

4 NEED AND ALTERNATIVES CONSIDERED

4.1 Introduction

- 4.1.1 This chapter of the Environmental Statement (ES) provides a summary of the context of the project and the main alternatives considered by the applicant during the EIA process. It includes a summary of the:
- Need for the proposed REC; and
 - reasons for the selection of the site, together with a description of the alternative design and layout options that have been considered.
- 4.1.2 Further information is provided in the Planning Statement that accompanies the planning application.

4.2 Need for the Development

- 4.2.1 The proposed REC forms three main elements; the principal function of which is the generation of renewable and low carbon energy through the combustion of fuel in the form of residual waste including Refuse Derived Fuel (RDF) through the proposed ERF element. In so doing, the proposed ERF also performs the function of sustainable waste management. That function is, however, an ancillary function to the primary function of the ERF which is generating energy.
- 4.2.2 The proposed MRF and IBA Recycling Facility both perform a waste recycling function.
- 4.2.3 Need for the different operational elements of the proposed REC may therefore be derived from both the need for the energy in the case of the proposed ERF, and from the need for sustainable waste management, and in the case of the MRF and the IBA Recycling facility from the need for sustainable waste management.

National Policy Need

- 4.2.4 Details of the national planning context, specifically the National Planning Policy Framework, Waste Management Plan for England, National Planning Policy for Waste, Overarching National Policy Statement for Energy EN-1, National Policy Statement for Renewable Energy Infrastructure EN-3, and National Planning Practice Guidance are outlined in Chapter 3 of this ES.
- 4.2.5 The above documents establish an urgent national need for power generation stations including those which generate renewable, sustainable and low carbon energy; and for sustainable waste management facilities which divert waste from landfill, moving waste up the waste hierarchy by recovering value through recycling and energy recovery. The urgent national need for energy is acknowledged for planning purposes.
- 4.2.6 In respect of both national RDF and C&I waste requiring energy recovery, JMWCS policy MWCS7 provides that proposals for waste management facilities to manage waste from outside the Tees Valley must be supported by evidence of need and justification for their location within the Tees Valley.
- 4.2.7 There is a national need to provide additional energy recovery facilities to meet the needs of recovering energy from the RDF that is currently exported to the EU each year. The Digest of Waste and Resource Statistics published by DEFRA in May 2018 (Table 6.2) shows that in 2017 3.2million tonnes per annum of RDF was exported from England and that the amount exported had grown considerably and consistently from 2010. Table 6.3 of that report shows that in 2017

the majority of RDF exported from England was sent to The Netherlands (48%), Germany (20%) and Sweden (16.5%).

- 4.2.8 In addition, a report prepared by consultancy Tolvik for the Environmental Services Association published in November 2017 sets out that in 2016 the amount of RDF exported from the UK as whole was 3.6million tonnes per annum.
- 4.2.9 Tolvik also forecasts that by 2030 RDF exports will be 2.5million tonnes per annum taking into account increased energy recovery capacity in the UK as well as factors such as changes to tax regimes in the EU.
- 4.2.10 There is also a national need to recover value from the C&I waste arising in England and the UK through further recycling and energy recovery. According to DEFRA the quantity of C&I waste arising in England in 2018 was 37.3 million tonnes. If 65% of this waste was recycled in accordance with the Circular Economy Package (CEP) recycling target (albeit this a target for municipal waste in 2035) that would have led to the equivalent of an estimated 13.02 million tonnes of residual C&I waste available for energy recovery. However, it is estimated by Tolvik in a report in 2019 that only 2.18 million tonnes of EFW capacity was fuelled by C&I waste in 2018, leaving an estimated 10.84 million tonnes ($13.02 - 2.18 = 10.84$) of residual C&I waste available for energy recovery in England alone. If the amount of C&I waste being recycled was at the 52% target set out in the Waste Management Plan for England, rather than the 65% set out in the CEP, there would have been at least 15.72 million tonnes of C&I waste available for energy recovery in England in 2018.

Local Context

- 4.2.11 Redcar and Cleveland Local Plan (RCLP) and the Joint Tees Valley Minerals and Waste Core Strategy (JTVMWCS) which together provide the relevant development plan policy are informed by the national planning policy and are supportive of the need for the development.
- 4.2.12 RCLP policy SD6 – Renewable and Low Carbon Energy provides in principle support and encouragement for renewable and low carbon development. RCLP policy ED6 – Promoting Economic Growth, together with the South Tees Development Area SPD, provides support for suitable employment related sui-generis uses, which expressly include energy generation, and waste management development to be provided in the South Tees area in which the site is located.
- 4.2.13 JTVMWCS policy MWCS6 sets out that the waste strategy for the management of waste arising in the Tees Valley including, amongst other things, making provision for sufficient waste management capacity to deliver a) 40% of household waste to be recycled from 2010, rising to 46% from 2016; b) to recover value from 53% of MSW from 2010, rising to 73% from 2016; and c) to increase the recovery of value from C&I waste from 2016.
- 4.2.14 JTVMWCS policy MWCS7 requires land to be provided for the development of waste management facilities to meet the identified requirements of the Tees Valley for the recovery of value from at least 103,000 tonnes of municipal solid waste and commercial and industrial waste per year from 2010, falling to 83,000 tonnes per year by 2021. These need requirements are a minimum but also include 450,000 tonnes per annum of capacity provided by planning permissions for the South Tees Eco Park which have since lapsed. That capacity gap could be provided by the proposed REC.
- 4.2.15 Furthermore, the draft Joint Tees Valley Waste Management Strategy 2020 to 2035 (dJTCWMS) from 2019 identifies a need for a new modern energy recovery facility of 420,000tpa with the ability to utilise heat produced through development of CHP.

Overall policy context

4.2.16 There is therefore:

- a clear need established for the proposed ERF power generation plant established at a national and local level.
- a national and local need for additional waste recovery capacity for the proposed REC in terms of its potential to provide operational capacity for
 - recycling of MSW and C&I waste, and IBA, and
 - energy recovery facilities from residual MSW, C&I waste and RDF.

4.3 Alternatives Considered

4.3.1 The EIA Regulations require that an ES should include:

'A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects' (Schedule 4(2)).

4.3.2 This section therefore sets out the key reasons for choosing the proposed REC site and how the layout was developed, taking into account environmental effects.

Site Location

4.3.3 The main reasons for the selection of the application site, taking into account environmental effects/considerations, were:

- the Development Plan: Redcar and Cleveland Local Plan – the site is:
 - within the defined settlement limits where development is to be directed to in accordance with policy SD2 where development is supported in principle in accordance with policy SD3,
 - within the South Tees Development Corporation area which is a Protected Employment Area where in accordance with policy ED6 specialist employment uses will be focused and employment uses including suitable employment related sui generis uses (such as waste management facilities) will be supported having regard to the South Tees SPD, and
 - is located within the South Tees Development Corporation area where regeneration is supported through the implementation of the South Tees Area SPD in accordance with policy LS4.
- South Tees Area SPD – the site is located within the South Tees Area where the Council's vision for the area is underpinned by and supportive of, amongst other things:
 - the delivery of the comprehensive redevelopment of the area to realise an exemplar world class industrial park with the development of uses aligned with a low carbon economy and circular economy within a framework of reduced energy costs and waste minimisation.
 - strategic development principle STDC6 provides support for new energy generation including renewable energy in the South Tees Area and in particular that development which contributes supports the area's energy needs.

- the site is located within the Northern Industrial Zone which provides a site specific development principle that supports development proposals for power generation as well as employment uses and bulk materials and minerals processing.
- Development Plan: Tees Valley Joint Minerals and Waste Core Strategy (JMWCS) – the site is identified within the JMWCS as an area where proposals for large waste management facilities should be located and is suitable for built waste facilities including clusters of waste management and processing facilities.
- Proximity and Accessibility – the site is located in close proximity to the other major conurbations of the Tees Valley and the wider region, with excellent connections to the strategic highway network.
- Sustainable Transport Links – the site is also well connected to sustainable transport modes with access to the existing rail and port infrastructure in close proximity.
- Current and historic uses – the site is comprised of brownfield land within a heavily industrialised setting.
- Suitability/Sensitivity – the site is not designated for statutory nature conservation, landscape or historic environment reasons. It is unlikely that such receptors in the wider area would be significantly affected. The site is not subject to flooding. There are no residential receptors nearby.
- Opportunity – the REC proposals:
 - fit comfortably within the site area making an efficient use of the brownfield site and access roads
 - respond well with the surroundings
 - conform with the South Tees regeneration vision and act as a catalyst for other development
 - provide significant employment
 - provides the renewable and low carbon energy to meet the urgent national need with the potential to serve the planned future development of the South Tees Development Corporation area with both electricity and CHP
 - provide the added benefits of sustainable waste management through collocating energy recovery facilities which recover energy from residual waste which would otherwise be landfilled, with recycling and bulk storage facilities.

4.3.4 Having regard to all of the above, the site is considered suitable for the intended purpose and other locations have not been considered.

Site Layout and Design

Site Constraints and Opportunities

4.3.5 An evaluation of site constraints and opportunities was undertaken to inform the site layout and design.

Landscape

- 4.3.6 The Application Site is currently used for the storage of bulk goods such as coal scrapings. There are a number of small corrugated metal buildings located on the eastern part of the Application Site. The Application Site is located within a heavily industrialised area which has few landscape features of note with the exception of the area to the north, adjacent to the Tees Estuary, which is made up of sand dune and other associated grassland.

Visual Impact and Amenity

- 4.3.7 The Application Site is set within a highly industrialised area so its redevelopment would have limited impact on the amenity of the area. The following have been identified as the nearest sensitive receptors/areas which have the potential to be affected by one or more of the following: visual, noise, vibration, dust and odour impacts arising from the redevelopment and eventual operation of this site:
- Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI) which borders the Application Site to the north;
 - The Teesmouth and Cleveland Coast Special Protection Area (SPA) and Ramsar which is located approximately 80 metres from the Application Site boundary;
 - Saltholme Nature Reserve on Bran Sands approximately 109m to the north of the Application Site;
 - Seaton Dunes and Common Local Nature Reserve located 2.7km north west of the Application Site on the opposite side of the Tees Estuary;
 - Teesmouth National Nature Reserve located 1.5km to the west of the site on the opposite side of the Tees Estuary;
 - Marsh Farm located 2.3km to the east, the closest residential receptor to the Application Site; and
 - Grade II listed South Gare Lighthouse located 2.2km to the north of the site, which is the nearest heritage receptor

Flood Risk

- 4.3.8 The Environment Agency's flood risk maps indicate that the application site is located within Flood Zone 1, defined as having low vulnerability to flooding.

Access and Transport

- 4.3.9 Access to the Application Site is via a series of internal access roads which serve the industrial area. The internal road merges with the A1085 Trunk Road as a single road via a roundabout approximately 2.7km to the south east of the site. The A1085 provides a strategic access to Middlesbrough and beyond to the north and south via the A19.

Function

- 4.3.10 The Redcar and Cleveland Local Plan ('RCLP') (May 2018), and the Tees Valley Joint Minerals and Waste Core Strategy DPD (September 2011) together set out the relevant strategic policy provisions of the statutory development plan for the Application Site.
- 4.3.11 The Redcar and Cleveland Local Plan sets out the strategic policy for the South Tees Development Corporation area in which the Application Site is located. The RCLP sets out the spatial strategy for the area through its strategic economic aims;
- delivering significant economic growth and job opportunities through the South Tees Development Corporation;
 - support for the regeneration of the South Tees Development Corporation area through the implementation of the South Tees Area Supplementary Planning Document (STASPD);
 - growing the environmental and recycling sector;
 - supporting the expansion and protection of the port and logistics sector; and
 - taking a lead role in supporting the future regeneration of the steel sites as part of the South Tees Development Corporation.
- 4.3.12 The RCLP also sets out that further strategic policy support is derived through the Application Site's location within an area where land and buildings will continue to be developed and safeguarded for employment uses including specialist uses, including suitable employment related sui generis users and general employment uses. Such uses would include waste management facilities such as the proposed REC.

Design Principles and Objectives

- 4.3.13 Taking the site constraints and opportunities into account, alongside national and local design policy, the following specific design objectives have been set out for the proposed development:
- Secure a modern design which will visually enhance this industrial site;
 - Develop a proposal in keeping with the nature of the site and immediate surrounding environment;
 - Achieve a function which contributes to a thriving local economy in this location, offering a level of employment within the community;
 - Select materials of a high quality to complement the aesthetic of the proposed design;
 - Employ sustainable construction methods promoting the development of a low carbon/energy efficient building;
 - Ensure appropriate sustainable drainage solutions sensitive to the need to protect adjacent water courses;
 - Enhance the site boundary planting and improve landscaping throughout the site - new planting would be used to enhance the site; and

- Retain and improve the biodiversity of the site allowing for the retention and creation of habitats, including the attenuation pond, boundary buffer zone with native planting, landscaping along the access road and the inclusion of at least one damselfly/dragonfly water feature.

- 4.3.14 The EIA process has influenced the iterative design process of the project, through the identification of the above objectives, responses during the consultation process, and identification of environmental effects. Therefore, there have been a number of iterations and refinements to the layout of the project.
- 4.3.15 The current project layout is provided in Figure 2.2 of this ES. Plans and elevations of the buildings are provided at Appendix 2.1.
- 4.3.16 Throughout the course of the proposal, the layout has been through three different design options with the initial site area being much larger and including a bulk storage facility. The site layout has been altered and the positions of the MRF and EfW swapped, with the MRF increasing in size, as the scheme has been developed. The IBA building location has also been revised following discussions with Natural England. The access routes for the HGV and vehicles around the site have been improved and the colour scheme amended to blend into the environment.
- 4.3.17 The following paragraphs provide further details regarding the alterations that were made to the scheme as it has progressed.
- 4.3.18 The original concept design covered a much larger site than the Application Site. The original concept design included the following:
- EfW;
 - MRF with external baled RDF and direct access to EfW bunker, with drying tunnels shredding, screening and baling lines for the export bales. The drying area was proposed to serve approximately 10,000m³. The drying material was proposed to be stored to a height of 5m so the design looked at 10 x 5m wide and 45m long tunnels. Overall at least 2,000m² floor space was identified as being required to dry the material;
 - 2 shredding lines and 2 screener and baling lines;
 - Liquid waste bulk tanks;
 - IBA Facility;
 - Bulk Store;
 - Option for external bulk storage at 360,000 ft²
- 4.3.19 Following the initial concept design the proposal was revised with the following changes being made:
- The site size was reduced to the current 10.1ha with the site layout being revised as a consequence;
 - The IBA was reduced in size to 16,000m² and the material within it would be conveyed;
 - The layout ensured that it did not close off any other areas of the Redcar Bulk Terminal site;
 - A 20,000m² MRF was provided;

- Quick access/egress for lorries to the Bunker and MRF was provided;
- No building envelope for the fuel gas treatment;
- Slight increase in building size to allow for larger tipping hall;
- Air cooled condensers;
- Space for queuing at the weighbridge was provided.

4.3.20 A final design for the scheme was subsequently completed where the following final alterations were made;

- The layout of the MRF and EfW on site were mirrored;
- The lorry route in and out of the tipping hall was revised allowing scope for future extensions;
- The IBA facility was positioned within the area to the north of the site which would otherwise, in the previous layouts, have been closed off by the buildings.

4.3.21 Along with the site layout, the elevations for the ERF and the MRF have also evolved as the scheme has progressed. The bullet points below summarise, chronologically, how the east elevation of the ERF has changed throughout the process:

- The colours on the elevation were lightened to include more greys and blues so it sat in the location better. Horizontal cladding was used to ground the building with a dark band around the base. Vertical flashings have also been used to further break up the mass of the building;
- Transparent cladding was moved to the boiler hall to create a lighthouse feature;
- The cladding to the boiler hall was darkened but the clear cladding at the top was retained. The cladding on the building entrance canopy was also darkened to match the boiler hall;
- To create an interesting feature on the building, a curved brise soleil was added to the top of the boiler house; and
- Finally, all the dark blue cladding on the boiler hall was changed to transparent blue cladding.

4.3.22 The MRF elevations have been designed to incorporate a long narrow band of transparent blue cladding in a scatter pattern in order to provide a distinctive feature. This cladding also visually diminishes the side wall heights when the building is viewed from a distance.

4.3.23 None of these changes is considered to materially change the environmental impact, as the form and function of all the components is substantially unaltered, with the exception of the visible form, which is considered to be more attractive, with better function, utility and biodiversity net gain, than the original design layout.

4.4 References

Department of Energy and Climate Change (DECC) (2011a) Overarching National Policy Statement for Energy (EN-1). July 2011.

Department of Energy and Climate Change (DECC) (2011b) National Policy Statement for Renewable Energy Infrastructure (EN-3). July 2011.

Department for Communities and Local Government (DCLG) (2014) National Planning Policy for Waste. October 2014.

Department for Environment, Food and Rural Affairs (Defra) (2013) Waste Management Plan for England. December 2013.

Department for Environment, Food and Rural Affairs (Defra) Digest of Waste and Resource Statistics May 2018

Ministry for Housing, Communities and Local Government (2019) National Planning Policy Framework.

Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (2017 SI No.571)

Redcar and Cleveland Borough Council (2018) South Tees Area – Supplementary Policy Document Adopted May 2018

Redcar and Cleveland Borough Council (2018) The Redcar and Cleveland Local Plan Adopted May 2018

The Tees Valley Joint Minerals and Waste Development Plan Core Strategy DPD Adopted September 2011

The Tees Valley Joint Minerals and Waste Development Plan Policies & Sites DPD Adopted September 2011

The draft Tees Valley Joint Valley Waste Management Strategy 2020 to 2025 December 2019

UK Residual Waste: 2030 Market Review, Tolvik Consulting, November 2017

UK Energy from Waste Statistics – 2018, Tolvik Consulting, June 2019