

Severn Road Resource Recovery Centre



Non Technical Summary

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1.0 Introduction



1.1 The Applicant

1.2 Background to the Development

1.3 The Development

Severn Road Resource Recovery Centre



Site Location

1.1 The Applicant

Viridor Waste Management Ltd is one of the UK's leading recycling, renewable energy and waste management companies. It currently operates over 230 waste management facilities providing a range of services from recycling and composting through to waste treatment and disposal throughout the UK. Viridor employs over 2,600 people, providing a full range of recycling and waste management services to local authorities, the industrial and commercial sectors and local businesses. The company has recently won several industry awards for best practice and partnership working.

Viridor has 50 years experience in its sector. Its future vision is clearly focused on delivering quality waste management solutions that respect local amenities and the environment. It also invests in ongoing technical innovation and continuous improvement.

Viridor is owned by the Pennon Group; a major water and waste management PLC based in the south west.

1.2 Background to the Development

Avonmouth is fast developing as a major base for the development of renewable and low carbon energy industries with recycling and energy from waste playing an important role. The ample supply of industrial land and excellent transport links means that the area offers strong potential

over the next 5 to 10 years to become a regional/national centre of excellence for these industries ensuring that Bristol is at the forefront of the development of a low carbon economy.

Viridor have therefore selected the Avonmouth area to develop a Resource Recovery Centre, which will maximise the recovery of recyclable materials, energy and heat and minimise the need for landfill.

1.3 The Development

The proposed Resource Recovery Centre will consist of a materials recycling facility which will sort and bulk up recyclable waste and an energy from waste facility that will generate energy and heat from the residual waste that remains after recycling has taken place. Bottom ash generated by the process will be treated on site and recycled as a secondary aggregate.

The proposed development will be known as the Severn Road Resource Recovery Centre and a full description is as follows:

The construction and operation of a Resource Recovery Centre including a materials recycling facility, associated office, visitor centre and energy from waste and bottom ash facility, with new access road and weighbridge facilities, associated landscaping and surface water attenuation features.

2.0 SITE DESCRIPTION



2.1 Surrounding Area

2.2 The Site

2.1 Surrounding Area

Avonmouth is an extensive, long established industrial area that serves the West of England sub region and beyond. It hosts a wide range of general industrial uses, specialist industries, port facilities, storage and distribution, power generation and waste management uses and has excellent links to the strategic route network.

2.2 The Site

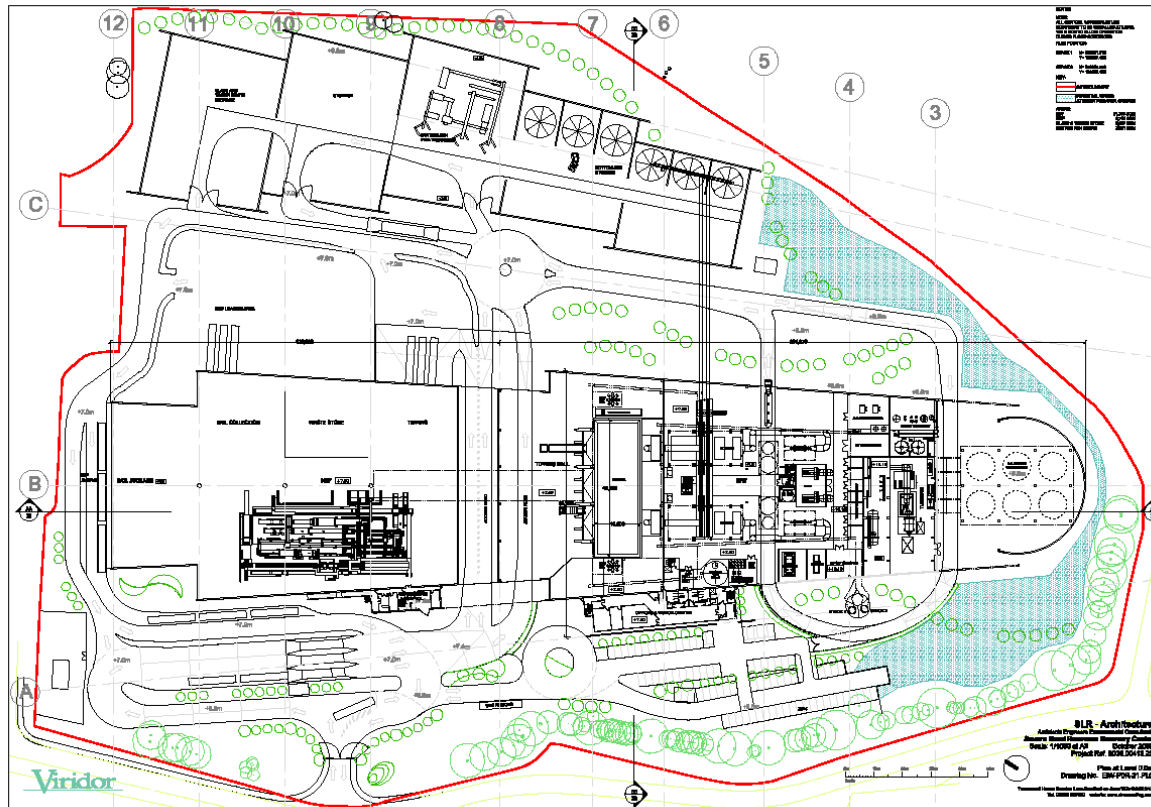
The site is the northern half of the Sevalco plant site at Severn Road, Avonmouth, which comprises of approximately 8.3 hectares of previously developed industrial land. To the north of the site are the industrial areas of the Severnside Works and Seabanks power station and to the west is the Chittening Industrial Estate. Immediately south is the adjacent part of the former Sevalco works site. To the east, flat open agricultural land leads to a gas works and onto the M49 motorway.

The site has an existing access on to Severn Road which joins the A403 Chittening Road. Chittening Road is the main road providing a north/south connection within the Avonmouth industrial area.

Incorporated within the development proposals are improvements to the existing site access and Severn Road and plans to install traffic signals at the Severn Road/Chittening Road junction.



3.0 The Development



3.1 Materials Recycling

3.2 Energy from Waste

3.3 Bottom Ash

3.4 Ancillary Development

3.1 Materials Recycling

The proposed MRF, which will have a capacity of 150,000 tpa, will occupy the western half of the proposed RRC building providing a large, flexible internal space which will enable a wide range of recycling options to be implemented. The size of the building will, for example, enable the establishment of separate lines of recycling equipment enabling the plant to deal with a wide range of wastes and maximise the recovery of recyclable material including glass, plastics, paper, card, metals, wood, etc.

Waste materials will be delivered into the building and deposited within a designated tipping area. From here material will be loaded in to the processing equipment for the screening and sorting of recyclable materials and residual waste.

Recyclable materials from the process will then be baled and stored within the building prior to dispatch from the bale collection area. Glass and timber, which cannot be baled, will be stored externally in an area adjacent to the bottom ash recycling facility.

Waste from the process that cannot be recycled will be placed in the waste store prior to dispatch to the EfW.

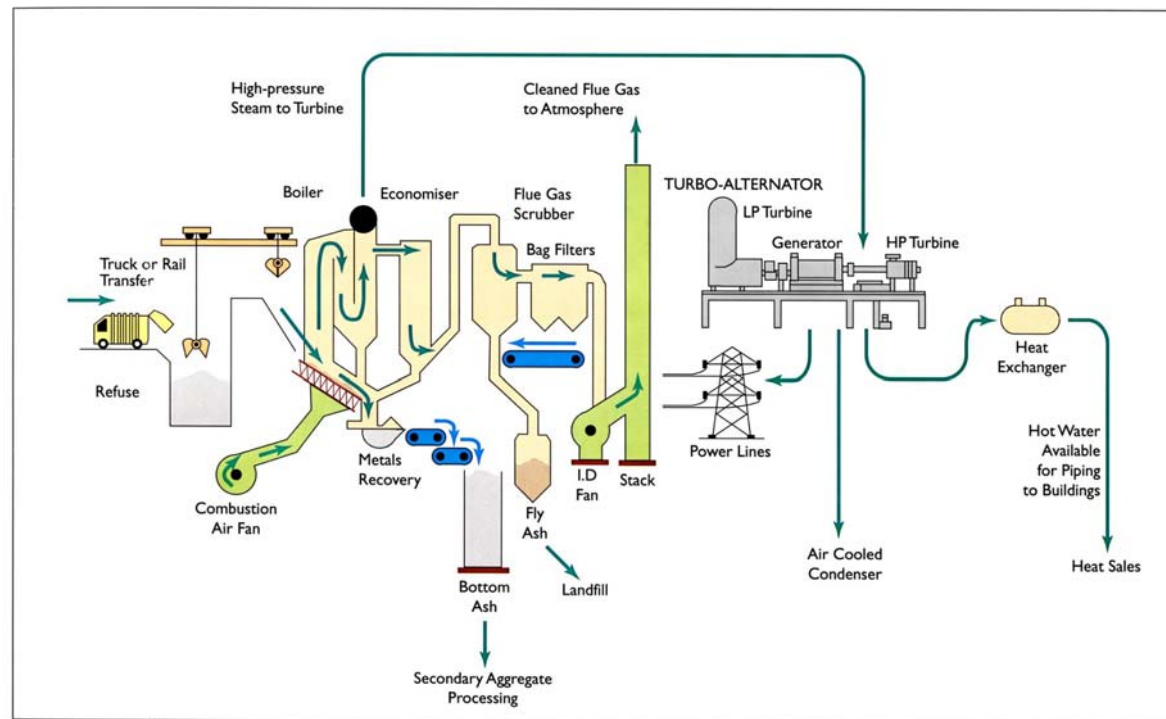
3.2 Energy from Waste

The proposed EfW, which will have a capacity of 350,000 tpa, will occupy the eastern half of the main RRC building. The main elements of the EfW proposals are:

- Waste reception hall with storage bunker, shredder and a waste feed system;
- Boiler hall with a grate, combustion chamber and a heat recovery boiler;
- Turbine Hall with steam turbine for generating electricity;
- Flue gas treatment hall with equipment to clean combustion gases;
- Facility for handling air pollution control residue silos and other ancillary equipment;
- Conveyor system to transfer bottom ash to the recycling area;
- Twin chimney stacks, 90m high, to discharge the treated flue gases into the atmosphere;

- An air-cooled condenser for cooling and recycling steam from the generating process; and
- Equipment for the delivery of steam and/or hot water as part of the provision of Combined Heat and Power (CHP)

EfW Process



3.3 Bottom Ash

It is proposed that incinerator bottom ash will be treated and recycled to produce aggregate material at an on site plant adjoining the EfW. The material will be moved from the EfW via a covered conveyor to the bottom ash facility.

The bottom ash material is wet on leaving the EfW and needs to be matured and turned for between 4-6 weeks before it can be processed for aggregate. The maturation and aggregate processing operations will be carried out under cover, with further storage areas provided for the finished product.

At full capacity it is estimated that the plant will produce approximately 90,000 tpa of recycled aggregate for the local market. The screening, maturation and storage of this material will take place under cover in the northern part of the site.

3.4 Other Development

Other development at the Resource Recovery Centre will include:

- A visitor centre to enable community participation and the encouragement of waste reduction, recycling and energy recovery in Bristol and the surrounding area;

- Offices, changing rooms and showers for staff;
- Staff and visitors car park, a coach and mini bus standing and cycle spaces to encourage a reduction in car use;
- Weighbridges and control centre;
- Combined heat and power infrastructure;
- Transformer House (contains meters, circuit breakers and step up transformers necessary for the export of electricity);
- Storage facilities for the collection, recycling and attenuation of surface water run off;
- Wheel wash facility;
- Storage areas for skips and containers;
- Site access roads with lighting, CCTV, footpaths and vehicle manoeuvring areas; and
- Landscaping and site fencing.

The energy from waste facility will operate on a 24/7 basis and the MRF and bottom Ash facility may also operate in this way. Deliveries and exports may occur throughout the day and night but it is anticipated that the majority of deliveries will take place between 06.00 and 19.00.

It is anticipated that the proposed development will generate permanent employment for 65 staff when operational.

The construction period is likely to take up to three years and, subject to planning, construction works are likely to commence in 2011 with completion and commissioning by 2013. This would enable the plant to be operational by 2014.

4.0 Alternatives



4.1 Alternative Sites

4.2 Alternative Technologies

4.1 Alternative Sites

The Alternative Site Assessment enabled Viridor to demonstrate the benefits of the Severn Road site and also how a facility in this location can make a significant contribution to the effective management of residual waste in the West of England.

The process of an alternative site assessment is one that by its nature needs to take account of regulatory issues, including planning policy, commercial opportunities, the availability of land and amenity and environmental constraints and opportunities.

The assessment used a range of criteria to assess 17 potential sites against each other in terms of their suitability for a strategic waste management facility for residual waste.

The top scoring sites were the application site (Sevalco site north) and the Terra Nitrogen site at Severn Beach which both scored 15 points out of a possible 22. In terms of environmental issues, residential amenity and planning policy, there is little to differentiate the two sites. The major advantage the Sevalco site has over the Terra Nitrogen site is land deliverability, which is key to achieving this development. The Terra Nitrogen site is not owned by a Local Authority or a waste management company, therefore, it is not certain that a strategic waste management facility would be deliverable at this site to meet sustainable waste management targets.

The conclusion has therefore been reached that the most appropriate site of those considered as part of this alternative site assessment, is the Sevalco site.

4.2 Alternative Technologies

The Environment Agency life cycle assessment software 'Waste and Resource Assessment Tool for the Environment (WRATE)' was used to model the environmental impacts of the EfW facility.

The environmental burden of processing 350,000 tonnes of waste through the following waste treatment processes was calculated;

- Landfill;
- Energy from Waste;
- Advanced Thermal Treatment (ATT);
- Mechanical Biological Treatment with refuse Derived Fuel to EfW and;
- Mechanical Biological Treatment with refuse Derived Fuel to landfill.

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 than other competing technologies. On

this basis it is concluded that the proposed Severn Road Resource Recovery Centre will result in an avoided environmental footprint, that is, an overall reduction in environmental impacts such as global CO2 emissions.

It is further concluded based on the assumptions that the same level of environmental footprint is unlikely to be deliverable via an MBT type treatment technology.

The assessments carried out for the proposed SRRRC have not identified any significant effects that cannot be mitigated and the review of alternative sites and technologies which are potential alternatives for this development has not identified any significant benefits to indicate that they would be a more suitable alternative.

5.0 Potential Environmental Effects



- 5.1 Traffic
- 5.2 Air Quality
- 5.3 Noise
- 5.4 Water
- 5.5 Land Quality
- 5.6 Landscape and Visual
- 5.7 Ecology
- 5.8 Cultural Heritage
- 5.9 Climate Change
- 5.10 Socio Economic
- 5.11 Human Health
- 5.12 Cumulative

5.1 Traffic

An assessment of the potential impacts of the proposed development on the local highway network has been undertaken.

The proposed SRRRC is designed to deal with around 500,000 tonnes of waste per annum. It is estimated that the operation of the EfW will generate 64 HGV trips a day (128 two way movements) and 26 RCV (52 two way movements) a day. This figure is based on an average of 8 tonne loads for RCVs, 20 tonne loads for bulk imports and a 5 and a half day working week. Waste is likely to be brought into the site consistently throughout the day and will not peak in line with traffic on the surrounding roads.

The MRF will generate a maximum of 142 RCV movements and 56 HGV movements per day with a similar pattern to the EfW. Of the 150,000 tonnes imported to the MRF, 60,000 tonnes of waste imported to the MRF will be transferred to the EfW and this accounts for the relatively low number of lorry movements to the EfW when compared to the MRF. In total, the SRRRC will generate an estimated 378 HGV and RCV movements per day.

The Transport Assessment undertaken concludes that following mitigation, the proposed development will not have significant impacts on the highway network. Mitigation is primarily provided by the proposed highway improvements and a Travel Plan, including a ban on all traffic associated with the development going through Hallen.

5.2 Air Quality

The potential air quality impacts of the proposed development have been rigorously modelled and assessed. However the site is well separated from sensitive receptors and is located on former industrial land within an established industrial area.

To ensure there are no significant effects on the environment or local communities as a result of the proposed development the following mitigation measures are proposed:

- All materials entering and leaving the site will be transported in enclosed or sheeted vehicles;
- All waste reception, processing and storage activities will be contained within the proposed building;
- All vehicle movements will take place on surfaced roads and hardstanding;
- The air pollution control system will form an integral part of the EfW and will ensure the plant complies with the requirements of the Waste Incineration Directive, as demonstrated by the detailed air dispersion modelling undertaken;
- All storage and handling of air pollution control residues will be undertaken inside the building in enclosed vessels and silos; and
- Bottom ash will be quenched and moved by covered conveyor to a dedicated enclosed building for maturation and processing.

5.3 Noise

A noise assessment was undertaken to determine the following;

- the existing noise levels at noise sensitive receptors around the site;
- the impact of site clearance, preparation and construction and potential impact on the noise sensitive receptors;
- the noise impact of the operation of the SRRRC.

The noise levels from on site noise sources have been assessed against standards appropriate for each noise source. The predicted operational noise levels were then assessed against the existing noise levels at each noise sensitive receptor. It is predicted that there will be no increase in noise at each noise sensitive receptor, therefore, no mitigation measures are necessary.

5.4 Water

The potential impacts on the baseline hydrogeological and hydrological environments have been identified and assessed and a flood risk assessment has been undertaken which concludes that the site is deliverable and sustainable in flood risk terms.

The assessments conclude that no significant effects are likely subject to the following mitigation measures:

- Use of silt traps and temporary settlement arrangements during the earthworks phase;
- Appropriate storage of potentially contaminating materials during the construction phase in accordance with the Environment Agency Pollution Prevention Guidelines;
- Controlled demolition of existing plant with safe removal of potential pollutants;
- Proposed MRF and EfW to be built at a level of 7.8m AOD;
- Safe refuge for employees provided by first floor accommodation within the RRC offices;
- Provision of attenuation lagoons and rainwater harvesting to manage surface water run off;
- Provision of groundwater drainage to minimise impact on groundwater flow from the bunker; and
- Potential for leachate generation from waste sources will be minimal as all handling and processing activities will take place inside buildings.

5.5 Land Quality

The land quality assessment concludes that the previous industrial use of the site does not pose an unacceptable risk to future development, but that the following mitigation measures are required to protect any new structures:

- Foundations should specify sulphate resistant concrete and new water pipes should be protected;
- Building requires a reinforced concrete slab with sealed joints and a gas resistant membrane with a passive vented under floor sub-space provided; and
- The excavation of any shallow oil deposits from the former use for off site disposal.

In respect of the proposed development impacting on land quality the following mitigation is proposed during the construction phase of the development:

- Site procedures to be in place for the handling of potentially contaminating materials in accordance with the Environment Agency Pollution Prevention Guidelines;
- Spill response kits are available;
- Minimise the removal of vegetation and do not leave large areas of bare soil exposed;
- Long term stockpiles (if required) are grassed;

- Water is directed away from slopes and siltation traps are installed in local water courses;
- Wide tyres are fitted to construction plant if required;
- Construction road network is limited to a few main tracks; and
- Compacted areas are tilled once construction completed.

5.6 Landscape and Visual

A landscape and visual assessment of the proposed development has been completed in accordance with accepted guidance.

The proposed development will have a Minor/Moderate effect on the local landscape due to its modern nature and mass as an integrated building and structure. Aesthetically, the proposals are considered beneficial, but visual change and thus effects on perception of the landscape will occur.

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.

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. It is therefore considered that the proposed building will meet its aim of having a positive effect on the views and landscape of the area.

5.7 Ecology

The proposed site is former industrial land with no nature conservation designations within or immediately adjoining the site. A phase 1 habitat survey was carried out in 2009 along with additional species specific surveys for water voles, reptiles, amphibians, breeding birds and invertebrates. This survey work confirmed that there will be no significant direct effects of the proposed development going ahead, subject to appropriate mitigation measures prior to development commencing. These include:

- Implementation of Environment Agency Pollution Prevention Guidelines and use of slit traps;
- Timing of works to allow mobile invertebrate and reptile species to disperse;

- Recreation of similar habitat types as part of the landscaping scheme for the site and ongoing favourable management;
- Time works to avoid breeding bird season and checks prior to vegetation removal;
- Destructive search for voles and reptiles prior to works commencing

Indirect air quality impacts on international and national nature conservation sites within a 10km radius have also been considered but it is considered that the use of modern pollution prevention control technologies will reduce emissions to acceptable levels.

5.8 Cultural Heritage

The cultural heritage of the application site was assessed in the context of the surrounding area. Data was gathered from a variety of sources so that a model for the site's historical development could be constructed, and its potential historic value understood.

There are no designated sites that will be impacted upon by the proposed scheme and no significant archaeological effects are considered likely.

However the proposed site is in a rich archaeological landscape, and site investigation will be necessary before construction begins. The presence of a palaeochannel within the application site was identified in 2004 from borehole data. 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 the potential for earlier archaeological remains and related palaeoenvironmental deposits.

Mitigation is recommended in the form of a planning condition requiring a watching brief. If archaeological or palaeoenvironmental deposits are found during site investigations an assessment will be made on whether the foundations and groundworks for the proposed SRRRC will impact on these remains. A programme of excavation, recording and reporting may therefore be required to complete the mitigation strategy.

5.9 Climate Change

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 than other competing technologies. On this basis it is concluded that the proposed Severn Road Resource Recovery Centre will result in an overall reduction in environmental impacts such as global CO₂ emissions. The recovery of recyclable

materials by the MRF will reduce demand for virgin raw materials, thus increasing the environmental performance of the SRRRC even further.

The WRATE assessment concluded that the EfW facility will result in a negative environmental footprint that is, an overall reduction in environmental impacts such as global CO2 emissions. This can be attributed to the generation of electricity from waste and the 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.

5.10 Socio Economic

The main positive impact of the facility on the socio economic situation in the local area is the provision of 150-200 jobs during the construction of the facility. Upon operation, 65 permanent jobs will be created. The SRRRC may also create jobs indirectly, for example waste separation jobs in waste transfer stations and local haulage companies. The facility will also help Bristol and surrounding Local Authorities to meet their landfill directive targets and avoid costly penalties, which may otherwise have to be met by increasing council tax

5.11 Human Health

A site model was developed for the proposed energy from waste facility that identified the potential sources of pollution, receptors and relevant pathways of exposure.

A conservative worst scenario was developed for a screening exercise in which it was assumed that the most sensitive receptor, a young female child, was present at the site location receiving the highest deposition rates of the persistent contaminants (i.e. metals and dioxins). The calculated intakes were generally considerably lower than tolerable daily intakes recommended for the risk assessment of metals and dioxins, thus demonstrating an absence of risk due to emissions from the proposed EfW.

It is therefore considered that the effect on health from the metal and dioxin emissions from the energy from waste facility can be classified as highly unlikely to be significant which is confirmed by Government advice on this topic.

5.12 Cumulative

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 has been fully considered.

The 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.

6.0 Conclusions

The assessments undertaken have not identified any significant environmental effects as a result of the proposed development.

The proposed Resource Recovery Centre will maximise the recovery of recyclable materials, energy and heat from waste and minimise the need for landfill. It is therefore considered to be fully compliant with the principles of the waste hierarchy and national, regional and local waste management policy.

The benefits of the SRRRC include the following:

- The facility will provide much needed recycling and resource recovery capacity for local businesses and authorities to allow them to improve environmental performance and reduce costs through the avoidance of landfill and landfill tax;
- The facility will maximise the recovery of resources through recycling and the production of energy in the form of electricity and heat;
- The MRF will utilise latest sorting technology to help local authorities and businesses achieve their recycling targets;

- The Combined Heat and Power (CHP) design will present opportunities for additional commercial development through the availability of cost effective heat and “cold” energy;
- The facility will generate approximately 30MW of electricity for export to the National Grid, maximising the recovery of resources and contributing to energy security for the area;
- The facility will involve the re-development of brownfield land and bring former industrial land back into productive use;
- The facility is in compliance 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 satisfy the principle of sub-regional self sufficiency helping the West of England to be at the forefront of sustainable waste management;
- The facility will provide approximately 65 permanent jobs and in the region of 200 or more temporary jobs during the 3 year 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.

It has been demonstrated that 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 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.

The non technical summary, is accompanied by an Environmental Statement which is available as a separate document. Paper copies of the planning application and Environmental Statement are also available at a cost of £250 (including post and packing) from SLR Consulting Ltd. Alternatively these documents are available free of charge from the Viridor web site, www.viridor-consultation.co.uk/bristol or CD format at a nominal charge of £5 from the address below.

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