

Energy from Waste Incinerator (EFW) including Infrastructure plus that for Combined Heat and Power (CHP), Incinerator Bottom Ash (IBA) Processing Plant with Outside Storage Area, and Air Pollution Control Residue (APCR) Treatment and Disposal Facility, Visitor & Office Accommodation and Landscaping within the Sutton Courtenay Resource Recovery Park

Sutton Courtenay Resource Recovery Park, Oxfordshire

Waste Recycling Group Limited

Chapter 16
Environmental Statement
Summary of Effects

Chapter 16 Contents

16 Summary of Effects.....	5-16
16.1 Introduction	5-16
16.2 Traffic and Transport.....	5-16
16.3 Air Quality	7-16
16.4 Ecology & Nature Conservation.....	8-16
16.5 Landscape & Visual Impacts.....	10-16
16.6 Hydrology, Hydrogeology and Flooding	12-16
16.7 Noise and Vibration... ..	13 -16
16.8 Socio Economic	14-6
16.9 Archaeology & Cultural Heritage.....	15-16
16.10 Amenity Issues and Waste.....	16-16
16.11 Summary of Recommended Mitigation Measures.....	21-16
16.12 Conclusion.....	24-16

Chapter 16 Drawings

No associated appendices

Chapter 16 Appendices

No associated appendices

16 Summary of Effects

16.1 Introduction

16.1.1 This concluding section of the Environmental Statement draws together the results of the foregoing assessment. It describes the disciplines addressed, summarises how they have been assessed, summarises further mitigation measures required and recommended, and identifies the likely significant residual effects of the proposed Energy from Waste Incinerator (EFW) including Infrastructure plus that for Combined Heat and Power (CHP), Incinerator Bottom Ash (IBA) Processing Plant with Outside Storage Area, and Air Pollution Control Residue (APCR) Disposal Facility, Visitor & Office Accommodation and Landscaping, 'the Scheme', within the Sutton Courtenay Resource Recovery Park..

16.2 Traffic and Transport

16.2.1 The Traffic and Transportation chapter contains an assessment of the Scheme upon the highway network and of the overall impact of traffic related to the development during its construction and operation.

16.2.2 The Sutton Courtenay Resource Recovery Park is located to the north of the A4130 Didcot Northern Perimeter Road, which to the west of the site access provides direct access onto the A34 at the Milton Interchange. And to the east provides access to Wallingford and south east Oxfordshire. The A4130 is the route which HGV's associated with the EfW will take and hence has been the area studied in the Transport Chapter of the Environmental Statement.

16.2.3 In summary, the estimated change in traffic flow was estimated using first principles by deduction the resultant traffic flows from existing consents which will cease from those activities proposed. Essentially, the proposed EfW will have capacity of 300,000 tonnes per annum, Windrow Composting, IVC and MRF will be maintained in accordance with their existing consent, Landfill will be reduced from 300,000 to 100,000 tonnes per annum by road and the consented Clay Extraction (125,000 tonnes per annum) will be reallocated to Landfill and the EfW. In addition, the EfW process will require 50,000 tonnes per annum of Incinerator Bottom Ash to be exported and 25,000 tonnes per annum of additives to be imported. .

16.2.4 The distribution of traffic was estimated from distributions previously agreed with officers at Oxfordshire County Council whilst obtaining previous consents; 90% along the A4130 west of the site access towards the A34 Milton Interchange and 10% along the A4130 east of the site access. Inspection of the count data obtained at the site access suggests that this is still an appropriate estimate.

16.2.5 The greatest hourly effect on the A4130 to the west of the site access during a weekday is predicted to occur between 08:00 and 09:00 where a total increase of 2.57% is predicted. The greatest hourly HGV effect is predicted between 17:00 and 18:00 where an increase of 6.01% is predicted. In terms of a 12 hour period (07:00 to 19:00), total and HGV increases of 0.95% and 4.04% are predicted respectively. On a Saturday, the greatest hourly effect is predicted to occur between 08:00 and 09:00 where an increase of 9.91% is predicted. The greatest hourly HGV effect is predicted between 09:00 and 10:00 and between 10:00 and 11:00 where an increase of 8.23% is predicted. In terms of a 12 hour period (07:00 to 19:00), total and HGV increases of 1.15% and 4.27% are predicted respectively.

16.2.6 The greatest hourly effect along the A4130 to the east of the site access on a weekday is also predicted to occur between 08:00 and 09:00 where a total increase of 0.32% is predicted.

- The greatest hourly HGV effect is predicted between 17:00 and 18:00 where an increase of 3.19% is predicted. In terms of a 12 hour period (07:00 to 19:00), total and HGV increases of 0.16% and 1.70% are predicted respectively. On a Saturday, the greatest hourly effect is predicted to occur between 08:00 and 09:00 where an increase of 1.28% is predicted. The greatest hourly HGV effect is predicted between 09:00 and 10:00 where an increase of 4.85% is predicted. In terms of a 12 hour period (07:00 to 19:00), total and HGV increases of 0.17% and 1.77% are predicted respectively.
- 16.2.7 Given that the A4130 functions as a Distributor Road within the Oxfordshire road hierarchy, with limited access, it is considered that the 30% threshold should apply. The predicted increases are well within this. The IEMA guidelines suggests that increases in traffic of around 30% are unlikely to be perceived although this represents a starting point at which to undertake further assessments. Given the predicted increases are well below this threshold it is considered that the environmental effect of the proposals are unlikely to be perceived and there is therefore no requirement to undertake any further, more detailed assessments.
- 16.2.9 The effect of road traffic as a result of the proposal is not predicted to have any perceptible environmental effect. This is based on the assessment guidelines set out by the IEMA in their 'Guidance Note No. 1: Guidelines for the Assessment of Road Traffic'.
- 16.2.10 The IEMA Guidelines suggest that such increases will not be perceptible and as such there is no requirement for any mitigation measures. Notwithstanding this, this does not obviate the need for the on site management of HGV's exiting the site, in particular in relation to dust and dirt. On site procedures such as washing down of wheels will prevent the occurrence of dust and dirt spreading from the site to the adjoining road network. Such procedures will be undertaken on site and will remove the possibility of dust and dirt impacting upon the surrounding road network.
- 16.2.11 It should be noted that the northern site access onto the B4016 is limited to 100 vehicle movements per day in order to minimise any impact through Sutton Courtenay and surrounding sensitive areas. This limit will remain enforced and all traffic associated with the EfW proposals will route via the southern access onto the A4130.
- 16.2.12 Indeed, the proposals are likely to form a routeing agreement with OCC which will require vehicles associated with the EfW to route via the most appropriate route. This will ensure that vehicular movements along the northern access will not increase and exceed the legal limit.
- 16.2.13 Following discussions with OCC it was agreed that a Travel Plan would be prepared for staff at the proposed EfW. This would assist in increasing sustainable travel movements and reduce single occupancy private car trips to the site.
- 16.2.14 The assessments undertaken have demonstrated that the proposals would increase traffic flow on the adjacent network by less than 10% during periods of peak activity on site. During other times, the increase is predicted to be far less than this. In accordance with the IEMA guidelines, such increases are unlikely to create any perceptible effect upon the road network and as such no further, more detailed, assessments were required. It is considered there will no perceptible environmental effect as a result of the proposed EfW.

Table 16.1: Summary of Residual Impacts

Resource	Phase	Residual Effect	Sensitivity of Receptor	Magnitude of Impact	Duration	Nature	Significance	Geographical Level of Importance of Issue				
								I	N	R	D	L
Traffic and Transport	Construction	Increase in traffic flows	Medium	Minor	Permanent	Adverse	Minor					L
		Visual Effects	Medium	Minor	Permanent	Adverse	Minor					L
		Severance	Medium	Minor	Permanent	Adverse	Minor					L
		Driver Delay	Medium	Minor	Permanent	Adverse	Minor					L
		Pedestrian Delay/Amenity	Medium	Minor	Permanent	Adverse	Minor					L
		Accidents and Safety	Medium	Minor	Permanent	Adverse	Minor					L
		Hazardous Loads	Medium	Minor	Permanent	Adverse	Minor					L
		Dust and Dirt	Medium	Minor	Permanent	Adverse	Minor					L
	Operation	Increase in traffic flows	Medium	Minor	Permanent	Adverse	Minor					L
		Visual Effects	Medium	Minor	Permanent	Adverse	Minor					L
		Severance	Medium	Minor	Permanent	Adverse	Minor					L
		Driver Delay	Medium	Minor	Permanent	Adverse	Minor					L
		Pedestrian Delay/Amenity	Medium	Minor	Permanent	Adverse	Minor					L
		Accidents and Safety	Medium	Minor	Permanent	Adverse	Minor					L
		Hazardous Loads	Medium	Minor	Permanent	Adverse	Minor					L
		Dust and Dirt	Medium	Minor	Permanent	Adverse	Minor					L

Key: I: International

N: National

R: Regional

D: District

L: Local

16.3 Air Quality

- 16.3.1 An assessment of the air quality effects associated with the Scheme has been undertaken. The assessment includes a description of the legislation and policy framework relating to air quality issues associated with waste facilities of this type. It also establishes the current air quality conditions within the study area and describes the methodology used to assess the air quality effects of the proposed facility.

- 16.3.2 There is the potential for air quality effects to arise from the construction of the scheme, including construction-related traffic movements; and from the operation of the proposed facility, including traffic movements. There are a number of potential sensitive receptors in the area. Hartwright House, Hill Farm, Level Crossing Cottage, Appleford and properties on Main Road, Appleford, are the closest residential properties, situated to the east or south east, approximately 640 m from the proposed facility. Other residential properties are located approximately 1,500 m west of the proposed facility on the eastern edge of Sutton Courtenay. To the south of the site, are Didcot Power Station and the Southmead Industrial Estate. There are also several designated ecological sites in the vicinity of the proposed facility which are included in the air quality assessment.
- 16.3.3 The Scheme will be designed to minimise pollutant emissions using the Best Available Techniques (BAT) and to ensure air quality effects from residual emissions are minimised by release through a stack of an appropriate height. The resulting likely effects on sensitive communities and ecological receptors have been assessed utilising dispersion modelling techniques in accordance with good practice. The effect of development-related traffic emissions on air quality has also been assessed, together with an assessment of the effects of odour.
- 16.3.4 Emissions from the proposed EfW have been assessed through detailed dispersion modelling following the Environment Agency's good practice guidelines. The assessment has been undertaken assuming a number of worst-case assumptions. This is likely to result in an over-estimate of the contributions that will arise in practice from the proposed EfW.
- 16.3.5 Overall, predicted pollutant concentrations from the project operating at both the short-term and long-term WID emission limits are not considered to be significant. The results presented in the assessment are considered to represent the worst case for the long-term operation of the plant. Actual emissions are expected to be lower than the WID emission limits.
- 16.3.6 The likelihood effect on air quality from the APC disposal site and operational traffic is not considered to be significant.
- 16.3.7 There are no areas on site that have the potential to emit significant odours or concentrations of dust as the waste reception hall will be fully enclosed with the indoor air being under a slight negative pressure and will be used as the primary air feed supply to the furnace, ensuring combustion (and thus minimising the potential for emissions) of odours and dust.

Table 16.2 : Summary of Residual Impacts

Resource	Phase	Residual Effect	Sensitivity of Receptor	Magnitude of Impact	Duration	Nature	Significance	Geographical Level of Importance of Issue					
								I	N	R	D	L	
Air Quality	Construction	Construction Dust	Medium	Extremely Small	Temporary	Adverse	Negligible						✓
		Air Quality Effects from Construction Traffic	Medium	Extremely Small	Temporary	Adverse	Negligible						✓
	Operation	Air Quality Effects from Stack Emissions	Medium	Extremely Small – Small	Permanent	Adverse	Negligible / Moderate Adverse			✓	✓	✓	
		Air Quality Effects from Operational Vehicles	Medium	Extremely Small	Permanent	Adverse	Negligible				✓	✓	
		Assessment of Odour	Medium	Extremely Small	Permanent	Adverse	Negligible						✓
		Assessment of Plume Ground Effects	Low	Medium	Permanent	Neutral	Negligible						✓
		APC	Medium	Extremely Small	Permanent	Adverse	Negligible						✓

Key: I: International N: National R: Regional D: District L: Local

16.4 Ecology and Nature Conservation

- 16.4.1 The methods used for assessing the potential impacts on features of nature conservation build on those set out in the Institute of Ecology and Environmental Management (IEEM) Guidelines for Ecological Impact Assessment in the United Kingdom (IEEM, 2006). The ecological baseline conditions are first described and evaluated. The potential implications of the Scheme proposals to ecology and features of nature conservation importance are then outlined, and their significance assessed. Appropriate mitigation measures are recommended where practicable to avoid or offset potential adverse impacts of the proposals. Additional enhancement measures are also described that would benefit nature conservation.
- 16.4.2 To inform the ecological evaluation of the Site and to determine what impacts the proposed facility may have on the ecological value of the Site and its surroundings, a desk study and a series of surveys were undertaken by RPS between February 2008 and April 2008.
- 16.4.3 Relevant statutory and non-statutory organisations were contacted in February 2008 for information on designated sites of nature conservation importance, and habitats and species of importance to nature conservation. The aim of this exercise was to supplement the field survey results by collating and reviewing ecological information relevant to the site and the local area.
- 16.4.4 Impacts on the ecology and nature conservation value of the sites associated with the development can be divided into two main types: direct and indirect.
- 16.4.5 Direct impacts occur when a habitat or species is affected by the development itself, and any effects can be attributed to the development in a straightforward way. For example, actual damage or habitat loss, or similarly injury or mortality of a species caused by development

- works would constitute a direct impact. The removal of vegetation to accommodate the energy from waste recovery plant will constitute a direct impact.
- 16.4.6 Indirect impacts may occur when habitats or species are remotely affected, or when factors that relate to the development, but are not actually part of the development itself, influence ecology or features of nature conservation value. An example would be increased disturbance to animals during the construction phase or effects of air quality on nearby designated sites.
- 16.4.7 The proposed development will result in the loss of the majority of the terrestrial habitat present within the proposed development site. However, this has been assessed to be of no more than local nature conservation value. With the proposed mitigation successfully in place, the significance of effect for most ecological features is considered to be of no more than minor negative. For dense and scattered scrub, there will actually be a positive benefit due to the large area proposed for planting.
- 16.4.8 The impacts of construction and operation in terms of noise, visual and lighting disturbance to animal and bird species is considered to have a minor significance of effect within the zone of influence only. Disturbance from activities will be minimised through best site practices wherever possible.
- 16.4.9 The proposed development is likely to cause a reduction in available open field habitats and ponds for wintering and breeding birds during construction. However, a considerable amount of alternative habitat is currently available in the immediate surrounding area and the proposals include plans for the creation of new ponds and other habitats.
- 16.4.10 The mitigation measures outlined in Chapter 9 Section 9.7 of this Environmental Statement would prevent direct impacts on nesting birds during the breeding season and the habitat management and creation proposed would greatly reduce the impacts relating to loss of wintering and nesting habitats. These measures would especially ensure that no Schedule 1 species i.e. little ringed plover are negatively impacted upon during the breeding season.
- 16.4.11 The enhancement measures relating to habitat management and creation and the provision of nesting boxes offering further potential for designated species could lead to an overall increase in the potential value of wintering and breeding bird populations within the site boundary.
- 16.4.12 To summarise, the majority of predicted effects on ecological and nature conservation features are considered to be significant at no more than a local level. Only the impact on little ringed plover is assessed as being significant at a district level. However, with the proposed mitigation and a programme of monitoring in place this impact may also become insignificant. Please refer to Appendix 9.8 of Chapter 9 for the summary of Residual Effects Table. The table has not been reproduced in this chapter due to the size of the Table.

16.5 Landscape and Visual Effects

- 16.5.1 An assessment has been completed to identify the significance of the effect of the proposed facility on:
- The character of the landscape and its component features; and
 - Views of the landscape that people experience.
- 16.5.2 The significance of a landscape or visual effect is a function of the sensitivity of the affected landscape or visual receptors, the magnitude of change that they will experience and the nature of the effect. Each development is evaluated in accordance to the proposals and the landscape and visual setting.
- 16.5.3 In some instances, the nature of effect can be classed as 'Neutral', in terms of the effect on visual or landscape amenity. This is related to the visual and landscape 'capacity' of the Site

and study area and to the residual landscape and visual qualities compared to the baseline situation. This is relevant to the Sutton Courtenay EfW proposal as not only is there is current landfill operation within the Site and Operational Area, there is also a mineral processing plant, immediately to the north. The scale and location of the Development will affect the overall appearance and as such the 'nature' of effect. In some situations, the environment is likely to have higher capacity to accommodate change, without significant adverse effects. The nature of change can be such that the visual (or landscape) coherence, structure and function remain largely unaffected.

16.5.4 Opportunities of screening the buildings are limited due to the inherent size. Nevertheless, the following mitigating factors have been considered and incorporated as part of the overall design process.

- Location of the development within the overall Sutton Courtenay operational area;
- Colour scheme and use of materials for building cladding;
- Overall architectural design/layout, including the stylisation and architectural detailing of the building itself;
- Site levels relative to adjacent (higher) landfill areas; and the
- Formation of a framework landscape scheme, establishing structure planting around the boundary.

16.5.5 The potential sources of visual impact from the proposed development were identified as the following:

- Visibility of the stack;
- Associated visibility of the plume;
- Visibility of the EfW complex;
- Architectural style/colour of the proposed building;
- Visibility of the IBA hopper.

16.5.6 Mitigating factors include Site design and landscape arrangements that will help screen closer range views, building design and appearance, distance of sensitive views from the development.

16.5.7 Close range views within 2km of the Site will receive the greater adverse visual effect. The predicted impacts will be between a Moderate and Major effect, creating a visible new structure where there is presently open ground. Nevertheless, the lower degree of adverse nature which results from the Site location and scale of the setting ensuring the development sits in an open space, will play a part in mitigating the predicted higher impact rating. Even at close range, the building will remain in scale and context to the general scale and pattern of the landscape. In most views, it is apparent that the open nature of the scene and visual (as well as physical) separation of the EfW from the Didcot Power Station demonstrates an isolated development and mitigates against potential cumulative effects that might arise where the development is seen as an extension to the power station.

16.5.8 The sensitivity of the Site and its immediate environs to the south, is Low, and change through re-development of the Site will be readily absorbed as part of the current landuses, in terms of the ultimate effect upon the landscape character. The effect upon the adjacent industrial area will be Low, though it is recognised that the area is, in a visual sense, separate from this and that the landscape character is more open, and less developed. The sensitivity of areas the north, east and west is likely to be at a Medium level. Thus, the effects upon the

character of these areas, adjacent to the site may be greater and thus overall the effect will be a Moderate level.

- 16.5.9 The proposed EfW development is of a scale and location separate to the power station yet it is seen within the context of the developed/industrial character of the Didcot area, and will be a subservient element to the overall character. The sensitivity of these areas is High or Very High yet the degree of change will be Very Small, generally of a neutral nature of effect. The resultant significance of effect will be Negligible.

16.6 Hydrology, Hydrogeology and Flooding

- 16.6.1 As a matter of best practice, this assessment has been undertaken based on the relevant guidance on hydrology and flood risk assessment. This includes:

- Planning Policy Statement 25 (PPS25): Development and Flood Risk.

- 16.6.2 The hydrological site conditions, flooding and water quality were determined by consulting maps and published information regarding the topography, geology, and hydrology of the area. Much of the information was obtained from an Envirocheck report. In addition, the Environment Agency (EA) was consulted regarding the existing water quality of watercourses around the site and an agreed methodology for the Flood Risk Assessment (FRA). A site walkover and site investigation works were also undertaken to ascertain the current site conditions.

- 16.6.3 A detailed Flood Risk Assessment has been undertaken for the application site and is located in the Technical Appendix. The FRA scope was agreed with the EA and meets the intent of PPS25. The key components of the FRA were as follows:

- Confirmation of modelled flood level for the site including potential impacts of climate change, and comparison of these flood levels against topographic levels over the site and surrounds;
- Identification of any hydrological constraints to the proposed development;
- Assessment of the existing surface-water runoff regime at the site, and determination of the potential impacts of the development on peak runoff rates and flow directions;
- Development of a conceptual mitigation strategy for the proposed development, including an outline for an appropriate surface-water SUDS
- Consideration of flood storage compensation measures.

- 16.6.4 It is not anticipated that the construction, operation or de-commissioning of the proposed development would result in any adverse impacts in terms of hydrology. Surface water run-off from the development will be attenuated in the IBA lagoon to the west of the IBA area, which is designated for rainwater and surface run off from the IBA, and in the EfW lagoon east of the EfW plant, which is designated for surface water run-off from roads and any overflow from rainwater collected from the roof of the EfW building. These lagoons are separate facilities but will eventually outfall to the same surface water discharge point to the east of the site.

- 16.6.5 It has been identified that the assessment area has a number of hydrological receiving environments. The construction of the proposed EfW facility would involve many activities which have the potential to affect these receiving environments. These activities have been identified and an assessment of their potential effect made. Mitigation measures to be adopted during the construction, operation and de-commissioning phases have been detailed. No residual impacts relating to the geology, hydrogeology and land contamination of the site are expected with regard to the proposed scheme.

Table 16.3 Table of Residual Impact

Phase	Impact	Impact Type	Magnitude	Significance
Operation	Surface Water Runoff Maintenance	Adverse	Short Term	Negligible / Minor
Operation	Surface Water Quality Maintenance	Adverse	Short Term	Negligible / Minor
Operation	Surface Water Quality Emergency Spill	Adverse	Short Term	Minor / Severe

16.7 Noise and Vibration

- 16.7.1 There is the potential for noise and vibration effects to arise from the construction of the Scheme, together with construction-related traffic movements and noise effects from the operation of the proposed facility including traffic movements. There are a number of potential noise sensitive receptors (NSRs) in the area. Hartwright House, Hill Farm, Level Crossing Cottage, Appleford and properties on Main Road, Appleford, are the closest residential properties, situated to the east or south east, approximately 640m from the proposed facility. Other residential properties are located approximately 1,500m west of the proposed facility on the eastern edge of Sutton Courtenay. To the south of the site, are Didcot Power Station and the Southmead Industrial Estate.
- 16.7.2 With regard to noise and vibration from construction activities, at the EIA stage of a project, there is often insufficient information to carry out a definitive noise and vibration assessment. However, impact can be minimised through environmental controls defined in a Construction Environmental Management Plan or Code of Construction Practice, either of which can contain specific plans or procedures to address aspects such as waste or traffic. For this assessment, preliminary information on construction was derived from WRG and from assumptions based upon experience of construction activities on other sites. Hence, noise levels have been predicted to determine the likelihood of noise impacts occurring from the construction of the proposed development.
- 16.7.3 In relation to the operational assessment, at this stage, there is also often insufficient information to carry out an accurate assessment of operational noise effects prior to a plant supplier being appointed. However, indicative plant types and noise source information for the operational plant have been provided by WRG.
- 16.7.4 Planning Policy Guidance (PPG) 24 cites the use of BS 4142 to assess noise from proposed industrial and commercial premises affecting residential areas. The BS 4142 criterion is proposed to be that the Rating Level from the plant should not exceed the Background Level over appropriate periods.
- 16.7.5 At night and with respect to sleep disturbance, it is the resultant noise levels inside properties, which are of more significance. PPG 24 also makes reference to BS 8233, which provides general guidance on acceptable noise levels within buildings. In sleeping areas, the recommended maximum indoor ambient noise levels range from 30 dB L_{Aeq} (good conditions) to 35 dB L_{Aeq} (reasonable conditions). These correspond to external noise levels of 40 to 45 dB(A) L_{Aeq} with windows open. If the noise of concern contains distinctive characteristics, then these may need to be lower.
- 16.7.6 Similar advice is provided in the report to the WHO. This states that to avoid the negative effects on sleep, the L_{Aeq} sound pressure level during the sleeping period should not exceed 30 to 35 dB(A) for continuous noise and the recommended night-time noise levels outside of dwellings should not exceed 45 dB(A) to enable residents to sleep with bedroom windows open.

- 16.7.7 Significant construction activities are proposed to be undertaken between the hours of 07:00 and 19:00 Monday - Friday for all phases of construction. However, some activities will be undertaken outside these core hours. These will be limited to those that will not generate excessive or unacceptable levels of noise at NSRs. In general, these activities may include electrical fit out, installation of small equipment, inspections, meetings and site office based work. Due to the low level significance of this activity, noise effects have not been assessed in detail.
- 16.7.8 The traffic noise assessment indicates that the 18 hour daytime noise level or 6-hour night time noise level will increase by less than 0.5 dB L_{A10} on any section of road. The results of this assessment therefore indicate that a significant noise effect would not occur as a result of increased traffic flows on local roads due to either the facility or the cumulative flows of the facility and other committed development.
- 16.7.9 Vibration effects arising from operational plant usually do not occur, or should not occur, and are resolved during commissioning testing. On this basis, and due to the separation distances between the plant and NSRs, it is most unlikely that any perceptible vibration effects would occur.
- 16.7.10 Residual impacts, their magnitude and significance are summarised in table 16.4 below:

Table 16.4: Residual Impacts

Resource	Phase	Residual Effect	Sensitivity of Receptor	Magnitude of Impact	Duration	Nature	Significance	Geographical Level of Importance of Issue				
								I	N	R	D	L
Noise	Construction	Construction Noise	High	No Significant Change	Temporary	Neutral	No significance					*
		Construction traffic	High	No Significant Change	Temporary	Neutral	No significance					*
	Operation	Operational Noise	High	No Significant Change	Permanent	Neutral	No significance					*
		Operational Traffic	High	No Significant Change	Permanent	Neutral	No significance					*

- 16.7.11 Noise and vibration from operational activities, including traffic, will not result in significant effects at any NSRs.

16.8 Socio-Economic Effects

- 16.8.1 The Environmental Statement has assessed the potential social and economic effects of the Scheme. It describes the potential community and social effects of the proposed Energy from Waste incinerator at Sutton Courtenay. A full description of the site and the proposed development is included in Chapter 4. The assessment was carried out in accordance with relevant guidance, using data from the 2001 Census and other sources.

- 16.8.2 The proposed development is typical of other energy from waste projects, and of many infrastructure projects generally, in having a high capital cost but only moderate benefits in terms of employment in the construction stage and slight benefits in the operational stage.
- 16.8.3 Social and economic effects are unlike most other topics addressed in environmental statement in that they deal to a great extent with matters of human behaviour where individual choice is exercised. It is not possible for example to predict with any degree of accuracy who will benefit from the likely employment created by the proposed development at either the construction or operational stage - whether the jobs will be taken entirely by people in the local area (represented here by the Sutton Courtenay and Appleford Ward) or whether the impact will be diffused over much of the District and the area around it.
- 16.8.4 It is concluded overall that the impacts will be moderate beneficial in the construction phase, and slight beneficial in the operational phase. No dis-benefits in terms of example of the overheating of the local labour can be identified. Table 16.5 details the Residual Impacts of the proposed development.

Table 16.5 : Summary of Residual Impacts

Topic	Phase	Impact	Impact Type	Magnitude	Significance	Geographical Level of Importance of Issue				
						I	N	R	D	L
Socio-Economic	Construction	Employment generation	Beneficial	Minor	Slight/ Moderate beneficial				*	
	Operation	Employment generation	Beneficial	Minor	Slight beneficial				*	

16.9 Archaeology and Cultural Heritage

- 16.9.1 The potential effects upon archaeology and built heritage has been assessed, the chapter presents the results of a largely desk based archaeological and historical assessment of the proposal site which was supplemented by a site visit to complete basic fieldwork to establish the presence of any known and hitherto unrecorded archaeological sites that may be affected by the development.
- 16.9.2 The primary study area comprises some 1800 metres around the central point of the proposed development area, although third party data was also requested on any significant sites outside this area that it would be appropriate to include.
- 16.9.3 Consideration was given to information on Scheduled Ancient Monuments, Registered Parks and Gardens and Registered Battlefields, Conservation Areas and Listed Buildings from a wider area so that the effect, if any, of the proposed development on their setting could be considered. An iterative approach has been taken, based on any likely impact on the setting of these cultural heritage features.

- 16.9.4 There seems to be relatively little evidence for Mesolithic material in the area, but the Neolithic is well represented. A Neolithic Causewayed enclosure has been excavated to the east of Abingdon at NGR SU 511 983, approximately 5 kilometres north of the proposed development area. Closer to the proposed development area, the remains of two Neolithic cursus monuments (linear features of considerable length, probably used in rituals) are known to the west of Sutton Courtenay (Fletcher: 8). A Neolithic polished stone axe has been found within the quarry (HER number 7669).
- 16.9.5 Several finds of Bronze Age material have been made in the area around the proposed development area, including that of a plastave (HER number 1893), found immediately south of the northern part of the proposed development area and a beaker burial (HER number 1885). A number of late Bronze Age pits were revealed during excavations in advance of quarrying within the quarry itself during the 1970s.
- 16.9.6 The Thames Valley was relatively densely settled during the Roman period. There was a major Roman settlement at Abingdon, some 5 kilometres northwest of the proposed development area. Miles (1984:3) notes that *The size of this settlement, the numbers of Roman coins, especially early ones, found in and around it, and the concentration of Romano-British rural sites suggest that Abingdon functioned as some sort of market centre [during the Roman period].*
- 16.9.7 There is no evidence, recorded or otherwise, for the proposed development area to contain any archaeological remains. It is highly unlikely that the proposed development area contains remains of national importance, or of sufficient importance to warrant preservation *in situ*.
- 16.9.8 The nearest listed building is the road bridge over the railway at Appleford. The structure, located some 850 metres northeast of the proposed development area, is listed at Grade II. There is no intervisibility with the proposed development area and there will be no effect on the setting of the listed building. At a similar distance from the proposed development area is Elm Hayes, a building dating from the 17th century. This structure is similarly listed at Grade II. There is no intervisibility with the proposed development area and there will be no effect on the setting of the listed buildings. No other listed building, or its setting, will be affected by the proposed development.
- 16.9.9 The nearest Conservation Area is at Appleford, some 600 metres north of the proposed development area, on the east side of the railway. There is no intervisibility with the proposed development area and there will be no effect on the setting of the Conservation Area. There is a further Conservation Area at Sutton Courtenay; the nearest point of the Conservation Area to the proposed development area is some 650 metres east of it. There is little or no intervisibility with the proposed development area and there will be little or no effect on the setting of the Conservation Area.
- 16.9.10 There will be no effect on any other listed building, or setting. No registered parks and gardens, historic battlefields or conservation areas, or their settings, will be affected by the proposed development. No Scheduled Ancient Monument or other statutorily protected or registered feature, or their setting, will be affected by the proposed development.
- 16.9.11 It is recommended that no further action need be taken with regard to below ground archaeology. Given that there will be no effect on the setting of any protected cultural heritage feature, there is no requirement for any specific mitigation. There will be no residual impacts with regard to archaeology and cultural heritage.

16.10 Amenity Issues and Waste

- 16.10.1 The potential adverse impacts on local amenity from litter, pests and vermin can be adequately mitigated using standard procedures associated with good waste management practice. These standard procedures will form part of the environmental management system for the application site.

- 16.10.2 The residual amenity impacts in relation to litter, pests, vermin and birds directly associated with the proposal will be of minor significance.
- 16.10.3 In addition, the move to EfW will reduce the scope for litter, flies, rat and seagull nuisance to be caused at landfill sites within Oxfordshire that are currently managing this waste stream. The proposed facility at Sutton Courtenay will therefore have an overall minor beneficial effect within the Oxfordshire area in this respect.
- 16.10.4 Residual impacts and their significance are summarised in Table 16.6 below.

Table 16.6: Summary of Residual Impacts

Phase	Impact	Impact Type	Significance	Geographical Level of Importance of Issue				
				—	Z	R	D	L
Operation	Amenity Impacts associated with Gulls, flies, rodents and litter – at landfill sites within Oxfordshire	Beneficial	Minor				*	
Operation	Amenity Impacts associated with flies, rodents and litter.	Adverse	Minor					*

Key: I: International N: National R: Regional D: District L: Local

- 16.10.5 The potential adverse impacts on local amenity from litter, pests and vermin can be adequately mitigated using standard procedures associated with good waste management practice. These standard procedures will be required under the terms of the site's Integrated Pollution Prevention and Control permit.
- 16.10.6 In view of the mitigation measures it is considered that the development will not give rise to any unacceptable impacts in terms of litter, pests, vermin and birds.
- 16.10.7 In addition, the removal of the municipal waste element from the landfill waste stream, that will result from the development of the facility, will reduce the potential for litter, flies, rat and seagull nuisance to be caused at landfill sites within the Oxfordshire area.

6.11 Summary of Residual Impacts

- 6.11.1 The following table (Table 16.7) summarises the residual environmental impacts that may result from the proposed development. The identification of impact, whether adverse or beneficial, of minor, moderate or major significance is a professional judgement based on the authors experience and knowledge and the guidelines relevant to assessment methodology for individual topics.

Topic	Phase	Impact	Impact Type	Magnitude	Significance	Geographical Level of Importance of Issue				
						I	N	R	D	L
Traffic and Transportation	Construction	Increase in Traffic Flows	Medium	Minor	Minor					*
		Visual Effects	Medium	Minor	Minor					*
		Severance	Medium	Minor	Minor					*
		Driver Delay	Medium	Minor	Minor					*
		Pedestrian Delay and Amenity	Medium	Minor	Minor					*
		Accidents and Safety	Medium	Minor	Minor					*
		Hazardous Loads	Medium	Minor	Minor					*
		Dust and Dirt	Medium	Minor	Minor					*
	Operation	Increase in Traffic Flows	Medium	Minor	Minor					*
		Visual Effects	Medium	Minor	Minor					*
		Severance	Medium	Minor	Minor					*
		Driver Delay	Medium	Minor	Minor					*
		Pedestrian Delay and Amenity	Medium	Minor	Minor					*
		Accidents and Safety	Medium	Minor	Minor					*
		Hazardous Loads	Medium	Minor	Minor					*
		Dust and Dirt	Medium	Minor	Minor					*
Air Quality	Constructi	Construction Dust	Medium	Extremely Small	Negligible					*
		Air Quality Effects from Construction Traffic	Medium	Extremely Small	Negligible					*
	Operation	Air Quality Effects from Stack Emissions	Medium	Extremely Small-Small	Negligible/Moderate Adverse			*	*	*
		Air Quality Effects from Operational Vehicles	Medium	Extremely Small	Negligible				*	*
		Assessment of Odour	Medium	Extremely Small	Negligible					*
		Assessment of Visible Plume Ground	Low	Medium	Negligible					*
		APC Cell	Medium	Extremely Small	Negligible					*
Visual Impact	Constructio									

Topic	Phase	Impact	Impact Type	Magnitude	Significance	Geographical Level of Importance of Issue					
	Operation	The residual impacts are summarised in Chapter 8, Table 8.7									
Landscape Impact Assessment	Construction	Impact upon the Existing Landscape	High / Very High	Very Small	Negligible				*	*	
	Operation	Impact on the Existing Landscape	High / Very High	Very Small	Negligible				*	*	
Ecology	Construction	An assessment of residual impacts upon Ecological and Nature Conservation is provided in Appendix 9.8; formulated using the Institute of Ecology and Environmental Management (IEEM) (2006) Guidelines for Ecological Impact Assessment in the United Kingdom.									
	Operation										
Hydrology and Flood Risk	Construction	It is not anticipated that the construction of the proposed development would result in any adverse effects in terms of hydrology									
	Operation	Surface Water Runoff Maintenance	Adverse	Short Term	Negligible / Minor					*	
		Surface Water Quality Maintenance	Adverse	Short Term	Negligible / Minor					*	
		Surface Water Quality Emergency Spill	Adverse	Short Term	Minor / Severe				*		
Hydrogeology & Ground Conditions	Construction	No residual impacts relating to the geology, hydrogeology and land contamination of the site are expected with regard to the proposed scheme									
	Operation										

Topic	Phase	Impact	Impact Type	Magnitude	Significance	Geographical Level of Importance of Issue				
Noise & Vibration	Construction	Construction Noise	High	Not significant change	No Significance					*
		Construction Traffic	High	Not significant change	No Significance					*
	Operation	Operational Noise	High	Not significant change	No Significance					*
		Operational Traffic	High	Not significant	No Significance					*
Socio Economic	Construction	Employment Generation	Beneficial	Minor	Slight/Moderate beneficial				*	
	Operation	Employment Generation	Beneficial	Minor	Slight beneficial				*	
Archaeology/Cultural Heritage	Construction	There will be no residual impact with regard to archaeology and cultural heritage								
	Operation									
Amenity Impacts	Construction	Amenity Impacts associated with Gulls, flies, rodents and litter – at landfill sites within Oxfordshire	Beneficial	Not Significant	Minor				*	
	Operation	Amenity Impacts associated with flies, rodents and litter	Adverse	Not Significant	Minor					*

Key: I: International N: National R: Regional D: District L: Local

16.12 Summary of Recommended Mitigation Measures

16.12.1 The following table (Table 16.7) summarises the mitigation measures (additional to those incorporated within the development proposals) recommended as a result of the impact assessments.

Table 16.7: Summary of Recommended Mitigation Measures

Discipline	Stage	Operation	Recommended Mitigation Measures
Air Quality	Construction & Operation	Traffic/Plant	Site plant and equipment would be kept in good repair and maintained in accordance with the manufacturer's specifications.
			Plant would not be left running when not in use.
			Any fixed plant and equipment would be located away from sensitive receptors near the site.
			Plant with dust arrestment equipment (such as particle traps) would be used where practicable.
			All site vehicles and plant to have upward-facing exhausts where practicable to minimise surface dust re-suspension
			All vehicles to switch off engines – no idling vehicles.
		Traffic	Wheel washing on leaving site.
			All vehicles carrying dusty materials into or out of the site would be sheeted to prevent escape of materials
			All site vehicles would be kept in a good state of repair and maintenance.
			Speeds would be restricted to 10 mph on haul roads across the site.
			All off-road vehicles to use Ultra Low Sulphur Diesel (ULSD) where available.
			On-road vehicles to comply to set emission standards.
		Site Activities	All-weather surfaces would be provided on the main access route into the site. This area would be regularly cleaned to prevent mud/dust leaving the site.
			The appropriate control measures for specific site operations would be agreed, taking into account local topography, prevailing wind patterns and local sensitive receptors.
			Burning of materials on site would be prohibited.
Visual Impact	Construction & Operation	Design of Buildings	Loading and unloading would only be permitted on designated areas.
			The stylisation and architectural detailing of the building itself to ensure the least amount of visual impact.
			The immediate landscape treatment on the periphery of the Site to be designed in a way as to minimise visual impact of development.

			Cladding colour and stack colour/material to be chosen to ensure minimum impact on landscape.
Ecology	Construction	Habitat Loss	Planting of approximately 9.96 ha of species rich grassland species
		Habitat Loss	Planting of approximately 12.25 ha of ephemeral/ short perennial vegetation
		Habitat Loss	Planting of areas of scrub
		Habitat Loss	Water bodies will be drained down in winter months (November to February inclusive)
		Habitat Loss	If a badger sett is found on site prior to development, all works within 30 m of the sett must cease and advice from an ecologist should be sought
		Habitat Loss	Areas of bare ground should be maintained around Water body 19 and bare islands will be introduced
		Habitat Loss	Lighting will be kept to a minimum and where possible will be directed away from sensitive ecological receptors.
		Habitat Loss	No vegetation clearance shall take place in the breeding bird season (March to September inclusive). Where this cannot be avoided nesting birds must not be disturbed and advice from an ecologist will be sought on how to proceed.
		Habitat Loss	20 different types of nest boxes will be effected to provide nesting opportunities for birds
		Habitat Loss	Roads will be regularly sprayed with a bowser to minimise dust pollution
	Operation	Habitat Loss	A 25-year ecological management plan for the site will be developed.
		Habitat Loss	Current ditch management will be reviewed and written into an ecological management plan for the site.
		Habitat Loss	Should little ringed plover be found breeding, suitable exclusion fencing must be erected to prevent human disturbance until juvenile birds are no longer considered to be at risk.
Hydrology	Construction	Flood Defences	Use of waterproof material in the construction of the building.
			Use of infiltration structures for the runoff from vehicle parks.
	Operation	Flood	Installation of infiltration and water improvement areas along the runoff channel.
			Flood management plan for safe site evacuation.

			Undertake intrusive site investigation to quantify the nature of impact.
Hydrogeology & Ground Conditions	Construction	Contaminated Soil	Appropriate construction techniques to minimise pollutant pathway development.
			Liaison with the local community as to forewarn of potential noise.
			Gas protection measures to be incorporated within the building design. The level of protection will be determined through a gas risk assessment.
Noise	Construction	Noise	None required.
		Vibration	None required.
		Traffic	None required.
	Operation	Noise	None required.
		Vibration	None required.
		Traffic	
Archaeology	Pre-Construction	Archaeological Investigation	Archaeological observation and recording during construction of facility.
			Archaeological observation and recording during ground-works.
			A scope of works where necessary, to allow for archaeological investigation and recording, creation of an archive, assimilation of data into the HER, deposition and long-term storage of finds and archive, and an appropriate level of reporting, should all be agreed in advance with the Lincolnshire District Council Archaeology Officer.
	Operation	Preservation	None required.
Socio-Economic	Construction & Operation		None required
Amenity & Waste	Construction & Operation	Vermin & Pests	Regular inspections and treatment by pest control specialists; and Inspection and treatment of areas where rats are likely to live (drains, culverts, etc).
			Undertaking all waste reception and storage operations involving biodegradable materials within enclosed buildings.

16.13 Conclusion

- 16.13.1 The Environmental Impact Assessment has considered the likelihood of significant environmental effects occurring from the development of the Energy from Waste (EfW) incinerator and associated development at Sutton Courtenay in Oxfordshire upon the site itself and its surroundings. The environmental issues addressed as part of the scheme have been identified through consultation with the Council and other organisations.
- 16.13.2 The evidence from the Environmental Statement indicates that there is no reason why planning permission should not be granted. It has shown that the proposed development would create both beneficial and very slight adverse environmental impacts and that mitigation measures embodied within the project design, or imposed through planning conditions would limit any impacts identified. The applicant has demonstrated a commitment through the Environmental Statement, to mitigation measures and these would be implemented through planning conditions attached to any planning approval.