



SEVERN ROAD RESOURCE RECOVERY CENTRE

CHAPTER 18 CONCLUSIONS

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solutions for today's environment

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INTRODUCTION

- 18.1 The proposed development comprises the construction of a Materials Recycling Facility (MRF) which will sort and bulk up 150,000 tpa of recyclable waste and an Energy from Waste (EfW) facility that would generate energy and heat from combustion of residual waste. The EfW would incinerate 350,000 tonnes of non hazardous waste, residual Municipal Solid Waste (MSW), Commercial and Industrial waste (C & I) and residues from other waste processes, per annum.
- 18.2 The development is proposed on the northern part of the Sevalco Plant site on Severn Road, Avonmouth, around 7 miles north west of Bristol city centre. The proposed site is brownfield industrial land in an area identified as a target area for regeneration, including regeneration through the development of waste management and energy production industries.

MAIN ISSUES

- 18.3 The main issues relating to the proposed development are considered to be as follows:
- air quality - ensuring that there are no negative effects from the stack of the EfW facility;
 - potential adverse landscape and visual impacts;
 - potential increase in traffic on the surrounding road network;
 - potential adverse impacts on the local environment in terms of noise, land quality, hydrology, ecology, and cultural heritage;
 - the climate change impacts of the proposed EfW facility; and
 - the potential cumulative impacts of the development in combination with other existing and committed developments in the area.

AIR QUALITY

- 18.4 An assessment of the air quality impacts associated with the proposed SRRRC has been undertaken. The assessment has focused on the principal emissions to air, including:

During the construction phase:

- fugitive dust from traffic movements and construction; and
- combustion pollutants (PM₁₀, NO_x) from construction traffic.

During the site operational phase:

- combustion pollutants (PM₁₀, NO_x, etc) from traffic;
 - combustion pollutants (specified in the Waste Incineration Directive) from the stack; and
 - fugitive odours and bioaerosols from waste handling operations.¹
- 18.5 The assessments of dust, litter, odour and bioaerosols during operation have been undertaken qualitatively and have found that the risk of significant generation of emissions during the operational phase is insignificant.
- 18.6 The findings of the assessment of combustion emissions from the proposed EfW facility has found that for all pollutants the maximum predicted long-term and short term impacts would be negligible. The assessment takes a 'worst case' approach and has assumed emission at the WID limits and for 100% hours in the year. In reality the EfW will operate for less than 100% of hours in the year and is likely to emit at below WID limits.
- 18.7 The impact of emissions on sensitive ecosystems are not predicted to be significant as process contribution is a very small increase on current levels and neither critical levels nor critical loads are exceeded as a result of EfW combustion emissions.
- 18.8 The findings a DMRB assessment of the effects of the development traffic on air quality at the closest sensitive receptors to affected roads indicates that the significance of impacts would 'negligible'.
- 18.9 **In summary the proposed Severn Road Resource Recovery Centre is not predicted to lead to exceedences of applicable standards for either human or ecological receptors. The impact of emissions from the proposed development would not give rise to significant adverse air quality effects for either human or ecological receptors in either the short-term or the long-term.**

LANDSCAPE AND VISUAL IMPACT

- 18.10 A Landscape and Visual Impact Assessment has been carried out in accordance with the Guidelines for Landscape and Visual Impact Assessment². A desk top review and site visit was undertaken to identify potential landscape and visual receptors, such as footpath users, residents, designated landscapes and landscape character areas. This information was used to inform early development design work.
- 18.11 The aim of the building design is to produce a high quality 'landmark' building that is capable of having a positive effect on views and the landscape of the local area. Given the scale and size of the proposed buildings the design is successful in reducing the perceived mass of the building sufficiently to minimise landscape and visual effects.

¹ Reference required

² Landscape Institute and Institute of Environmental Management and Assessment. (2002) Guidelines for Landscape and Visual Impact Assessment, 2nd Ed.

- 18.12 The proposed landscape design is based around retaining the existing tree screen along Severn Road to preserve amenity. This tree screen would be re-enforced by additional woodland and woodland edge planting to create a long term native screen and a background landscape to the car park facilities, weighbridge and site entrance areas. Woodland edge planting would also be undertaken around the northern and western boundaries to soften the edges of the development and provide wildlife habitats. To the east a well vegetated boundary to each side of a public track provides good ground level screening, with more limited re-enforcement required.
- 18.13 Grassland and wild flower meadows would form the base layer of the landscape scheme. Water attenuation features have been integrated into a series of curved channel features and rhines. The channels would have a varied depth so that reed beds can be accommodated within them to help filter and improve the quality of standing water in summer months, while allowing for flooding of the reed beds in winter.

The removal of the existing site structures and replacement by a high quality modern building is considered positive. Combining this with the industrial context of the site, means that the resultant effects are reduced further and to a level not considered significant. It is therefore considered that the proposed building would meet its aim of having a positive effect on the views and landscape of the area.

TRAFFIC AND TRANSPORT

- 18.14 The Transport Assessment assessed the potential traffic and transport impacts of the SRRRC. The assessment also took account of the cumulative effects of the development in combination with the traffic generation associated with the committed Deep Sea Container Port and Cabot Park developments. The existing site access junction will be improved to current highway standards and junction improvements to signalise the Severn Road / Chittening Road junction will be implemented to improve safety.
- 18.15 The transport assessment concluded that the existing safety record of the highway has been reviewed and it has been concluded that there is no pattern of accidents that is suggestive of a highway layout deficiency that leads to unacceptable safety risks. Furthermore, the impact of development traffic would be immeasurably small. Consequently, the proposed development is acceptable from a highway safety perspective.

The development proposals will not discernibly or materially worsen the existing operation of the highway network and all highway improvements meet the required design standards. By virtue of this, the development proposal is acceptable in traffic and transport terms.

NOISE AND VIBRATION

- 18.16 The noise assessment was carried out with reference to British Standard and other government guidance. The assessment considered both the

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potential for the construction and operational proposals to give rise to noise and vibration at the closest noise-sensitive receptors.

18.17 The assessment concluded that:

- construction noise levels are predicted to be well below the 75dB criterion adopted for this assessment at all receptors;
- perceptible levels of vibration from the construction works is improbable at the nearest vibration-sensitive properties, however, it has been recommended that vibration levels are subject to a watching brief and;
- site-related heavy goods, light goods and passenger vehicle movements will have no impact on the existing measured ambient noise levels at any of the properties assessed.

In summary, the cumulative impact of all operations and vehicles movements associated with the proposed development would have no impact on the existing measured ambient noise levels at any of the properties assessed.

HYDROLOGY AND FLOOD RISK

18.18 The potential impacts of the proposed development upon the baseline hydrogeological and hydrological environments have been identified and assessed, and where appropriate, mitigation measures have been accommodated into the design of the proposed development.

18.19 A flood risk assessment has been undertaken for the proposed development. The FRA concluded that the site is presented as being deliverable and sustainable in flood risk terms with proposed mitigation measures in place, and that key requirements set out within PPS25 may be adequately satisfied. Elevation of the development platform and finished floor levels shall provide an enhanced degree of flood protection from both fluvial and tidal sources, and will seek to ensure that critical site infrastructure will remain operational during flood conditions.

18.20 An improved drainage system will be implemented as part of the proposed development and the inclusion of SuDS mitigation in the form of proprietary petrol interceptors, silt traps, reed beds and detention ponds will ensure that the quality of the surface water drained from roofs, highways and other external hardstanding areas is controlled prior to offsite discharge. Therefore, there will be an improvement to the existing regime in terms of reducing the risk of pollutant / contaminant washout from the site.

Overall, it is concluded that, with respect to geology, groundwater and surface water, there would be no significant residual impacts of the proposed development with the proposed mitigation measures in place.

LAND QUALITY

- 18.21 The proposed development aims to utilise a brownfield site, therefore, land quality has been established in accordance with CLR 11 'Model Procedures for the Management of Land Contamination'. The procedures followed took account of the proposal to construct commercial buildings and re-introduce humans to this disused site. Various risk assessments considered the potential for existing ground conditions to damage new buildings, harm site users and pollute the wider environment.
- 18.22 The land quality assessment included a discussion of the potential physical and chemical impacts of the proposed development on soils and near surface geological deposits via erosion, disaggregation, compaction and pollution. Appropriate mitigation measures are identified where predicted impacts during construction and operation are significant.
- 18.23 It is concluded that the site's previous use, residual made ground and the neighbouring landfill have reduced the quality of the land to some degree. However, the human health assessment performed to date demonstrates that the soils on this site should not pose an unacceptable risk to the health of future site workers and visitors. Whilst no remediation works are required on that account, mitigation measures are required to protect new structures against mildly aggressive ground conditions.

Having regard to the proposed mitigation, the effect of the proposed development on the local geology, ground conditions and land quality are considered to be negligible.

CULTURAL HERITAGE

- 18.24 The Cultural Heritage assessment gathered data from a variety of sources in order to establish the baseline context for the natural and social historic environment within and around the application site.
- 18.25 There are no designated sites that will be impacted upon by the proposed scheme and no known archaeological reasons why the proposed scheme should not be consented. The proposed location for the SRRRC is, however, in a rich archaeological landscape, and site investigation is recommended before construction begins. The presence of a palaeochannel within the application site, however, was identified in 2004 from borehole data.
- 18.26 Although undated, from dating of comparative deposits in the vicinity, it is likely that this could date from the Bronze Age. Bronze Age saltworking has been found adjacent to a palaeochannel at Cabot Park, 1.5km to the south. To the north and west of the application site a concentration of archaeological evidence shows Roman and medieval settlement and probable activities related to the maritime economy along Chittening "Wharf". In contrast to the post-medieval and modern landscape the application site has potential for earlier archaeological remains and related palaeoenvironmental deposits.

- 18.27 Mitigation is recommended in the form of a planning condition requiring a watching brief. If archaeological or palaeoenvironmental deposits are found during site investigation, an assessment will need to be made on whether the foundations and groundworks for the proposed SRRRC will impact on these remains. A programme of excavation and recording, followed by analysis, report preparation and publication, might be required to complete the mitigation strategy.

Through a properly planned and implemented programme of archaeological works, a residual benefit for the proposed scheme would be the increase in knowledge about the ancient exploitation of Chittening and this part of the Avon Levels.

SOCIO-ECONOMIC IMPACTS

- 18.28 The principle of sustainable development is relevant not only to environmental issues but also to the implications for social and economic issues. A socio-economic impact assessment (SEIA) was undertaken to identify the potential impacts of the SRRRC on the local social and economic environment. The assessment considered the potential impacts of the development against the socio economic aspirations of the area and aimed to show whether the development was compatible with the latter.
- 18.29 The SEIA concluded that the construction and operation of the SRRRC will have direct and indirect employment opportunities for the residents of Bristol and the surrounding area. In addition to construction workers, the facility will employ civil engineers, project managers etc during operation and will require management and sales staff, plant operatives and administration staff etc.
- 18.30 Indirect benefits include the generation of a significant amount of usable energy in the form of heat and power and the avoidance of landfill tax and potential fines associated with not implementing sustainable forms of waste management. In addition, the construction and operation of the SRRRC will create a demand for haulage, HGV drivers, equipment and materials suppliers and other ancillary businesses.

The SEIA confirmed that the location and operation of the SRRRC within Avonmouth meets many of the socio economic objectives of the Bristol Local Plan and the South Gloucestershire Economic Strategy. The type and amount of employment opportunities the SRRRC will create will bring benefits to the local labour market and provide training opportunities in the local area.

NATURE CONSERVATION

- 18.31 The ecological field work focused primarily on land within the planning boundary of the application site, however, desk based studies included an area extending up to 10km from the site itself, and the impact assessment also considers potential ecological receptors within this area.

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- 18.32 Specialist surveys have been undertaken for habitats and legally protected and notable fauna including water vole, reptiles, amphibians, breeding birds and invertebrates.
- 18.33 The construction and operation of the SRRRC has the potential to impact on designated sites, semi natural habitat, grass snake, water vole, invertebrates and birds. These impacts will arise due to habitat loss through land take, alterations to groundwater and surface water flow and quality, noise and dust deposition.
- 18.34 Mitigation measures have been identified and designed into the scheme wherever possible. Further mitigation measures include the timing of certain works and techniques for habitat removal. Bird, bat and bee boxes will be installed on trees around the site and the proposed open water and wetland features around the SRRRC will provide foraging opportunities for bats, and a habitat for aquatic invertebrates. Grassland areas will be seeded with species rich, neutral wildflower mixes and managed to increase species biodiversity.

In summary, it is considered that the development of the site will not have significant impacts on the existing ecology of the site and will lead to positive benefits for flora and fauna in the long term.

CLIMATE CHANGE

- 18.35 The Life Cycle Assessment Chapter presented the environmental burdens (including global warming potential³, commonly known as carbon footprint) for the processing of 350,000 tonnes of municipal and commercial and industrial waste through a number of different residual waste treatment processes. Modelling has been carried out using the Environment Agency's Life Cycle Assessment Tool, WRATE.
- 18.36 The WRATE modelling results indicated that the best performing scenario is Energy from Waste with Combined Heat and Power which scores highest on 5 criteria (abiotic resource depletion, global warming and human toxicity, freshwater aquatic ecotoxicity and eutrophication).
- 18.37 In conclusion, through the use of the WRATE life cycle assessment software, it can be demonstrated that most residual treatment technologies result in an environmental benefit when compared to the continued landfill of waste. Energy from Waste, preferably with Combined Heat and Power, yields an environmental impact that is better i.e. lower than other competing technologies. On this basis it is concluded that the proposed Severn Road EfW facility will result in an avoided environmental footprint, that is, an overall reduction in environmental impacts such as global CO₂ emissions.
- 18.38 The WRATE assessment concluded that the EfW facility will result in an overall reduction in environmental impacts such as global CO₂ emissions. This can be attributed to the generation of electricity from waste and the

³ WRATE Life Cycle Impact Assessment - Default Impact Assessment, Global Warming (GWP100)
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subsequent displacement of fossil fuel electricity generation; The EfW facility will produce carbon emissions but these are less harmful greenhouse gases than methane, which would be produced if the waste was landfilled:

The proposed development will have a positive effect on climate change by proposing a technology which will result in an overall reduction in CO2 emissions. In addition, the separation of recyclable materials for re use will reduce the demand for virgin materials.

CUMULATIVE IMPACTS

- 18.39 Cumulative impacts relate to the way in which different impacts can affect a particular environmental resource or location incrementally, for example, combined noise, dust and traffic emissions on a dwelling from a new road scheme. In essence, cumulative impacts are those which result from incremental changes caused by other past, present or reasonable foreseeable actions together with the proposed development. Therefore, the potential impacts of the proposed development cannot be considered in isolation but must be considered in addition to impacts already arising from existing or planned development.
- 18.40 The application site is currently vacant but was formerly an active industrial site for many years and the redundant plant still remains on the site. Existing developments within the vicinity of the site include the M5 motorway, Severnside Works and Seabank Power Station.
- 18.41 The environmental assessment process within this ES considered the potential for cumulative impacts to arise, as a result of the proposed development in conjunction with other developments within the vicinity of the site. These assessments have concluded that the proposed development will not cause negative cumulative impacts when considered in addition to existing and forthcoming developments in the vicinity of the site.

SUMMARY

- 18.42 The proposed development will comprise of materials recycling facility for recovering recyclate, an energy from waste facility for recovering energy from the waste that remains after recycling and a bottom ash facility to produce secondary aggregates from the residues of the energy from waste process.
- 18.43 The proposed SRRRC will make a fundamental contribution to waste management in Bristol and the surrounding area and maximise the recovery of recyclates, energy and secondary aggregates from waste. The introduction of a MRF and an EfW plant into the area will result in a move away from reliance on landfill towards a solution by which the recovery of recyclates is maximised and residual waste (i.e. that remaining after recycling) is effectively and efficiently dealt with by means of a modern and proven industrial combustion process. This process will generate significant amounts of energy to be harnessed for use within the development and for

surplus export to the National Grid. There is also the potential to utilise excess heat generated by the facility in local homes and businesses.

- 18.44 The Environmental Impact Assessment (EIA) process has considered the full range of environmental issues established during a comprehensive scoping exercise that included both formal scoping with the local planning authority and subsequent engagement with statutory and non-statutory stakeholders.
- 18.45 The findings of the EIA for the facility concluded that, having taken into account the proposed mitigation, the effects of the development are not considered to be significant. The impacts which could be considered to be contentious (air quality, traffic and flood risk) have been fully mitigated as a result of an iterative design process and through careful consideration of emissions control and abatement techniques, site levels and proposed highway improvements.
- 18.46 In respect of landscape and visual impact the proposed development is located within an established industrial area and replaces a redundant industrial plant. An Architect with an established track record of working on waste recovery buildings has ensured that a high quality design is proposed to ensure that the building enhances its location and reflects the emerging role of Avonmouth as a centre of excellence for recycling and energy recovery development. Additional mitigation in the form of on-site landscaping measures is offered to increase the visual interest of the building and establish it in its setting.
- 18.47 The potential impacts of the development on issues such as noise, site conditions, nature conservation and cultural heritage were also subject to detailed assessments. The conclusion in respect of each of these is that the nature of the development and its location has ensured that there are no adverse impacts in respect of any of these issues.
- 18.48 With regard to carbon footprint, the EIA has demonstrated that the facility will have a negative carbon footprint and this overall reduction in carbon emissions will make a significant contribution to reducing the emission footprint of waste management, especially in comparison to the current waste disposal route.

Benefits of the Development

- 18.49 Other benefits of the SRRRC include the following:
- The MRF will utilise latest sorting technology to help local authorities and businesses achieve their recycling targets;
 - The EfW has excellent long term capabilities., providing non-landfill disposal for a significant proportion of industrial and commercial waste arising in Bristol and the surrounding area;

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- Will comply with national, regional and local planning policies for siting waste management facilities and will enable national, regional and local targets on recycling and recovery to be met;
- Will involve the re-development of brownfield land and bring former industrial land back into productive use
- Will satisfy the principle of sub-regional self sufficiency helping Bristol to be at the forefront of sustainable waste management; and
- Has a lower carbon footprint than many other mass waste disposal technologies.

18.50 It is considered that the SRRRC will provide:

- A safe and sustainable alternative to landfill for wastes generated within Bristol and the surrounding area after the materials that can be recycled have been removed;
- A potential source of heat for local businesses, which will improve resource efficiency and reduce the dependence on fossil fuels;
- Up to 40 permanent jobs in the EfW and 25 in the MRF, plus further contract/temporary employment during the construction period; and
- Enable the local economy to benefit from additional employment and be sustained by wages and salaries received and spent in the local economy by people directly employed on the operational side and through the use of local services.

18.51 The facility will not have an adverse impact on the environment and will make a significant beneficial contribution to moving the management of waste up the waste hierarchy in the Bristol and West of England area. The need for additional waste management capacity to ensure landfill diversion targets are met is set out in the West of England Waste Management Capacity Needs Assessment, dated June 2009, which is part of the evidence base for the emerging West of England Joint Waste Development Plan Document.

18.52 The proposal complies with national, regional and local policies to promote sustainable methods of waste management and maximises the benefits of locating the complimentary activities of recycling, energy recovery and bottom ash recycling at a single location. The Severn Road Resource Recovery Centre will drive forward sustainable waste management both in Bristol and the West of England enabling communities and businesses to meet their obligations to reduce the amount of waste sent to landfill. In taking into account the minimal environmental impact and the benefits associated with the development, it is considered that the planning application should be supported.