | | | | |
| VR1<br>Residents in local area north within 1.5km | Medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR2<br>Residents in local area east within 1.5km | Medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR3<br>Residents in local area south within 1.5km | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| VR4<br>Residents in local area west within 1.5km (except conservation area) | Medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR5<br>Residents Yapton conservation area | Medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR6<br>Landings: Future residents | Low-medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR7<br>Residents in local area north 1.5-4.5km | High | Medium | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR8<br>Residents in local area north east 1.5-4.5km | High | Medium | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR9<br>Residents in local area east & south-east 1.5-4.5km | Medium-high | Medium | Adverse | Permanent | Moderate | Reasonable |

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|---|---|---|---|---|---|
| VR10<br>Residents in local area south 1.5-4.5km | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| VR11<br>Residents in local area west 1.5-4.5km | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| VR12 People accessing the SDNP within 5km | Medium-high | Small-medium | Adverse | Permanent | Moderate | Reasonable |
| VR14 PROWs<br>In area within 1.5km | Medium | Medium-large | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR15 PROWs<br>In area north 1.5-4.5 km (but south of SDNP boundary) | Medium-high | Medium | Adverse | Permanent | Moderate-substantial | Reasonable |
| VR16 PROWs<br>In area north east 1.5-4.5 km | Medium-high | Medium | Adverse | Permanent | Moderate | Reasonable |
| VR17 PROWs<br>In area east & south east 1.5-4.5 km | Medium-high | Medium | Adverse | Permanent | Moderate | Reasonable |
| VR18 PROWs<br>In area south 1.5-4.5 km | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| VR19 PROWs<br>In area west 1.5-4.5 km | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| VR21 Arundel heritage visitors | High | Small | Adverse | Permanent | Moderate | Reasonable |
| VR23 Local area heritage visitors | Medium | Medium | Adverse | Permanent | Moderate | Reasonable |
| ***Natural heritage*** | | | | | | |
| No residual natural heritage effects | | | | | | |
| ***Noise and vibration*** | | | | | | |
| No residual noise and vibration effects | | | | | | |
| ***Traffic and transport*** | | | | | | |
| No residual traffic and transport effects | | | | | | |

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|---|---|---|---|---|---|
| | | | ***Cumulative effects*** | | | |
| Cumulative impact of The Landings and the proposed ERF and WSTF proposals on the setting of the listed building - Place Farm (LB1) at completion | High | Medium | Adverse | Long term | Substantial | Absolute |
| Cumulative impact of the remaining part of the strategic housing allocation SD8 and the proposed ERF and WSTF proposals on the setting of the listed building - Place Farm (LB1) at completion | High | Medium-small | Adverse | Long term | Moderate | Absolute |
| Cumulative impact of the secondary school (option stage / preferred site) and the proposed ERF and WSTF on the setting of the listed building - St. Mary's Church Yapton (LB7) at completion | High | Small | Adverse | Long term | Moderate | Absolute |
| Cumulative impact of The Landings (submitted application) and the proposed ERF and WSTF proposals on landscape resources (ADC character area, North of Yapton Coastal Plain (29)) | Low-medium | Large | Adverse | Long term | Substantial | Reasonable |
| Cumulative impact of The Landings (submitted application) and the proposed ERF and WSTF proposals on visual receptors (VR1, VR2, VR4, VR5 and VR14) | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Cumulative impact of The Landings (submitted application) and the proposed ERF and WSTF proposals on visual receptors (VR3) | Medium | Medium-large | Adverse | Long term | Moderate-substantial | Reasonable |
| Cumulative impact of The Landings (remaining allocation) and the proposed ERF and WSTF proposals on landscape resources (ADC character area, North of Yapton Coastal Plain (29)) | Low-medium | Large | Adverse | Long term | Substantial | Reasonable |
| Cumulative impact of The Landings (submitted application) and the proposed ERF and WSTF proposals on visual receptors (VR1, VR2, VR4, VR5 and VR14) | Medium | Large | Adverse | Long term | Substantial | Reasonable |

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|---|---|---|---|---|---|
| Cumulative impact of The Landings (submitted application) and the proposed ERF and WSTF proposals on visual receptors (VR3) | Medium | Medium-large | Adverse | Long term | Moderate-substantial | Reasonable |
| Cumulative impact of 10 FE secondary school (preferred option) and the proposed ERF and WSTF proposals on visual receptors (VR4 and VR5) | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| The landscape and visual impact assessment has assessed potential cumulative landscape and visual impacts and concluded that, with the exception of the cumulative effects assessed in relation to The Landings, whilst several of the remaining proposals may have additional effects on landscape resources and visual receptors that would be affected by the proposals, the cumulative effects would not result in a change in the assessed significance of effect, as reported above. | | | | | | |

## Table 16.4: Proposed monitoring measures

| Adverse effect | Proposed monitoring measure | Responsibility for monitoring |
|---|---|---|
| Generation of dust during construction (mitigated through CEMP) | Regular site inspections to monitor compliance with the dust management plan and recording of results | Contractor |
| Need to meet appropriate standards required to protect human health and the environment | Comprehensive monitoring of emissions will be undertaken at the ERF in line with its environmental permit. No additional operational mitigation or monitoring is required beyond that embedded into the design and required by legislation. | Environment Agency in line with the environmental permits |
| Potential for ground and water pollution during site preparation / construction activities | A programme of long-term groundwater monitoring to be undertaken in line with any foundation works programme, including excavation and construction of the waste bunker. The long-term water monitoring will also include surface water monitoring of the nearest ditch and the River Arun, due to site discharge into these features. | Environmental specialist appointed by the contractor |