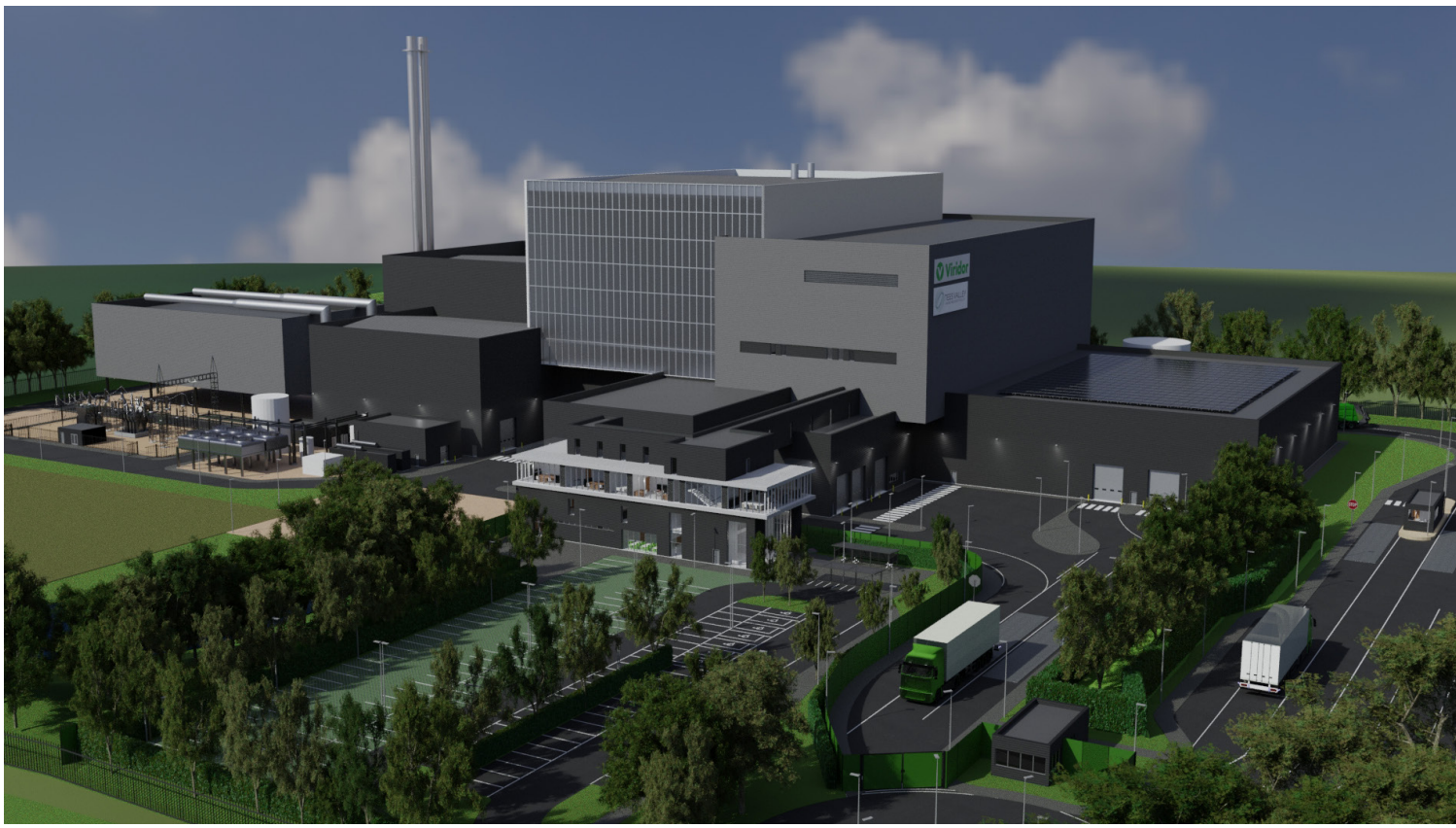

Environmental Impact Assessment: Statement of Conformity

Tees Valley Energy Recovery Facility
Grangetown Prairie, Dorman Point
Prepared on behalf of Viridor Tees Valley Limited
March 2023

In association with:

Environmental Impact Assessment: Statement of Conformity

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TEES VALLEY ENERGY RECOVERY FACILITY

ENVIRONMENTAL IMPACT ASSESSMENT: STATEMENT OF CONFORMITY

VIRIDOR TEES VALLEY LIMITED

MARCH 2023

TERENCE O'ROURKE

TEES VALLEY ENERGY RECOVERY FACILITY

ENVIRONMENTAL IMPACT ASSESSMENT: STATEMENT OF CONFORMITY

VIRIDOR TEES VALLEY LIMITED

2023

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Contents

Figures

Appendices

1.0 Introduction

1.1 This Environmental Impact Assessment (EIA) Statement of Conformity (SoC) is prepared in support of the submission of reserved matters pursuant to outline planning permission for the construction of an energy recovery facility (ERF) and associated development at Grangetown Prairie Land, east of John Boyle Road and west of Tees Dock Road, Grangetown (application reference R/2019/0767/OOM), granted by Redcar and Cleveland Borough Council (RCBC) and dated 24th July 2020.

1.2 The application for reserved matters approval is submitted on behalf of Viridor Tees Valley Limited (Viridor) and is undertaken pursuant to the following planning condition:

> *"Details of the access, appearance, landscaping, layout and scale (hereinafter called the reserved matters) shall be submitted to and approved by the Local Planning Authority before any development takes place and the development shall be carried out as approved. Application for the approval of the Reserved Matters shall be made within 3 years of the date of this permission."*

1.3 This EIA SoC has been prepared and is submitted in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended), (henceforth referred to as the EIA Regulations) to provide a comparative assessment of the environmental impacts of the proposed reserved matters with the outline scheme.

Planning and EIA history

1.4 The proposed ERF and associated development benefits from an outline planning permission (OPP), as referenced above, which now enables the project to progress to more detailed design and the approval of reserved matters. The outline scheme was subject to the EIA process and was supported by an environmental statement (ES) (hereafter referred to as the December 2019 ES) that was prepared by JBA Consulting.

Need for further environmental information

1.5 Where an EIA is required for a proposed development, information on the likely significant effects of the development must be provided by the applicant in an ES to accompany the planning application. As outlined previously, the outline scheme has already been subject to EIA which was reported within the December 2019 ES.

1.6 Regulation 3 of the EIA Regulations states:

> *"The relevant planning authority... must not grant planning permission or subsequent consent for EIA development unless an EIA has been carried out in respect of that development."*

1.7 When considering the reserved matters for the outline scheme it is necessary to consider how the EIA Regulations apply to "subsequent applications" which are defined as meaning (as set out in EIA Regulation 2):

"An application for approval of a matter where the approval – is required by or under a condition to which a planning permission is subject; and must be obtained before all or part of the development permitted by the planning permission may be begun."

1.8 The EIA Regulations therefore prohibit development consent being granted, including those for subsequent applications, unless there is an assessment of the likely significant effects of the development. The EIA Regulations seek to ensure the determining authority makes its decision in the full knowledge of any likely significant environmental effects.

1.9 Since the Tees Valley ERF is an EIA development, it follows that any subsequent applications pursuant to that planning permission will also be ones that relate to EIA development and will thus have to be determined by reference to an ES.

1.10 In relation to the outline scheme, it is necessary to consider the EIA Regulations on the basis set out in Regulation 9 for "subsequent applications" since this applies where an ES has already been submitted. Regulation 9(2) states that where the environmental information (in this instance the December 2019 ES and any other associated environmental information) already before the authority is considered adequate, the authority should take this into account in its decision for subsequent consent. Regulation 9(3) states that where the environmental information is not considered adequate to assess the significant effects of the development on the environment, a notice must be served under Regulation 25. Alternatively, the applicant can submit further environmental information voluntarily, as provided within this EIA SoC report.

1.11 This report considers whether the December 2019 ES is adequate for decision making (i.e. remains valid) and whether the likely significant effects of the outline scheme identified at the outline stage remain valid. The report also provides further environmental information for certain technical topics where assessment work has been undertaken to confirm whether any likely significant environmental effects would arise, from the development with the reserved matters scheme in place, which were not fully identified or identifiable at the outline stage.

1.12 This report has been prepared and coordinated by Terence O'Rourke Ltd to accompany the reserved matters application, with technical reviews / assessments completed by additional parties including:

- Terence O'Rourke Ltd – landscape and visual effects, archaeology and cultural heritage, socio-economic
- Fichtner Consulting Engineers Ltd – air quality, human health
- Ramboll – hydrology, hydrogeology, geology, contamination, water quality, flood risk assessment, ecology / biodiversity, noise, traffic and transportation

1.13 The scope of the EIA SoC report and general approach is provided in chapter 4: Approach to the EIA Statement of Conformity.

Report structure

1.14 This report contains an EIA SoC for each environmental topic. Each topic considers:

1. Whether environmental baseline information presented in the December 2019 ES remains valid
2. Whether there has been any new relevant legislation, policy or guidance to take into consideration since December 2019
3. Whether the detailed design, once reviewed, is found to give rise to any new or different significant environmental impacts from those reported in the December 2019 ES

1.15 Where relevant, further environmental information has been provided to support the reserved matters EIA SoC. Where environmental effects are new, or where effects differ from those presented in the December 2019 ES, these are clearly presented within the technical chapters.

1.16 The chapter headings are set out as follows and chapters 5 – 14 correspond to the topic chapters of the December 2019 ES:

1. Introduction - overview on purpose of document, context and content
2. Context and background - update in light of detailed design for reserved matters
3. Description of development - description of the outline scheme and features of the reserved matters submission
4. Approach to the EIA SoC report - sets out the approach to scoping and general methodology applied
5. Ecology and biodiversity
6. Landscape and visual impact
7. Hydrology, hydrogeology, geology and contamination
8. Flood risk and water quality
9. Archaeology and cultural heritage
10. Socio-economic
11. Air quality, noise and human health
12. Traffic and transportation
13. Cumulative impacts
14. Environmental commitments
15. Conclusions

2.0 Context and background

The site

2.1 The ERF site lies within the area known as Grangetown Prairie, owned by the South Tees Development Corporation (STDC). The site forms part of 1,800 ha of land previously occupied by heavy industry and infrastructure that is subject to STDC's Regeneration Master Plan.

2.2 The site lies within the south west corner of the STDC regeneration area, within the Grangetown Prairie zone. It is located approximately 1.2 km from the River Tees to the north, around 6.5 km to the north east of Middlesbrough and 5 km south west of Redcar town centre.

2.3 The ERF site is a previously developed industrial site that was formerly used for the production of iron and steel. Following the closure of the steel works and cessation of industrial activities, the building complex was cleared in the 1980's and the site is now vacant.

2.4 The extent of the ERF OPP (R/2019/0767/OOM) covers around 10 ha of land that is roughly rectangular in shape and situated between John Boyle Road to the west, Tees Dock Road to the east, the A66 to the south and the railway line to the north. The site subject to the reserved matters application sits within the area of the OPP and covers an area of 8.87 ha. The part of the outline application area that is not included in the reserved matters application area is not required for the delivery of the proposals in the application (see figure 2.1). Indeed, the outline land to the south of the ERF site has recently been developed and is now occupied by the Teesworks Skills Academy.

2.5 Planning permission was granted to STDC for new road infrastructure to serve the site (this is detailed further below). The planning permission included a new roundabout on Eston Road and lengths of new road extending north and east. This road infrastructure was completed in late 2022 and so the site now has direct access to the public highway.

2.6 At the time of the OPP, the site was generally characterised by relatively flat areas of grassland. However, the site is now bare ground following subsequent remediation works carried out by STDC as part of a wider remediation project. Further details are set out below.

Surrounding land uses

2.7 The ERF site is currently surrounded by areas of relatively flat, vacant, former industrial land, with the exception of the recently constructed Teesworks Skills Academy to the immediate south. There are remaining industrial buildings and uses within the wider vicinity of the site. The former steelworks torpedo shed and Bolckow industrial estate lie further south of the site. The South Tees Freight Park lies to the west of the site, beyond John Boyle Road and to the east is the operational British Steel Lackenby Beam Mill. To the north of the site lies the Tees Valley railway, with the Highfield landfill located beyond this.

2.8 The Teesdale Way long-distance public right of way runs along the railway lines approximately 115 m from the site's northern boundary, while a SUSTRANS

national cycle route runs partly along the A66 approximately 530 m to the south of the site.

2.9 The nearest residential areas associated with Grangetown and South Bank are located approximately 700 m away to the south and south west of the ERF site, beyond the A66.

Environmental features and designations

2.10 There are no designated heritage assets on the site, or in close proximity to the site. However, the site's long industrial heritage associated with the iron and steel industry was considered at the outline application stage. It was concluded that a part of the ERF site contained surviving historic blast furnace bases which were of national importance and of high value. Under the provision of the outline consent the area subject to features of high historic value was to be retained and protected. However, the blast furnaces have subsequently been assessed as of little value by the archaeologists appointed by STDC, which was agreed by the council, and so the features have been removed during the site remediation works carried out recently by STDC. Consequently there are now no heritage or archaeology constraints on the site. Further information on this is set out in the following section.

2.11 The Teesmouth and Cleveland Coast Special Protection Area (SPA), pSPA, Ramsar and pRamsar sites, designated international nature conservation sites, together with the underlying Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI) are located within 2 km of the ERF site. The North York Moors SAC and SPA is located 9.4 km south east of the site. The outline planning application was supported by a Habitat Regulation Assessment (HRA) screening report which concluded that the proposed ERF was unlikely to have a significant adverse effect on these protected sites. Whilst this position was agreed with Natural England based on the modelling data available at the outline stage, RCBC applied the precautionary principle and condition 3 of the OPP requires an updated HRA and an additional air quality assessment to be submitted under condition 3 to confirm that there will be no such adverse effects. This matter is addressed in further detail in chapter 11 of this SoC, as well as in the air quality technical reports that have also been submitted to discharge condition 3 of the outline consent and the updated HRA Screening report.

2.12 The site is in flood zone 1 and is considered to be at very low risk of flooding. The OPP determined this to be the case and that there would be no adverse impact on water quality subject to appropriate mitigation by means of details of the final drainage system for surface and foul water. Details of the drainage strategy are set out in section 3 of the SoC and in the Surface Water Technical Note.

2.13 The site is not covered by any landscape designations and is located within a predominantly industrial setting. However, there are some recognised sensitive rural landscape areas situated within the wider area, such as the Eston Hills to the south. The OPP confirmed that the scale of the ERF development could be accommodated within the urban area of the site with no unacceptable impact in terms of landscape or visual amenity.

Recent planning application decisions and work on site

Ground conditions

2.14 In September 2019 RCBC granted permission (R/2019/0427/FFM) to STDC for remediation and ground preparation works at the wider Grangetown Prairie site, which includes the land within the OPP for the ERF and therefore the land subject to the reserved matters application to which this EIA SoC refers. In September 2020 RCBC granted a further permission (R/2020/0318/FFM) for engineering operations associated with ground remediation and preparation, including removal of the former railway embankment and works to Holme Beck and Knitting Wife Beck.

2.15 It is understood that the works to remediate the site under these permissions have been completed by STDC.

Ecology

2.16 The outline scheme included ecological mitigation that involved the reservation of 2.32 ha of land on site, where a biodiversity improvement scheme would be implemented. The scheme would also contribute to sustainable drainage and landscaping of the site. The ES therefore set out a strategy for ecological enhancement within the site based on the ecological reserve including creation of reed beds and refuges.

2.17 Since the grant of OPP, Natural England and RCBC have agreed with STDC that all the ecological mitigation required for development within the STDC regeneration master plan area, including the site of the ERF, can be provided off-site. Nevertheless, there is the expectation that the various development sites will provide some on-site biodiversity features where possible and appropriate. This may be used to support the wider biodiversity mitigation plan that is being prepared.

2.18 The landscape proposals, as set out in the following chapter, include provision of habitats that will enhance the biodiversity of the site and therefore while the majority of the mitigation associated with the construction and operation of the ERF site will be provided off-site, there will be some ecological opportunities provided on-site.

Archaeology

2.19 The potential impacts of the ERF's development on heritage assets and archaeological potential were considered in the December 2019 ES. The site's heritage value was considered largely to derive from its former use for steel making, forming part of Eston Iron Works, the first steel works in the area. Whilst RCBC accepted that the construction of the ERF would affect these non-designated heritage assets, the public benefits of the development were deemed sufficient to outweigh these impacts. The harm was considered to be mitigated through a programme of archaeological work and the retention of some of these features in situ (indicated as Area B Archaeology Interest on the ES Indicative Site Plan). As such a planning condition was imposed requiring a written scheme of investigation (WSI) for archaeological work.

2.20 As noted previously, the site has now been cleared, but at the time of the outline planning application, the bases of some early blast furnaces remained in situ. The agreed strategy to evaluate and undertake a strip, map and record of the blast furnace bases was outlined in the agreed WSI (Prospect Archaeology January 2021) submitted to RCBC under condition 7 of permission R/2019/0767/OOM. The WSI was agreed under permission R/2021/0152/CD. This work took place between January and March 2021 by Pre-Construct Archaeology. The evaluation report was submitted to RCBC in December 2021 and was approved in March 2022.

2.21 The full extent of remediation could not be quantified at the time of the December 2019 ES. The archaeological monitoring of the site investigation during the remediation work has re-evaluated the remains of the Eston Iron Works furnaces (Area B) and determined that a programme of preservation by record is a more proportionate mitigation response.

Highways

2.22 In August 2020 planning permission (R/2020/0270/FFM) was granted to STDC by RCBC for *"Engineering operations including widening of Eston Road, formation of new roundabout and internal access roads, works to enhance Holme Beck and associated hard and soft landscaping works*". This was subject to a non-material amendment (ref: R/2021/0296/NM) approved in May 2021 to amend the north link road further south, with alterations to the east link road and emergency access (to the ERF site), and details of works to the Holme Beck. The permission provided for the creation of a new road and highway access to the site of the ERF. The reserved matters plans and layout for the ERF therefore include the access design to link the site to the approved and now constructed, new highways infrastructure, including both the main site access and emergency access.

Teesworks Skills Academy

2.23 A full application (R/2021/0879/FF) for erection of a training facility with associated landscaping and parking areas was approved in December 2021 on land within the ERF outline planning application boundary, to the immediate south of the ERF reserved matters application boundary. This facility has recently opened in late 2022 and operates as the Teesworks Skills Academy.

Dorman Point

2.24 An outline application (R/2020/0819/ESM) for development of up to 139,353 square metres (gross) of general industry (Use Class B2) and office accommodation (Use Class E), HGV and car parking, works to watercourse including realignment and associated infrastructure works (all matters reserved) was approved in May 2022, and encompasses the ERF site as part of a larger site area. The approved development is known as Dorman Point. The planning statement accompanying the application explains that STDC is fully supportive of the ERF scheme and that the future detailed design of the site will ensure that the ERF scheme is incorporated in the proposals for Dorman Point.

3.0 Description of development proposed under the reserved matters

The outline scheme

3.1 Section 3.6 of the December 2019 ES included a short process description and a list of buildings and structures that are required for the process, including: a tipping hall, boiler hall, turbine hall, flue gas treatment (FGT) building, air cooled condenser, stacks, fuel oil, fire fighting water tank, standby diesel generator, air cooled condenser building, bottom ash building, air pollution control residue silos, powdered activated carbon silo, lime tank, ammonia storage tank, administration building, electrical equipment building and car parking.

3.2 Section 3.6 also referred to planning drawings, which included the Indicative Site Plan (2019s0951-JBAU-Z-DR-PL-1002-Site_Plan-AO Drawing) which showed the following three zones: development area (A), archaeology interest (B) and biodiversity enhancement (C).

3.3 The December 2019 ES set out brief information in relation to construction methodology and timing (section 3.7). With regard to construction methodology, the ES stated that STDC would be responsible for the initial site remediation works at the site, the first phase of which was to be a comprehensive ground investigation. The site remediation was to be informed by the findings of the ground investigation and until these results became available there wouldn't be any firmer proposals, but as a minimum it was likely to involve the clearance of any contamination / debris / rubbish / obstructions down to 2.5m.

3.4 The buildings were noted in the December 2019 ES to sit on a concrete base, which would be piled into the underlying ground. The ground conditions at the time the ES was written were considered likely to be a collection of materials, including slag and underlying alluvial deposits, which would not be suitable for heavily loaded structures or plant.

3.5 The principal engineering activities to be carried out were listed in the December 2019 ES (section 3.7.2) as:

- Site establishment including installation of site offices, utility services and welfare facilities
- Creation of ecological mitigation areas
- Stripping of the site
- Demolition work and removal of existing services
- Installation of drains
- Land-raising operations
- Groundwork construction
- Earthworks
- Piling work
- Concrete construction of foundations, walls etc.
- Steelwork erection
- Roof and cladding works

- Building work
- Construction of roads, paved areas, rail link, car and heavy goods vehicle (HGV) parking
- Construction of temporary structures (including scaffolds, formwork and falsework)
- Mechanical installation including pipework and fixed plant
- Electrical installation including lighting and connection to the Grid
- Security fencing
- Site finishes, signing etc.
- Plant commissioning and testing
- Landscape planting

3.6 The December 2019 ES stated that the 36-month construction period would be phased, starting in 2022, with a view to commencing operations in 2025. Construction work was to take place between 07.30 to 18.00 Monday to Friday and 08.00 to 13.30 on Saturdays, with no working on Sundays or bank holidays.

Reserved matters information

3.7 The reserved matters application is supported with the following plans:

- Site location
- Existing site
- Proposed site
- Site elevations - north and east
- Site elevations - south and west
- ERF elevations – south and west
- ERF elevations – north and east
- Level 00
- Level 01 and 02
- Level 03 and 04
- Level 05 and roof
- Section - A
- Sections - B and C
- Sections - D and E
- Office admin plans
- Office admin elevations
- Security control and driver welfare
- Weighbridge control
- Fin fan cooler
- Combined heat and power (CHP)
- Emergency diesel generator (EDG), water tank and pump house
- Generator step-up transformer

- Substation
- Landscape masterplan and planting plans
- Fencing, gating and security
- On-site vehicle circulation
- Pedestrian routes

3.8 The proposed site layout plan (drawing 20044-FRA-00-00-DR-A-90-0003-P13 Proposed Site Plan submitted as part of the reserved matters application shows the layout for the site (figure 3.1). The key similarities and differences between this and the Indicative Site Plan (2019s0951-JBAU-Z-DR-PL-1002-Site_Plan-AO Drawing) assessed for the December 2019 ES are:

- The main built development is still aligned north to south, towards the eastern half of the site. This is in line with the December 2019 ES Indicative Site Plan.
- The main access is now towards the south west corner of the site, where the outline application had this towards the north west corner. This followed changes to the external access road by STDC that amended the permitted road layout from that proposed at the time of the OPP. The location of the access therefore deviates from the December 2019 ES Indicative Site Plan, but this is not considered to be a material change.
- A new emergency access is proposed towards the south east corner of the site. This is a deviation from the December 2019 ES Indicative Site Plan, but is not considered to be a material change.
- The archaeology interest area shown on the Indicative Site Plan (Area B) no longer exists following confirmation from STDC and RCBC that the foundations of the Bessemer furnace were not in a condition or of significant interest to retain.
- The biodiversity enhancement area shown on the Indicative Site Plan (Area C) no longer exists following confirmation from STDC, RCBC and Natural England that ecological mitigation for the ERF and wider STDC development area is to be provided off-site.
- Land is reserved in two areas of the Proposed Site Plan for carbon capture technology (or other future requirement). It is anticipated that the area reserved would allow for the treatment of 100% of the flue gas generated by the operational ERF. The areas reserved are located largely within Area A, for built development, as shown on the December 2019 ES Indicative Site Plan.
- In addition to the elements of development listed in paragraph 3.1 (as set out in the December 2019 ES), the Proposed Site Plan also refers to the following elements: storage bunker, CHP, shredder, carbon capture (or other future requirement), electrical and workshop, contractors' compound for shut downs (outages), transformer / substation, generator step-up transformers, switchgear transformer, water tank, security control and driver welfare facility, weighbridge, weighbridge control, waste reception area, rainwater pit, diesel and ammonia bund, fin fan coolers, laboratory, effluent treatment pit, recycled water tank, chemical dosing skid, water treatment plant, feedwater pumps, raw water pumps / tank, compressed air station, continuous emissions monitoring system (CEMS), HGV quarantine bay, quarantine bay, waste truck parking bays (queuing area prior to vehicles going over weighbridges), electric vehicle charging parking spaces and staff / visitor parking spaces. The

aforementioned are all principally located within Area A, for built development, as shown on the December 2019 ES Indicative Site Plan. Some elements (e.g. parking admin building, HGV queuing area, etc.) extend into Areas B and C as shown on the December 2019 ES Indicative Site Plan, however, as set out previously the dedicated biodiversity enhancement and archaeological interest areas are no longer required.

- The Proposed Site Plan also indicates the areas of the site proposed for landscape planting, ecological enhancement and a sustainable urban drainage system (SuDS). The location of planting and the SuDS reflect the revised layout and maximise the opportunities to provide landscape and ecological enhancements on-site. The December 2019 ES Indicative Site Plan did not indicate the location of SuDS or specific areas for landscape planting, although Area C was proposed for biodiversity enhancement and these objectives could have been aligned.

3.9 With regard to the construction methodology referred to in the December 2019 ES, STDC has completed the initial site remediation works, which includes a comprehensive ground investigation down to a depth of at least 2.5m (see chapter 7 for further details). The ground investigation work has confirmed that the underlying alluvial deposits will not be suitable for heavily loaded structures or plant, and for all major structures, such as the process building, stacks or ACCs, their bases will sit on piles to distribute the load into the underlying ground.

3.10 With the exception of the construction of a rail link, which is not proposed as part of the reserved matters, or the creation of the ecological mitigation areas on site, the list of principal engineering activities set out in the December 2019 ES (section 3.7.2) and as noted above are all still applicable. As noted previously, ecological mitigation will be provided off-site by STDC in association with the wider site remediation strategy.

3.11 The proposed construction period is longer, moving from a 36 to a 47-month programme. Construction will still commence in 2024, but completion will be November/December 2027 rather than at the end of 2025. Slightly elongated construction working hours are also proposed, with construction activities audible outside of the site boundary taking place during standard hours, i.e. 07.00 - 19.00 hours Monday to Saturday, with no audible work on Sundays or public holidays (compared to 07.30 to 18.00 Monday to Friday and 08.00 to 13.30 on Saturdays, with no working on Sundays or bank holidays). Delivery of oversize plant and equipment, internal fit out, internal works and other non-intrusive works may take place outside of the new proposed times. Extraordinary events such as concrete pours may also need to take place outside these hours as by their nature they need to be continuous.

Additional project details

3.12 As the detailed design work has progressed, more information can now be provided about the Tees Valley ERF, which encompasses the following elements:

- A twin stream ERF – located towards the east of the application site and with ability to treat non-hazardous, non-recyclable, residual waste material. The inputs will typically comprise residual municipal waste collected from households in the five unitary councils of Darlington, Stockton-on-Tees,

Middlesbrough, Redcar and Cleveland, and Hartlepool, as well as from Durham County Council and Newcastle City Council (together forming the Contract Authority). Towards the north west of the main building will be the steam turbine generator. This is designed to utilise high pressure steam from water heated by the combustion processes and generate electrical power. Solar panels proposed on the roof of the waste reception area and tipping hall will also generate electrical power. The majority of electricity generated will be exported to the grid, with a small amount being used within the ERF. The ERF will also be able to export heat in the form of steam or hot water in the future, should off-site recipients be identified or for use in the carbon capture plant.

- Buildings and structures ancillary to the ERF – these include: security control and driver welfare facility, five weighbridges, air cooled condenser, electricity transformer / substation, storage tanks (diesel, ammonia, fire water), staff and visitor parking and internal roads. The ERF development will also include visitor (conference/education room), administrative and welfare facilities.
- Two areas towards the north east and north west of the site are reserved for the future provision of carbon capture facilities, or another future use.
- Landscape planting – around all four boundaries of the site, which will screen the lower part of the buildings and the activity on the site at ground level. The site boundaries will also include security fencing.
- Drainage – a proposed surface water drainage strategy for the developed site and a proposed foul water network discharging into a local sewer.

3.13 The following sections cover additional information for the key elements of the ERF proposals:

- The proposed buildings and structures
- The day-to-day operation of the ERF
- Construction details

Buildings and structures

3.14 The layout of the facilities is illustrated in figure 3.1.

ERF buildings and structures

3.15 The ERF building will be 189 m long, 87 m wide (144 m wide if the administration building is included) and up to 50 m in height (at the boiler hall), relative to the ground level. The primary axis of the ERF building will run north to south. The building is positioned towards the eastern half of the site and is surrounded by internal access roads, service areas and landscaping. Elevations of the ERF building are shown in figures 3.2 a - d and sections through the site are shown for context in figure 3.3 a - c. The proposed building height is within the maximum assessed for the December 2019 ES (i.e. 50m).

3.16 The main ERF building will house the following plant process equipment: the waste reception system consisting of waste reception area, tipping hall and storage bunker (which will extend 12.5 m below ground level), a shredder, two process lines that each include: a waste feed crane and grab, furnace feed hopper, grate, furnace / combustion chamber, auxiliary burners, boiler, flue gas treatment (FGT) plant and stacks, together with residue handling systems, a feed

water treatment system, control and monitoring systems, and workshops and mechanical stores. The administration and welfare building (including education facilities) will link to the main ERF building via an elevated, covered walkway. Southerly facing photovoltaic (PV) solar panels will be mounted to the flat / low pitch roof covering the waste reception area and tipping hall and will provide for an area of 2,500 m².

3.17 The two 80 m stacks (one for each combustion line) will be situated together towards the north western end of the site. The height of the stacks is consistent with the OPP and was confirmed as suitable following detailed air dispersion modelling (details of which are set out in chapter 11 and the associated technical reports). The stacks will each have an outside diameter of 2.3 m. The stacks have been structurally designed to meet all predicted climatic conditions and will be suitably protected from lightning strike. The stacks will also have an external access ladder (with a safety cage) and platforms for sampling points for manual measurement and connections for continuous emissions monitoring equipment.

3.18 The combined heat and power (CHP) station will be located to the west of the turbine hall and will be 10 m long, 17 m wide and 4.5 m high. In the future the CHP building will include plant that transfers heat generated by the combustion process off-site to heat users. The site layout has been designed to enable CHP pipework to be installed relatively easily beneath site roads / landscaped areas once customers are identified, an indicative route option is shown in figure 3.4.

3.19 The air-cooled condensers, which return low-pressure steam from the turbine to water, will be situated to the immediate north of the ERF turbine hall. The condensers will cover a total area of 1,707 m^2. The condenser units will be situated on a 6 m high platform to allow air flow around them, the top of the condensers will be at 22 m, see elevations in figure 3.2 a.

3.20 The fin fan coolers, situated to the west of the Demin water tank, will cover a 11.8 m x 16.3 m area and will be up to 3.5 m high. The fin fan coolers are part of the closed cooling water system that provides coolant for the refrigeration of the generator coolers, lube oil coolers, boiler water feed pumps and the steam and water sampling station.

3.21 The administration and welfare building will include three floors of accommodation, plus a raised and enclosed walkway linking the offices to the main ERF building. The office will incorporate a reception area, general office / meeting room space, welfare facilities, shower and changing rooms (male and female) and a dedicated floor for a visitors' centre (conference/education room) for internal use and visiting groups. Visitor tours will provide the opportunity to promote the importance of sustainable waste management to all ages of the community.

3.22 There will be a single storey security control and driver welfare facility to the east of the entrance roundabout. The building will be 11.72 m long, 5.70 m wide and 4 m high. The location of the building is shown on figure 3.1.

3.23 The ERF facility will have five weighbridges, three for incoming vehicles and two for exiting vehicles. The weighbridges will be situated towards the south of the site. All vehicles carrying ERF waste, residues or process materials will be required

to weigh in and out of the facility. The layout of the site allows for bypassing all the weighbridges for any vehicle, such as maintenance vehicles.

3.24 To the north of the site, two areas (12,000 m^2 in total) are retained for the future provision of carbon capture plant (or other future requirement). The north eastern area will be gravelled and the north western area will be grassed until such time that development takes place. Based on current technology intelligence, the total area has been calculated to be sufficient to provide plant that will process 100% of the flue gas emissions from the fully operational ERF. This system would be designed to extract CO2 from the flue gas to be piped offsite into the Net Zero Teesside Carbon Capture Utilisation and Storage (CCUS) Network.

3.25 In addition to the main buildings and structures on site are a number of other important elements including the emergency diesel generators (EDG) to the central / north part of the site (each being 13.8 m long, 2.25 m wide and 2.85 m high), the fire water tank to the south east of the site (16 m high and 13.5 m diameter) and the fire water pump house, also to the south east of the site (10 m long, 5 m wide and 5 m high).

3.26 The proposed ERF building will be modern, contemporary and industrial in character. As many plant components as possible are included within the main building to achieve a simple, unified appearance. The palette of materials proposed is light, with grey tones complementing each other across the various built elements that make up the ERF and its component parts and ancillary buildings and structures. The chosen materials will also have a variety of textures and depths. The materials ensure that the new buildings will make a positive contribution to built form in the area through the use of good quality materials of appropriate scale, profile, finish, colour and weathering characteristics. These characteristics are all in line with the vision for the site as set out in the December 2019 ES (Chapter 7 Landscape and Visual Impact, Section 7.7 Mitigation). The appearance of the building has also been tested in discussion with STDC in relation to the Teesworks Design Guide, and the final design and materials palette selection has been informed by this testing and dialogue.

Ancillary development

Parking

3.27 Tarmac parking for 58 cars is provided to the north of the site entrance. This includes ten car club spaces, six contract authority parking spaces, six visitor spaces, seven mobility impaired user spaces, 29 general spaces and 20 electric vehicle spaces (the latter includes six spaces for the contract authority, two spaces for mobility impaired users, one for visitors and 11 for staff). In addition to these, 90 grasscrete / gravel spaces are provided to the immediate north for workers associated with ERF shutdown / outage periods. See figure 3.1.

3.28 In addition to the above there is a coach parking area (there is space for up to two minibuses or one coach) towards the south of the tarmac car park to cater for larger groups of visitors attending the site. All visits will be by prior appointment. Twelve secure spaces for bicycles and up to nine motorcycle spaces will also be provided to the south of the admin building for use by staff and visitors.

Maintenance and shutdown / 'outage' area

3.29 The ERF electrical and workshop facility towards the centre of the site is adjacent to the internal circulation road and beneath the elevated walkway that connects the administration and welfare building to the main ERF. The ERF electrical and workshop facility will include a full complement of tools and spares required for the usual operation and maintenance of the ERF plant. During periods of shutdown of the ERF, the contractor laydown area towards the centre of the site will provide flexible space for the equipment and facilities that are needed during these temporary periods, including portacabins for welfare facilities, offices and storage of additional parts / equipment / tools.

Electrical offtake

3.30 Under normal operating conditions, the power requirements of the ERF will be supplied by the steam turbine generator and PV solar panels, with the balance exported to the grid via a connection to the north of the site. The ERF will operate a separate underground electrical distribution system for internal power distribution and export power to the grid via a single cable connection.

3.31 The steam turbine generator will generate electrical power at 11 kV and will be connected to the facility's 11 kV power distribution system and then to the grid network through a step-up transformer situated in the northern part of the site adjacent to the air cooled condenser (ACC).

3.32 Viridor will provide space for power cables from the on-site substation / transformer to the northern boundary of the site (see indicative route shown in figure 3.4) to allow the Contract Authority to install the necessary connection infrastructure. The Contract Authority will be responsible for obtaining any permissions or permits required to develop the necessary connection infrastructure.

Telecommunications and data systems

3.33 The ERF will connect with the existing Openreach fibre network that runs adjacent to the site. The telecommunication systems to be provided at the site will comprise telephone connections, broadband internet connections, CCTV and signal cables for the fire alarm. The telecommunications cables will route from the ERF to the site entrance and then onto the new access road and connect to the existing cable network.

Surface water

3.34 The ERF development will give rise to surface water run-off from the roads within the site, buildings, vehicle parking areas and other hardstanding areas. At ground level it is proposed that surface water runoff is collected via external hardstanding areas. The runoff will be passed through oil interceptors and then directed via gravity into an attenuation pond or tank, both of which will be situated to the west of the site.

3.35 The surface water runoff will be treated via an oil interceptor and polishing filter and be discharged at greenfield runoff rates into Holme Beck to the west of the site. Due to the anticipated depth of the upstream network and the attenuation

tank it will be necessary to pump the discharge from the attenuation tank. In addition, the pond will also serve as attenuation. Surface run off will be passed through an oil interceptor prior to discharge into the pond, before also discharging into Holme Beck culvert.

3.36 The proposed attenuation system will provide between 2,284 – 3,312m^3 of attenuation storage volume, which has been designed to contain the 1-in-100 year critical storm event, including 40% allowance for climate change without causing any flooding to the site. Any exceedance flows beyond the 1-in-100 year critical storm event will be managed on site by installing hydro-brakes and penstock valves at or near the outfall location. This will ensure there is no increase in flood risk downstream as a result of the proposed development.

3.37 Rainwater harvesting tanks will also be installed in the ERF buildings to collect rainwater from building roof areas. This water will be used on site to support site activities / processes where appropriate (mainly in the process itself). For the purposes of the assessment, the impact of rainwater harvesting on the required sustainable drainage systems (SuDS) attenuation volumes has not been considered in the current attenuation and discharge calculations, especially as during extreme events the rainwater harvesting system may already be at capacity.

3.38 Surface water from the site access road will be collected using a combination of kerbed drainage, gullies and carrier pipes.

3.39 In the event of a fire, all firewater will be collected through the drainage systems. Site drainage for external areas will be fitted with an isolation (penstock) valve to prevent the discharge of firewater from the surface water drainage system. Sufficient storage capacity for external firewater will also be designed into the system.

3.40 A more detailed description of the surface water drainage arrangements for the site and flood risk is included within the Sustainable Urban Drainage Systems Technical Note and Flood Risk Assessment which are submitted as part of the reserved matters application. The detailed proposals reflect the high level approach set out in the December 2019 ES (see Chapter 8 Hydrology, Hydrogeology, Geology and Contamination, Sections 8.6 – 8.7) including a new surface water drainage system that allows for climate change, measures to remove / capture silt and oils, etc.

Foul water

3.41 STDC is responsible for providing a foul water sewer to the ERF site boundary. Under normal operations there will not be any liquid process emissions from the ERF. Where practicable, waste waters generated from the process will be re-used / recycled within the facilities. Process effluents and wash down waters collected from internal process areas will be collected in a process effluent system and stored within a dirty water pit ready for re-use. In the event that excess process effluents are generated, such as during periods of maintenance, these will be discharged to the new foul sewer adjacent to the site boundary in accordance with a trade effluent consent which will be sought from Northumbrian Water or tanked off site to a suitable processing facility. These proposals reflect the high

level approach set out in the December 2019 ES, which refers (in Chapter 8, Table 8-4) to foul water being directed to the main sewer.

Potable / mains water

3.42 The ERF will require a new mains water connection and STDC will provide a potable water supply to the junction of Eston Road and the East Link Road, adjacent to the roundabout at the south west corner of the site. The incoming water supply will then be separated into industrial water, fire-fighting water and potable water.

3.43 The ERF requires water for the steam cycle / boilers, the FGT plants and the bottom ash quenches. Water for the boilers needs to be demineralised and so the facility will be equipped with a demineralised water treatment plant system, which is likely to utilise reverse osmosis followed by ion exchange technology.

3.44 The ERF will have a fire water tank. This will be situated to the east of the tipping hall and will be sized to exceed the minimum requirements of the National Fire Protection Association (NFPA) recommended practice for fire protection for electric generating plants and high voltage direct current converter stations. The firewater tank will hold approximately 1,860 m^3 in total, which provides two hours of firefighting water.

Access and circulation

3.45 All vehicles will access the ERF via the new northern arm of the new Eston Road roundabout, which is located to the south west of the site boundary. Eston Road and the strategic highway network are shown in figure 3.5.

3.46 Figure 3.6 illustrates the various vehicle circulation routes within the site.

3.47 The Teesdale Way long-distance public right of way runs adjacent to the railway lines approximately 115 m from the site's northern boundary, while a SUSTRANS national cycle route runs partly along the A66 approximately 530 m to the south of the site. Neither the national trail or the national cycle route will be physically affected by the development.

Security

3.48 A boundary fence will provide security for the ERF. This will be a 2.4 m high metal security palisade fence that will extend around the north and the majority of the east and western perimeters of the site. On the southern boundary the palisade fence will run from the main site entrance in the west, around the site roundabout and follow the boundary of the HGV delivery vehicle queuing area to the south of the site, cross the emergency access road and join the eastern boundary fence. The fence will be continuous apart from where the swing gates are provided at the site entrance and emergency access. The main entrance gates will be open during normal working hours and closed at all other times. The emergency access gates will be closed at all times unless there is an emergency situation.

3.49 For security and safety reasons there will also be a 2.4 m high paladin fence separating the car parking and administration building from the operational ERF

area / HGV circulation. A 2.4 m high palisade fence will also be provided around the sub-station / transformer equipment to the north of the site.

3.50 Supervised CCTV will monitor the site entrance and the whole boundary.

Lighting

3.51 The lighting design is based on the use of appropriate lighting to provide safe working conditions in all areas of the development area, whilst minimising light pollution and the visual impact on the local environment using lighting guidance for the external environment and obtrusive light. The lighting has been designed in accordance with the environmental lighting zone E4 within 8 m of the site boundary, as defined by Guidance Notes for the Reduction of Obtrusive Light (Institution of Lighting Professionals). Environmental lighting zone E4 is defined as an area of high ambient brightness - urban areas, residential and commercial with high levels of night time activity, which is considered appropriate for the future surrounding area.

3.52 The site access and internal access roads will be illuminated during the hours of darkness to permit night time working as the ERF will be operational for 24 hours per day. The lighting proposals allow for lighting control options of photocells and time clocks.

3.53 A mixture of wall and column mounted light fittings will provide the lighting of walkways, roads and car parking areas. All lights will produce zero upward light pollution and have low glare reflector systems, which help to minimise the amount of glow, glare and flicker.

3.54 The proposed landscape bunding and planting forming the majority of the site's perimeter (see below) will assist in minimising light spill from the proposed lighting and the headlights of moving vehicles.

Landscape planting

3.55 Landscape bunds and planting are proposed to assist in breaking up the proposed building mass and provide a degree of screening to the ground level activity. This approach aligns to that set out in the December 2019 ES in chapter 7, Landscape and Visual Impact, section 7.7 Mitigation). The detailed landscape planting scheme for the site is illustrated in figure 3.7.

3.56 As set out previously, a 2.4 m high palisade boundary fence will provide security for the ERF. This fence will sit along the perimeter of the site in the middle of a 0.5m gravel maintenance strip with the landscape bunding and planting located on the inside of this fencing along the northern eastern and western boundary. This allows for access to cut grass and shrubs adjacent to the fencing and allows for unobstructed views of the fencing from the CCTV cameras. Along the southern boundary this security fencing will run from the main site entrance in the west, around the site roundabout and follow the boundary of the HGV delivery vehicle queuing area to the south of the site, cross the emergency access road and join the eastern boundary fence. It will be in the middle of 0.8m wide gravel maintenance strip, with the earth bunding and landscape planting outside of the secure fence line. Again, this allows for access to cut grass and shrubs adjacent

to the fencing and allows for unobstructed views of the fencing from the CCTV cameras.

3.57 The spoil generated from the construction of the ERF will, where possible, be retained and used to form earth bunds around the perimeter of the site. These will sit inside of the security fence line along the north, east and west boundaries and in front of the fence line along the southern boundary.

3.58 Along the northern boundary the bund will reach a height of 1 - 1.2 m high. Along the eastern boundary the bund will be predominantly 1 m high rising to 1.5 m where space allows. Along the majority of the western boundary the bund will be 1.5 m high, reducing to just 0.5 m high along the western edge of the car park. At the south western corner of the site where there is greater space for landscape, south of the site entrance, the bunding rises to 3 m, reducing to 1.5 m high where the landscape area narrows and then rises again to 2 m at the emergency access gate.

3.59 The majority of the bunds along all four of the boundaries have a gradient of predominantly 1:4 and will be planted with native woodland planting. In order to provide a more established appearance from day one the mix will consist of a variety of sizes rather than being purely transplants. Light standard trees ranging in height from 3 – 6 m high will be planted at 4 m centres. 1.25 – 2 m high feathered whips will be planted at 2 m centres and at 1 m centres smaller transplant stock. The species proposed are native to Teesside and will provide a biodiverse species mix that will benefit numerous birds, small mammals, and insects alike.

3.60 Within the woodland mix there will also be some advanced nursery stock trees that will provide further immediate height to the planting and will be planted in species groups of three, five and seven. Within the car park and along the eastern and western boundary relatively small tree species have been proposed such as wild cherry, small leaved lime, grey alder and field maple. Where space allows for their eventual growth size, common oak have been used to provide a more substantial climax tree species. Equally, around the attenuation pond, where the soil will be wetter, fast growing white willow have been proposed which will assist in visually breaking up the mass of the built form in views from the north west and west.

3.61 In order to enhance the biodiversity on site, a wildflower rich grass mix will be used around the attenuation pond and around the native woodland mix to the bunds along the eastern, western and northern boundaries. While the attenuation pond has not been designed to hold permanent water, a wet meadow grass mix will provide additional biodiversity and will cope well when temporarily flooded following heavy rain.

3.62 Ornamental shrub planting is only used at the site entrance, to the east and west of the security control building, the staff and visitor car park and the admin block. Where soft landscape areas are wider, they will be planted with further pockets of native woodland mix, such as areas to the south of the staff and visitor car park and to the north of the southern weighbridges.

3.63 The site is located on a corner or gateway plot and as such it is important the landscape design takes account of this. For this reason, the native woodland

planting has been located to the rear of the bund and contained within a more formal beech hedge and a more contemporary ornamental concentric ring shrub design located on the southern slope of the entrance bund, south of the beech hedge.

3.64 The concentric ring design layout uses a limited palate of evergreen and semi evergreen shrubs, perennials and ornamental grasses, along with short broken lengths of evergreen hedging to create rhythmic concentric swathes of single species block planting that repeat throughout the design. Species have been chosen that require limited maintenance and where even the perennial and ornamental grass species can be left throughout the winter as they form interesting sculptural forms even when dead, before requiring an annual cut back the following spring. White stemmed Jermyns birch are proposed as a single tree species within the entrance planting, also to be planted in concentric rings. However, as the design runs eastwards, both the ornamental shrub planting and tree planting begin to break up and decrease in size. About mid-point along the southern boundary the ornamental white stemmed birch give way to common silver birch.

3.65 As stated above, while not screening the main ERF buildings, this planting and earth bunding will assist in screening the majority of the ground level activity, especially with regards to views from the Teesdale Way public right of way to the north of the site. Equally, the high bund, the wide area of native woodland and the ornamental tree and shrub entrance design will assist in visually screening the queuing HGV's at the weighbridges within the site and also provide an attractive contemporary landscape design to this important southern gateway site.

3.66 As noted previously, the biodiversity enhancement area (Area C) shown on the December 2019 ES Indicative Site Plan, is no longer included on-site and all biodiversity mitigation is to be provided by STDC off-site. Nevertheless, the landscape planting proposed at the site will provide biodiversity benefits as set out above.

Climate change adaptation and greenhouse gas emissions

3.67 The ERF includes the following measures to reduce greenhouse gas emissions and minimise vulnerability to climate change:

- The facility will generate energy through the combustion of waste as this mitigates methane generation if the waste was landfilled
- The proposed ERF will generate electricity and solar panels proposed on the roof of the waste reception area and tipping hall will contribute to this. The majority of electricity generated will be exported to the grid, with a small amount being used within the ERF
- The facility will have the capability to export heat in the form of steam or hot water, should suitable off-site users be identified in the future.
- Twenty car parking spaces will be provided with electric charging points to encourage the use of electric vehicles, ducts will be in place to increase electric vehicle charging points as required.
- The facilities will use LED lighting, which will reduce electricity use.

- Rainwater will be harvested from the roof area to supply site activities / processes where appropriate. In addition, water-efficient fittings will be specified for the staff facilities.
- Bottom ash from the ERF will be used to make aggregates suitable for construction and road projects.
- The application site is in flood zone 1 and is largely at very low risk of surface water flooding. The SuDS proposed incorporates a 40% allowance for climate change and hydro-brakes and penstock valves at or near the outfall location which will ensure discharges to the Holme Beck to the west of the site will be at greenfield run off rates. These measures will ensure that the development will not be at increased risk of flooding as a result of climate change or increase the risk of flooding in the surrounding areas as a result of climate change.
- The facilities will be built in accordance with the requirements of the prevailing Building Regulations in relation to target emission rates of CO_2 and target fabric energy efficiency rates.
- The site layout also allows 12,000 m^2 over two areas to provide carbon capture facilities should this become feasible in the future.

The ERF combustion process

3.68 Incoming waste will be delivered to the plant in refuse collection vehicles (RCVs) or HGVs. Vehicles will be weighed on arrival at the site and periodically inspected before proceeding to the tipping hall. Only authorised waste will be able to proceed to the waste reception area. Unauthorised vehicles will be turned away.

3.69 The waste reception area will have eleven tipping bays to allow multiple vehicles to discharge their waste into the bunker at the same time. The entry and exit door to the tipping hall will be equipped with fast acting doors, which will be kept closed except when a vehicle is travelling through them. The waste reception area will also include an area for unacceptable waste to be quarantined if required.

3.70 Once the waste has been tipped into the ERF waste bunker, the delivery vehicles will exit the ERF and have their weight recorded again at the exit weighbridge prior to leaving the site.

3.71 The waste bunker will be housed within the tipping hall and will extend 12.5 m below ground level and be constructed in concrete. The storage capacity of the bunker will be at least 8,000 m^3.

3.72 Two crane grabs will transfer the waste from the bunker into the feed hoppers that feed the combustion chambers of each process line. The grabs will also be used to mix and homogenise the incoming waste and will remove any unsuitable or non-combustible items identified within the bunker. The combustion chambers will use reciprocating grate systems to agitate the fuel beds and promote good burnout of the waste, ensuring a uniform heat release.

3.73 Combustion air will be fed to the underside of the grates by fans. Air will also be admitted above the grates to ensure complete combustion and create turbulence, improving mixing and minimising production of oxides of nitrogen (NOx). The volume of the combustion air will be regulated by combustion control systems.

Heat from the water-steam cycle will be used to preheat the air streams as this will improve the overall efficiency of the facility.

3.74 The combustion chambers of each line will be provided with auxiliary burners. The burners are designed to start automatically and maintain the flue gas temperature in the post-combustion zone if the flue gas temperature after two seconds residence time drops below 850°C during normal operation, and to ensure complete combustion of the flue gases during shutdown of the furnace.

3.75 The ERF will be designed to meet the requirements of the Industrial Emissions Directive (IED). The combustion control systems will regulate the combustion conditions, and thereby minimise the levels of pollutants and particulates in the flue gas before flue gas treatment (FGT). Combustion chambers, casings, ducts, and ancillary equipment will be maintained under a negative pressure to prevent the release of gases.

3.76 During operation, the temperature in the combustion chambers will be continuously monitored and recorded to demonstrate compliance with the requirements of the IED. The combustion control systems will be automated systems, including monitoring of the steam flow, oxygen content, temperature conditions of the grates, modification of the waste feed rates and control of the combustion air.

3.77 Bottom ash is the burnt-out residue from the combustion process. The bottom ash will fall from the end of the grates into water quenches that cool the hot ash such that it does not represent a fire or dust risk. Any oversize metals in the ash will be collected and exported off-site for recycling. The ash is then transferred via conveyors to a dedicated bottom ash (BA) storage area.

Energy recovery

3.78 Heat will be recovered from the flue gases by means of water tube boilers that are integral with the furnaces. The heat will be transferred through a series of heat exchangers. The hot gases from the furnaces first pass through evaporators that raise the steam which then passes into the boilers. Superheated steam will then be supplied to a high efficiency turbine.

3.79 The single steam turbine generator, located in a dedicated turbine hall which, through a connecting shaft, will turn a generator to produce electricity. The low pressure steam exiting the turbine will be condensed back to water in the air cooled condenser (ACC) for reuse in the water-steam cycle.

3.80 Heat from the ERF facility will be available for export to existing and potential local heat users. Depending on the requirements of any heat users, either steam or hot water could be supplied. Steam could be extracted from the turbine and piped directly to heat users. Alternatively, low pressure steam exiting the turbine (prior to the condensers) could pass through an onsite heat exchanger to heat up water for use in a heat network or in the carbon capture process. The volume of steam extracted would vary depending on the heat load requirements of the heat users.

3.81 Ash which drops out in the boiler passes (boiler ash) will be collected in hoppers and conveyed back to the bottom ash extractors and mixed with the BA.

Flue gas treatment

3.82 Flue gases generated from the combustion process will be cleaned before being released into the atmosphere to the appropriate standards required to protect human health and the environment. The FGT systems (one for each process line) will be designed to comply with current legislation, meeting the requirements of the Environment Agency guidance on risk assessments for environmental permits and the IED. In accordance with Article 15, paragraph 2 of the IED, emission limit values must be based on best available techniques (BAT). The BAT-associated emissions levels (BAT-AELs) are included in the BAT Reference document (BREF) on Waste Incineration, and the recommendations of the BREF have become enforceable through Environmental Permits. The FGT systems will therefore be designed to ensure that the facility operates well within the daily average BAT-AELs and IED 30-minute average limits.

3.83 The abatement of oxides of nitrogen (NOx) will be achieved by careful control of combustion air and NOx abatement systems. NOx will be formed in the boilers at high temperature from nitrogen in the waste and in the combustion air. The NOx abatement systems will use a NOx reagent (ammonia) which will be injected into the flue gas streams to minimise emissions of nitrogen oxides (NOx).

3.84 Acid gases, such as sulphur oxides (SOx) and hydrogen chloride (HCl), produced during the combustion process will be treated, typically using hydrated lime as a reagent. Neutralisation of the acid gases will take place as they react with the reagent.

3.85 Powdered activated carbon (PAC) will be used as an adsorbent to remove volatile metals, dioxins and furans. Both PAC and lime will be held in dedicated storage silos and injected into the flue gas streams.

3.86 The flue gases containing the reagents will pass through reaction chambers and into bag filters where reaction products and un-reacted solids will be removed from the flue gases. Some of the residual material will be recirculated to reduce the amount of reagent consumed, as it will not be fully reacted. The residue, referred to as air pollution control residues (APCr) (which comprises fine particles of ash and residues from the FGT process) will accumulate on the inside of the filter bags.

3.87 Regular bag filter cleaning will be performed whilst on-line by pulsing compressed air through the filter bags. The APCr will be collected in fully enclosed residue silos adjacent to the FGT plant. The silos will have loading chutes that are designed for dust-free loading of material directly into trucks for export off site.

3.88 Following cleaning, the treated flue gases will be monitored for pollutants, passed through induced draught fans (IDFs) and discharged to atmosphere via the 80 m stacks. As set out above, the flue gases released will be compliant with the standards required to protect human health and the environment and will meet all requirements set by current, stringent legislation.

Residues and ashes

3.89 The process will result in two separate ash streams: BA and APCr. BA is a recyclable non-hazardous waste. Like other similar facilities, the BA will be

transported off-site where it will be used to make sustainable aggregates suitable for construction projects and road construction. 100% of the BA from the proposed facility will be used for secondary aggregate production.

3.90 Any oversize ferrous material will be separated from the BA streams on site, collected separately and then recycled off-site. All other ferrous metals will be exported off site within the bottom ash and will be recovered as part of that process.

3.91 The APCr is classed as a hazardous waste due to its elevated pH and will therefore be taken for processing at an appropriately licensed site.

Emissions monitoring

3.92 Emissions from the stacks will be continuously monitored using continuous emission monitoring systems (CEMS) and reported in accordance with the Environment Agency's requirements for the operation of the facility. Sampling and analysis of all pollutants will be carried out to the European Committee for Standardisation (CEN) or equivalent standards (e.g. the International Organisation for Standardisation (ISO), national or international standards). This will ensure the provision of data of an equivalent scientific quality.

3.93 The CEMS will provide the information necessary for the ERF's automatic control systems to ensure safe and efficient operation, it will warn the operator if any emissions deviate from predefined ranges and it will provide a record of emissions and events for the purposes of demonstrating regulatory compliance.

3.94 The following substances are expected to be monitored and recorded continuously at the stacks using the CEMS:

- Oxygen
- Carbon monoxide
- Hydrogen chloride
- Sulphur dioxide
- Nitrogen oxides
- Ammonia
- Volatile organic compounds (VOCs)
- Particulates

3.95 There will be one CEMS for each waste treatment line and an installed back-up which can operate in the event of a CEMS failure. In addition, periodic monitoring (at a frequency that will be agreed with the Environment Agency) will be undertaken of pollutants which are not able to be monitored continuously, such as metals and dioxins and furans.

Raw material handling and storage

3.96 In addition to the residual waste that will be tipped into the ERF bunker, the following raw materials will be required for ERF process operations:

- Hydrated lime - used to react with acid gases in the FGT process, will be stored in a silo on site.
- Powdered activated carbon (PAC) - used for the adsorption of volatile heavy metals and organic components and will be added with the lime in the FGT process. The PAC will be stored in a silo and delivered via tanker.
- Ammonia - used for the abatement of NOx in a NOx abatement system. Ammonia will be delivered in liquid form and stored in a tank on-site.
- Water treatment chemicals - used to treat water in the water treatment plant that provides feedwater to the boiler. The chemicals will be stored in a bunded area within the water treatment plant.
- Fuel oil - used for the primary and auxiliary support burners, the EDGs and mobile plant and equipment. The fuel oil will be stored in a bunded storage tank.

3.97 In addition to the raw materials described above, various maintenance materials will be stored in an appropriate manner and used in small quantities. These will include hydraulic and silicone-based oils, CEMS calibration gases, refrigerant gases for air conditioning plant and glycol / anti-freeze for cooling.

3.98 In order to minimise the risks of contamination to process and surface water, all liquid chemicals stored on site will be kept in bunded controlled areas with a volume of 110% of stored capacity.

ERF operations

Operating hours

3.99 The ERF will operate 24 hours a day, seven days a week, though there will be periods of annual maintenance when waste processing is reduced. The majority of deliveries and collections will be received / made between 07:00 and 20:00 hours Mondays to Sundays. However, some deliveries and / or collections may take place outside of these hours to take account of traffic conditions, to prevent the build-up of waste at transfer stations and following holiday periods or for other operational reasons.

3.100 These hours of operation differ to those in the December 2019 ES, which refers to waste deliveries between 08:30 – 16:30 Monday to Friday and 08:30 – 13:00 on a Saturday, with residual waste being removed from the site between 06:00 – 16:30 Monday to Friday and 08:30 – 13:00 on a Saturday. The proposed change is due to a change in operating hour requirements by the Contract Authority.

Staff

3.101 The ERF will be operated and managed by suitably qualified and trained personnel. It is anticipated that a total of 49 full-time staff will be employed, including facility operations, engineering, health / safety / environment and finance managers, mechanical and electrical engineers, shift team leaders, operators, mechanical and environmental technicians, administrators and industrial cleaners. However, please note, that while 49 are anticipated, the assessment work undertaken as part of this SoC / reserved matters submission is based on 54 full-time staff to ensure a worst-case scenario has been considered in terms of staff vehicle movements. There will be a high degree of automation in the facility, with

all processes controlled from a central control room. Fully automatic fuel grab cranes are to be installed which removes the need to manually operate the fuel cranes except at the busiest delivery times. The weighbridges will have the ability to be fully automated with vehicle recognition systems and traffic light control systems but will be manned during the main operating periods. The Teesworks Skills Academy will be engaged throughout the service period to provide details of opportunities as appropriate. There will also be apprenticeship opportunities.

3.102 The ERF staff will largely work on a two or three shift basis, with each shift being led by experienced operatives who will have the responsibility for managing operations. For the purposes of the assessment it has been assumed the ERF will work on a three shift basis and there will typically be a maximum of 44 staff on site at any one time (this is considered to be the worst-case scenario and is likely to be less in practice as the number includes Contract Authority staff and when shift changes occur and there is an overlap of staff present on site).

3.103 It is worth noting that there will also be additional jobs supported by the proposals off-site, for example in head or regional offices which haven't been included here.

Vehicle movements and trip distribution

3.104 Taking into account waste deliveries to the ERF (in bulkers and RCVs), the delivery of consumables (e.g. hydrated lime, ammonia, diesel, etc) the removal of residues from site (e.g. APCr, ferrous metals and bottom ash) and the transfer of recyclable waste (eg from the admin block) for onward treatment, the average daily operational HGV movements are forecast to be 162 each way (i.e. 324 HGV movements in total) Mondays to Fridays, and 127 each way (254 HGV movements in total) on Saturdays and Sundays.

3.105 It is anticipated that the trips associated with movement of waste to the ERF will follow a daily distribution similar to other operational facilities, with a peak mid-morning and early afternoon, with minimal trips to site during the traditional peak hours on the main highway.

3.106 In addition to the delivery of wastes and process materials and the export of process materials, vehicle movements will also be generated as a result of maintenance activities, deliveries related to administration and welfare on site, and visitor and staff movements. It is anticipated that these will be limited.

3.107 As set out above, the ERF is expected to employ a total of 49 staff (although the assessment work is based on 54 full-time staff) and there will be a maximum of 44 staff on site at any one time (this is a worse case assessment for the purposes of the vehicle movement assessment as this figure is likely to be less in practice). The site will operate 24 hours per day, with the shift changeovers taking place outside of the peak traffic flow hours on the public highway. Overall staff traffic generation will be minimal.

3.108 Due to the nature of the facilities, it is anticipated that most of the visitor trips will be made outside the conventional peak hours and amount to a few each week.

3.109 All vehicles will access / depart the site via the new northern arm of the new Eston Road roundabout, which connects to Eston Road, the A66 and the wider network.

Visitor facilities

3.110 The ERF will be available for visits by local interested parties during the normal day shift opening hours, by prior arrangement, subject to health and safety and operational priorities. For this the design of the facility has a dedicated floor within the administration and welfare building, with a conference/education room, break out room and associated independent welfare facilities. The bridge link from the administration and welfare building to the main ERF will also allow visitors (under supervision) to access the control room and operational areas. Visitors will be escorted around the ERF and will be able to view the main areas of the facility, including: the grates and their viewing ports, boilers, turbine, FGT and the air cooled condenser. Visitors will also be able to have a clear view of the tipping hall, bunker area and waste crane operation. Viridor has a history of supporting education and research projects and specific provision will be made for the presentation of the facilities and operations as a resource for local schools and educational establishments. Audio-visual presentations might include the operation of the ERF and wider environmental awareness topics. Pre-recorded CCTV feeds from parts of the facility showing activities taking place in those areas will also be made available. All materials will be managed to promote awareness and education about the ERF.

Maintenance

3.111 The ERF will operate a detailed maintenance programme to ensure systems and equipment operate safely, effectively and reliably. The maintenance programme for the ERF will aim to maintain and improve overall efficiency, reduce emergency repairs, reduce unscheduled equipment shutdowns and the duration of such shutdowns, decrease process faults or reduced performance due to equipment problems and extend the useful life of equipment, repairing and adapting it where necessary.

3.112 Individual items of plant and equipment (e.g. nozzles, filters, electric motors etc.) will have a defined frequency of inspection, checking, cleaning, adjustment and servicing. Maintenance of large items of equipment at the ERF facility (e.g. the boilers, FGT equipment, grates, hoppers, ash handling systems, etc.) will require a line to be shut down, unless it is an item of plant that is shared by both process lines, in which case both lines will need shutting down simultaneously. Where practicable, it is intended that goods and services required to fulfil site maintenance requirements will be actively sources from local businesses.

3.113 Each line will need to be shut down separately for approximately seven to ten days each year. Depending on the results of these shutdowns, a total shutdown of both lines simultaneously for up to seven days is anticipated every other year, during which maintenance of the shared items of equipment will take place. Where practicable, waste will still be received in the waste reception area, where it will be bulked up and out-loaded to alternatives sites. Where this is not practicable, the waste will be directed to alternative sites from source.

Spillages

3.114 Due to the proposed nature of operations at the site there is potential for a range of spillages involving significantly different materials. A number of spill procedures will be produced for each potential spillage event identified, including spillage of

raw material inputs to the ERF, used consumables and waste material outputs. Suitable and sufficient equipment will be maintained on site (such as spill kits) in order to deal with the predicted scale of possible spillages of material. Staff will receive training in the use of the spill kits and will regularly practise as part of the normal operation of the facility. Under all circumstances, priority will be given to the potential environmental and health and safety impacts of spillages. Engineering controls will be employed where these would reduce the potential for spillage (or minimise the impact of spillage) e.g. bunded areas for fuel storage above ground.

Abnormal operating conditions

3.115 Procedures and training will be in put in place for dealing with abnormal operating conditions at the ERF (e.g. failure of an auxiliary burner, FGT bag, CEMS or electricity supply). The ERF will be designed to avoid the need for regular shutdowns but if any incident is likely to endanger personnel, or there is a risk of serious damage to the facilities, or a complete power failure, an emergency shutdown will be instigated.

3.116 The steam turbine will be capable of operating in island mode. Therefore, in the event of a loss of grid connection, this would allow the facility to continue processing waste with the auxiliary load supplied from the turbine generator. In the event of a breakdown of the steam turbine generator, the power for the site parasitic load will be supplied from the external power network or the emergency diesel generator if the grid is also not available.

3.117 An alternating current (AC) uninterruptible power supply (UPS) will be provided for essential functions, such as the facility control system, that cannot tolerate a loss of supply, even for a very short period (i.e. while the diesel generator starts up).

3.118 A full set of procedures will be developed and implemented on site for an emergency shutdown. These will be published in an Emergency Plan. Appropriate drill and training exercises will be undertaken at regular intervals to ensure that all plant operatives are aware of and are competent to identify and respond to plant emergencies.

3.119 The ERF will be equipped with comprehensive fire protection and detection systems which will comply with the requirements of the National Fire Protection Association's recommended practice for fire protection for electricity generating plants and high voltage direct current converter stations (NFPA 850) and also in accordance with Fire Prevention Plan guidance as set out by the Environment Agency. Automatic fire alarm detection will be provided throughout specified areas of the ERF as well as manual alarm break glass call points.

Nuisance control

Odour and dust controls

3.120 The proposed ERF will include a number of controls to minimise odour during normal and abnormal operation.

3.121 All wastes received at the ERF will be unloaded inside an enclosed waste reception area. The waste reception area and waste bunker area will be retained

at negative pressure. Air from the waste bunker area will be used as combustion air within the process. The negative pressure within the waste reception areas will minimise odorous emissions escaping from the building.

3.122 During normal operation of the ERF, regular inspections will be undertaken to monitor for odour and will include the following:

- Olfactory checks for odour externally, at the installation boundary
- Monitoring the positions of doors and louvres (such as keeping doors shut when no waste deliveries need to pass)
- Monitoring combustion air flow, with odorous air extracted via the boiler and the stacks

3.123 During periods of shutdown, the frequency of the above inspections would be extended, including monitoring combustion air flow if the induced draft fan operation can be maintained, for instance during periods of maintenance. In addition, during shutdown, a daily 'sniff test' and inspection around the boundary of the ERF would be conducted.

3.124 During normal operation, bunker management procedures will be employed to avoid the development of anaerobic conditions and decomposition in the waste bunker, which could generate further odorous emissions. These management procedures will include the frequent mixing and rotation of waste to ensure regular and well distributed turnover of waste. The process also results in a more homogeneous fuel, which would increase fuel efficiency in the incineration process. During periods of shutdown, the bunker management procedures would not normally be implemented, to avoid the generation of odorous emissions especially when waste volumes within the bunker are low.

3.125 In the event of an extended unplanned shutdown, it is very unlikely that both streams will be subject to an unplanned shutdown at the same time. Therefore, potentially odorous air within the waste bunker will continue to be used as combustion air, providing negative pressure within the waste reception area.

3.126 Potential emissions of dust and fumes from the ERF bottom ash discharger will be minimised by the quenching process and storage systems proposed. As part of ongoing occupational health protection dust level checks will be carried out on a regular basis in operational areas of the ERF where high dust levels may be present. This will provide an early warning of increasing dust levels, at which point action will be taken to reduce dust levels.

3.127 The site access road will be properly maintained and regular checks will be carried out on road conditions. Cleaning will be carried out promptly.

3.128 The operation of the ERF will be regulated by the Environment Agency under the conditions of an Environmental Permit. This will include conditions to control dust and odour emissions from the site.

Noise controls

3.129 The majority of plant equipment with potential to create noise will be housed inside the main ERF buildings and will include measures to contain noise from the noisiest elements. Within the ERF high levels of acoustic insulation will be installed

around the turbine and generator sets. Other potentially noisy equipment such as fans and motors will also be insulated / silenced. The ACCs have been designed to reduce noise and tonal components.

3.130 Doors to buildings will be kept closed when not in use to prevent noise egress. A silencer will be fitted to the exhaust of the ERF flue gas induced draft (ID) fans. Vehicle movements at night will be limited and regular maintenance of plant items will ensure noise does not become a problem.

3.131 In addition, all unloading and loading of vehicles will be undertaken inside the ERF buildings and vehicle access for delivery of waste or collection of ash or recyclable materials will be restricted to normal working hours where possible. The ERF has also been designed to have a one-way vehicle circulation system, which reduces the need for reversing vehicles and reversing alarms.

3.132 Mobile plant for the site (which are principally employed inside the proposed ERF building) will comply with the most up-to-date standards, including noise emissions. All mobile plant will be operated and maintained in accordance with the manufacturer's instructions. Mobile plant that does not comply with the agreed operating noise limits will be taken out of service until compliance is achieved. Mobile plant external movements at night will be limited.

3.133 Noise level checks will be carried out on a regular basis in operational areas of the ERF where high noise levels may be present. Early warning of increasing noise levels will result in a noise reduction or mitigation programme.

Pest control

3.134 Waste delivered for disposal will only be stored in designated areas and any spillage of waste will be recovered in accordance with specific, time limited procedures. This will reduce the potential for feeding patterns to be established by vermin and therefore discourages infestation. The design of the waste bunker for the ERF will ensure that the bunker is watertight and this will prevent access to the contained waste by burrowing pests such as rats or squirrels. The bunker will be enclosed and under cover thereby reducing access to waste for birds and the tipping hall has been designed so as to eliminate roosting points for birds.

3.135 Routine cleaning and good housekeeping at the ERF will reduce the potential for the facilities to provide an attractive environment for vermin and this will be implemented through the maintenance programmes. In the event that pests are identified, an action plan will be developed to eliminate or reduce the potential for nuisance to neighbours.

3.136 Regular visual checks will be undertaken of the waste storage areas and tipping hall / waste bunker area, as well as the access road and the site generally. If pests are reported appropriate measures will be taken and pest control specialists utilised where necessary. In addition to these measures, the tipping hall will be cleaned periodically and standard pest control methods will be implemented.

Litter controls

3.137 All vehicles carrying waste into or out of the ERF will be fully enclosed (RCV) covered or sheeted (HGV), thereby ensuring the potential for litter to escape is

minimised. The vehicles will be visually inspected from the weighbridge so anyone delivering waste uncovered / sheeted will be identified and reported for action directly or through the delivery contractor (mainly the councils). The delivery and storage of all waste within buildings on site further minimises the potential for wind-blown litter to occur. A daily check will also be made to key areas of the site (e.g. the tipping hall) to identify any build-up of waste. These combined measures will ensure that control of litter is maintained at all times.

Community relations

3.138 Viridor will appoint a Social Value Officer to help deliver a range of social value benefits and opportunities within the Contract Authority area (Darlington, Stockton-on-Tees, Middlesbrough, Redcar and Cleveland, Hartlepool, Durham and Newcastle). The Social Value Officer will be in place during the construction as well as the operational period of the ERF and will facilitate work with local schools, businesses and community groups as appropriate. Viridor will also set up a Local Liaison Committee, with which the Social Value Officer will be involved. The committee will meet on a regular basis to discuss the construction and operation of the ERF. It is intended that the committee will meet during all stages of the proposed development, including: construction, commissioning and the start of operations and continue for as long as there is an interest. The committee will provide the opportunity for those in the local community to raise any potential issues or queries. It will also provide a forum for community stakeholders to be informed and consulted regarding site operations and procedures. It is intended that the liaison group members will include local parish councils, locally elected representatives of the community, as well as representatives of the Environment Agency, RCBC, STDC and other stakeholders as appropriate.

Environmental management

3.139 It is the intention of Viridor that the ERF will also be accredited to ISO14001 Environmental Management System, ISO9001 Quality Management System, ISO45001 Health and Safety Management and ISO50001 Energy Management, thus indicating Viridor's aim to achieve the highest practical standards of quality, safety, occupational health, environmental control and performance at the Tees Valley site.

Construction

Construction programme and activities

3.140 The total site preparation and construction programme for the ERF is expected to last for approximately 47 months. The anticipated programme for construction activities is as follows:

- January 2024 – November 2026 – Civil works and structures, including: mobilisation period, plant preparation, set up of construction compound, earthworks, piling, laying foundations / concrete structures for the tipping hall, waste bunker, boiler areas, FGT areas and air cooled condensers, erection of steel super structure for the ERF building, construction of a culvert(s) beneath internal site road(s) to facilitate future pipe work with minimal disruption to the site, etc.

- July 2025 – January 2027 – Mechanical works, including: installation of various tower cranes, assembly and erection of boiler, FGT plant, furnace grates, refractories and thermal insulation, conveyor systems, bag filters, stack installations, tank installations, ducts / connecting pipework, air cooled condensers, steam turbine, transformer and associated cabling and steel structure and cladding, etc.
- October 2025 – December 2026 – Pipes, valves and accessories, including: installation of main steam, extraction, condensate, cooling, raw water, feedwater, turbine drain, fire fighting, sampling, air instrument, chemical dosing, auxiliary fuel, flushing, etc. systems.
- December 2025 – January 2027 – Electrical equipment, including fitting of various systems (e.g. mainstream, extraction, condensate, raw water, feedwater, drains, cooling, fire fighting, chemical dosing, auxiliary fuel, turbine, gas treatment) etc.
- April 2026 – August 2027 – Commissioning, including: electrical and fire fighting, mechanical and steam systems, steam turbine and boiler.
- July 2027 – November / December 2027 – Completion testing, acceptance testing, readiness testing and completion of takeover with issuing of Acceptance Test certificate.

3.141 The off-site network electrical connection will be provided by the Contract Authority by April 2026 and this will involve the excavation of a short section of trench. It is likely that the installation contractor will seek to open as much trench at a time as possible so that suitable ducts can be laid quickly. Once the trench is backfilled and reinstated the electricity cable will be drawn through the ducts.

Construction employment

3.142 The number of people employed on site at any one time will vary considerably, but it is estimated (based on experience with similar projects elsewhere) that the average will be 381 over the 47-month construction / commissioning period. It is anticipated that there will be a daily peak in employment during months 34 – 36, during which up to 620 construction workers could be on site. The Teesworks Skills Academy will be engaged throughout the construction period to provide details of employment opportunities as appropriate.

3.143 It is noted that the December 2019 ES referred to a peak of 300 construction staff. It is unknown where this figure derives from. The 620 employment peak noted above is based on a detailed historical review of peak ERF construction staff numbers carried out by Fichtner Consulting Engineers Limited.

Construction traffic

3.144 All site preparation and construction related HGV vehicles will access / depart the site via the new northern arm of the new Eston Road roundabout, which connects to Eston Road, the A66 and the wider network.

3.145 Based on experience of similar projects elsewhere it is predicted that site preparation and construction activities will generate, on average, 5 HGV movements each way per day (i.e. 10 HGV movements in total). Peak HGV movements are anticipated during month 16, when there is likely to be around 40

HGV movements each way per day (i.e. 80 HGV movements in total). It is assumed that HGV movements will be spread over the course of the working day.

3.146 Additionally, the movement of construction staff will result on average in 259 vehicle movements each way per day (i.e. 518 vehicle movements in total) and 413 vehicle movements each way per day (i.e. 826 vehicle movements in total) during the peak construction period (months 34 – 36). In line with standard practice, for the purposes of assessment it has been assumed that there will be 1.5 construction workers per car. All construction staff will park on site or adjacent land, within a temporary construction compound and as staff will be working shifts, it is assumed that construction staff movements to and from site will occur mainly between the hours of 07:00 – 09:00 and 17:00 – 19:00.

Work hours

3.147 Construction work audible outside of the site boundary will take place during standard hours, e.g. 07:00-19:00 hrs Monday – Saturday, with no audible work on Sundays or public holidays. Delivery of oversize plant and equipment, internal fit out, internal works and other non-intrusive works may take place outside of these times. Extraordinary events such as concrete pours may also need to take place outside these hours as by their nature they need to be continuous.

Construction equipment and laydown areas

3.148 A wide range of equipment will be required during the different construction phases, including excavators, dump trucks, cranes, hoists, mobile elevating work platforms, forklift trucks, concrete pumps, piling rigs, compressors, generators and pumps.

3.149 The construction activities will require laydown areas for storage and limited pre-assembly of components. The location and size of laydown areas on site will vary throughout the programme as areas initially available start being required for construction activities. To reduce laydown requirements, the construction programme will make use of ‘just in time’ deliveries where possible.

Site cabins, welfare and parking

3.150 During all construction phases the site will require an area in which to place cabins, which will house site management and welfare facilities for construction workers. The area towards the north west of the site, where the carbon capture facilities may ultimately be located is proposed for this use, or alternatively adjacent land may be used. Car parking for construction workers will also be provided in this area.

Procedures for storing, handling and haulage of construction waste

3.151 Detailed procedures for the temporary storage, handling and haulage of construction waste will be developed once further design work has been completed, the nature of any waste material is fully understood and routes for recycling and disposal of waste material are established. All procedures will adopt best practice and ensure that materials are safely handled whilst fully mitigating any risk of pollution to the environment or any contamination, which may jeopardise effective reuse or recycling. A detailed construction environment

management plan (CEMP) will be prepared in due course. The CEMP will cover waste management and will be based on a number of key concepts that aim to manage and reduce construction waste.

Environmental protection measures during construction

3.152 In order to effectively manage environmental impact and nuisance control an environmental risk assessment will be undertaken of all construction activities (over and above that undertaken as part of the EIA process). The risk assessments will prioritise the risks to the environment and the potential consequences if the risk is realised. Control measures will be introduced in order to remove or reduce the risk to an acceptable level. The detailed CEMP will cover all construction activities. The CEMP will encompass standard best practice approaches to construction and all the relevant mitigation measures identified by the EIA process.

Commissioning

3.153 Commissioning / testing of the ERF will commence following completion of the civil works and the erection and installation of all equipment. Viridor will agree a written commissioning programme with the Environment Agency, which will also describe the commissioning protocols with regard to meeting regulatory requirements, e.g.: noise monitoring, emissions monitoring and the calibration / verification of CEMS equipment.

3.154 Commissioning will take place in two stages, 'cold' and 'hot' commissioning. Cold commissioning of the facility involves confirming that all items of plant and equipment function as intended. This will include line checking, rotation checking, electrical testing, calibration, etc. It will also include testing of any computer control systems, validation of safety systems and interlocks, and interfaces with external services. Cold commissioning will occur before waste is delivered to the ERF. Hot commissioning will involve operating the ERF with waste and verifying that the waste treatment technologies achieve their desired aims.

3.155 At the end of hot commissioning the ERF will undergo testing to verify that the facility achieves its contractual requirements. On satisfactory completion of the acceptance tests, the independent certifier will issue an acceptance test certificate. Once the acceptance test certificate has been issued, the facility will be deemed ready for commercial operation.

4.0 Approach to the EIA Statement of Conformity report

4.1 The EIA SoC assesses the proposed ERF design, layout and alterations to be implemented by the submitted reserved matters against the scheme which formed the basis of the OPP and evaluates the implications of the reserved matters scheme on the validity of the conclusions of the December 2019 ES.

4.2 The approach has involved the following:

- A review of the environmental documents submitted with the planning application for the outline scheme. Principally the December 2019 ES which assessed the potential environmental effects of the outline scheme.
- Consideration of the implications of the development and the likelihood for the findings of the December 2019 ES to be altered positively (i.e. through a reduction of adverse impacts) or negatively (i.e. through the amplification of adverse impacts), or neutrally (no change to positive or adverse impacts).

4.3 The assessment has also taken into account any new relevant legislation, policy or guidance that has been adopted since December 2019. A separate Planning Supporting Statement has been prepared and submitted as part of the reserved matters application, which provides a summary of the key planning legislation and policy that is currently adopted and relevant.

4.4 The topics that were assessed in the December 2019 ES have been re-assessed within this EIA SoC. The topics are as follows:

- Ecology and biodiversity
- Landscape and visual impact
- Hydrology, hydrogeology, geology and contamination
- Flood risk and water quality
- Archaeology and cultural heritage
- Socio-economic
- Air quality, noise and human health
- Traffic and transportation
- Cumulative impacts

4.5 These topics are assessed in the following chapters (5 – 13) to provide a comparable assessment to the outline scheme.

4.6 The assessments carried out within this component of the application are mostly qualitative, although some quantitative analysis has been included where further assessment has been carried out, e.g. chapter 11 (Air Quality). This is discussed under the relevant sections of this report where applicable.

4.7 It is assumed that all relevant mitigation measures which the December 2019 ES relied upon are carried over for the reserved matters and implemented accordingly. Where any changes to mitigation measures are considered necessary, this is stated in the relevant technical chapter.

4.8 Cumulative effects were assessed within a discrete chapter of the December 2019 ES. This assessed two types of cumulative effects:

- Intra-project effects: the combined effects of individual effects resulting from the proposed development (i.e. the ERF) upon a set of defined sensitive receptors, for example, noise, dust and visual effects
- Inter-project effects: the combined effects arising from other development site(s), which individually might be insignificant, but when considered together, could create a significant cumulative effect.

4.9 A review has been undertaken of the December 2019 ES cumulative assessment and the potential for additional cumulative effects in relation to other projects that have come forward since this time. A number of new schemes have been identified which were not previously covered in the December 2019 ES. Analysis of the potential cumulative effects is covered in chapter 13.

5.0 Ecology and biodiversity

Introduction

5.1 This chapter reviews the assessment and findings of the December 2019 ES chapter 6 on Ecology and Biodiversity that was prepared for the outline planning application, in order to ascertain if there are any changes to the assessment on the ecology and biodiversity with regards to the submission of reserved matters pursuant to the OPP. This chapter should also be read in conjunction with chapter 11 of this SoC that includes air quality and the Habitat Regulations Assessment (HRA) screening that is also submitted as part of the reserved matters application.

5.2 As noted in chapter 2 of this report, remediation works at the site have been completed by STDC. As such, the EIA SoC has considered ecology and biodiversity from the new, post-remediation baseline.

Validity of environmental baseline presented in the December 2019 ES

5.3 The ecological baseline as presented in the December 2019 ES is no longer valid given the site remediation works. A site visit by a Ramboll ecologist in July of 2021 identified limited habitats left on site and limited potential for use by protected or notable species. The site was subject to a further validation walkover in January 2023 to assess for any changes to conditions and habitats on site since the 2021 survey and to confirm that the existing data and assessment remains valid. This identified that no habitats of value remained at the site with ground cover comprising bare ground.

5.4 Documents and text used to describe the national and local designations are still valid, as are the baseline assessments for these sites.

Legislation, policy and guidance update

5.5 Since the production of the December 2019 ES *The Conservation of Habitats and Species Regulations 2017* has been updated in relation to the UK's exit from the European Union. The latest regulations are *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*.

5.6 In line with the updated regulations, Special Areas of Conservation (SAC) and Special Protection Areas (SPA) in the UK no longer form part of the EU's Natura 2000 ecological network. The *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:

- Existing SACs and SPAs
- New SACs and SPAs designated under these regulations

5.7 Any references to Natura 2000 in *The Conservation of Habitats and Species Regulations 2017,* as amended and in guidance, now refers to the new national site network. Maintaining a coherent network of protected sites with overarching conservation objectives is still required in order to:

- Fulfil the commitment made by government to maintain environmental protections
- Continue to meet the UK's international legal obligations, such as the Bern Convention, the Oslo and Paris Conventions (OSPAR), Bonn and Ramsar Conventions

5.8 Redcar and Cleveland Local Plan was adopted in 2018 and cited within the December 2019 ES. This local policy remains unchanged.

Assessment update

During construction

5.9 The assessment presented in the December 2019 ES remains valid with regards to designated sites within the vicinity of the site.

5.10 The site visit by Ramboll in 2023 identified no habitats left on site and limited potential for use by protected or notable species. It is therefore considered that the main construction impacts outlined in the December 2019 ES regarding habitats and species have already taken place as a result of site remediation works.

During operation

5.11 The assessment presented in the December 2019 ES remains valid with regards to designated sites within the vicinity of the site.

5.12 Following consultation with Natural England in relation to the HRA screening, information was specifically requested in relation to the effects of nitrogen deposition on the Teesmouth and Cleveland Coast SSSI and this is set out in Appendix 1. It was concluded that the change in nitrogen deposition from the operation of the ERF is not considered likely to have any adverse impacts on the floral interest of the dune system within the SSSI.

5.13 The assessment presented in the December 2019 ES remains valid with regards to impacts on habitats and species, although these impacts have already taken place as a result of the site remediation works.

Mitigation

5.14 Remediation works have recently been completed on site and a verification report has been prepared by Arcadis to demonstrate that the works were completed in accordance with the agreed Remediation Strategy and condition 4 of the remediation planning permission (reference R/2020/0318/FFM). A separate CEMP will be prepared specifically for the ERF under condition 4 of permission R/2019/0767/OOM.

5.15 The December 2019 ES stated that a 2.32 ha area of the site would be safeguarded and managed for the lifetime of the operations as a designated biodiversity area. The ES also stated that ponds were to be created in the designated biodiversity area and managed for the lifetime of the facility. As noted in chapter 2 previously, since the grant of the OPP, Natural England and RCBC have agreed that all the ecological mitigation required for the ERF development

can be provided off-site. As also highlighted in chapter 3, while the majority of mitigation will be provided off-site in due course, some biodiversity features will be provided on-site. For instance, the landscape proposals include provision of habitats (e.g. woodlands and wildflowers) that will enhance the biodiversity of the site. The reserved matters application also includes the creation of an attenuation pond which serves as part of a sustainable drainage system, which will also provide ecological benefits.

5.16 While the location of the mitigation measures will vary from that set out in the December 2019 ES, it is considered that both construction and operational mitigation is robust, and will still ensure that no significant adverse effects will arise as a result of the ERF development.

Residual effects significance

5.17 The December 2019 ES identified no significant residual impacts during the construction or operational phases with the application of appropriate mitigation. As mitigation will be provided both on and off-site this conclusion is still considered to be valid.

Conclusion

5.18 On the basis that remediation works have been completed at the site in accordance with the agreed remediation strategy as reported by Arcadis, and that subsequent enabling works are undertaken in line with the approved CEMP for the site, and a future CEMP for the ERF construction works is prepared, as well as the recommended off-site mitigation put in place, the conclusions of chapter 6 of the December 2019 ES are considered to remain valid.

6.0 Landscape and visual impact

Introduction

6.1 This chapter reviews the assessment and findings of the December 2019 ES chapter on landscape and visual impact assessment (LVIA) that was prepared for the outline planning application in order to ascertain if there are any changes to the assessment on both the landscape character and visual amenity associated with the submission of reserved matters pursuant to the OPP.

Validity of environmental baseline presented in the December 2019 ES

6.2 The original baseline remains correct. The documents and text used to describe the national and local designations are still correct, as are the baseline assessments of the character areas within the study area. Equally, with the visual baseline the study area was defined by the preparation of a series of zones of theoretical visibility (ZTV's). While the reserved matter application amends the building layout so the 80 m stacks are now in the north rather than the south, the 50 m high boiler house remains in the middle of the eastern half of the site. New ZTV's have been prepared and confirm that the ZTVs remain almost identical to the original baseline studies. Figures 6.1 – 6.3 present the new ZTVs prepared – for the buildings only, for the stacks only and for the buildings and stacks combined. Figure 6.4 is the ZTV from the December 2019 ES and is included for comparative purposes.

Legislation, policy and guidance update

6.3 Both national and local planning policies of relevance to the LVIA were considered in the December 2019 ES. In terms of national policy, the National Planning Policy Framework (NPPF), February 2019 was used. This document was revised in July 2021 which has created some minor changes to the paragraph quotes used and paragraphs numbers. These changes are summarised below:

- Paragraph 8 b) – minor text change
- Paragraph 9 – no change
- Paragraph 127 – changed to Paragraph 130
- Paragraph 180 – changed to Paragraph 185

6.4 With regards to the policies and quotes used from Planning Practice Guidance (PPG's), the Redcar and Cleveland Local Plan, May 2018, policies from the Minerals and Waste Core Strategy DPD and the Redcar and Cleveland South Tees Area SPD, there are no changes.

Landscape assessment update

6.5 In its assessment of the landscape effects, the December 2019 ES considered the impacts of the proposed development on the physical landscape fabric of the application site itself and the landscape characters of relevance within a 5 km study area.

6.6 The landscape character areas assessed within the site were:

- Eston Hills broad character area
- Redcar Flats broad character area
- East Billingham to Teesmouth landscape character areas
- Coastal Fringe landscape type
- Estuarine landscape type
- Residential areas
- Industrial areas

6.7 Of the seven landscape character areas / types, six were assessed as having no residual change or effects through the development of the site. In the assessment of the industrial areas, it was concluded there would be a slight beneficial residual effect. The reserved matters application will not alter this assessment.

6.8 Regarding the site itself, the assessment on the effects on the overall pattern, scale and perceptual qualities of the landscape of the site were slight beneficial. The reserved matters application will not alter this assessment. However, the effect on both the vegetation and landform that were originally assessed as being slight adverse are now assessed as there being no effect. In terms of landform the blast furnaces have now been removed and in terms of vegetation, the site has now been completely cleared of all plant life.

Visual assessment update

During construction

6.9 Out of a total of 23 representative viewpoints assessed during construction the only change is the significance of effects to viewpoint 3, Kirkleatham Lane, A1042. Following the intervening time since the assessment was made the site in front of this view is now occupied by residential dwellings within the Linden Homes Kirkleatham Green housing estate which is presently under construction. This development will now block views of the cranes within the site during construction so that the significance of effects will now be negligible.

6.10 Apart from the change stated above for viewpoint 3 the reserved matters application will not change the significance of effects at construction as assessed in the December 2019 ES. The construction effects will have negligible effect on these new dwellings.

During operation

6.11 Statements concerning the general visual effects of the ERF remain valid. While the stacks are now in the north of the site, they will remain the most prominent feature of the development. The main ERF building will also not exceed the height of buildings assessed in the December 2019 ES. Equally, the development will still be screened in some views by intervening built form or vegetation. With regards to more distant elevated views such as from the Eston Hills or from Cowpen Bewley County Park, the massing effect of the buildings will remain the same.

6.12 Out of a total of 23 representative viewpoints assessed during operation the only change is the significance of effects to viewpoint 3, Kirkleatham Lane, A1042.

Following the intervening time since the assessment was made the site in front of this view is now occupied by residential dwellings within the Linden Homes Kirkleatham Green housing estate which is presently under construction (approximately 5 km from the site). This development will now block views of the proposed development so that the significance of effects will now be negligible.

6.13 Apart from the change stated above for viewpoint 3 the reserved matters application will not change the significance of effects at operation as assessed in the December 2019 ES. The visual effects on these new dwellings once the ERF is operational will be negligible.

Mitigation

6.14 Almost all the potential mitigation in the December 2019 ES refers to consideration being given to the cladding material and façade treatment of the buildings. Within the reserved matters application, the material palette chosen for the buildings will be a series of grey tones that each complement the other across a variety of forms. It is considered that expression of the individual component parts is important. In conjunction with the built form, the material palette will enhance and complete the overall composition.

6.15 The chosen material will also have a variety of textures and depths that will ensure that the development makes a positive contribution to the overall appearance of the site area. White clad buildings can often appear at odds with their surroundings or become visually intrusive. In choosing a variety of greys the prominence and massing of the larger built elements, such as the boiler house and storage bunker building will be visually reduced and will assist in blending the facility into the receiving landscape.

6.16 In the outline application layout, the boiler house and the FGT building were 50 m tall, with the 80 m high stacks to the south eastern corner of the site. While the majority of the buildings were aligned along the eastern half of the site, smaller ancillary buildings were scattered across the site, especially towards the north of the site and south of the north western site entrance.

6.17 The Contract Authority has subsequently requested that the stacks be located to the north of the site. Through the detailed design process consideration has been given to the arrangement of plant and of adjacent land uses in order to produce a more compact, simpler and more unified design layout. The FGT building, which in the outline was 50 m high, is now 26.1 m high and the tipping hall that was 30 m high is now 15.6 m high (including their safety parapets). The stacks remain at 80 m. Overall, the massing and height of the buildings in the reserved matters application are smaller.

6.18 While these alterations to the layout may not have altered the overall impact assessment on visual amenity they will result in a facility that has a more unified, compact layout that is contemporary, functional and modern, and that will produce less impact in terms of visual massing, than that assessed at outline in the December 2019 ES.

6.19 In terms of landscape design, while it is accepted there is little opportunity to mitigate the visual impact created by stacks and buildings of this size, it has been possible to reduce low level impacts such as queuing HGV's, internal pedestrian /

vehicular movements and car parking. This has been achieved through the proposed use of earth bunding and native woodland structure planting around the entire site perimeter, with the exceptions of entrance points. A full description of the landscape proposals is provided in chapter 3.

Residual effects significance

6.20 Out of a total of 23 representative viewpoints assessed, the reserved matters application will not alter the significance of effects reported in the December 2019 ES after accounting for the residual effects with mitigation and after 15 years post operation. In terms of residual effects significance there are very few comments to note except for the following.

6.21 In the assessment of viewpoint 7b from the Teesdale Way footpath it was noted that careful siting of the buildings away from the north boundary was important. The Contract Authority has requested that the stacks be located in the north of the site. In the reserved matters application the stacks have in fact been located as far from the northern boundary as possible to address both considerations.

6.22 Furthermore, there is a 10 – 12 m wide, 1.5 m high earth bund along the entire northern boundary to be planted with a native woodland mix along with some advanced nursery stock tree planting that includes larger climax tree species such as oak. Once established after 15 years, along with the earth bunding, these proposals will adequately screen all ground level activity. However, in terms of the assessed significance of effects there is no change to the assessment of this view. Even with the northern boundary treatment, there will still be close-range views of the upper sections of the taller buildings and stacks, albeit limited through the existing vertical palling fence, pipelines and existing scrub.

6.23 From viewpoint 8 on the corner of Eston Road, looking north east, the proposed 2.5 – 3 m high earth bunding, native woodland planting and contemporary concentric designed ornamental tree and shrub entrance planting will be clearly visible from this location, as will the western boundary landscape treatment. After 15 years post operation the planting scheme will be establishing well so that all HGV, internal pedestrian / vehicular movements and car parking will be screened. The advance nursery stock trees, especially the faster growing white willow proposed around the attenuation pond will, by this stage, be showing signs of assisting to visually break up the mass of the taller buildings. However, the magnitude of change and significance of effect will remain as originally assessed.

6.24 In terms of the overall visual impact assessment, the December 2019 ES LVIA chapter had incorrectly labelled the assessed impacts to individual viewpoints in the summary within paragraph 7.6.4. In line with the assessment tables the significant impacts on visual amenity resulting from the proposed development should have read:

- Slight to Moderate adverse effect on view from V6, Tees Dock Road
- Slight to Moderate adverse effect on view from V7a, Teesdale Way access point
- Slight to Moderate adverse effect on view from V7b, Teesdale Way
- Slight to Moderate adverse effect on view from V8, Eston Road

- Moderate adverse effect on view from V11, Junction of Normanby Road / Poplar Grove
- Slight to Moderate adverse effect on view from V13, Local footpath just off Church Lane, Lackenby
- Slight to Moderate adverse effect on view from V15, NCN Route 1 adjacent to the B1380
- Slight to Moderate adverse effect on view from V16, Bridleway at Lazenby Bank within the Eston Hills
- Slight to Moderate adverse effect on view from V17, Tees Link National Trail
- Moderate adverse effect on view from V18, Eston Nab

6.25 As stated above, the reserved matters application will not alter the assessed significance of effects as set out in the December 2019 ES.

Conclusion

6.26 As originally concluded, there are not likely to be any significant impacts on national, regional or local landscape character areas as a result of the project. Due to the location of the site, well within the industrial area and surrounded on all sides by heavy industry, even though the proposed facility is large in scale, mass and height, the existing landscape character has the capacity and qualities to accommodate the ERF development.

6.27 As expected, the most notable landscape change is that of the site itself. In this regard the reserved matters application proposals will see the creation of a high-quality external environment, designed to provide a contemporary and attractive environment with both landscape and biodiversity benefits.

6.28 In terms of the impact on visual amenity within the 15 km visual study area it was concluded that the close range visual receptors, such as users of the Teesdale Way and from the local road network where gaps in the urban fabric allowed views towards the site, were considered likely to experience the most significant impacts, with a number of residual visual impacts noted in close proximity to the site and from high sensitivity receptors in elevated locations associated with the public rights of way network and the Eston Hills. This conclusion remains valid.

6.29 With regard to planning policy, the detailed design complies with the building envelope and stack height assessed in the December 2019 ES and as stated above, does not give rise to a landscape and visual impact beyond the worst case as originally assessed. In this respect, the proposals are in accordance with Landscape Policy N1.

6.30 The detailed design of the ERF has been devised taking account of the vision and mitigation established by the OPP and has adopted an approach to deliver a high-quality design that respects and enhances its location and setting and the wider context of the South Tees Regeneration Area.

7.0 Hydrology, hydrogeology, geology and contamination

Introduction

7.1 This chapter reviews the assessment and findings of the December 2019 ES that was prepared for the approved OPP in order to ascertain if there are any changes to the assessment on the hydrology, hydrogeology, geology and contamination with regards to the submission of reserved matters pursuant to the OPP.

7.2 The corresponding chapter of the December 2019 ES (chapter 8) describes the existing environment in relation to hydrology and hydrogeology and assesses the potential impacts of the construction, operation and decommissioning of the ERF (the proposed development) on hydrology (surface water quality, levels and flows), hydrogeology (groundwater quality and levels) and contamination.

7.3 This chapter of the SoC provides a review of the corresponding chapter of the December 2019 ES in the context of aspects of the proposed development which may interact with hydrology, hydrogeology and ground contamination (i.e. below-ground structures, sustainable drainage systems (SuDS) and soft landscaping).

Validity of environmental baseline presented in the December 2019 ES

7.4 A number of desk-based assessments and intrusive ground investigations have been undertaken at the site by Stantec and Arcadis since the completion of the December 2019 ES, which generally confirm the baseline environmental conditions in relation to geology, hydrogeology, hydrology and land contamination established in the December 2019 ES. Remediation works have recently been completed on site as required under OPP for the wider site (R/2020/0318/FFM granted on 30 September 2020), which have been verified by Arcadis, which is in line with recommendations in the ES and to fulfil planning conditions attached to the OPP.

Legislation, policy and guidance update

7.5 Since the completion of the December 2019 ES, the following legislative documents referred to in the ES have been subject to revisions:

- National Planning Policy Framework (NPPF) (revised July 2021)
- Environmental Permitting (England and Wales) Regulations 2010 (revised 2019)

7.6 The updates to the NPPF in July 2021 (as relevant) to the ES include:

- Achieving sustainable development principles (Para 8c) to protect and enhance the natural environment, rather than merely contributing to these matters
- Plans to take into account all sources of flood risk, use opportunities provided by green infrastructure and to make as much use as possible of natural flood management techniques. Development should be appropriately flood resistant and resilient such that, in the event of a flood, it could quickly be brought back into use without significant refurbishment

7.7 The updates to the NPPF are not considered to have resulted in significant changes to the requirements for compliance with the December 2019 ES in terms of geology, hydrology and hydrogeology and contamination. Changes in terms of flood risk are detailed in chapter 8 of this EIA SoC.

7.8 The updates to the Environmental Permitting (England and Wales) Regulations relate to updates made following Britain's exit from the European Union and are not considered to affect requirements for compliance with the December 2019 ES in terms of geology, hydrology and hydrogeology, and contamination. However, since the submission of the December 2019 ES, the Environment Agency has published an update to the Model Procedures of Land Contamination (CLR11) called Land Contamination Risk Management (LCRM)[1]. LCRM is relevant to all those involved in, or responsible for, managing land contamination.

Assessment update

During construction

7.9 The potential risks to human health and controlled waters identified by the December 2019 ES at the construction phase were comparable to those identified in the subsequent assessments undertaken by Stantec and Arcadis with the exception of the following:

- The risk to the superficial aquifer as a groundwater resource is considered to be slight adverse prior to mitigation, as opposed to negligible adverse as identified by the December 2019 ES. This is based on the results of contamination testing undertaken as part of the ground investigations following the completion of the ES and the inclusion of below-ground structures which may increase the potential for contaminant migration within shallow groundwater during construction and excavation works, (e.g. below-ground waste bunker, effluent pit and rainwater tank pit, SuDS).
- The potential impact to the River Tees Estuary is considered to be negligible adverse prior to mitigation, as opposed to moderate adverse as identified by the December 2019 ES. This is based on the results of permeability testing undertaken by Arcadis following the completion of the ES. The potential for contaminants to migrate to the groundwater is considered to be low given the low permeability of underlying geology and the distance of the site from the River Tees and other surface water receptors.

7.10 The increased risk to the superficial aquifer identified above is considered to be addressed by the mitigation measures outlined in the Arcadis Remediation Options Appraisal (ROA) and Strategy (identified as a requirement by the December 2019 ES) which have been implemented during the completed remediation works at the site as verified by Arcadis, and therefore not deemed significant in EIA terms with the proposed mitigation in place. Mitigation measures are discussed in detail below.

[1] Environment Agency (2020) Land contamination risk management (LCRM). Available online at: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm [Last Accessed 14/10/2021]

During operation

7.11 The potential risks to human health and controlled waters identified by the December 2019 ES during the operational phase are comparable to those identified by the subsequent assessments undertaken by Stantec and Arcadis. As such, no mitigation measures additional to those identified in the Arcadis ROA and Strategy are considered to be required during the operational phase, and the December 2019 ES is considered to be valid with respect to the operational phase of the development.

Mitigation

7.12 The Arcadis (ROA) and Strategy includes a number of mitigation measures and additional actions (such as excavation, treatment and backfill of impacted soils, removal and processing of relic underground structures and placement of clean caping materials in areas of soft landscaping) needed to remediate the site to a level suitable for redevelopment to a commercial use. These measures have been implemented during the remediation works completed at the site, as verified by Arcadis. Provided that any further development specific works are implemented as appropriate to the construction programme, the December 2019 ES assessment is considered to remain valid.

Residual effects significance

7.13 The December 2019 ES identifies no significant residual effects in either the construction or operational phase. On the basis that remediation works have been completed at the site in accordance with the agreed remediation strategy as reported by Arcadis, and that subsequent enabling works for the ERF are undertaken in line with the approved Arcadis remediation strategy for the site, no significant residual effects are anticipated to occur.

Conclusion

7.14 On the basis that remediation works have been completed at the site in accordance with the agreed remediation strategy as reported by Arcadis, chapter 8 of the December 2019 ES is considered to remain valid in light of the reserved matters application.

8.0 Flood risk and water quality

Introduction

8.1 This chapter reviews the assessment and findings of the December 2019 ES chapter 9 on Flood Risk and Water Quality that was prepared for the outline planning application in order to ascertain if there are any changes to the assessment of the flood risk and water quality with regards to the submission of reserved matters pursuant to the OPP.

Validity of environmental baseline presented in the December 2019 ES

8.2 The validity of the original flood risk baseline remains correct overall. There have been no meaningful changes to local hydrology, hydrogeology, or existing flood risk.

Flood Risk

8.3 An updated flood risk assessment (FRA) has been produced by Ramboll in 2023[2] in support of the reserved matters application. The site remains within flood zone 1 and flood risk from all sources is considered to be low, except for groundwater flooding which was assessed as moderate-low.

Water Quality

8.4 A Water Framework Directive (WFD) assessment report was undertaken by JBA Consulting for the site in December 2019[3]. Ramboll undertook a review of the JBA WFD report in relation to the detailed design submitted under the reserved matters application[4]. The environmental baseline presented in the December 2019 ES was found to be consistent with that identified in the Ramboll WFD assessment review report.

Legislation, policy and guidance update

8.5 Both national and local planning policies of relevance to flood risk and water quality were considered in the December 2019 ES. The National Planning Policy Framework (NPPF), February 2019, was originally used. The NPPF was revised in July 2021. The principles of the NPPF as they related to flood risk are unchanged and there is no other national policy relating to aspects of the water environment.

8.6 The legislation cited in the December 2019 ES, in section 9.2, remains unchanged as it relates to flood risk and water quality.

8.7 Redcar and Cleveland Local Plan was adopted in 2018 and cited within the December 2019 ES. This local policy remains unchanged.

[2] Ramboll (2021) Flood Risk Assessment. Report ref. 1620010534-RAM-XX-XX-RP-FR-00001

[3] JBA (2019) Energy Recovery Facility – Water Framework Directive Assessment.

[4] Ramboll UK (2023). Tees Walley Energy Recovery Facility, Water Framework Directive Assessment – Review and Update. Report ref. 1620010534-RAM-XX-XX-RP-WFD-00001

Assessment update

During construction

8.8 The potential risks to the water environment and flood risk identified by the December 2019 ES at the construction phase are comparable to those identified by the subsequent assessments undertaken by Ramboll.

During operation

Flood Risk

8.9 In the December 2019 ES JFlow modelling of the wider catchment at the site was undertaken to identify surface water flow routes and quantify associated flow rate and flow volume. A 1% annual exceedance probability (AEP) plus 40% climate change (CC) surface water flood depth was modelled. This determined surface water flooding comprised of highly localised ponding to shallow depths below 0.3 m with localised areas of 0.3 – 0.6 m. Model outputs also indicated that there are no clear off-site impacts that need to be managed.

8.10 This determination remains largely unchanged since 2019. The 2023 FRA also noted localised areas of surface water flooding and identified no significant risk of flooding off-site, assuming adherence to a drainage strategy designed to mitigate any increase in surface water runoff above the baseline as a result of the proposed development.

Water Quality

8.11 The potential risks to surface water via contamination from run-off and / or spillage during operations, as well as potential risks to groundwater contamination from excavation / infiltration are identified in the December 2019 ES. These identified risks are comparable to those identified by the subsequent review of the WFD Report undertaken by Ramboll (2023).

8.12 Additionally, as identified in the December 2019 ES, potential risks for abstraction from a surface water or any underground strata may have an adverse impact on migratory fish and eels and water resources during operations. As stated in the WFD Report undertaken by Ramboll (2023), no water abstraction is proposed from the Tees Estuary for the proposed development.

Mitigation

8.13 The construction of the proposed development will be carried out in line with a CEMP which will include best practice measures to manage potential effects associated with ground conditions and the water environment. The measures will include the preparation of a pollutants, water and sediment management protocol to inform construction works, which will set out measures such as the following:

- Minimise storage of hazardous chemicals on site and where storage is necessary, use anti-pollution measures such as bunded trays or leak-proof containers
- Use designated refuelling sites, located away from open water

- Any cleaning materials or chemicals used during the construction phase are not to be hazardous to the water environment
- No storage of potentially contaminating materials in areas liable to water inundation
- Use of electrical power rather than diesel where possible
- Design of construction methods to minimise disturbance to, and mobilisation of, sediment
- Controlled washing down of plant while on site
- Implementation of piling design with tight quality assurance / quality controls
- Oil spill kits to be kept on site and site staff trained in their use
- Minimisation of dewatering requirements by programming excavation works to be as short as possible. The need for an environmental permit to undertake dewatering will be established and the necessary applications made as required

8.14 Construction works will be carried out in accordance with the Environment Agency's (2007) *Pollution Prevention Guideline 5: Works and Maintenance on or Near Water.* While this document is no longer officially supported by the Environment Agency, it is still considered to be representative of good practice within the UK.

8.15 In addition to the CEMP, further work and monitoring will be undertaken in order to ensure that residual risks associated with the water environment are minimised once the proposed development is constructed, where necessary:

- Water quality downstream of the works will be monitored regularly to detect any changes that could indicate a pollution incident. Should the monitoring indicate any potential pollution works should stop and a solution found to prevent pollution
- Pollution Prevention Guidelines (PPG5) shall be implemented during construction works to prevent excessive sediment input and mitigate impacts in the event of oil or fluid leaks
- Standard design measures for below ground structures constructed in groundwater such as piles, for example, by the provision of granular conveyance routes and drainage blankets where necessary to maintain groundwater flow rates to be approximately equivalent to that pre-development (although unlikely to be required)
- Compliance with environmental permits where needed to undertake the dewatering works

8.16 Prior to groundwater dewatering (if required during construction), the following steps will be taken where necessary:

- Liaison with the Environment Agency at pre-application stage for abstraction licensing and discharge consent
- Site-specific hydrogeological site investigation
- Hydrogeological calculations based on the site investigation to better delineate expected abstraction rates

- Determination of suitable route to discharge abstracted water, should the abstracted water drain into surface water, the impacts on these surface waters should be assessed
- Application for groundwater abstraction license
- Application for discharge consent from the Environment Agency, for which a surface water flood risk assessment and assessment of water quality impacts are likely to be required
- If necessary, design remediation to treat groundwater and reduce contamination to an acceptable concentration prior to discharge
- Design of discharge system
- Provision of strategy for monitoring of water quality, groundwater level and surface water flow pre, during and post abstraction

8.17 Overall, the impacts to the biological, hydromorphological and physico-chemical elements of the water bodies can all be mitigated using the same measures:

- Completion of an HRA, implementing the resulting conclusions and recommendations
- Discharge through connection to mains sewage or obtain an appropriate environmental permit from the Environment Agency
- Abstraction from a surface water (including the Tees Estuary) and obtaining a water resource licence

8.18 The following measures are specific to mitigate impacts to biological elements:

- Pollution prevention measures should be put in place, such as using drip trays and using emergency spill kits

- The completion of a construction works under the management of a Construction Environmental Management Plan (CEMP)

8.19 In accordance with Tees Valley SuDS requirements, surface water runoff from the development is to be limited to the greenfield Qbar runoff rate for all return periods up to and including the 1% annual exceedance probability (AEP) rainfall event. In the December 2019 ES, Qbar for the site was calculated to be 100 l/s, and it was assumed that discharging to Holme Beck at the greenfield Qbar runoff rate is acceptable to the Lead Local Flood Authority (LLFA). From the December 2019 ES, it was further proposed that 4,823 m^3 of attenuation would be provided within a 0.322 ha detention basin.

8.20 In 2023, the Sustainable Urban Drainage Systems Technical Note by Ramboll calculated a Qbar rate of 43.21 l/s derived from the HR Wallingford IH 124 methodology and determined a requirement for 2,284 – 3,312 m^3 of storage volume. This specified volume was calculated in order to retain a 1-in-100-year 24-hour storm event (plus 40% allowance for climate change) without causing any surface flooding on the site. Ramboll proposed a hybrid system of an attenuation pond and lined below-ground attenuation tank. The surface water attenuated to the above Qbar rate of 43.21 l/s will discharge to the Holme Beck, subject to approval.

8.21 With the above mitigation measures in place, there will be no significant effects on ground conditions, groundwater, flood risk and surface water quality during construction of the development.

Residual effects significance

8.22 With the above measures in place, no significant residual risks are predicted in association with ground conditions, the water environment or flood risk.

Conclusion

8.23 As concluded in the December 2019 ES, no significant flood risk to the site is anticipated. The site is situated within flood zone 1 and the proposed facility is considered essential infrastructure and therefore is appropriate for the location in accordance with the NPPF. With the implementation of mitigation, no significant impacts are anticipated. Surface water will be attenuated at a Qbar rate of 43.21 l/s. This is a reduction from the existing Qbar rate calculated to be 100 l/s.

8.24 Provided that the construction works at the site are undertaken in line with the appropriate mitigation measures, there are no identified significant adverse impacts that could impact the WFD status of the water bodies. Therefore, chapter 9 of the December 2019 ES is considered to remain valid in light of the reserved matters application.

9.0 Archaeology and cultural heritage

Introduction

9.1 This chapter reviews the archaeology and cultural heritage assessment presented in chapter 10 of the December 2019 ES to determine if any changes are required for this reserved matters application.

Validity of environmental baseline presented in the December 2019 ES

9.2 The historic environment desk-based assessment (Tees Archaeology 2019) formed the basis of the archaeological and historic baseline of the site. This included the relevant records from the National Heritage List for England on listed buildings and other designated assets, and from RCBC on conservation areas. This baseline was subsequently presented within chapter 10 of the December 2019 ES produced by JBA Consulting. The baseline information remains factually accurate and no changes are required.

9.3 Site remediation work undertaken across the site in 2020 and 2021 by STDC allowed a greater appreciation of the archaeological survival, or lack thereof, outside of the area containing the bases of blast furnaces relating to the Eston Iron Works; this area measured *c.*100 m x 50 m and was identified as Area B in the outline application. The most pertinent and relevant updates to the baseline therefore came as a result of an archaeological walkover and monitoring of ground investigations by Northern Archaeological Associates (NAA) in November 2020 and updates paragraph 10.4.4 on Future Baseline Conditions in the December 2019 ES.

9.4 The archaeological walkover survey concluded that the extent of land reclamation means that there is little potential for archaeological finds of significance preceding the use of the site for iron and steel manufacture. The remains of the steelworks had clearly been demolished to ground level, or close to ground level, and then the surviving remains are sealed by a combination of imported materials and demolition material from the steelworks themselves. It was possible to identify the surviving remains where metalwork had been sawn off or cut, and concrete or brickwork reduced, which seems to confirm good survival on the site, and the dating of any damage to the demolition of the steelworks in 1994. Several distinct structures were identified, comprising:

1. Three blast furnaces; one believed to be 20th century and the other two of possible 19th century date. Floor/ base survived and recorded as being 2-3m in height
2. Blast stoves
3. Railway line
4. Gas cleaning plant
5. Number of concrete structures flanking area B (not sufficiently exposed to allow their interpretation or demolished to such an extent that only their foundations survived).

9.5 Geotechnical site investigations undertaken across the site were archaeologically monitored in November 2020 to identify the presence and location of any archaeological remains within areas of proposed clearance for infrastructural development. The ground investigations were concentrated mainly within the

northern and eastern parts of the site, where it is proposed to site the main buildings associated with the ERF. A smaller number of investigations were carried out in the south-western part of the site where a biodiversity enhancement area was proposed.

9.6 The results of this phase of sitework confirmed the level of natural clay and depth of overlying reclamation and demolition deposits across much of the area. It was also determined that many of the buildings associated with the later phase of the steelworks had contained basements, below-ground tanks and other structures which had caused significant localised truncation of earlier deposits, in some places to a depth of 3 m below ground level (bgl) or deeper. However, in areas between these deeper intrusions, the modern concrete services had served to protect earlier deposits from modern disturbance.

9.7 Within the northern part of the site there was a concentration of brick-wall footings, which were not associated with the concrete slab floors seen in later structures on the site. In the same area, several arched brick structures were encountered, which possibly represented furnace flues. The NAA watching brief report concludes that arched brick structural remains to the north of the later Cleveland Iron Works furnaces may be furnace flues of the 1850s Eston Iron Works. Before the advent of mechanical excavators, it is likely that demolition of the earlier works in 1872 will have consisted merely of demolition down to the then ground surface, with any below-ground structures (such as flues) retained in situ. Further reduction in the ground surface in this area has also impacted on archaeological survival.

9.8 A programme of cleaning and recording has been undertaken around the blast furnaces and adjacent land. The archaeological works undertaken in November 2020 confirmed that there was no archaeological survival to the east of the rail track, east of the blast furnaces and limited survival of archaeological remains to the west, south and north. No further archaeological recording work was therefore proposed or deemed necessary outside of the area defined as that formerly occupied by the Eston Iron Works.

9.9 This next stage of work was covered by the WSI produced by Prospect Archaeology, January 2021, and a programme of archaeological investigation was undertaken by Pre-Construct Archaeology Limited between January and March 2021. No remains were found of the Eston Iron Works. Structural remains comprised numerous brick walls, rail lines, three upstanding blast furnaces, two blast furnaces demolished to ground level, the base of a possible chimney stack and several floor surfaces. The remains dated from the earliest phase of the Cleveland Steel Works from 1874 up to the late 20th century and were of local significance. The Post-Excavation Assessment Report produced by Pre-Construct Archaeology (August 2021) was submitted to RCBC in December 2021 as part of the application to fully discharge condition 7 relating to archaeology. No further on-site archaeological works are required. Condition 7 was fully discharged in March 2022.

Legislation, policy and guidance update

9.10 The revision to the NPPF in July 2021, resulted in changes to the paragraph number references pertaining to the historic environment, now between 189 – 208. The guiding principle to gather sufficient information to ensure an adequate

understanding of the significance of a heritage asset before any decisions affecting its future are made remains unchanged. The objective is to avoid or minimise conflict between a heritage asset's conservation and any aspect of a proposal. The consideration of legislation, policy and guidance in the December 2019 ES focused on policies in the Redcar and Cleveland Local Plan (2018). These remain the key applicable local planning policies.

Assessment update

During construction

9.11 All the site investigation and recording are now complete and condition 7 of the OPP was approved in March 2022. There will be no effects on archaeology as a result of the current proposals.

9.12 The December 2019 ES predicted no effects during construction on the settings of the listed buildings on the edge of the study area at South Bank, or on the scheduled monuments and conservation areas at between 4km and 6km distance from the site. There is no change to this assessment as a result of the current proposals.

During operation

9.13 No impacts on either archaeology or built heritage were predicted in the December 2019 ES and none are predicted as a result of the current proposals.

Mitigation

9.14 The full extent of remediation could not be quantified at the time of the December 2019 ES as further site investigation work was necessary to define further archaeological work in particular locations of the site. Further archaeological monitoring of the site investigation during the remediation work allowed a professional judgement to be made regarding the only area of the site likely to possess sufficient remains pertaining to the earliest industrial heritage of the Eston Iron Works. The phase of archaeological investigation of this area undertaken in early 2021 found no evidence of the early works, and the remains uncovered were considered to be of local significance. No further mitigation is required.

Residual effects significance

9.15 The mitigation strategy to appropriately preserve by record the earliest remnant structure(s) of industrial heritage at the site has ensured that the evidential value of the archaeological remains has been adequately interpreted and recorded. The December 2019 ES did not assess mitigation measures for the blast furnace structures as they were earmarked for preservation, resulting in a minor-moderate beneficial effect. The significance attributed to the on-site archaeology of being of medium importance and the blast furnace bases of high importance was amended by the findings of the walkover survey and monitoring in November 2020 and the subsequent site investigations in early 2021. The blast furnace bases and related remains were of low value and their preservation by record is a moderate positive impact resulting in a minor beneficial effect. There is no discernible impact recognised on the negligible archaeological resource across the remainder of the site.

Conclusion

9.16 There have been some additions to the on-site baseline archaeological knowledge resulting from the phases of survey and the site investigation and recording by Pre-Construct Archaeology. As a result, there is a difference to how the archaeology and cultural heritage effects were assessed and presented in the December 2019 ES and the current proposals. The greater understanding that has resulted from the recording of the former works is a positive beneficial effect. There are no changes to the previous assessment of effects on built heritage, which found no significant effects.

10.0 Socio-economic

Introduction

10.1 This chapter reviews the socio-economic assessment presented in the December 2019 ES to determine if any changes are required for this reserved matters application.

Validity of environmental baseline presented in the December 2019 ES

10.2 This section only updates the baseline data that are actively required to inform the assessment of potential socio-economic effects. The relatively short time that has passed since the December 2019 ES was produced, and the fact that the remaining topics were not taken forward into the original impact assessment, mean that it was not considered appropriate to update baseline data that were only used to provide a general context on the area and were not relied upon in the assessment.

10.3 The most recent data on employment show that, between October 2021 and September 2022, 54,300 people were in employment in Redcar and Cleveland, while 2,500 (4.4% of the economically active population) were unemployed (Nomis, 2023[5]). The figures for Middlesbrough were 52,500 and 3,600 (6.3% unemployment), while in Stockton-on-Tees 87,400 people were in employment and 4,700 (5.1%) were unemployed. Average annual earnings in Redcar and Cleveland in 2022 were £29,557, while in Middlesbrough they were £28,860 and in Stockton-on-Tees they were £31,689 (Nomis, 2023). The data from the 2011 Census on the home locations of current workers in the area set out in the December 2019 ES remain current, as the findings of the 2021 Census on this topic (origin-destination statistics) have not yet been published.

10.4 The data on housing vacancy rates from the council's strategic housing market assessment (Bullock, 2016) set out in the December 2019 ES remain the most up-to-date figures available. However, house prices have increased since the December 2019 ES. The average house price in Redcar and Cleveland district in 2022 was £167,730, while in Middlesbrough it was £152,745 and in Stockton-on-Tees it was higher at £184,728[6]. When average salaries are compared to average house prices, the three districts have ratios of between 5.3 and 5.9, compared to an average of 10.8 for England. This suggests that the conclusion of the December 2019 ES that housing is relatively affordable in the wider area remains correct.

10.5 Tourism in Redcar and Cleveland district increased to 3.4 million day visitors and 327,000 overnight visitors by 2017, with a total spend of £167 million[7]. However, the COVID-19 pandemic reduced visitors to the wider Tees Valley area by approximately 60% in 2020 compared to 2019 (Enjoy Tees Valley, 2021[8]). The 2021 study confirmed the findings of the 2014 study reported in the 2019 ES that the seaside resorts of Redcar and Saltburn-by-the-Sea are an important attraction

[5] https://www.nomisweb.co.uk.
[6] https://landregistry.data.gov.uk/app/standard-reports/download-report.
[7] https://redcarcleveland.co.uk/blog/news/increase-in-visitors-results-in-167-million-boost-to-the-economy-and-1700-jobs-in-redcar-and-cleveland/.
[8] Enjoy Tees Valley, 2021, *Tees Valley Destination Management Plan Baseline Executive Summary*.

and that the industrial nature of the area discourages visitors, stating that *"industrial perceptions prevail and cloud opinion of what a trip to the area would be like."*

10.6 The 2019 Indices of Multiple Deprivation used in the overall discussion of crime in the area remain the most up to date figures. Crime rates in the district have continued rising since 2019 and stood at 112.51 crimes per 1,000 people in 2021/22[9]. The most common crimes committed in Redcar Town (the area that the proposed development falls within) continued to be violence and sexual offences (33%) and anti-social behaviour (21%) in 2022[10]. Burglary, theft and robbery (10%) and criminal damage and arson (11%), which are of greatest concern to the development, remain at similar relatively high levels to those set out in the 2019 ES.

Legislation, policy and guidance update

10.7 The consideration of legislation, policy and guidance in the December 2019 ES focused on policies in the Redcar and Cleveland Local Plan (2018). These remain the key applicable local planning policies.

Assessment update

During construction

10.8 The key potential effects assessed in the December 2019 ES during construction related to increased employment, pressure on local housing, crime and traffic.

Construction employment

10.9 The original assessment predicted that peak construction employment on site would be 300 workers. As discussed in section 3 above, based on experience of similar projects elsewhere, it is now predicted that the average employment over the construction period will be 381 workers, with up to a peak of 620 workers in months 34 – 36 of the construction programme. Table 11.4 of the December 2019 ES, showing the predicted home locations of the construction employees, has therefore been updated to reflect these revised figures (table 10.1).

Home district	Proportion of employees currently commuting from this district	No. construction employees projected to travel in from this district (average)	No. construction employees projected to travel in from this district (peak)
Redcar and Cleveland	52.5%	200	325
Middlesbrough	22.6%	86	141
Stockton-on-Tees	16.0%	61	99
Others	8.9%	34	55
Total	100%	381	620

Table 10.1: Predicted home locations of construction employees

10.10 While the estimated peak construction employment is considerably greater than that predicted in the December 2019 ES, the average estimate remains close to

[9] https://www.varbes.com/crime/redcar-and-cleveland-crime.
[10] https://www.police.uk/pu/your-area/cleveland-police/redcar-town/?tab=CrimeMap.

the peak figure used in the original assessment. These figures represent an increase in employment of between 0.4% and 0.6% in Redcar and Cleveland, 0.2-0.3% in Middlesbrough and 0.07-0.1% in Stockton-on-Tees, which are generally similar to the figures quoted in the December 2019 ES. The qualitative discussion of multiplier effects in the December 2019 ES remains valid.

10.11 Given the above findings, it is considered that the 2019 assessment findings of a slight to moderate effect on local employment within Redcar and Cleveland district and a slight positive effect on employment within other districts remain valid.

Housing

10.12 The December 2019 ES identified that the majority of construction jobs will be filled by current residents of the local area because of the relatively high unemployment rates. The updated employment data continue to support this conclusion. The December 2019 ES concluded that construction works would not place significant stress on local housing provision because of the nature of the employment, relative affordability of dwellings in the area, high dwelling vacancy rate and the presence of two consented large housing developments relatively close to the site (one of which is now under construction). As discussed in the baseline section above, these factors continue to apply, meaning that the assessment that there will be no significant effects on the local housing market remains valid.

Crime

10.13 The December 2019 ES identified that the proposed development could become a target for local crime during the construction stage because of the equipment on the site and noted that the area already has relatively high rates of non-residential burglary and vandalism, which remains the case. However, it concluded that the presence of 24-hour security on site during construction would prevent significant effects. This will continue to be the case and the assessment remains valid.

Construction traffic

10.14 The December 2019 ES stated that the construction period would be approximately 36 months, with construction traffic anticipated to peak during the first 12 months. A peak of up to 40 HGVs was predicted to visit the site each day, resulting in 80 HGV trips. Construction working hours were stated to be 08:00 – 17:00, with site worker private car trips predominantly occurring between 07:00 and 08:00 and 17:00 and 18:00, five days a week. The assessment concluded that no significant effects were predicted as a result of construction traffic.

10.15 As set out in chapter 3, the construction period is now predicted to last for around 47 months, with peak HGV numbers in month 16 of 40 HGVs per day (80 HGV trips in total). Construction working hours will be slightly longer than stated in the December 2019 ES, 07:00 – 19:00 Monday – Saturday, with construction staff vehicle trips predicted to occur mainly between 07:00 and 09:00 and 17:00 and 19:00. While the overall construction period and working hours have slightly increased, the estimated number of HGV trips is almost identical to that assessed in the December 2019 ES.

10.16 As set out in chapter 12 (paragraph 12.11) it is noted that the construction phase of the reserved matters application will give rise to a greater increase in construction staff vehicle movements; however, with the mitigation measures that will be included within the CEMP, it is considered that the residual impact of this will be minor and therefore not significant. Overall, therefore, the updated construction traffic assessment in section 12 confirms that no significant effects are predicted as a result of construction traffic.

During operation

10.17 The key potential operational effects assessed in the December 2019 ES related to increased employment, pressure on local housing, tourism, crime and traffic. Reference was also made to air quality and noise assessments having been undertaken but the socio-economic chapter did not discuss them in any detail and instead cross-referred to other sections of the ES. These topics are examined in section 11 of this report and are not considered further here.

Operational employment

10.18 The December 2019 ES stated that the development would create 42 full-time jobs once operational and that the facility would operate 24 hours per day, 365 days a year with staff working a three-shift pattern. As set out in section 3, it is now envisaged that the development will create 49 full-time jobs (although the assessment has been based on 54 full-time staff as a worst case in relation to staff vehicle movements). The facility will still operate 24 hours per day, seven days a week, although there will be periods of annual maintenance when waste processing is reduced. Table 11.4 of the December 2019 ES, showing the predicted home locations of the operational employees has been updated to reflect the revised staffing figures (table 10.2).

Home district	Proportion of employees currently commuting from this district	No. operational employees projected to travel in from this district
Redcar and Cleveland	52.5%	28
Middlesbrough	22.6%	12
Stockton-on-Tees	16.0%	9
Others	8.9%	5
Total	**100%**	**54**

Table 10.2: Predicted home locations of operational employees

10.19 As these figures are only slightly different from those set out in the December 2019 ES, the original conclusions that there will be a slight to moderate positive effect on local employment within Redcar and Cleveland district and a slight positive effect on employment within other districts are considered to remain valid. A significant proportion, if not all, of roles are considered likely to be filled by people living within the Tees Valley Combined Authority area.

Housing

10.20 The December 2019 ES concluded that the operation of the proposed development would not place significant stress on local housing provision for the same reasons as discussed above in the construction section. These factors remain valid, so the conclusion that there will be no significant effects on the local housing market remains unchanged.

Tourism

10.21 The December 2019 ES stated that, from local areas visited by tourists, such as Redcar, Eston Nab and Saltholme, the development's structures would form a small part of the wider panoramic view of heavy industry that defines the area's landscape setting. Overall impacts on views from these areas were assessed as being minor to neutral. The updated landscape and visual impact assessment in chapter 6 of this report confirms that the findings of the assessment remain unchanged from these areas. The conclusion that there will be no significant effects on the local tourism economy as a result of impacts on views from local visitor attractions therefore remains valid.

Crime

10.22 The December 2019 ES identified that the proposed development could also become a target for local crime during operation. However, it concluded that the continual operation of the site, constant presence of employees and regular tours by site security would prevent significant effects. As set out in section 3, the site will be securely fenced and supervised CCTV will monitor both the site entrance and the whole boundary. Staff in the ERF security control building will monitor people and vehicles entering and leaving the site. It is therefore considered that the assessment conclusion remains valid and no significant effects are predicted on crime rates.

Operational traffic

10.23 The December 2019 ES stated that between 07:00 and 15:00 Mondays to Fridays there would be up to 122 HGV waste deliveries to the site and 40 HGV residual waste removals from the site, equating to 324 HGV trips per day. On Saturdays between 08:00 and 14:00 there would be up to 60 HGV waste deliveries and 20 HGV residual waste removals, equating to 160 HGV trips. In addition, peak staff commuting journeys were estimated to be 33 trips between 07:00 and 09:00 Mondays to Saturdays and the same between 15:00 to 17:00. The assessment concluded that no significant effects were predicted as a result of operational traffic.

10.24 As set out in section 3, the majority of deliveries and collections are now proposed to take place between 07:00 and 20:00 Mondays to Sundays. Average daily operational HGV movements are forecast to be 162 each way (a total of 324 HGV trips) Mondays to Fridays and 127 each way (254 HGV trips in total) on Saturdays and Sundays. The predicted number of HGV trips is therefore unchanged on weekdays, but higher on Saturdays and Sundays. There will be a maximum of 44 staff on site at any one time (including shift change over / worst case assessment) and staff traffic generation is likely to be minimal.

10.25 While the overall number of HGV trips at weekends has increased, the figure for weekdays remains as previously assessed and the updated operational traffic assessment in section 12 confirms that no significant effects are predicted as a result of operational traffic.

Mitigation

10.26 The December 2019 ES stated that there would be no significant adverse socio-

economic effects of the proposed development, so mitigation was therefore not required. However, it recommended that the Grangetown Training and Employment Hub be used to source employees for the operational stage and this recommendation remains. The section 106 legal agreement includes a payment of £250,000 to the Grangetown Employment Hub to be used towards the provision of employment and training.

10.27 Several mitigation measures were recommended to help prevent crime, including the use of CCTV, security fencing, protection of the staff and visitor car park and the presence of a security team on site on a permanent basis. As discussed in the assessment section above, these measures have been incorporated into the proposed development.

10.28 Mitigation measures relating to traffic are discussed in section 12 and it is not considered appropriate to duplicate coverage here. The implementation of a CEMP was recommended to minimise the potential for adverse socio-economic effects during construction. As set out in section 3, a detailed CEMP will be prepared.

Residual effects significance

10.29 The residual effects remain as assessed in the December 2019 ES, with slight to moderate positive effects on employment in Redcar and Cleveland, slight positive effects on employment in other areas and all other effects negligible and not significant.

Conclusion

10.30 While there have been some changes to the baseline environment and elements of the proposed development, overall the socio-economic effects remain as assessed in the December 2019 ES.

11.0 Air quality, noise and human health

Air quality and human health

Introduction

11.1 This part of the chapter considers the potential impacts of the construction and operation of the ERF on local air quality and odour, and whether the updated assessment (required under condition 3 of the OPP) results in any alterations to the findings of the December 2019 ES.

11.2 The December 2019 ES included chapter 12: Air Quality, Noise and Human Health. However, the ES did not include an assessment of the predicted air quality effects of the outline scheme. The planning application was also accompanied by an Air Quality Assessment (the Outline AQA) which included a comprehensive assessment of the effects of the ERF. Therefore, any discussion of whether the updated assessment results in any alterations to the findings is made with reference to the Outline AQA.

11.3 The reserved matters application makes some changes to the layout of the ERF and the emissions parameters. Therefore, the main focus of this chapter is the emissions from the stacks of the ERF, which has been assessed quantitatively using the dispersion model ADMS 5.

11.4 Consideration has also been given to emissions from traffic and potential fugitive emissions of dust and odour during the construction and operational phases, which have been assessed on a qualitative basis.

11.5 This chapter is supported by the following standalone technical reports:

- Air Quality - Emissions Modelling, which provides all the technical details of the dispersion modelling of process emissions from the stacks (including an updated air quality baseline)
- Air Quality - Dioxin Pathway Intake Assessment, which provides the technical details of modelling of dioxins which have the potential to accumulate in the environment

Validity of environmental baseline presented in the December 2019 ES

11.6 The Outline AQA presented an environmental baseline which was representative of worst-case but realistic baseline pollutant concentrations in the vicinity of the proposed development. However, additional air quality monitoring data has become available since the Outline AQA was submitted. Therefore, an updated baseline has been used in the assessment of the reserved matters application and is included in the Emissions Modelling report.

Legislation, policy and guidance update

11.7 There have been minimal changes to legislation, policy and guidance since December 2019. Two changes of note have been considered in this assessment, both of which relate to the air quality assessment levels (AQALs) for particulate matter smaller than 2.5 microns ($PM_{2.5}$):

- The annual mean AQAL for $PM_{2.5}$ used in the Outline AQA was the Ambient Air Directive (AAD) limit value of 25 µg/m³. This AAD limit value was to be achieved by 1st January 2015. The AAD also includes a phase 2 limit of 20 µg/m³, to be achieved by 1st January 2020. The Environment Agency has implemented the lower value of 20 µg/m³ as the Environmental Assessment Level (EAL) for $PM_{2.5}$. Therefore, this assessment has used 20 µg/m³ as the annual mean AQAL for $PM_{2.5}$.
- The Environment Act 2021, recently passed in November 2021, will deliver key aspects of the UK's Clean Air Strategy. It has introduced a legally binding duty on the government to reduce the annual average level of $PM_{2.5}$ in ambient air. Although the Environment Act does not stipulate the level, it states that the Secretary of State lay a draft of the target for annual average levels of $PM_{2.5}$ before parliament by 31st October 2022. To date, no draft target level has been published.
    - The current level set in UK legislation (the AQAL) is 20 µg/m³
    - The recommended guideline value within the World Health Organisation (WHO) 2005 for $PM_{2.5}$ was 10 µg/m³
    - An updated recommendation was published by the WHO in September 2021 which recommended a guideline value for $PM_{2.5}$ of 5 µg/m³
    - Therefore, it is possible that the Secretary of State will set targets at either of the WHO recommendations or set an independently determined target.

11.8 The WHO recommendations are not legally binding. However, given the likelihood that one of the WHO guideline values will be included as a legally binding target in the Environment Act, the impact of the ERF has been considered against these guideline values. The details of this assessment are contained within the Emissions Modelling report.

Assessment update

During construction

11.9 There are two potential sources of air quality effects during construction, which are dust emissions arising from construction phase activities and vehicle emissions on the public highway arising from heavy goods vehicle (HGV) and staff traffic movements.

Construction phase dust emissions

11.10 The Outline AQA included a comprehensive assessment of dust emissions during the construction phase. This followed the methodology contained in the Institute of Air Quality Management (IAQM) document '*Guidance on the assessment of dust from demolition and construction*', published in 2014 and last updated in 2016 (the IAQM 2014 guidance). As no updates have been made to this guidance since the December 2019 ES was submitted, the methodology presented in the Outline AQA remains valid.

11.11 There have been minor changes to the site layout and construction programme for the reserved matters submission. These changes do not affect the findings of the Outline AQA, which were that:

- The potential dust emission magnitude from all construction phase activities is 'large'
- There are very few receptors (and no high-sensitivity receptors (e.g. residential dwellings) within the relevant screening distances which extend up to 350 m from the site boundary and up to 50 m of access roads, up to 500 m from the site entrance. Therefore, the sensitivity of the area to dust soiling and human health effects is 'low'
- No ecological receptors lie within the relevant screening distances, so effects on ecology were screened out of the assessment
- Based on the above, the overall risk of dust impacts is 'low risk'

11.12 The Outline AQA included recommended mitigation measures appropriate for a 'low risk' site. No changes to the recommended mitigation measures are proposed as part of the reserved matters application.

Construction phase vehicle emissions

11.13 The Outline AQA did not include an assessment of the effect of vehicle emissions during the construction phase. However, a qualitative assessment of vehicle distribution across the local road network has been prepared as part of the reserved matters application.

11.14 A detailed quantitative assessment of vehicle emissions during the operational phase was undertaken as part of the Outline AQA using the dispersion model ADMS Roads. The conclusion of this assessment was that the effect of operational phase vehicle emissions (when combined with stack emissions from the ERF) would not have a significant effect on air quality. To determine whether construction phase vehicle emissions will have a potentially significant effect as part of this reserved matters submission, the predicted construction phase vehicle movements have been compared to the operational phase vehicle movements from the Outline AQA.

11.15 Table 12.1 (see chapter 12) shows that the maximum number of daily vehicle movements associated with the construction phase is 826 staff vehicle movements and 80 HGV movements. The peak number of movements will only occur for up to two months of the 47-month construction programme, with vehicle movements typically much lower, especially HGV movements. Given that the assessment of air quality effects is concerned with annual mean impacts, the maximum rolling 12-monthly construction traffic volume has been calculated. This is 792 staff vehicle movements and 32 HGV movements, although these do not occur concurrently.

11.16 Table 12.2 (see chapter 12) shows that the operational phase, as assessed in the Outline AQA, was predicted to result in 324 daily HGV movements on weekdays and 160 HGV movements at weekends, and vehicle movements from 42 staff. The data from Table 59 of the Outline AQA show that the operational phase assessment was based on 77 staff vehicle movements and 252 HGV movements daily. With the reserved matters application (see chapter 3 for details), the maximum 12-month rolling number of staff movements during the construction phase under the reserved matters application (788) is much greater than the operational phase assessed in the Outline AQA (77), but the number of HGV movements during the construction phase under the reserved matters application

is much less than in the operational phase assessed in the Outline AQA (31 versus 252).

11.17 To determine whether construction phase vehicle emissions may have a significant effect, the emission rates for oxides of nitrogen (NOx) and particulate matter smaller than 10 microns (PM_{10}) taken from the ADMS Roads model (calculated using DEFRA's Emissions Factor Toolkit (EFT) version 11.0) have been calculated for the reserved matters construction phase and the Outline AQA operational phase, for a vehicle speed of 20 kph (the slowest speed assumed for any road section in the Outline AQA) with emissions set to 2018 levels as per the worst-case sensitivity test from the Outline AQA. A comparison of the vehicle emission rates is presented in Table 11.1.

Pollutant	Outline AQA Operational Phase	Reserved matters Construction Phase	Construction phase as % of Operational Phase
NOx	0.012	0.0053	46%
PM_{10}	0.00049	0.00038	76%

Table 11.1: Comparison of Vehicle Emission Rates (g/km)

11.18 As shown, the peak construction phase vehicle emissions (assuming peak staff and HGV movements coincide, which is highly unlikely) are 46% and 76% of the operational phase emissions from the Outline AQA for NOx and PM_{10} respectively. Therefore, the impact of construction phase vehicle emissions will be less than the impact of operational phase vehicle emissions as assessed in the Outline AQA.

During operation

11.19 The potential sources of air quality effects during operation are:

- Process emissions from the stacks of the ERF
- Vehicle emissions from staff and HGV movements
- Fugitive dust and odour emissions from waste deliveries and the ERF process

11.20 The design includes emergency diesel generators (EDG). The stack of the EDGs will be low (i.e., less than 10 m) as is appropriate for this type of development. Therefore, any air quality effects resulting from the operation of the EDGs will be very local to the EDG stack and will occur for a very limited number of hours per year for testing of the EDG and in any emergencies. As there are no high sensitivity receptors within several hundred metres of the EDG stack, emissions from the EDGs do not have the potential for a significant effect and have been scoped out of this updated assessment.

Operational phase process emissions

11.21 Process emissions from the stacks of the ERF have been assessed on a quantitative basis using the dispersion modelling software ADMS 5.2. This is the same software as used in the Outline AQA.

11.22 A detailed description of the modelling methodology and results is presented in the Emissions Modelling report. An assessment of the impacts has been undertaken using guidance published by the IAQM, which is the same as used in the Outline AQA. This assessment takes into account changes in both the layout

of the ERF and the flue gas parameters since the Outline AQA was completed, both of which have the potential to affect the dispersion of emissions from the ERF and the ground-level pollutant concentrations. An updated environmental baseline assessment (detailed in the Emissions Modelling report) has been undertaken to take into account the most recent baseline.

11.23 As detailed in the Emissions Modelling report, all air quality impacts with regard to human health can be described as 'negligible' at all areas of relevant exposure (i.e., where members of the public may be exposed over the relevant averaging periods) with the exception of:

- Annual mean nitrogen dioxide
- Annual mean volatile organic compounds (VOCs) as benzene and 1,3-butadiene
- Annual mean cadmium
- Short-term nitrogen dioxide and sulphur dioxide

11.24 Further assessment of these impacts has been presented in the Emissions Modelling report, which takes into account the baseline pollutant concentrations for annual mean impacts, and the extent of relevant exposure for short-term impacts. This has concluded that, with regard to process emissions:

- All annual mean impacts are 'negligible' at all areas of relevant exposure
- All short-term impacts are 'negligible' at all areas of relevant exposure, except for short-term sulphur dioxide and nitrogen dioxide impacts which are described as 'slight adverse' or 'moderate adverse' across the landfill site to the north of the ERF, the industrial estate north of the A66, and a small area between housing on Bolckow Road and the A66. This impact is only predicted to occur under a number of conservative assumptions, such as that both lines of the ERF operate at the maximum half-hourly emission limit during the worst-case weather conditions for dispersion.

11.25 In addition, the contribution from the ERF to concentrations of chromium VI at the point of maximum impact could not be screened out as 'negligible' using a screening method prescribed by the Environment Agency. This assumed emissions are as the maximum from a subset of monitoring data for similar facilities provided by the Environment Agency. If it is assumed that emissions are as per the average rather than maximum from this dataset, the impact is described as 'negligible'.

11.26 The impact of process emissions on ecological features has also been assessed and the results presented in the Emissions Modelling report. All of the impacts at ecological features can be screened out as insignificant except for nitrogen deposition at coastal sand dune habitats in the Teesmouth and Cleveland Coast SPA / Ramsar. The significance of this effect has been considered in the updated Habitat Regulations Assessment (HRA) included in the reserved matters submission. The effect on the Teesmouth and Cleveland Coast SSSI is also set out in Appendix 1 of this SoC. The conclusion of the HRA is that the effect is 'not significant' and similarly, the change in nitrogen deposition from the operation of the ERF is not considered likely to have any adverse impacts on the floral interest of the dune system within the SSSI.

11.27 When considered in isolation, the impact of process emissions from the ERF at all areas of relevant exposure is 'negligible', except for short-term sulphur dioxide and nitrogen dioxide, in which the maximum impact (for sulphur dioxide) is described as 'moderate adverse', and nitrogen deposition, which has been assessed by the project ecologist as 'not significant'. Therefore, process emissions alone will not have a significant effect on air quality.

11.28 The impact of emissions of dioxins has been considered in the Dioxin Pathway Intake Assessment. This has shown that emissions of dioxins from the ERF are not predicted to have a significant effect on human health.

Operational phase vehicle emissions

11.29 The Outline AQA contained a detailed assessment of traffic emissions from staff and HGV movements generated by the ERF, which concluded that the air quality effect of the stacks and vehicle emissions combined would be 'not significant'.

11.30 As shown in table 12.2, the reserved matters application results in a slight increase in traffic compared to the outline submission. The additional 12 staff will result in a very small increase in car movements which will not have the potential to significantly alter the conclusions of the assessment.

11.31 The number of HGV movements on weekdays is unchanged, but increases from 160 to 254 on weekends. This represents an increase of 9% averaged across the week.

11.32 The primary pollutant of concern from vehicle emissions is nitrogen dioxide. The Outline AQA did not present the contribution from vehicles separately to process emissions, but rather presented only the combined impact. The maximum increase in nitrogen dioxide concentrations at a location of relevant exposure (i.e. a residential dwelling) reported in the Outline AQA was 2.4% of the relevant air quality assessment level (AQAL) and was described as 'negligible'. Even if this impact was entirely due to vehicle emissions, a 9% increase in vehicle emissions would change this impact to 2.6% of the AQAL. The magnitude of the impact would remain the same, so the impact of operational phase vehicle emissions remains 'negligible', both alone and when added to process emissions.

11.33 The effect of vehicle emissions on ecological features has been screened out, as traffic generated by the operation of the ERF will not travel within 200 m of any designated site, except for a small section of the Teesmouth and Cleveland Coast SPA / Ramsar along the A1085. The effect in this area has been considered in the updated HRA and the conclusion of the HRA is that the effect is 'not significant'.

Operational phase dust and odour emissions

11.34 The Outline AQA did not contain an assessment of operational phase dust and odour emissions. No guidance is available for the assessment of dust emissions from operational sites which are not mineral workings, but the IAQM has published the guidance document 'Guidance on the Assessment of Odour for Planning' (the IAQM (2018) guidance) which provides methodologies for undertaking odour assessments. In lieu of specific guidance for the assessment of operational phase dust emissions, the principles from this guidance have been applied to both dust and odour emissions.

11.35 The IAQM 2018 guidance includes several tools an assessor can use to determine the risk of odour impacts. In the first instance, a screening assessment has been undertaken using the source-pathway-receptor concept, which considers the magnitude of the source, the effectiveness of the pathway and the sensitivity of the receptor to determine the risk of an adverse impact.

11.36 The ERF will include embedded mitigation measures to reduce the risk of dust and odour emissions. This mitigation includes only unloading waste within the enclosed buildings, and keeping the tipping hall and bunker under negative pressure, with the air being used in the combustion process. This prevents the release of odours and dust from the building when the doors are opened for short periods for deliveries. As a result, the risk of dust and odour emissions from the operation of the ERF is small.

11.37 The closest high-sensitivity receptors (i.e., residential dwellings) to the ERF lie approximately 700 m south of the process buildings. Figure 3 of the Emissions Modelling report shows the wind roses for each of the five years of weather data used in the dispersion modelling of process emissions. This shows that the wind blows infrequently from the north (i.e., towards the closest sensitive receptors). Due to the distance to the receptors and the low frequency of winds in this direction, the pathway is considered ineffective.

11.38 As the risk of dust and odour emissions is small and the pathway to high sensitivity receptors is ineffective, there is no risk of a significant effect from operational phase dust and odour emissions and the need for a more detailed assessment has been screened out.

Mitigation

11.39 The Outline AQA did not identify any mitigation measures for the operational phase beyond those embedded into the design of the ERF. This remains valid for the reserved matters application.

11.40 For the construction phase a number of mitigation measures were recommended in the Outline AQA to ensure that dust emissions during construction would be ‘negligible’. The assessment of construction phase dust emissions is unchanged, so these mitigation measures remain applicable. The exact mitigation measures required will be determined by the construction contractor, agreed with the local authority and included in the CEMP.

Residual effects significance

11.41 Detailed dispersion modelling of process emissions and pathway modelling of dioxins has been undertaken to determine whether the changes proposed as part of the reserved matters application will result in any changes to the conclusions of the Outline AQA. The assessment has shown that all air quality impacts with regard to human health are predicted to be ‘negligible’, except for short-term sulphur dioxide and nitrogen dioxide, for which the maximum impact (for sulphur dioxide) is described as ‘moderate adverse’. In accordance with the assessment criteria detailed in the Emissions Modelling report and Dioxin Pathway Intake Assessment, the overall effect of process emissions is ‘not significant’. This conclusion is unchanged from the Outline AQA.

11.42 With regard to ecological impacts, the only potentially significant effect from process emissions is due to nitrogen deposition on coastal sand dune habitats at the Teesmouth and Cleveland Coast SPA / Ramsar. The significance of effect has been assessed as part of the updated HRA. The conclusion of the updated HRA is that the effect is 'not significant'.

11.43 The Outline AQA concluded that the combined effect of process and vehicle emissions from the operational phase of the ERF would be 'not significant', and that the effect of construction phase dust emissions would be 'not significant' with the implementation of appropriate mitigation measures. These conclusions remain unchanged.

11.44 The Outline AQA did not contain an assessment of construction phase vehicle emissions or operational phase dust and odour emissions. The effect of these emissions has been assessed on a qualitative basis as 'not significant'.

11.45 Therefore, the December 2019 ES identified no significant residual impacts during the construction or operational phases with the application of appropriate mitigation.

Conclusion

11.46 This assessment has updated all aspects of the ERF that were assessed as part of the Outline AQA and has also considered effects that were not assessed as part of the Outline AQA, such as operational phase dust and odour emissions. The conclusion of the Outline AQA that the effect of the ERF on air quality is 'not significant' remains valid.

Noise

Introduction

11.47 This section of the chapter reviews the assessment and findings of the December 2019 ES noise assessment, in order to ascertain if there are any changes to the construction and operational conclusions as a result of the reserved matters application.

Validity of environmental baseline presented in the December 2019 ES

11.48 With reference to the Paul Horsley Acoustics Limited Noise Survey report J2895 dated 16 December 2019 which formed part of the outline planning application, a baseline noise survey was completed at three locations between 5-6 December 2019.

11.49 An updated baseline noise survey was completed between 22 - 26 January 2021 by Ramboll to inform the latest assessment. Continuous monitoring was completed to verify the survey data that was used to inform the outline planning application.

11.50 The results of the January 2021 survey have been used to inform the latest assessments, as set out below.

Legislation, policy and guidance update

11.51 No change to relevant legislation, policy and guidance have occurred since the December 2019 ES.

Assessment update

During construction

11.52 The outline planning application set thresholds for assessment of construction noise impacts for residential receptors. The latest assessment concludes that the residential receptor construction noise thresholds will not be exceeded. Non-residential receptors have also been considered in the latest assessment. No significant effects are expected for both residential and non-residential receptors.

During operation

11.53 The outline planning application set plant noise limits for assessment of operational noise impacts for residential receptors. It should be noted that as a conservative approach, limits were set at 10dB below the background noise levels.

11.54 It was agreed through consultation with RCBC that plant noise limits for determining a potential low impact in the reserved matters application would be set +0dB over the typical (and not lowest) background noise levels at residential receptors, in accordance with BS 4142:2014+A1:2019. Typical background noise levels were determined using statistical analysis, as recommended by BS 4142:2014+A1:2019.

11.55 The updated operational noise assessment concludes that the predicted operational noise levels at the residential receptors at Bolckow Road (residential) and Cresswell Road (residential) are below the background noise levels.

11.56 The typical background noise levels at residential receptors along Jones Road (residential) may be exceeded by +1 dB for typical operation, and by up to +4 dB with the fin fan coolers operating at maximum speed. However, background noise levels at the Jones Road receptors are typically 22 dB below typical ambient noise levels and therefore, significant effects are not expected.

11.57 For the non-residential receptor of the Teesworks Skills Academy, whilst the resultant internal noise levels may be increased due to the operation of the ERF facility when compared to the existing noise levels, the resultant internal noise levels will be within guideline internal noise levels for training rooms. The context of the noise will be industrial, with the arrival and departure of HGVs. This context is expected to be similar to the current noise environment and it has been assumed that the Skills Academy has been constructed with knowledge of the outline planning approval for the proposed development. Significant effects are therefore not predicted.

11.58 The predicted operational noise levels are not expected to give rise to significant effects at any receptor location. The predicted operational noise levels at each receptor location are also below the background noise levels detailed in the Paul Horsley Acoustics Limited Noise Survey report J2895 dated 16 December 2019.

Mitigation

11.59 No additional mitigation is expected to be required, over the inherent design measures of the proposed ERF.

Residual effects significance

11.60 Residual construction and operational noise significant effects are not expected.

Conclusion

11.61 The December 2019 ES and Paul Horsley Acoustics Limited Noise Survey report J2895 dated 16 December 2019 concluded that if the proposed construction noise thresholds and plant noise limits were achieved, significant effects would not be expected.

11.62 The latest construction and operational noise assessments have concluded that:

- Construction noise levels are not expected to exceed baseline noise levels and the thresholds set for all receptors
- Background noise levels may just be exceeded for receptors at Jones Road. However, background noise levels are typically 22 dB below ambient noise levels at this location and therefore significant effects are not expected
- Operational noise levels are below the typical background noise levels for other residential receptors and therefore significant effects are not expected

11.63 Significant effects are therefore not expected in relation to both construction and operational noise. The findings are therefore in line with the conclusions of the December 2019 ES.

12.0 Traffic and transportation

Introduction

12.1 This chapter reviews the assessment and findings of the December 2019 ES chapter 13 on Traffic and Transportation that was prepared for the outline planning application in order to ascertain if there are any changes to the assessment on traffic and transportation with regards to the submission of reserved matters pursuant to the OPP.

Validity of environmental baseline presented in the December 2019 ES

12.2 The 2019 assessment was based on one week of automatic traffic count (ATC) survey data from November 2019 and Department for Transport (DfT) data sources for the A66 mainline flows. Proposed development flows were also provided by RCBC, and the extent of the study area is considered appropriate. The 2019 assessment also considered accident data between 2014 - 2018. It is assumed that the review of walking / cycling and public transport links was based upon 2019 data, when the report was produced.

12.3 The 2019 assessment assumed an opening year of 2025 and TEMPRO growth factors were applied to the 2019 data for the forecast scenarios. It is noted that the opening year used in the reserved matters application has moved from 2025 to 2027.

12.4 The 2019 assessment considered two committed development schemes: Kirkleatham Lane (R/2016/0663/OOM and R/2019/0485/RMM) and Land at Low Grange Farm (R/2014/0372/OOM).

12.5 Any new assessment would consider the most recent data available, however it is considered unlikely that there have been any significant changes which would affect the overall assessment. Additional committed development and potential effects to be considered within the reserved matters application are identified in chapter 13.

Legislation, policy and guidance update

12.6 National Planning Policy Framework (NPPF) February 2019 was revised in July 2021, however there are no material changes in relation to the traffic and transport context that would affect the approach used in the December 2019 ES.

12.7 A new plan has been released since the 2019 ES, known as the Strategic Transport Plan 2020-2030 which has been prepared by the Tees Valley Combined Authority. The Plan has been prepared to deliver social equality, economic growth, and carbon reduction and environmental improvement.

Assessment update

During construction

12.8 The construction movements for the December 2019 ES and the reserved matters application (2023) are summarised in table 12.1.

	Programme	Construction Staff (Peak)	Construction staff vehicle movements (Peak) (assuming 1.5 occupancy)	Peak HGV Movements (daily)
December 2019 ES	36 months	300	400	80
Reserved matters application (2023)	47 months	620 (2 months)	826	80

Table 12.1: Summary of Construction Movements

12.9 The construction phase assessments have both been undertaken based upon professional judgement.

12.10 The December 2019 ES stated:

> *"The movement of construction traffic may result in a temporary adverse impact on the operation of the local road network (in terms of pedestrian and driver delay on the main routes to and from the proposed development site), and may also adversely affect pedestrian amenity, severance and accidents and safety. In addition, construction vehicles could carry mud or dust on to the local road network.*
>
> *During the construction phase, the potential impact of the proposed development is considered to be of minor adverse significance at the local level, prior to the implementation of mitigation measures. The potential impact will be medium-term (3 years), but non-permanent".*

12.11 The construction phase for the reserved matters application will be longer than the 36 months considered in the December 2019 ES, however, the potential impact will remain as medium term, but not permanent. There are no proposed changes to HGV flows. There will however be an increase in the number of construction staff and anticipated construction staff vehicle movements has increased from 400 to 826 daily movements during the two-month peak construction period. It should be noted that this peak is anticipated to be for a two-month period only, with construction staff falling to 381 on average, resulting in 518 daily vehicle movements which is comparable to that referred to in the December 2019 ES.

12.12 The increased volume of construction staff vehicles could potentially have a greater impact on the operation of the local road network in terms of pedestrian and driver delay, and may also adversely affect pedestrian amenity, severance and accidents and safety. The potential impact of the construction stage from the proposed development is considered to be of moderate adverse significance at the local level (significant in EIA terms), prior to the implementation of mitigation measures.

During operation

12.13 The operational movements for the December 2019 ES and the reserved matters application are summarised in table 12.2.

	Staff Movements			HGV Movements	
	No of Staff	**AM Peak**	**PM Peak**	**HGV Weekday**	**HGV Weekend**
December 2019 ES	42	33 (07:00-09:00)	33 (15:00-17:00)	324	160 (Sat 08:30-13:00)
Reserved matters application (2023)	54*	18 (08:00-09:00)	17 (17:00-18:00)	324	254 (Sat & Sun 07:00-20:00)

Table 12.2: Summary of Operational Movements
***49 full-time staff anticipated, however, assessment based on a worst case of 54 staff**

12.14 The potential impact of the proposed development in the December 2019 ES prior to mitigation was as follows:

- A potential impact on severance of negligible significance
- A potential impact on driver delay of negligible significance
- A potential impact on pedestrian delay of negligible significance
- A potential impact on pedestrian amenity of negligible significance
- A potential impact on accidents and safety of minor adverse significance

12.15 As demonstrated in table 12.2 the traffic flows generated by the operational phase of the proposed reserved matters development are consistent with those presented in the December 2019 ES. Whilst there is an increase in overall HGV movements during the weekend these are spread over a longer period of time, with an average of 27 HGV movements compared to an average of 20 HGV movements. Therefore, there are no changes to the December 2019 ES assessment for the operational phase.

Mitigation

12.16 No significant effects were identified in the December 2019 ES assessment therefore mitigation was not required. However, for the construction phase a CEMP will be delivered and assist with managing construction traffic to minimise any impacts.

12.17 The reserved matters proposals will generate additional construction staff vehicle movements and therefore a temporary moderate adverse effect which is significant in EIA terms. Therefore, mitigation in the form of the CEMP is proposed to minimise this effect.

12.18 The CEMP will identity measures to help mitigate the potential adverse impacts associated with the addition of construction traffic onto the local road network. The measures are likely to include the following:

- The scheduling of deliveries to minimise potential disturbance on local residents and conflicts with the highway peak hours
- The provision of wheel washing facilities at site egress points to minimise the potential for site debris to be transferred on to the local road network
- Consideration of providing off-site parking and bringing construction staff to the site via minibus

12.19 During the operational phase, the December 2019 ES assessment included the provision of improved pedestrian links incorporated as part of the delivery of the new link roads serving the wider STDC masterplan area. The reserved matters submission includes the provision of a pedestrian footway to tie into the highways proposals for the wider STDC masterplan area.

Residual effects significance

12.20 The residual effects of the construction phase in the December 2019 ES are as follows:

- A residual impact on driver delay, severance, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents and safety of negligible significance

12.21 As a result of the proposed mitigation measures the residual effects of the construction phase in the reserved matters application will be as follows:

- A residual impact on driver delay, severance, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents and safety of minor adverse significance, which is not significant in EIA terms

12.22 There are no changes anticipated to the level of significance of the following residual effects for the operational phase as identified in the December 2019 ES assessment as a result of the reserved matters submission:

- A residual impact on severance of negligible significance
- A residual impact on driver delay of negligible significance
- A residual impact on pedestrian delay of negligible significance
- A residual impact on pedestrian amenity of negligible significance
- A residual impact on accidents and safety of minor adverse significance

Conclusion

12.23 As concluded in the December 2019 ES traffic associated with the proposed development will be satisfactorily accommodated and will not give rise to any major or moderate adverse impacts.

12.24 The December 2019 ES assessment concludes that '*The environmental impacts of the proposed development as a result of transport and access are acceptable*'.

12.25 On review of the reserved matters submission it is considered comparable to the December 2019 ES and that traffic associated with the operation of the proposed reserved matters will be satisfactorily accommodated and will not give rise to any significant adverse impacts.

12.26 The construction phase of the reserved matters submission will give rise to a greater increase in construction staff vehicle movements, however, together with the mitigation measures in the CEMP it is considered that the residual impact will be minor and therefore not significant.

13.0 Cumulative impacts

Introduction

13.1 As noted in chapter 4, cumulative effects were assessed within a discrete chapter of the December 2019 ES and both intra-project effects and inter-project effects were considered. An updated analysis of these effects has been undertaken given that additional projects have come forward since December 2019.

Projects to be considered cumulatively

13.2 In addition to the projects identified in the December 2019 ES, a number of new cumulative schemes have been identified which were not previously covered in the December 2019 ES. Table 13.1 sets out all the projects initially identified for consideration. Following consultation with RCBC Planning and Environmental Health Officers, the final column of the table indicates whether the projects have been included or excluded from the assessment of cumulative impacts. Figure 13.1 shows the location of the projects listed in table 13.1.

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
Point source emitters							
1	Tees REP	Biomass	2.0	Redcar & Cleveland	R/2008/0671/EA	Consented - under construction	**Include** - air quality (traffic and stack emissions)
2	Teesside Combined Cycle Power Plant	Gas	2.0	Redcar & Cleveland	R/2017/0119/DCO	Consented - not under construction	**Include** - air quality (traffic and stack emissions)
3	Grangetown Peaking Plant	Gas	0.7	Redcar & Cleveland	R/2018/0098/FF	Consented / constructed	**Include** - air quality (stack emissions)
4	Peak African Minerals Resources Refinery	Refinery	1.5	Redcar & Cleveland	R/2017/0876/FFM	Consented - unsure if under construction	**Include** - air quality (traffic and stack emissions)
5	TeesEco Billingham Reach	EfW	6.9	Stockton-on-Tees	16/2165/VARY	Consented - unsure if under construction	Exclude - dispersion modelling of TV ERF stack emissions shows no potential for overlap of stack emissions. No potential for in-combination effect of TV ERF traffic on A178
6	Suez Teesside 6th Line	EfW	6.7	Stockton-on-Tees	14/1454/EIS	Consented - not under construction	Exclude - dispersion modelling of TV ERF stack emissions shows no potential for overlap of stack emissions. No potential for in-combination effect of TV ERF traffic on A178
7	Graythorp	EfW	7.4	Hartlepool	H/2019/0275	Consented - unsure if under construction, possible trial trenching undertaken	Exclude - Dispersion modelling of TV ERF stack emissions shows no potential for overlap of stack emissions. No potential for in-combination effect of TV ERF traffic on A178

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
8	Port Clarence UPDATE: Extension Application Submitted: 21/1071/FUL - Proposed extension to the existing reception hall for the creation of new receiving bay and bunker and change in feedstock to residual waste.	Biomass	3.6	Stockton-on-Tees	14/1106/EIS	Consented – update applications being submitted	Exclude – the project has been mothballed. In addition, dispersion modelling of TV ERF stack emissions shows no potential for overlap of stack emissions. No potential for in-combination effect of TV ERF traffic on A178
9	Scott Bros Ltd Billingham	EfW	7.6	Stockton-on-Tees	16/0195/VARY 16/0195/NMA New NMA submitted - 20/2620/VARY	Consented	Exclude – dispersion modelling of TV ERF stack emissions shows no potential for overlap of stack emissions. No potential for in-combination effect of TV ERF traffic on A178
10	Tees Cluster Carbon Capture and Storage	Gas	4.7	Redcar & Cleveland	R/2019/0124/DCO	DCO Scoping – no application made at this point	Exclude – insufficient information available for assessment at this point. We would include if a PEIR has been submitted but we cannot find one on the planning inspectorate website
11	PMAC Redcar Bulk Terminal - construction of the Redcar energy centre (REC) consisting of a material recovery facility incorporating a bulk storage facility; an energy recovery facility; and an bottom ash recycling facility along with ancillary infrastructure and landscaping	EfW	2.1	Redcar & Cleveland	R/2020/0411/FFM	Consented	**Include** - air quality (traffic and stack emissions)
Projects considered in the 2019 ES (NB some are already included in the section above)							

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
12	Land at former South Bank Works, Grangetown Prairie; British Steel and Warrenby area - demolition of structures and engineering operations associated with ground preparation and temporary storage of soils and its final use in the remediation and preparation of land for regeneration and development	Regeneration	4	Redcar & Cleveland	R/2019/0427/FFM	Consented – unsure if implemented	**Include** - air quality (traffic and construction dust)
13	550 dwellings and associated access, landscaping and open space	Residential	4.5	Redcar & Cleveland	R/2016/0663/OOM	Consented, construction underway	**Include** - air quality (traffic) (Traffic generated by housing developments that are in the Local Plan should have been assessed as part of the plan)
14	Land at Low Grange Farm, South Bank – outline application for up to 1250 dwellings	Residential	850m	Redcar & Cleveland	R/2014/0372/OOM	Consented – unsure if construction started	**Include** - air quality (traffic) (Traffic generated by housing developments that are in the Local Plan should have been assessed as part of the plan)
15a	Offshore wind farm and onshore infrastructure	Offshore windfarm	3	Redcar & Cleveland	R/2018/0364/NID	Consented	**Include** - air quality (traffic)
15b	Large offshore wind farm at Dogger Bank Teesside (in international waters) and associated offshore export cabling and onshore infrastructure, with a generating capacity of up to 4.8GW. Both developments will result in increases in employment in the area, during construction and operation.	DCO Windfarm	n/a	Redcar and Cleveland	DCO Reference. 5192	Consented, Amendment submitted in 2019	**Include –** Air quality, traffic (has onshore and offshore elements)
16	Container terminal	Port terminal	1.0	Redcar & Cleveland	R/2006/0433/OO	Consented	**Include** - air quality (traffic, possibly shipping)
17	Facility for export of polyhalite bulk fertiliser	Port facility	3.6	Redcar & Cleveland	R/2015/0218/DCO	DCO made 2016, under construction	**Include** - air quality (traffic, possibly shipping)
18	New mine development by York Potash Ltd	Mining	3.7	Redcar & Cleveland	R/2014/0626/FFM	Consented, construction begun	**Include** - air quality (traffic)

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
-	Highways improvement schemes - various	Highways	-	Redcar & Cleveland	Various	-	**Include** - air quality (traffic) (Traffic generated by highways improvements might have been assessed as part of the Local Plan)
Projects considered in outline application HRA Screening Report (NB some are already included in the sections above)							
19	Train maintenance and fuelling facility	Industrial	2.5	Redcar & Cleveland	R/2019/0245/SC	Screening request – no application submitted yet	Exclude - insufficient information on which to base assessment
New projects for consideration							
20	Outline planning application for demolition of existing structures on site and the development of up to 418,000 sqm (gross) of general industry (use class b2) and storage or distribution facilities (use class b8) with office accommodation (use class b1), HGV and car parking and associated infrastructure works all matters reserved other than access. 174 ha site. UPDATE: RM Now Submitted: R/2021/0878/ESM - Reserved matters application for proposed hardstanding area.R/2021/0473/ESM - Reserved matters application for 76,200 sqm floor space following approval. R/2022/0343/ESM - Application for the approval of reserved matters, namely appearance, landscaping, layout and scale in respect of a class B2 manufacturing unit with ancillary offices, parking, servicing, and landscaping.	Industrial	0.5	Redcar & Cleveland	R/2020/0357/OOM	Consented – Demolition possibly begun	**Include** - air quality (traffic, construction dust)

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
21	Overhead conveyor and associated storage facilities in connection with the York Potash Project	Industrial / mining	2.5	Redcar & Cleveland	R/2017/0906/OOM	Consented	**Include** - air quality (traffic)
22	New plant, new buildings and extensions to existing buildings. Works to include warehouse D extension, boiler house structure, amenities and workshop building, drum storage workshop extension, amenities extension, 2 no. warehouse buildings, contractor's cabins, gate house and weighbridge, receivers, driers, extension to existing tank farm, tanker offloading stations, process and control buildings, installation of new and replacement cooling towers and industrial apparatus, pipe bridge, swale and the demolition of old plant and buildings	Industrial	2.0	Stockton-on-Tees	19/2161/FUL	Consented	**Include** - air quality from on-site emissions not a planning matter in this case. Air quality effects of traffic not included in application docs. Include traffic effects in air quality assessment
23	Land north of Woodcock Wood and west of Flatts Lane, Normanby - 400 dwelling houses	Residential	4	Redcar & Cleveland	R/2019/0443/RMM R/2016/0326/OOM	Consented – Some highways construction started	**Include** - air quality (traffic)
24	Land at and adjoining Eston Road, including gateway junction of A66 to Middlesbrough Road, East Grangetown - engineering operations including widening of Eston Road, formation of new roundabout and internal access roads, works to enhance Holme Beck and associated hard and soft landscaping works	Engineering	0	Redcar & Cleveland	R/2020/0270/FFM	Consented	**Include** - air quality (traffic, construction dust)

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
25	Various locations along existing approved cable route from Marske Beach to Lackenby - installation of underground high voltage electrical cables and ancillary works within five areas to connect existing approved Dogger Bank C and Sofia offshore wind farms	Engineering / cable installation	3	Redcar & Cleveland	R/2020/0355/FFM	Consented	**Include** - air quality (traffic, construction dust)
26	Land at South Bank Wharf, Grangetown, Lackenby - demolition of existing redundant quay structures, capital dredging and development of new quay and associated works (Phases 1 and 2)	Demolition / new quay	1.3	Redcar & Cleveland	R/2020/0684/ESM and R/2020/0685/ESM	Consented (Both)	Exclude – docs submitted with the application shows all AQ effects screened out from requiring detailed assessment except construction phase dust emissions. Due to distance between TV ERF and the Quay development there is no potential for cumulative construction dust effects
27	Land at metals recovery area, north west of PD Ports; north east of Sembcorp pipeline corridor and Tees Dock Road, south east of former Slem waste management facility and south west of Highfield environmental facility, South Bank – demolition of existing buildings/structures and engineering operations associated with ground remediation and preparation of land for development	Demolition / engineering	1.2	Redcar & Cleveland	R/2020/0465/FFM	Consented	**Include** - air quality (traffic)
28	Land at Prairie Site, Grangetown - engineering operations associated with ground remediation and preparation, including removal of former railway embankment and works to Holme Beck and Knitting Wife Beck	Engineering	0	Redcar & Cleveland	R/2020/0318/FFM	Consented	**Include** - air quality (traffic, construction dust)

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
29	Construction and operation of a plastic conversion facility including office and welfare buildings, workshops, weighbridges and associated infrastructure	Industrial	3.2	Redcar & Cleveland	R/2019/0031/FFM	Consented	Exclude – docs submitted with the application show predicted air quality effects are very small, at most 0.5% of the annual mean limit for nitrogen dioxide at sensitive receptors. Impact at all ecological receptors which would require consideration is reported as 0% of the relevant assessment levels. Dispersion modelling of TV ERF stack emissions shows no potential for overlap of stack emissions
30	Land to east former steel house and north of A1085 trunk road Redcar - formation of hardstanding, buildings, access roads from a1085 trunk road, associated facilities and landscaping works in association with the creation of a park and ride facility.	Park and Ride Facility	4.62	Redcar and Cleveland	R/2022/0816/FFM	Application on-going (As of 03/01/23)	**Include –** Air quality, traffic, construction dust.
31	Outline Planning Application for development of up to 139,353 SQM (gross) of general industry (Use Class B2) and office accommodation (Use Class E), HGV and Car Parking, Works to Watercourse including realignment and associated infrastructure works (All matters reserved). UPDATE: RM recently submitted for: R/2023/0080/ESM Reserved Matters application for: 5.56 ha renewable gas production facility and associated infrastructure (use class B2)	General Industry (B2) and Office Accommodation (E).	0	Redcar and Cleveland	R/2020/0819/ESM	Outline consented, RM application not consented (as at March 2023)	**Include –** Air quality, traffic, construction dust.

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
32	Steel House – Alterations to existing office building, car parking and landscaping	Office	4.27	Redcar and Cleveland	R/2022/0050/FFM	Consented	**Include –** Air quality, traffic
33	Steel House - Outline planning application for the development of up to 15,794sqm (gross) of office accommodation (use class e) and car parking and associated infrastructure works (all matters reserved)	Office	4.27	Redcar and Cleveland	R/2020/0823/ESM	Ongoing	**Include –** Air quality, traffic
34	Long Acres - Outline planning application for the development of up to 185,806 sqm (gross) of general industry (use class b2) and storage or distribution facilities (use class b8) with office accommodation (use class e), HGV and car parking, works to watercourses including realignment and associated infrastructure works (all matters reserved)	Distribution(B2), general industry (B8) and Office (E)	4.42	Redcar and Cleveland	R/2020/0822/ESM	Consented	**Include –** Air quality, traffic
35	The Foundry - Outline planning application for development of up to 464,515qm (gross) of general industry (use class b2) and storage or distribution facilities (use class b8) with office accommodation (use class e), HGV and car parking and associated infrastructure works (all matters reserved)	General Industry (B2) Storage and Distribution (B8) and Office (E)	4.31	Redcar and Cleveland	R/2020/0821/ESM	Consented	**Include –** Air quality, traffic

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
36	Lackenby - Outline planning application for development of up to 92,903sqm (gross) of general industry (use class b2) and storage or distribution facilities (use class b8) with office accommodation (use class b1), HGV and car parking and associated infrastructure works (all matters reserved)	General Industry (B2) Storage and Distribution (B8) and Office (E)	1.15	Redcar and Cleveland	R/2020/0820/ESM	Consented	**Include –** Air quality, traffic
37	Demolition of existing cinema and replace with new cinema including external terraces; landscaping and temporary sea wall	Leisure development	6.8	Redcar and Cleveland	R/2020/0075/F3M	Consented	**Include –** Air quality, traffic
38	Erection of industrial facility (use class b2/b8), associated structures, hardstanding and landscaping works – Land at South Bank off Tees Dock Road.	B2/B8 Industrial	1	Redcar and Cleveland	R/2022/0355/FFM	Consented	**Include –** Air quality, traffic
39	Engineering operations associated with the removal of mounds, installation of haul road; temporary bridge over watercourse and associated works	Engineering Operations	4.27	Redcar and Cleveland	R/2022/0494/FFM	Consented	**Include –** Air quality, traffic
40	Erection of a training facility with associated landscaping and parking areas -part of the wider Dorman Point Site	Training Facility	0	Redcar and Cleveland	R/2021/0879/FF	Consented	**Include** - traffic

Development		Type	Km from site	LPA	Planning Ref	Status	Assessment included or excluded
41	Carbon capture facility, comprising two plants to capture 240 ktpa CO2 from the flue gas generated by the Tees Valley ERF Facility at Haverton Hill. CO2 captured to then be delivered by pipeline to the separate Net Zero Teeside CCS project	Industrial / gas	6.5	Stockton-on-Tees	23/0090/EIS	Application on-going	**Exclude** - dispersion modelling of TV ERF stack emissions shows no potential for overlap of stack emissions. No potential for in-combination effect of TV ERF traffic on A178
42	Grid network connection to the ERF site boundary	Underground cable installation	0	N/A	N/A	Yet to be submitted	**Include** – air quality (traffic, construction dust)

Table 13.1: Projects for consideration cumulatively

Potential cumulative impacts - assessment update

Ecology and biodiversity

Intra-project effects

13.3 Potentially significant cumulative effects were possible as a result of the loss of habitat, including ponds and open mosaic habitats, at the site. However, these have already been removed from the site during the course of the remediation works and off-site mitigation is to be provided to compensate for the loss of these habitats. Significant intra-project effects are therefore not considered possible.

Inter-project effects

13.4 The ERF development is not anticipated to have significant impacts on species, or the SSSI and SPA in the surrounding area. No cumulative inter-project ecological effects are therefore anticipated.

Landscape and visual impact

Intra-project effects

13.5 There will be no intra-project cumulative landscape or visual impacts on the landscape character of the site itself or visual amenity.

Inter-project effects

13.6 There will be no cumulative landscape impacts on the character areas within the study area.

13.7 Regarding cumulative impacts on visual amenity, comments have only been made where one or more of the cumulative projects listed in table 13.1 can be seen from one of the 23 viewpoints used in the LVIA in the December 2019 ES.

1 - Tees REP

13.8 This site is approximately 1.5 km north of the site. This consented 300 MW biomass fired renewable energy power station will have a number of substantial buildings from air cooled condensers, turbine hall and a 55 m high boiler house and 95 m stack. The boiler house and stacks will be visible within views 8 and 9 that are relatively close to the site and from more distant views, like viewpoints 14 and 15 in the south. This development will also be viewed behind the ERF proposals from the elevated southern views within the Eston Hills, from viewpoints 16, 17 and 18. However, while viewed in juxtaposition within the skyline with the ERF proposals the cumulative impact will not alter the assessment of any of these views.

2 - Teesside Combined Cycle Power Plant

13.9 This consented development lies approximately 2 km to the south east of the site. This development will contain a 90 m high stack, a 34 m high heat recovery steam generator housing, a 25 m high cooling tower and a 23 m high gas turbine

building. There is a possibility that part of this development will be visible in conjunction with the ERF proposals from viewpoints 14 and 15, although most of this development is likely to be screened by the vegetation along the A105 Greystone Road. There will be cumulative effects from the elevated viewpoints 16, 17 and 18. However, given the large scale industries already within these views it is unlikely that this development will significantly alter the visual character of the area or the original visual assessments of these views.

3 – Grangetown Peaking Plant

13.10 This consented development lies approximately 0.6 km to the south east of the site. This development will contain six 12 m tall natural gas engine containers surrounded by a 6.5 m high fence. There is a possibility that this development will be visible in conjunction with the ERF proposals from viewpoints 14 and 15 and from the elevated viewpoints 16 and 18. However, from the elevated views it is likely this development will be barely discernible. The cumulative impacts will not alter the assessment of any of these views.

4 – Peak African Mineral Resources Refinery

13.11 This consented development lies approximately 1.7 km to the south east of the site. This development will contain a series of sheds, the tallest of which will be 15 m. While there is a possibility this may be seen in conjunction with the ERF proposals from the elevated Eston Hills viewpoints, it is more likely this development will be barely discernible amongst the large-scale industries that are already within these views. The cumulative impact will not alter the assessment of any of these views.

13 – 550 dwellings off Kirkleatham Lane

13.12 This consented development lies approximately 4.8 km to the east of the site and is presently under construction. From viewpoint 3 this development now completely screens views of the site and the proposed ERF buildings and stacks. The original visual impact assessment at construction and operational stage was considered to be slight adverse and will now be negligible. The assessment of the residual effects for this viewpoint will not alter.

14 – Land at Low Grange Farm, South Bank 1,250 dwellings

13.13 This development lies approximately 0.8 km to the south west of the site. From viewpoint 11 sections of rooflines of the two to two and half storey dwellings will be visible in the midground of the view behind properties along Bevanlee Road and the woodland belt along the eastern edge of the playing fields to St Peter's Catholic College. However, the cumulative impact will not alter the assessment of this view.

15a and 15b – Offshore wind farm and onshore infrastructure

13.14 The onshore infrastructure lies approximately 3 km to the south west of the site to the south of the XPO Logistics site and north east of Grange Estate. It is possible that parts of this onshore infrastructure will be seen in conjunction with the ERF proposals from viewpoint 16 and possibly from viewpoints 14 and 15. The cumulative impact will not alter the assessment of this view.

18 – New Mine development by York Potash Ltd

13.15 This consented development lies approximately 8 km to the north east of the site. The 4 m high bund with new native woodland planting and the 10 m high Loco shed along the eastern edge of this development will be visible from viewpoint 4 although they will appear to the south of the view. The 4 m high bund with native woodland planting along with a further four belts of proposed new native woodland planting within the northern section of this development will screen the majority of the proposed ERF buildings. However, until these woodland belts establish it is likely that the upper sections of the taller 50 m high boiler house and 80 m stacks will remain visible. The cumulative impact will not alter the assessment of this view.

20 – General Industrial shed development

13.16 This consented development lies approximately 0.5 km to the north and north east of the site. It consists of a large number of very large sheds with a maximum height of 40.2 m AOD with the largest of these sheds being directly north west of the site and 160 m wide by 560 m long. This development will be very clear from viewpoints 6 and 7a although they will be located to the north of the railway lines and the proposed ERF site. Regarding the receptors using the Teesdale Way from viewpoint 7b, this large development will create further enclosure to the experience of the receptors using the footpath and a significant increase in terms of massing regarding large industrial development. It will also be viewed in conjunction with the proposed ERF development within viewpoints 8 and 9, partially from viewpoint 10 and from viewpoints 11 and 12. Due to the size of these sheds, they will also be seen behind the proposed ERF development in views 14, 15, 16, 17 and 18. From viewpoint 20a the 40 m high sheds will screen the majority of the proposed ERF buildings, although the top of the boiler house and stacks are likely to remain visible.

13.17 While this development will be viewed in conjunction with the proposed ERF from numerous viewpoints, the industrial nature of these views, which already contain a high number of large industrial buildings means that the cumulative impacts will not alter the assessment of any of these views.

24 – Land adjoining Eston Road

13.18 This consented development includes the formation of a new roundabout to the immediate south western corner of the site and the formation and extension of Eston Road to the south of the site. These works will include tree planting which will be visible from viewpoint 8. The cumulative impact will not alter the assessment of this view.

31 – Dorman Point – General industrial shed, storage/distribution and office development

13.19 This consented outline development includes the site of the proposed ERF and extends westward to the Tees Dock Road, south adjacent to the Bolckow Industrial Estate and as far west as Eston Road. It will consist of a number of large sheds and office development with a maximum height of 46.8 m AOD. As an outline consented scheme, the exact location of buildings cannot yet be determined.

13.20 However, within this consented outline area there has now been a reserved matter application which does provide detailed information on a north central zone on this site. This is for a renewable gas production facility. It will contain some very large fuel receptions and storage buildings ranging from approximately 30 to 35 m high to the north and central areas of the site with other structures, silos and stacks ranging from 39 to 40 m high.

13.21 The proposed development within both the outline and reserved matter scheme will have elements almost as tall as the proposed 50 m high ERF boiler house and therefore will likely be very visible from viewpoints 7a, 7b, 8 and 10. These buildings will be viewed in front, or in the case of viewpoint 8, behind the proposed ERF and in terms of viewpoints 7a, 7b and 10 will to some extent screen views of the lower sections of the proposed ERF from these receptor groups.

13.22 Regarding the receptors using the Teesdale Way from viewpoint 7b, this large development will create further enclosure to the experience of the receptors using the footpath and a significant increase in terms of massing regarding large industrial development. They will also be partially viewed in conjunction with the proposed ERF development within viewpoints 11 and 12. Due to the size of these sheds, they may also be seen in front of the proposed ERF development in views 2, 14, 15, 16, 17,18, 19 and 21.

13.23 While this development will be viewed in conjunction with the proposed ERF from numerous viewpoints, the industrial nature of these views, which already contain a high number of large industrial buildings, means that the cumulative impacts will not alter the assessment of any of these views as this new development is unlikely to significantly alter the visual characteristics of the area.

35– The Foundry general industrial shed, storage / distribution and office development

13.24 This consented outline development lies approximately 3.5 km to the north east of the proposed ERF. This development will see a number of sheds and office blocks with a maximum height of 46.2 m be constructed on the former Teeside steelworks foundry. From viewpoint 20b sections of rooflines may be visible to the far left midground of the view (in the east). However, being located 3.5 km to the north east of the proposed ERF there will be no cumulative impact to alter the assessment of this view.

36 – Lackenby general industrial shed, storage / distribution and office development

13.25 This consented outline development lies approximately 0.7 km to the east of the proposed ERF. The illustrative masterplan indicates two very large sheds with a maximum height of 46 m along with some smaller office development located on the western third of the Lackenby site formerly occupied by SSI BOS and CONCAST steel making facilities and the former Tata Steel's vacant coil plate mill. All these buildings are disused and scheduled for demolition.

13.26 This development will have elements almost as tall as the proposed 50 m high ERF boiler house and therefore will likely be very visible from viewpoints 7a, 7b, 8 and 9.

13.27 At a slightly further distance they will also be viewed in conjunction with the proposed ERF development within viewpoints 11 and 12. Due to the size of these sheds, they may also be seen either in front of or within the same vicinity of the proposed ERF development within views 14, 15, 16, 17,18, 19 and 21.

13.28 While this development will be viewed in conjunction with the proposed ERF from numerous viewpoints, the industrial nature of these views, which already contain a high number of large industrial buildings means that the cumulative impacts will not alter the assessment of any of these views.

38 – Industrial and office development

13.29 This consented outline development lies approximately 0.48 km to the north west of the proposed ERF on land at South Tees Bank off Tees Dock Road. It will consist of a number of very long large sheds and office development with a maximum height ranging from 27.5 m to 40 m for the sheds and 10.5 m for the office development.

13.30 With built elements the same height as the proposed ERF storage bunker building and only 10m short of the boiler house these buildings will likely be visible from viewpoints 6, 7a, although the groundworks in the midground will screen the northern end of this site. This development will also be clearly visible conjunction with the proposed ERF in views 8, 9 and 10 and partially in view 12.

13.31 Due to the size of these sheds, they may also be seen either in front of, or within the same vicinity of the proposed ERF development within views 14, 15, 17,18, 19, 20a and 21.

13.32 While this development will be viewed in conjunction with the proposed ERF from numerous viewpoints, the industrial nature of these views, which already contain a high number of large industrial buildings means that the cumulative impacts will not alter the assessment of any of these views.

40 – Teesworks Skills Academy

13.33 This consented development has now been constructed and is operational. It lies approximately 30m from the sites south western boundary on the corner of the junction off the newly constructed Eston Road roundabout and Dorman Point Way. It consists of a single storey 7.5m high building with associated vehicular access, pedestrian paths, car parking, bin store, peripheral security fencing and soft landscape.

13.34 It will be clearly visible from viewpoint 8 on the Eston Road where it will be viewed in conjunction with the ERF building located directly behind and to the north east of it.

13.35 However, this is a small-scale development and it is doubtful it will be visible from any of the other 22 representative viewpoints. When viewed in conjunction with the ERF from viewpoint 8 the cumulative impacts will not alter the assessment of this view.

Summary of Inter-project effects

13.36 The only cumulative impact will be on viewpoint 3 during construction and at the operational stage from cumulative site 13.

13.37 The developments listed above will all be visible either separately or collectively in conjunction the proposed ERF development from many of the viewpoints assessed in the LVIA set out in the December 2019 ES. This is particularly true of the consented developments immediately surrounding the proposed ERF such as the large sheds listed above at sites 20, 31, 36 and 38 and the recently constructed Teesworks Skills Academy, site 40. With the exception of site 40, all these schemes consist of very large industrial sheds ranging from 40.2 m to 46.8 m high. Although their exact size, location and orientation is not yet known, once constructed it is likely that sections of the proposed ERF will be screened by parts of these developments to some degree when viewed in conjunction with one of the 23 viewpoints used in the LVIA in the December 2019 ES. However, the upper sections of the proposed ERF boiler house and stacks will always remain visible from all these viewpoints.

13.38 Due to the industrial nature of the site and the surrounding industrial landscape, and the amount of large-scale industrial buildings that already exist, the cumulative impacts of these developments will not significantly alter the visual characteristics from these viewpoints and therefore will not alter the assessments of these views.

Hydrology, hydrogeology, geology and contamination

Intra-project effects

13.39 On the basis that remediation works have been completed at the site in accordance with the agreed remediation strategy as reported by Arcadis, no significant cumulative impacts are predicted during construction, operation or decommissioning of the project, as concluded by the December 2019 ES.

Inter-project effects

13.40 On the basis that remediation works have been completed at the site in accordance with the agreed remediation strategy as reported by Arcadis, no significant cumulative impacts are predicted during construction, operation or decommissioning of the project, as concluded by the December 2019 ES.

Flood risk and water quality

Intra-project effects

13.41 The site is within flood zone 1 and flood risk to the site from all sources is considered to be low. Surface water flood risk is anticipated to remain low following the implementation of a drainage strategy, therefore no significant cumulative intra-project effects are anticipated based on the implementation of the proposed mitigation for flood risk.

13.42 As no water environment effects are predicted as a result of the proposed development, there is no potential for significant cumulative effects with the

proposed facility itself for water quality.

Inter-project effects

13.43 The site is situated within flood zone 1 and no cumulative impacts corresponding to fluvial flooding are anticipated.

13.44 Existing surface water flood risk on-site, and in the immediate surrounding area, is generally very low (> 0.1% annual probability of flooding). Although the impermeable surface area of the site is set to increase as a result of the proposed development, this will be mitigated by the implementation of a surface water drainage strategy incorporating attenuation solutions and restricting runoff rates.

13.45 Further to this, engineering operations, including widening of Eston Road, formation of a new roundabout and internal access roads, works to enhance Holme Beck, and associated hard and soft landscaping works consented under planning application R/2020/0270/FFM, would increase the impermeable surface areas adjacent to the site. Increased impermeable surface coverage resulting from adjacent applications R/2021/0879/FF and R/2020/0819/ESM will also result in increased surface water discharge in the locality.

13.46 However, conveyance of flood waters to the Tees Valley site is not likely to be significant based on local topography, and the adjacent projects are expected to incorporate their own drainage strategies. The agreed discharges are also unlikely to negatively impact the Tees Valley site or increase flood risk elsewhere in accordance with local and national planning policy.

13.47 Discharge from the Tees Valley site would discharge to the Holme Beck as proposed and would not pose a cumulative risk to adjacent sites.

13.48 As no significant water environment effects are predicted as a result of the proposed development, there is no potential for significant cumulative effects with other consented developments in the area for water quality.

Archaeology and cultural heritage

13.49 The December 2019 ES did not identify the potential for any intra-project archaeology and cultural heritage effects, and this remains the case with the reserved matters application.

13.50 There will therefore be no cumulative inter-project archaeology and cultural heritage effects.

Socio-economic

Intra-project effects

13.51 The December 2019 ES did not identify the potential for any intra-project socio-economic effects and this remains the case with the reserved matters application.

Inter-project effects

13.52 There is the potential for inter-project socio-economic effects as a result of increased employment generation with the: Tees REP, Teeside Combined Cycle

Power Plant, Grangetown Peaking Plant, Peak African Minerals Resources Refinery, PMAC Redcar Bulk Terminal, Land at former South Bank Works (construction only), 550-dwelling housing development (construction only), Land at Low Grange Farm (construction only), offshore wind farm and associated offshore and onshore infrastructure, container terminal, facility for the export of polyhalite bulk fertiliser, new mine development, highways improvement schemes (construction only), B2 / B8 and office development at South Bank, overhead conveyor (construction only), warehouse D extension, Land north of Woodcock Wood and west of Flatts Lane (construction only), Land at and adjoining Eston Road (construction only), installation of underground high voltage cables for wind farms (construction only), Land at metals recovery area (construction only), Land at Prairie Site (construction only), park and ride facility (construction only), B2 and office development, alterations to the existing office building at Steel House, additional office development at Steel House, B2 / B8 and office development at Long Acres, B2 / B8 and office development at The Foundry, B2 / B8 and office development at Lackenby, replacement cinema, B2 / B8 facility at South Bank, engineering operations (construction only), training facility at the wider Dorman Point site, and the Tees Valley ERF carbon capture facility (construction only).

13.53 Given the number of projects involved and the scale of employment to be generated, it is considered that this will be a significant positive effect during both construction and operation. As no significant effects are predicted on housing, tourism or crime as a result of the proposed development alone, it is not considered that there is the potential for significant inter-project effects on these issues. This reflects the conclusion of the December 2019 ES.

Air quality, noise and human health

Air quality and health

Intra-project effects

13.54 There is the potential for intra-project air quality effects during the operational phase due to the combined impact of vehicle and process emissions. This has been assessed in chapter 11. The residual effect has been assessed as 'not significant', which is the same conclusion as the Outline AQA.

13.55 The Outline AQA and December 2019 ES did not identify the potential for any other intra-project air quality effects and this remains the case.

Inter-project effects

13.56 The Outline AQA did not consider inter-project air quality effects. However, there is the potential for inter-project air quality effects due to stack emissions from six of the cumulative developments identified:

- (1) Tees REP Biomass Plant (ref: R/2008/0671/EA)
- (2) Teesside Combined Cycle Power Plant (CCPP) (R/2017/0119/DCO)
- (3) Grangetown Peaking Plant (R/2018/0098/FF)
- (4) Peak African Minerals Resources Refinery (R/2017/0876/FFM)
- (11) Redcar Energy Centre (ref: R/2020/0411/FFM)

- (31) Dorman Point, specifically the RM application for a renewable gas production facility (R/2023/0080/ESM)

13.57 A quantitative dispersion modelling assessment of the cumulative impacts is presented in the Emissions Modelling report, and an assessment of the cumulative impact of emissions of dioxins is presented in the Dioxin Pathway Intake Assessment. This shows that emissions from the identified point sources will not change any of the conclusions of the assessment with regard to human health, and the effect remains 'not significant'. With regard to air quality impacts on designated ecological habitat sites, the in-combination impacts remain 'insignificant', with the exception of oxides of nitrogen and nitrogen deposition at the Teesmouth and Cleveland Coast SPA / Ramsar. The significance of these inter-project effects has been assessed in the updated HRA, which concluded that the in-combination impacts would not have a significant effect on the Teesmouth and Cleveland Coast SPA / Ramsar.

13.58 In addition to the schemes above, there is the potential for inter-project effects on ecological designated habitat sites due to emissions from shipping from Teesport container terminal (Project 16, R/2006/0433/OO) and fertiliser export facility (Project 17, R/2015/0218/DCO). A review of the ESs for each development shows that the effect of shipping emissions from each scheme is predicted to be extremely small at no more than 0.2% of the Critical Load for nitrogen deposition at the Teesmouth and Cleveland Coast SPA / Ramsar. These very small contributions do not change the conclusions of the assessment contained in the updated HRA.

13.59 There is the potential for inter-project effects due to vehicle emissions from the identified developments. The Outline AQA included general growth in baseline traffic but did not consider any specific cumulative developments. Therefore, the cumulative developments may generate more traffic than was included in the future baseline in the Outline AQA. The Outline AQA identified all areas of relevant public exposure where the contribution from traffic and process emissions could not be described as 'negligible' irrespective of the total pollutant concentration. In these areas, the concentrations are all well below the relevant AQALs. In addition, baseline pollutant concentrations have been falling both nationally and locally as newer, cleaner vehicles replace older, more polluting vehicles. As a result, traffic generated by the cumulative developments will not increase baseline concentrations sufficiently to alter the conclusions of the air quality assessment regarding human health, and the effect will remain 'not significant'.

13.60 There is minimal potential for inter-project air quality effects due to vehicle emissions as vehicles generated by the ERF will not travel within 200 m of any designated ecological site, except along a section of the A1085. The inter-project effect in this area has been considered in the updated HRA and the conclusion of the HRA is that the effect is 'not significant'.

13.61 The potential for inter-project effects due to dust and odour emissions has been considered. As detailed in section 11, effective measures will be implemented to control odour emissions during the operational phase and dust emissions during the construction and operational phases. There are no high sensitivity receptors in close proximity to the ERF. The methodology for assessing construction phase dust impacts limits the screening distance to 350 m from the ERF site boundary. This is also considered to be a reasonable screening distance to apply for

operational phase dust and odour impacts. On this basis, only those projects within 700 m of the ERF site boundary have the potential for inter-project dust and odour effects. The projects which are within this distance are:

- (20) Land at South Tees Development Corporation (R/2020/0357/OOM)
- (24) Highways Improvements – land at Eston Road (R/2020/0270/FFM)
- (28) Ground remediation – Land at Grangetown Prairie (R/2020/0318/FFM)
- (31) Dorman Point (R/2020/0819/ESM)
- (40) Training Facility (R/2021/0879/FF)
- (42) ERF Grid Connection (yet to be submitted)

13.62 Of the projects listed above none include significant sources of odour, so inter-project effects on odour have not been considered further. Project 40 is now operational and has no potential for ongoing dust emissions. Of the remaining projects, there is the potential for cumulative effects from dust emissions during the construction of the projects. The potential is highest if the construction phases are concurrent with the construction phase of the ERF.

13.63 Projects 24, 28, 31 and 42 are located at or adjacent the ERF site and are related to the development of the ERF, or are part of the wider STDC Dorman Point development. As such, construction phase dust emissions from these projects these will managed either via an overarching CEMP, or individual CEMPs designed to minimise any cumulative dust impacts. In particular, it is noted that project 31 (Dorman Point) encompasses the ERF site as part of a larger site area and the detailed design for the site will include the ERF. The ES for the Dorman Point scheme did not identify any significant cumulative air quality effects, including those related to construction phase dust emissions.

13.64 There are no high-sensitivity receptors in the area where there is the potential for cumulative dust emissions, and best-practice dust management measures will be incorporated into the CEMP for each development. As such, there is no potential for significant inter-project effects due to dust emissions.

Noise

Intra-project effects

13.65 No significant intra-project effects are expected.

Inter-project effects

13.66 Inter-project noise effects have been considered for the schemes outlined in table 13.1. The schemes set out below may give risk to inter-project cumulative construction or operational effects. All other schemes listed in table 13.1 but not set out below are deemed to be of sufficient distance from the proposed ERF site to not give rise to potential cumulative construction or operational effects.

- *Teesside Combined Cycle Power Plant*

13.67 Operational noise emissions may contribute to the total noise levels at the Bolckow Road / Cresswell Road receptor of the proposed development noise assessment. However, the noise assessment for the Combined Cycle Power Plant

did not consider the Bolckow Road / Cresswell Road receptor. Noise emissions from the proposed development are predicted to be far below background noise levels. Therefore, cumulative effects are not expected.

- *Grangetown Peaking Plant*

13.68 The peaking plant is understood to have been operational during the survey outlined in the noise assessment for the proposed development. Any noise contribution from this plant at the Bolckow Road / Cresswell Road receptor will have been measured during the noise survey. Noise emissions from the proposed development are predicted to be far below background noise levels. Therefore, cumulative effects are not expected.

- *Peak African Minerals Resources Refinery*

13.69 Operational noise emissions may contribute to the total noise levels at the Bolckow Road / Cresswell Road receptor of the proposed development noise assessment. However, the noise assessment for the Resources Refinery did not consider the Bolckow Road / Cresswell Road receptor. Noise emissions from the proposed development are predicted to be far below background noise levels. Therefore, cumulative effects are not expected.

- *Land at Low Grange Farm, South Bank*

13.70 If the dwellings are built out, the predicted effects for the Jones Road receptor are likely to apply for the dwellings closest to the A66, and therefore the corresponding effect levels for the new receptors would be NOAEL (no observed effect level) to LOAEL (lowest observable adverse effect level). However, significant effects are not expected as the background noise levels at the proposed residential receptors would be far below the ambient noise levels (as is the case for the Jones Road receptors) due to road traffic noise from the A66.

- *Land at and adjoining Eston Road, including gateway junction of A66 to Middlesbrough Road, East Grangetown*

13.71 If construction of the scheme is concurrent with the construction of the proposed ERF, construction noise levels for non-residential receptors at John Boyle Road may be greater than those presented in the proposed development noise assessment. Construction noise effects would not be expected to exceed NOAEL to LOAEL and therefore significant effects are not expected.

- *Land at Prairie Site, Grangetown*

13.72 If works are concurrent with the construction of the proposed ERF, construction noise levels for non-residential receptors at John Boyle Road may be greater than those presented in the proposed development noise assessment. However, it is not expected that the construction noise effect level would exceed NOAEL and therefore significant effects are not expected.

- *Grid connection from ERF*

13.73 If works are concurrent with the construction of the proposed ERF, construction noise levels for non-residential receptors at John Boyle Road may be greater than

those presented in the proposed development noise assessment. However, it is not expected that the construction noise effect level would exceed NOAEL and therefore significant effects are not expected.

Traffic and transportation

Intra-project effects

13.74 Cumulative effects resulting from the combination of potential impacts from the facility itself were considered in the December 2019 ES. The overall significance of any impacts related to transport on receptors were considered 'not likely to be significant'.

13.75 No residual significant effects were identified in the December 2019 ES or the assessment for the reserved matters application for either the operational or construction phases. Therefore, no change to the overall significance of intra-project effects on transport is expected.

Inter-project effects

13.76 Potential inter-project effects with seven other developments were identified in the December 2019 ES for traffic and transportation. Additional effects resulting from the committed development identified in table 13.1 for the reserved matters application operational phase are considered to be negligible due to the minimal traffic flows generated by the ERF development.

13.77 There is the potential for some committed developments identified in table 13.1 to generate additional traffic on the local highway network during both construction and operational phases. This would be subject to confirmation on programme of these committed developments. However, it is anticipated that the other committed developments will also have CEMPs and travel plans in place to help reduce the amount of traffic on the local road network at peak times and reduce traffic movements generated by staff wherever possible.

13.78 Whilst additional cumulative schemes have been identified since the outline planning application, it is assumed that these schemes will have considered the proposed ERF as a committed development within their assessment. It is therefore proposed that no further assessment is required.

14.0 Environmental commitments

14.1 Table 15.1 of the December 2019 ES set out the environmental commitments that had been made to ensure that mitigation measures referred to in the ES would be fully implemented. Table 14.1 below updates the original table, reflecting the information provided in chapters 5 – 13 of this EIA SoC.

Receptor	Impacts	2019 December ES Commitment	2023 Update
Ecology	Habitat / Species disturbance during construction	Implementation of appropriate pollution prevention measures e.g. CIRIA guidance: Control of water pollution from construction sites. Guidance for consultants and contractors (C532D).	This commitment is still applicable and will be implemented.
		Mitigation shall include appropriate biosecurity measures. These shall follow the Check- Clean-Dry biosecurity procedure ensuring that all PPE and equipment is cleaned before leaving site. To prevent the spread of the Small-leaved Cotoneaster, it is recommended that it is removed from adjacent to the site to reduce the likelihood of vehicles spreading the plant around the site and taking the plant off site.	This commitment is still applicable and will be implemented.
		Installation of a fish guard to prevent entrapment within the abstraction pipe(s).	No abstraction pipes are proposed, therefore no fish guard is necessary.
	Habitat Loss	Ecological Clerk of Works (ECoW) to work with the contractor during site clearance and site establishment to maintain any sensitive areas on the development plot.	Site clearance work undertaken by STDC and recently completed.
		Ecological enhancement / mitigation areas to be created on c. 7ha of site to replace the brownfield grassland habitats. No imported topsoil to be brought onto the site and existing soils to be sorted and replaced after enabling works (SDTC).	Ecological mitigation is to be provided by STDC off-site. Some ecological enhancement to be provided through landscape planting.
		Area B (Archaeology Area) to be covered with existing site won topsoil to maintain connectivity of habitat across the open areas.	Protection of Area B no longer required. Ecological mitigation is to be provided by STDC off-site.
		Ponds will be created within the designated biodiversity area which may be able to hold water and provide suitable habitat for amphibians and invertebrates.	Biodiversity area not being provided on site (condition 13 allows for this). Ecological mitigation is to be provided by STDC off-site. The proposed attenuation pond has not been designed to hold permanent water, nevertheless a wet meadow grass mix will provide additional biodiversity and will cope well when temporarily flooded following heavy rain.
		The planned biodiversity area is expected to offset any valuable scrub habitat lost and impacts on populations of birds, butterflies, Brown Hare.	Biodiversity area not being provided on site (condition 13 allows for this). Ecological mitigation is to be provided by STDC off-site. Some ecological enhancement to be provided through landscape planting.
		Minimal lighting fitted to directional cowls shall be used to reduce the impact on birds.	This commitment is still applicable and will be implemented.

Receptor	Impacts	2019 December ES Commitment	2023 Update
	Water Quality	SuDS and water quality features to be designed to consider ecological benefits.	The proposed attenuation pond has not been designed to hold permanent water, nevertheless a wet meadow grass mix will provide additional biodiversity and will cope well when temporarily flooded following heavy rain.
		Opportunities for bio-treatment of surface water to be considered where practical and appropriate.	The proposed attenuation pond has not been designed to hold permanent water, nevertheless a wet meadow grass mix will provide additional biodiversity opportunities. The attenuation pond will also help reduce suspended sediments in surface water runoff.
	Post Construction	Site Management Plan to be developed to maintain the ecological enhancement area.	Ecological mitigation is to be provided by STDC off-site (condition 13 allows for off-site provision) and therefore there will be no dedicated ecological enhancement area on site.
		Minimal lighting fitted to directional cowls shall be used to reduce the impact on birds.	This commitment is still applicable and will be implemented.
Hydrology, Geology and Contamination	Pre-construction	In advance of site development, an updated Contaminated Land risk assessment should be undertaken, which may include additional ground investigation to characterise soil and groundwater conditions. Subsequently, a Remediation Strategy should be developed for the Site which would look to refine further baseline assessments, consider the risks associated with the identified contamination, and propose appropriate construction/ operational phase mitigation measures to reduce the potential for identified impacts to occur.	Contaminated land risk assessments have been completed and a remediation strategy has been developed, implemented and verified by Arcadis.
	During Construction	Implementation of appropriate pollution prevention measures e.g. CIRIA guidance: Control of water pollution from construction sites. Guidance for consultants and contractors (C532D).	This commitment is still applicable and will be implemented in line with the specified guidance.
		The timing of excavation and replacement of ground materials should be sensitive to avoiding poor weather conditions. Other pollution control measures advised in the FRA, such as bunding of potential sources of contamination, will also be implemented in order to prevent potential contamination incidents of the receiving watercourse.	Contaminated land risk assessments have been completed and a remediation strategy has been developed, implemented and verified by Arcadis. This commitment is still applicable and will be implemented in line with the specified guidance.
		Minimising the amount of exposed ground and soil stockpiles from which water drains and the period of time such water drains.	This commitment is still applicable and will be implemented.

Receptor	Impacts	2019 December ES Commitment	2023 Update
		Locating plant and machinery used during the construction phase would be well maintained to minimise the risks of oil leaks or similar. Maintenance and re-fuelling of machinery would be undertaken offsite or within filling areas of temporary hardstanding. In these designated areas, contingency plans would be implemented so that the risks of spillages are minimised. Placing a drip tray beneath plant and machinery during re-fuelling and maintenance would contain small spillages and wheel washing facilities in a designated area of hard standing at least 10m from any watercourse or surface water drain.	This commitment is still applicable and will be implemented in line with CEMP to be approved.
		An emergency response protocol will be developed by contractors and incorporated into the CEMP so that any accidental spillages are intercepted and that there are procedures for site staff to follow. Spill containment equipment (e.g. absorbent material) will be provided on site.	This commitment is still applicable and will be implemented in line with the CEMP to be approved.
		Effluent from welfare facilities on the site will either be taken off site for disposal and treatment or routed to the local sewer network.	This commitment is still applicable and will be implemented in line with CEMP to be approved.
		Pollution prevention measures shall be implemented during construction works to prevent excessive sediment input and mitigate impacts in the event of oil or fluid leaks.	This commitment is still applicable and will be implemented in line with CEMP to be approved.
		Groundwater and surface water monitoring will be carried out associated with any site investigation programme carried out.	Contaminated land risk assessments have been completed and a remediation strategy has been developed, implemented and verified by Arcadis.
	Embedded Design	During the placement of the new surface water drainage system, oil-water interceptors would be placed at any outfalls from the site. This would provide the opportunity to isolate the system, should spillage of polluting chemicals occur. The proposed drainage system incorporates design features to remove silt and other suspended solids, as well as capture any spills/oil and grease, prior to discharge. Storage of all chemicals and oils within areas of hard standing and installation of secondary containment, such as a bund wall, so that at least 110% of the stored capacity is provided for. Storage areas should be located at least 10m away from any surface watercourses and areas at risk of flooding.	This commitment is still applicable and will be implemented. Surface water runoff will be passed through oil interceptors and then directed into an attenuation pond or tank. The surface water runoff will be treated via an oil interceptor and polishing filter and be discharged at greenfield runoff rates into Holme Beck. In order to minimise the risks of contamination to process and surface water, all liquid chemicals stored on site will be kept in bunded controlled areas with a volume of 110% of stored capacity.

Receptor	Impacts	2019 December ES Commitment	2023 Update
Flood Risk and Water Quality	During Construction	The developer will need to comply with the requirements of the FRA in order that no impacts arise on flow volumes. Holme Beck is an Ordinary Watercourse, therefore, proposed discharge rates (if any) must be agreed with the LLFA.	This commitment is still applicable and will be implemented in line with the approved FRA, as well as in line with recommendations made in Ramboll's Water Framework Directive Assessment review report.
		Discharge through connection to mains sewage (as agreed with NWL) or obtain an appropriate Environmental Permit from the EA.	This commitment is still applicable and will be implemented.
		Minimise discharge and abstraction points wherever possible to limit disturbance.	This commitment is still applicable and will be taken into account during detailed design.
		All culverts will be designed following CIRIA's Culvert design and operation guide (2019) and SEPAs Engineering in the water environment: good practice guide. River crossings. December 2019.	This commitment is still applicable and will be implemented if applicable.
		An Emergency Plan should consider and avoid areas designated to contain on site surface water exceedance flows.	This commitment is still applicable and will be implemented.
		Site management requirements include maintenance of water quality and of water levels, e.g. to allow partial winter flooding on wetlands, required for wintering bird habitats.	This commitment is still applicable and will be implemented in line with CEMP to be approved.
	Embedded Design	The development will incorporate a Drainage Strategy appropriate to the site to reduce runoff rates as set out in the FRA and Surface Water Drainage Strategy, whilst also taking into account potential changes in rainfall from climate change.	The proposed attenuation system will provide between 2,284 – 3,312m^3 of attenuation storage volume, which has been designed to contain the 1-in-100 year critical storm event, including 40% allowance for climate change without causing any flooding to the site. Any exceedance flows beyond the 1-in-100 year critical storm event will be managed on site by installing hydro-brakes and penstock valves at or near the outfall location. This will ensure there is no increase in flood risk downstream.
		The attenuation requirements on site will be met through the use of a proposed detention basin which will discharge via a flow control device to restrict outflow to the Holme Beck culvert. The attenuation pools will be designed to enhance the ecology of the site.	Surface water runoff will be collected and directed into an attenuation pond or tank. As above, the attenuation system has been designed to control flows to the Holme Beck. The proposed attenuation pond has not been designed to hold permanent water, nevertheless a wet meadow grass mix will provide additional biodiversity and will cope well when temporarily flooded following heavy rain.

Receptor	Impacts	2019 December ES Commitment	2023 Update
		The drainage design takes account of climate change and such that water draining from the site into watercourses will not exceed existing runoff rates. The timing of excavation and re-placement of ground materials should be sensitive to avoiding poor weather conditions.	The proposed attenuation system has been designed to contain the 1-in-100 year critical storm event, including 40% allowance for climate change.
		In accordance with Tees Valley SuDS requirements, surface water runoff from development should be limited to the greenfield QBAR runoff rate for all return periods up to and including the 1% AEP rainfall event.	This commitment is still applicable and will be implemented.
Archaeology and Cultural Heritage	During Construction	Area B to be fenced and protected during earth moving and construction.	Protection no longer required for Area B (all archaeological mitigation works have been completed by STDC).
		Area B to be topsoiled from site derived material to protect the buried archaeology	Protection no longer required for Area B.
		Implementation of a programme of archaeological recording and reporting prior to or during construction.	All archaeological mitigation works have been completed by STDC.
Socio-Economic	During Development	Employment – when seeking employees for the operational stage of the scheme, the client use of the Grangetown Training and Employment Hub, a local scheme operated through a partnership between Jobcentre Plus, R&CBC, Coast and Country Housing, Work Programme providers, training providers and individual projects.	The commitment to using the Grangetown Training and Employment Hub is retained, as recognised in the S106 contribution to the Grangetown Employment Hub.

Receptor	Impacts	2019 December ES Commitment	2023 Update
		Security fencing should be installed surrounding the entire site to minimise the risk of break-ins, vandalism and theft. This fencing should be at least 2.0m high and have anti- climb devices on the top of the fence, such as anti-climb rotator spikes. Two perimeter fences with a gap between them was also a recommended feature to make break-ins more difficult.	A boundary fence will provide security for the ERF. This will be a 2.4 m high metal security palisade fence that will extend around the north and the majority of the east and western perimeters of the site. On the southern boundary the palisade fence will run from the main site entrance in the west, around the site roundabout and follow the boundary of the HGV delivery vehicle queuing area to the south of the site, cross the emergency access road and join the eastern boundary fence. The fence will be continuous apart from where the swing gates are provided at the site entrance and emergency access. The main entrance gates will be open during normal working hours and closed at all other times. The emergency access gates will be closed at all times unless there is an emergency situation. For security and safety reasons there will also be a 2.4 m high paladin fence separating the car parking and administration building from the operational ERF area / HGV circulation. A 2.4 m high palisade fence will also be provided around the sub-station / transformer equipment to the north of the site.
		Traffic management procedures will be in place to phase deliveries and avoid peak areas.	Deliveries will be managed to avoid peak periods where possible.
		Incorporate measures or infrastructure to reduce the necessity for prospective employees to travel via private car. Electric points will be installed for staff vehicles.	Electric vehicle charging points are included in the proposals.
		Procurement of the materials required for construction could be planned carefully to minimise excess material and waste. This would both minimise transportation on site of materials and transportation off site of waste and excess materials; Materials could be sourced as locally to the site as possible and transported to the site via shipping or rail freight due to the immediate proximity of the site to the Tees Estuary and rail line.	Measures to minimise waste generation during construction, manage construction traffic and minimise adverse impacts on the local community will be set out in the detailed CEMP to be submitted for approval.

Receptor	Impacts	2019 December ES Commitment	2023 Update
		Minimising the impact of deliveries, parking and work on the public highway.	Measures to minimise construction traffic will be set out in the detailed CEMP to be submitted for approval. All construction staff will park on site or on immediately adjacent land, within a temporary construction compound.
		Contributing to and supporting the local community and economy.	The Grangetown Training and Employment Hub will be used to source employees for the operational stage of the development. The S106 includes a payment of £250K to the Grangetown Employment Hub to be used towards the provision of employment and training.
		Working to create a positive and lasting impression.	Viridor will appoint a Social Value Officer, who will help deliver a range of social value benefits and opportunities within the Contract Authority area (Darlington, Stockton-on-Tees, Middlesbrough, Redcar and Cleveland, Hartlepool, Durham and Newcastle). Viridor will also set up a Local Liaison Committee which will meet on a regular basis to discuss the construction and operation of the ERF. It is intended that the committee will meet during all stages of the proposed development, including: construction, commissioning and the start of operations and continue for as long as there is an interest. It is the intention of Viridor that the ERF will also be accredited to ISO14001 Environmental Management System, ISO9001 Quality Management System and ISO45001 Health and Safety Management, thus indicating Viridor's aim to achieve the highest practical standards of quality, safety, occupational health, environmental control and performance at the Tees Valley site.
		Assessment of the site under the Considerate Constructors Scheme (CCS).	This commitment is still applicable and will be implemented in line with CEMP to be approved.
New topic sections added			

Receptor	Impacts	2019 December ES Commitment	2023 Update
Transport and Access	During construction	Not covered in December 2019 ES.	The CEMP to be submitted for approval will identity measures to help mitigate the potential adverse impacts associated with the addition of construction traffic onto the local road network. The measures are likely to consider the following: • The scheduling of deliveries to minimise potential disturbance on local residents and conflicts with the highway peak hours. • The provision of wheel washing facilities at site egress points to minimise the potential for site debris to be transferred on to the local road network. • Offsite parking and bringing construction staff to the site via minibus.
	During operation	Efforts shall be made to limit vehicle movements where possible. This could include making sure waste delivery vehicles are at full capacity before coming to the site.	The running of the ERF facility will be independent from the suppliers of the waste. Nevertheless, it is expected that the Contract Authorities will seek to maximise vehicle loads.
Noise	During construction	Not covered in December 2019 ES.	No specific mitigation measures were considered necessary to reduce construction noise effects in the ES. The ES only set construction noise thresholds that should aim to not be exceeded. The thresholds are not expected to be exceeded and therefore significant effects are not expected. The contractor shall employ Best Practicable Means to keep construction noise emissions to a minimum.

Receptor	Impacts	2019 December ES Commitment	2023 Update
	During operation	Not covered in December 2019 ES.	No specific commitments were made to reduce operational noise effects in the ES. The ES only set outline plant noise limits. It has subsequently been agreed through consultation with RCBC that plant noise limits for determining a potential low impact in the reserved matters application would be set +0dB over the typical (and not lowest) background noise levels at residential receptors, in accordance with BS 4142:2014+A1:2019. Typical background noise levels were determined using statistical analysis, as recommended by BS 4142:2014+A1:2019. Whilst the background noise levels may be just exceeded at one receptor location (Jones Road), the background noise levels are far below the ambient noise levels at this location. Therefore, significant effects are not expected. No additional mitigation over the embedded mitigation within the scheme design is considered to be required.
Air quality and human health	During construction	Not covered in December 2019 ES.	Construction dust – precise measures to be determined by the contractor and embedded within the CEMP to be submitted for approval.
	During operation	Not covered in December 2019 ES.	Operational dust – to be managed through embedded design.
			Operational odour – to be managed by embedded design.
			Operational emissions – to be managed by embedded design.
Landscape and visual effects	Embedded design	Not covered in December 2019 ES.	Design mitigation – provided through choice of cladding, façade treatment, palette of colours selected, etc.

Receptor	Impacts	2019 December ES Commitment	2023 Update
			While building and stack heights do not exceed those presented in the December 2019 ES, the reserved matters application includes a design and layout that reduces the overall massing and heights of some buildings, and presents a more unified and compact layout.
			Low level visual impacts have been reduced through the proposed earth bund and planting.

15.0 Conclusions

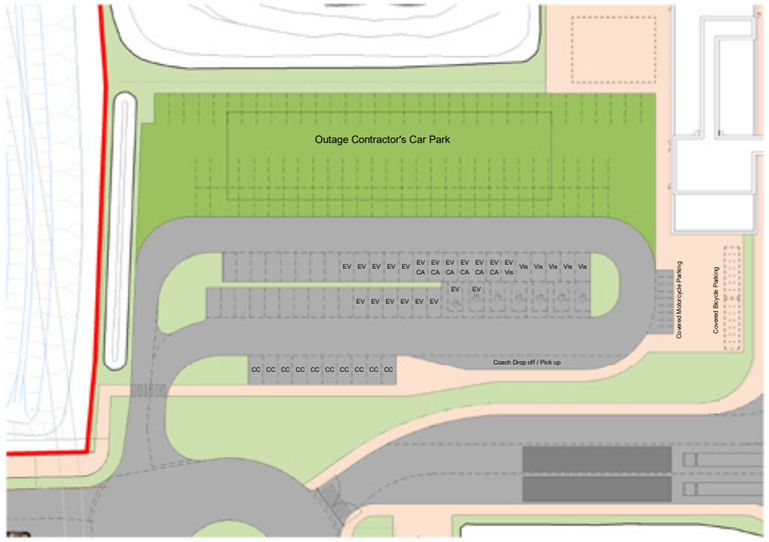
15.1 This report has considered whether the proposed details and amendments, which are the subject of the reserved matters submission, are likely to give rise to any new or materially different significant effects to those already identified in the December 2019 ES.

15.2 The report has assessed the proposed details against each of the topics included in the December 2019 ES and concludes that these details and minor amendments do not materially alter the basis of the topic specific assessments and that therefore they are not likely to give rise to any new significant or materially different effects to those in the December 2019 ES.

Reserved matters application boundary

0 1,000 m

N



Staff & Visitor Car Park not to scale

Common Legend

1. Electrical & Workshop
2. Tipping Hall
3. Fuel Storage Bunker
4. Boiler House
5. Flue Gas Treatment (FGT) Hall
6. Stack
7. Lime Storage Silos / Dosing *
8. Fire Water Tank & Pumphouse
9. Emergency Diesel Generator (EDG)
10. Vehicle Queuing Bays
11. Air Polution Control residues (APCr) Storage & Loadout
12. Admin Block - Reception, Offices and Visitors
13. Bottom Ash Storage Hall
14. Air Cooled Condensors (ACC)
15. Turbine Hall
16. CCUS Future Expansion Area A
17. CCUS Future Expansion Area B (or other future provision)
18. Contractors compound for shutdown
19. Combined Heat & Power (CHP) Building
20. Substation/Transformer
21. Demin Water Tank
22. Landscape & Ecology
23. SuDS/Wetland Area
24. Security Control & Driver & Crew Welfare Facility
25. Weighbridge (3 In & 2 Out)
26. Waste Reception Area For Quarantined Waste and Contaminants
27. Staff & Visitor Car Parking
28. Rainwater Pit (roofs)
29. Generator Step-up Transformers
30. Diesel & Ammonia Bund
31. Fin Fan Coolers
32. Laboratory *
33. In/Over Bunker Shredder *
34. Effluent Treatment Pit
35. Recycled Water Tank *
36. Chemical Dosing Skid *
37. Water Treatment Plant
38. Compressed Air Station *
39. Weighbridge Offices / Traffic Control
40. Switchgear Transformer *
41. Feedwater Pumps *
42. CEMS
43. Hot Load Bay
44. Backload Area / Crane Maintenance *
45. Raw water pumps and tank *
46. Oil Tank
47. Crew Parking Bays
48. Outside Staff Area
49. Quarantine Bay *
50. Emergency Access

EV Electric Vehicle Charging Parking Space
CA Contract Authority Parking Space
CC Car Club Parking Space
Vis Visitor Car Parking

Reserved Matters Boundary
Outline Planning Boundary

Gravel
Grass
Grasscrete
Tarmac
Concrete
Paved Footpath

Site Area: 88,180m2 / (21.79 acres)
CCUS Area: 12,000m2 / (2.97 acres)
Landscaping Area: 20,000m2 / (4.94 acres)

0 10m 25m 50m

Note - Items marked * are internal elements, refer to drawing 20-0006 Proposed GA Plan Level 00 for locations

Site Plan

General Notes

Do not scale from this drawing. Only work to written dimensions.

All site dimensions shall be verified by the Contractor on site prior to commencing any works.

Map bases were provided to Viridor Tees Valley Limited by the Tees Valley Energy Recovery Facility Contract Authority (comprising Darlington, Hartlepool, Middlesbrough, Redcar & Cleveland, and Stockton Unitary Authorities and Durham County Council and Newcastle City Council) in 2020.

Rev.	Description	Date	ISS	APP
P13	Amendments to suit client comments	24.02.2023	JDC	RT
P12	Additional EV provision indicated	22.02.2023	JDC	RT
P11	General Amendments	21.02.2023	JDC	RT
P10	Amendments to legend	14.02.2023	JDC	RT
P9	Amendments to suit client comments	07.02.2023	JDC	RT
P8	Planning / Bid Issue	31.01.2023	JDC	RT
P7	General Updates	27.01.2023	JDC	RT
P6	General Updates	10.01.2023	JDC	RT
P5	General note added for copyright purposes	04.04.2022	JDC	RT
P4	Drawing updated to client comments	28.03.2022	JDC	RT
P3	Planning pack update	10.02.2022	JDC	RT
P2	Planning pack issue	09.02.2022	JDC	RT
P1	Planning pack updated to reflect Acciona comments	09.12.2021	JDC	RT
P0	Planning pack first issue	16.10.2021	JDC	RT

Status **S2 Information**
Drawn By **JDC**
Checked By **RT**
Date **04.04.2022**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
Proposed Site Plan

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -90-0003 P13

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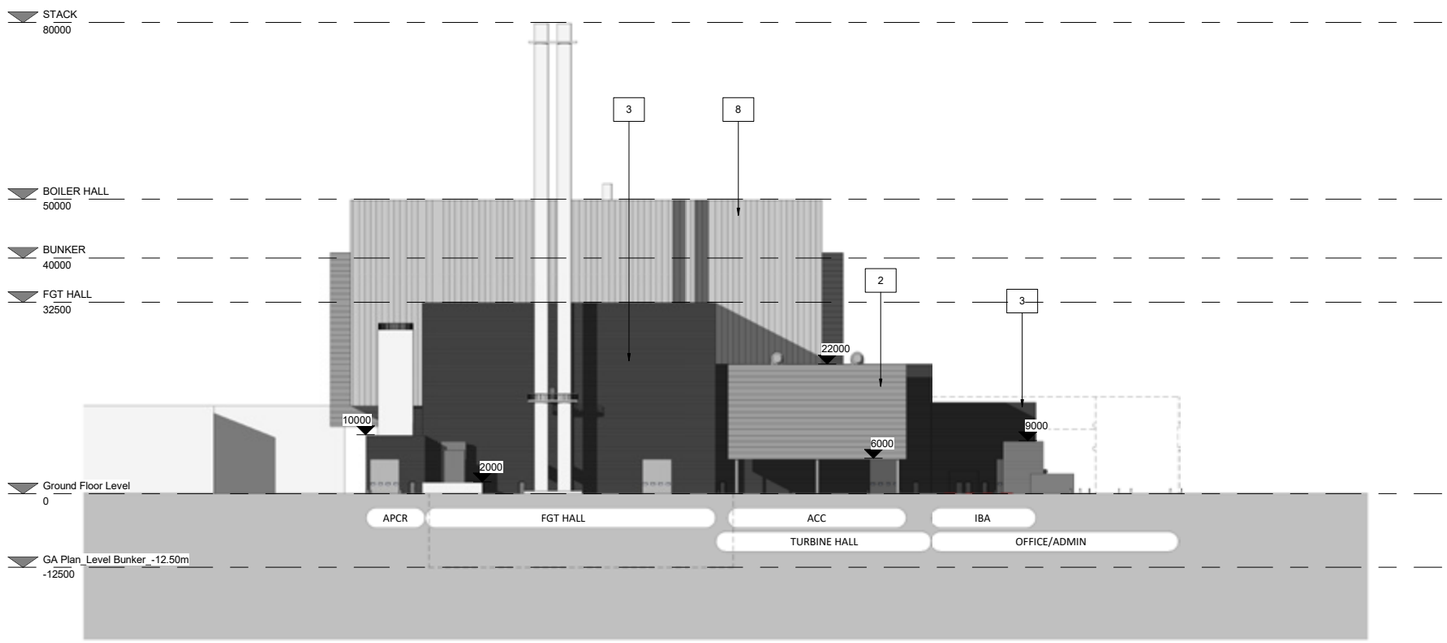

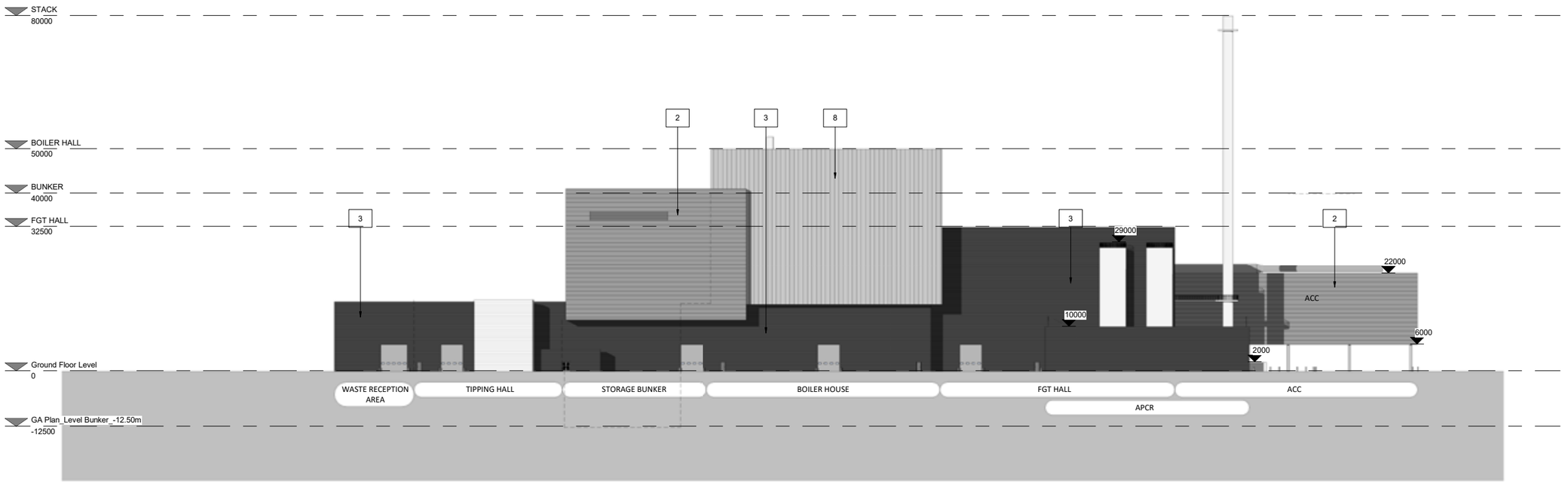

EAST_Elevation

0 10m 25m

General Notes

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Materials Key

1. Translucent polycarbonate cladding system
2. Deep profiled external sheet metal cladding laid with profile running horizontally. Colour: Grey (RAL TBC)
3. Deep profiled external sheet metal cladding laid with profile running horizontally. Colour: Black
4. Curtain wall glazing system, with integrated glazed doors.
5. Polyester powder coated panellised up and over electrically operated insulated loading door.
6. Steel framed doors with steel clad finish to both sides to match adjacent composite cladding.
7. Profiled roof deck with single layer PVC weathering membrane
8. Standing Seam System metal aid with profile running vertically. Colour: Light Grey

Ground FFL: 10m AOD

Rev.	Description	Date	ISS	APP
P10	Duct from FGT to Stack added, and Diesel and Ammonia bund tanks added	10.03.2023	JDC	RT
P9	Amendments to suit client comments	24.02.2023	JDC	RT
P8	General Amendments	21.02.2023	JDC	RT
P7	Amendments to suit client comments	07.02.2023	JDC	RT
P6	Planning / Bid Issue	31.01.2023	JDC	RT
P5	General Updates	10.01.2023	JDC	RT
P4	General note added for copyright purposes	04.04.2022	JDC	RT
P3	Drawing updated to client comments	28.03.2022	JDC	RT
P2	Planning pack issue	09.02.2022	JDC	RT
P1	Planning pack updated to reflect Acciona comments	09.12.2021	JDC	RT
P0	Planning pack first issue	16.10.2021	JDC	RT

Status	**S2 Information**
Drawn By	**JDC**
Checked By	**RT**
Date	**04.04.2022**
Client:	**VIRIDOR**
Project:	**TEES VALLEY ERF**
Sheet Name:	**Proposed GA Elevations_NORTH & EAST**

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -20-0010 P10

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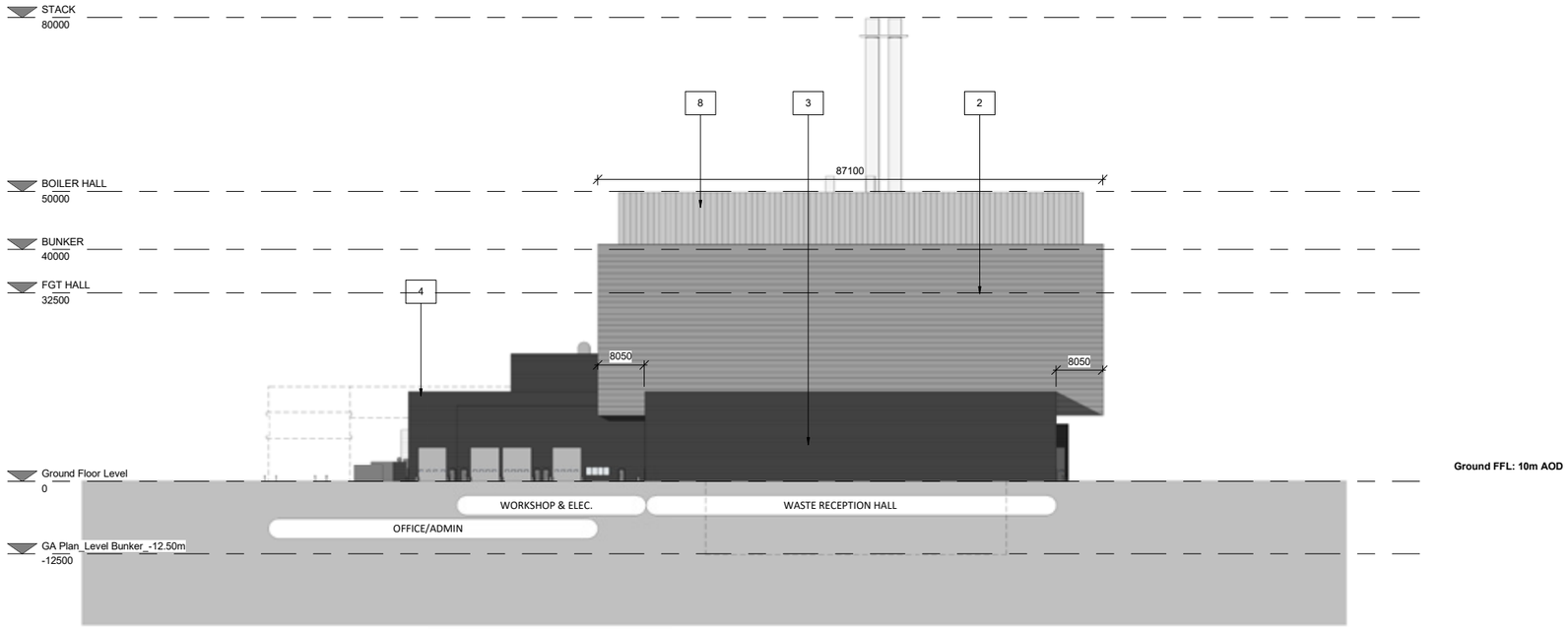
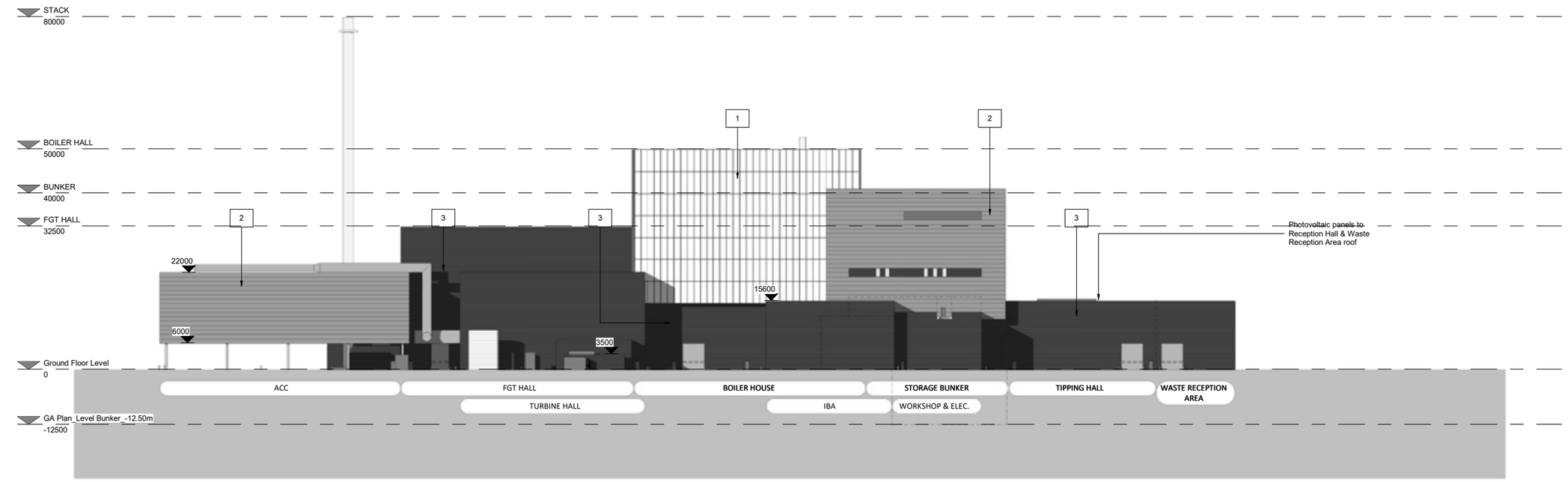


Ground FFL: 10m AOD

SOUTH_Elevation



WEST_Elevation

0 10m 25m

General Notes

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Materials Key

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2. Deep profiled external sheet metal cladding laid with profile running horizontally. Colour: Grey (RAL TBC)
3. Deep profiled external sheet metal cladding laid with profile running horizontally. Colour: Black
4. Curtain wall glazing system, with integrated glazed doors.
5. Polyester powder coated panellised up and over electrically operated insulated loading door.
6. Steel framed doors with steel clad finish to both sides to match adjacent composite cladding.
7. Profiled roof deck with single layer PVC weathering membrane
8. Standing Seam System metal aid with profile running vertically. Colour: Light Grey

Rev.	Description	Date	ISS	APP
P10	Duct from FGT to Stack added, and Diesel and Ammonia bund tanks added	10.03.2023	JDC	RT
P9	Amendments to suit client comments	24.02.2023	JDC	RT
P8	Amendments to drawing title & other general amendments	21.02.2023	JDC	RT
P7	Amendments to suit client comments	07.02.2023	JDC	RT
P6	Planning / Bid Issue	31.01.2023	JDC	RT
P5	General Updates	10.01.2023	JDC	RT
P4	General note added for copyright purposes	04.04.2022	JDC	RT
P3	Drawing updated to client comments	28.03.2022	JDC	RT
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P0	Planning pack first issue	16.10.2021	JDC	RT

Status	**S2 Information**
Drawn By	**JDC**
Checked By	**RT**
Date	**04.04.2022**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
Proposed GA Elevations_SOUTH & WEST

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -20-0011 P10

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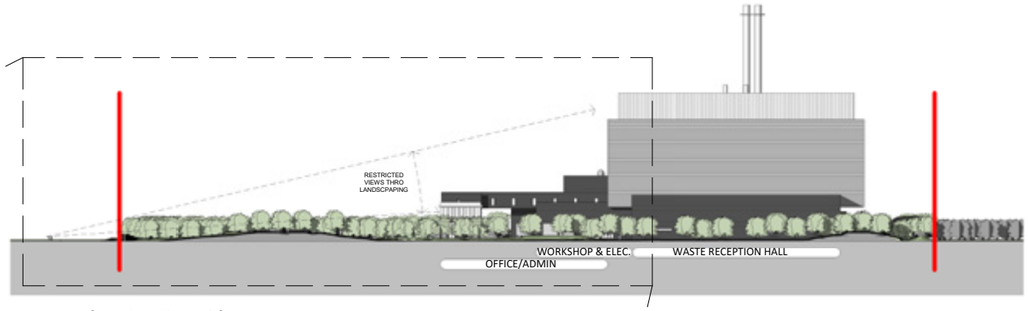
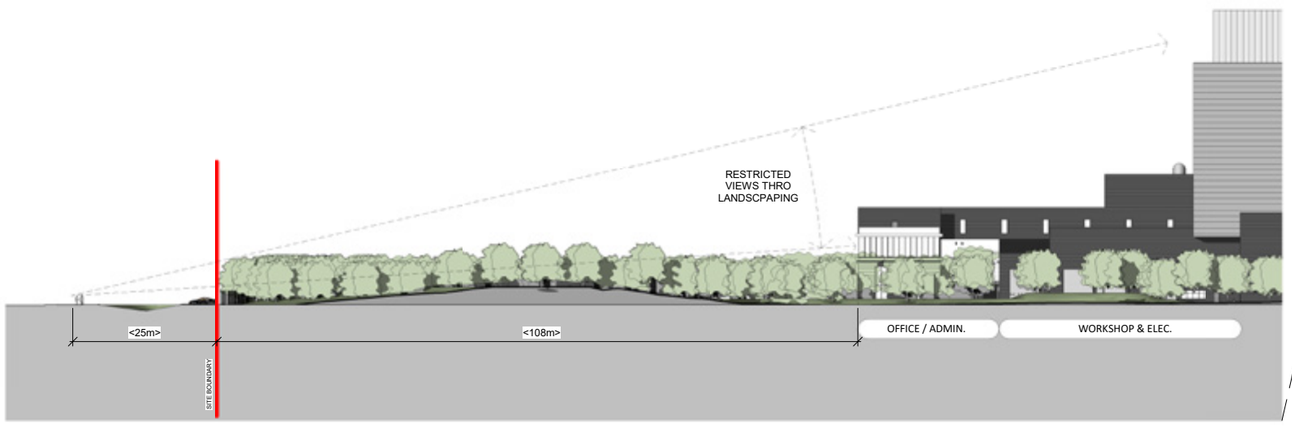
EAST Elevation Site Wide



SOUTH Elevation Site Wide



SOUTH Elevation Boundary Treatment

General Notes

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Site Boundary

Rev.	Description	Date	ISS	APP
P8	General Amendments	21.02.2023	JDC	RT
P7	Amendments to suit client comments	07.02.2023	JDC	RT
P6	Planning / Bid Issue	31.01.2023	JDC	RT
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not to scale

Status **S2 Information**
Drawn By **JDC**
Checked By **RT**
Date **04.04.2022**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
GA Site Elevations - SOUTH & EAST

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -90-0004 P8

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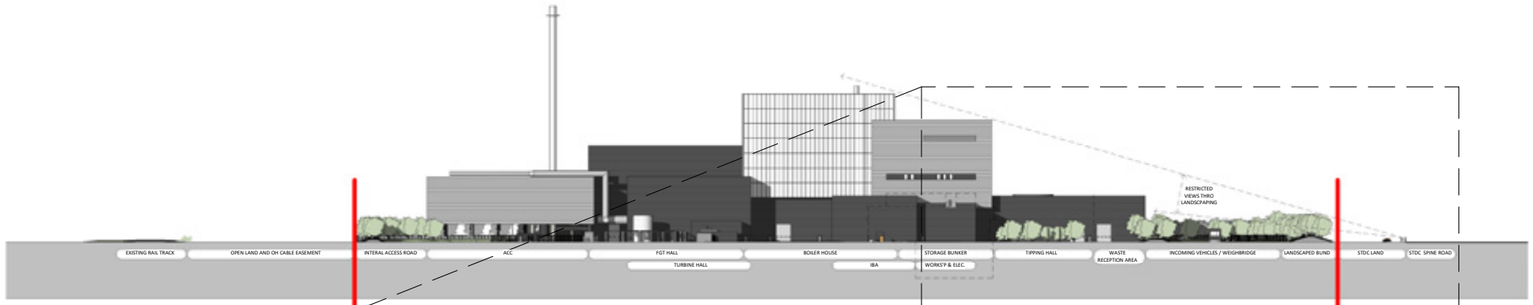
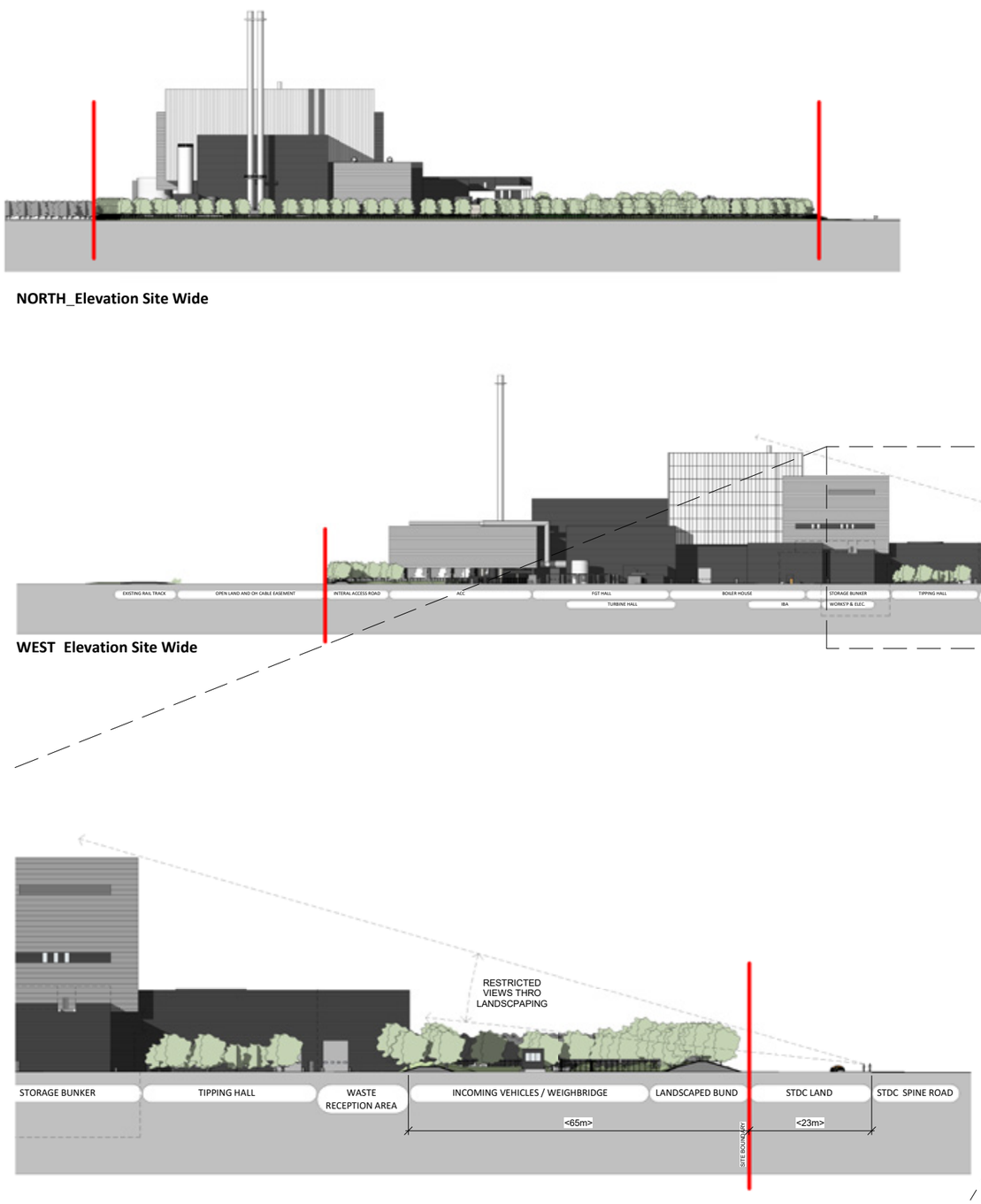
NORTH_Elevation Site Wide



WEST Elevation Site Wide



WEST Elevation Boundary Treatment

General Notes

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Site Boundary

Rev.	Description	Date	ISS	APP
P9	Duct from FGT to Stack added, and Diesel and Ammonia bund tanks added	10.03.2023	JDC	RT
P8	General Amendments	21.02.2023	JDC	RT
P7	Amendments to suit client comments	07.02.2023	JDC	RT
P6	Planning / Bid Issue	31.01.2023	JDC	RT
P5	General Updates	10.01.2023	JDC	RT
P4	General note added for copyright purposes	04.04.2022	JDC	RT
P3	Drawing updated to client comments	28.03.2022	JDC	RT
P2	Planning pack issue	09.02.2022	JDC	RT
P1	Planning pack updated to reflect Acciona comments	09.12.2021	JDC	RT
P0	Planning pack first issue	16.10.2021	JDC	RT

not to scale

Status	**S2 Information**
Drawn By	**JDC**
Checked By	**RT**
Date	**04.04.2022**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
GA Site Elevations - NORTH & WEST

Project No.	Orig.	Zone	Level	Type	Role	Cls	Dwg No.	Rev
20044	FRA	00	00	DR	A	-90	0005	P9

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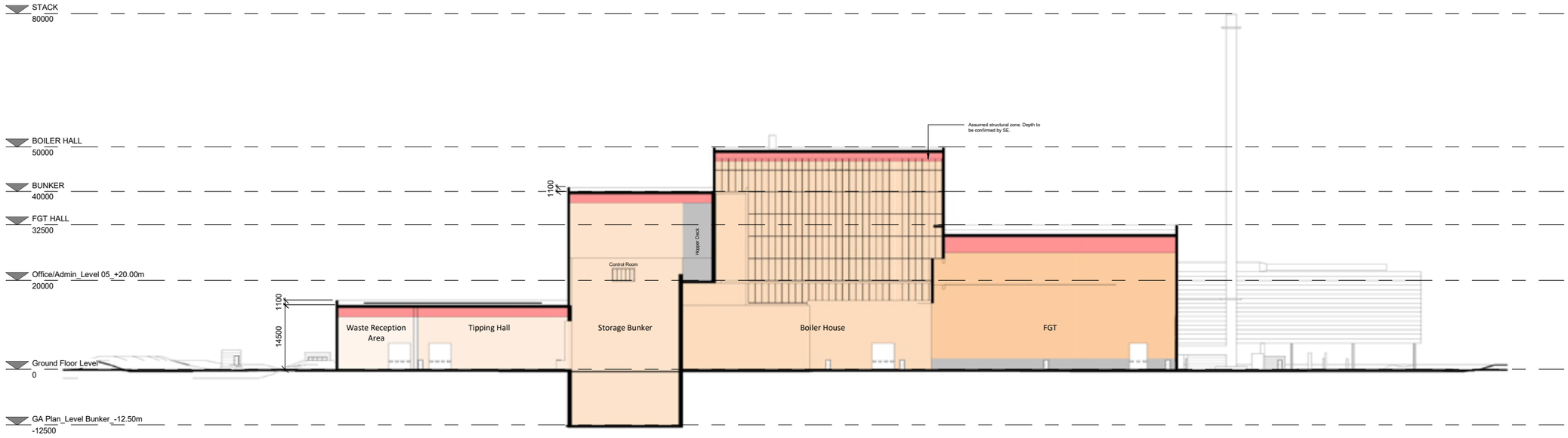

Section A

Section Key

General Notes

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Ground FFL: 10m AOD

Rev.	Description	Date	ISS	APP
P11	Duct from FGT to Stack added, and Diesel and Ammonia bund tanks added	10.03.2023	JDC	RT
P10	General Amendments	21.02.2023	JDC	RT
P9	Amendments to suit client comments	07.02.2023	JDC	RT
P8	Planning / Bid Issue	31.01.2023	JDC	RT
P7	General Updates	10.01.2023	JDC	RT
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P4	Planning pack update	10.02.2022	JDC	RT
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P2	Additional WC added to Gatehouse	27.01.2022	JDC	RT
P1	Planning pack updated to reflect Acciona comments	09.12.2021	JDC	RT
P0	Planning pack first issue	16.10.2021	JDC	RT

Status **S2 Information**
Drawn By **JDC**
Checked By **RT**
Date **04.04.2022**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
Section A

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -20-0012 P11

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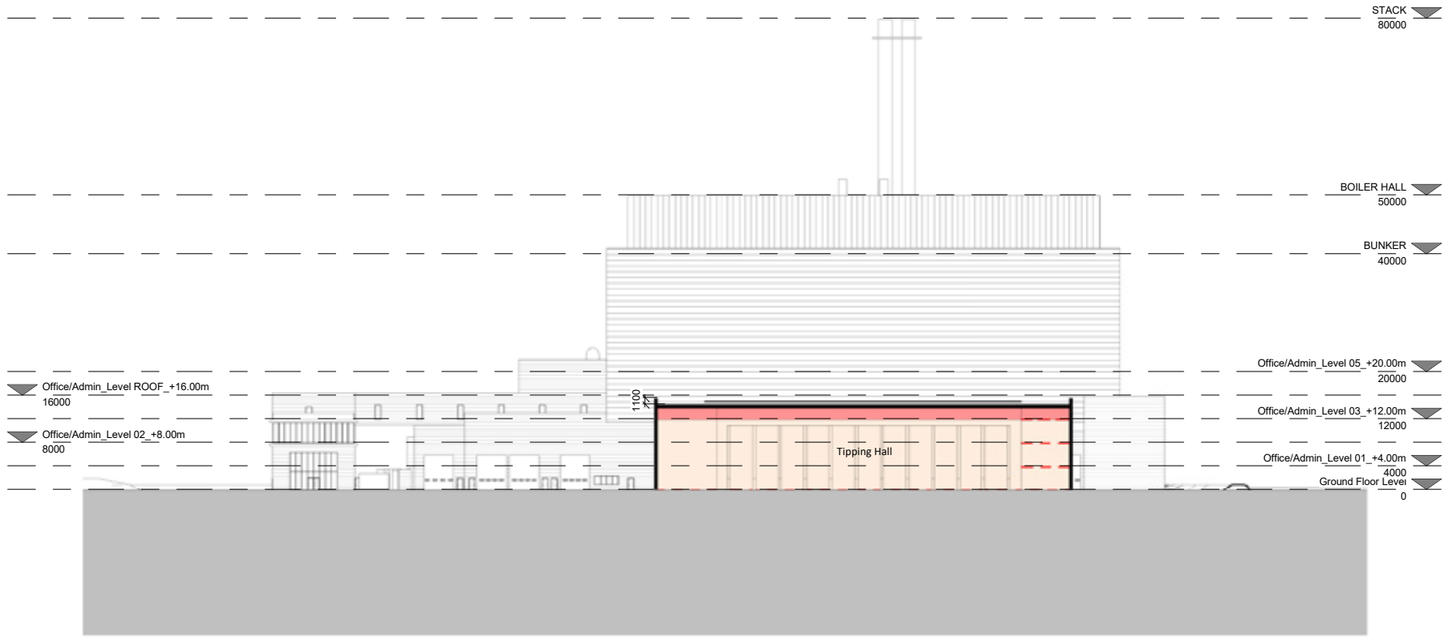
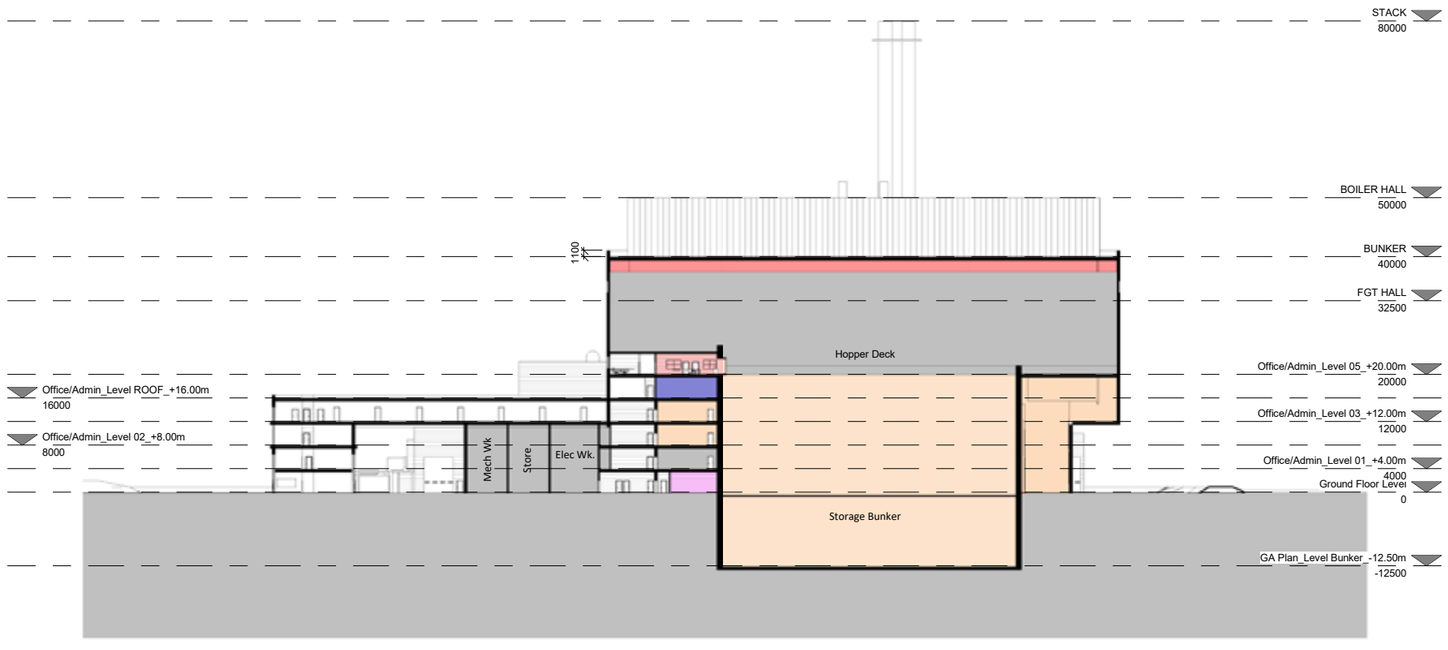
0 10m 25m

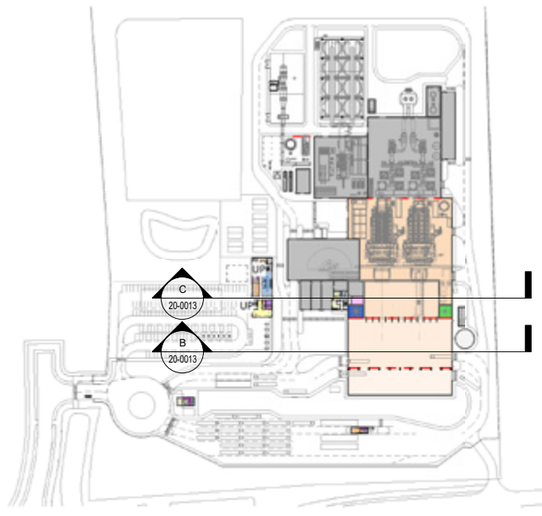


Ground FFL: 10m AOD

Section B



Section C



Section Key

0 10m 25m

General Notes

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Rev.	Description	Date	ISS	APP
P8	General Amendments	21.02.2023	JDC	RT
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P0	Planning pack first issue	16.10.2021	JDC	RT

Status **S2 Information**
Drawn By **JDC**
Checked By **RT**
Date **04.04.2022**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
Section B & C

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -20-0013 P8

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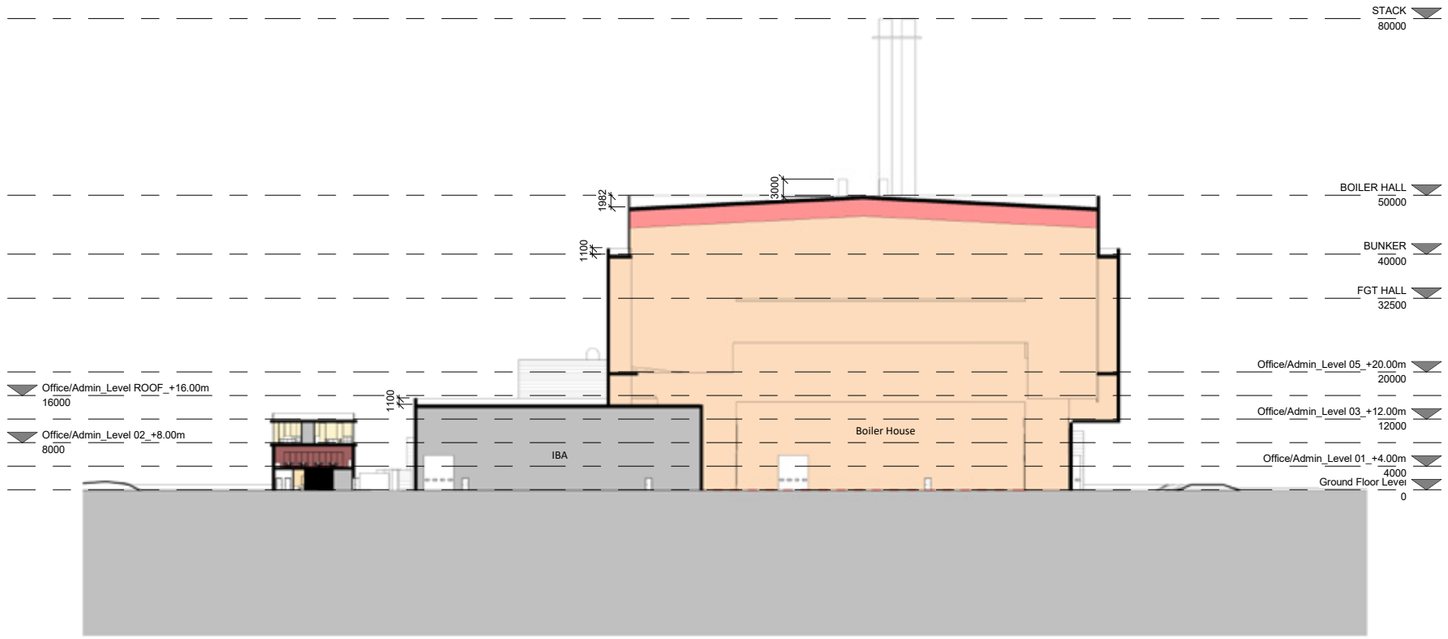
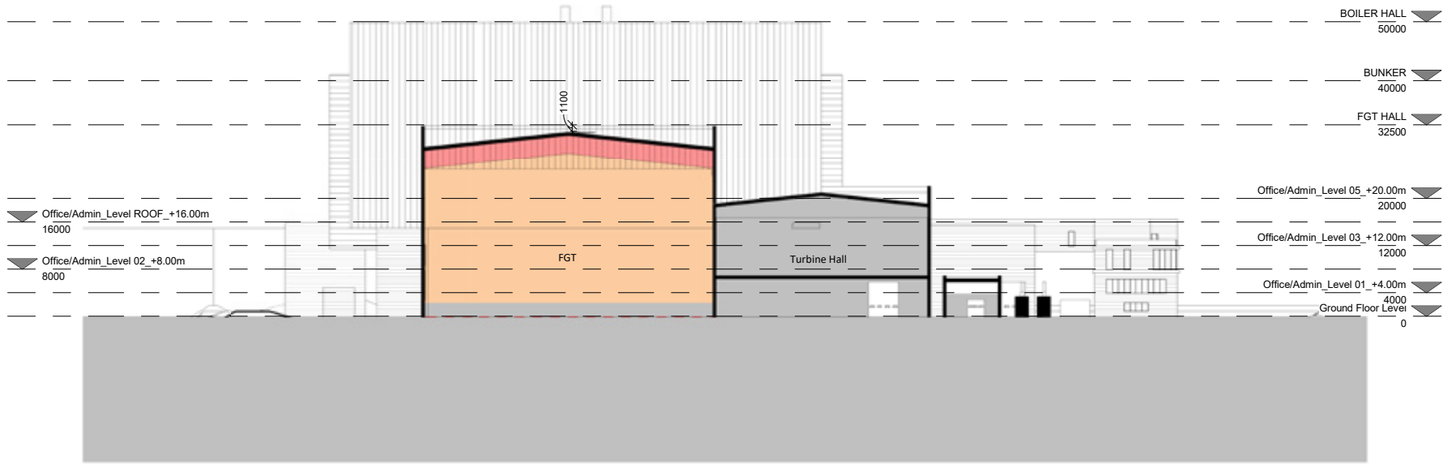


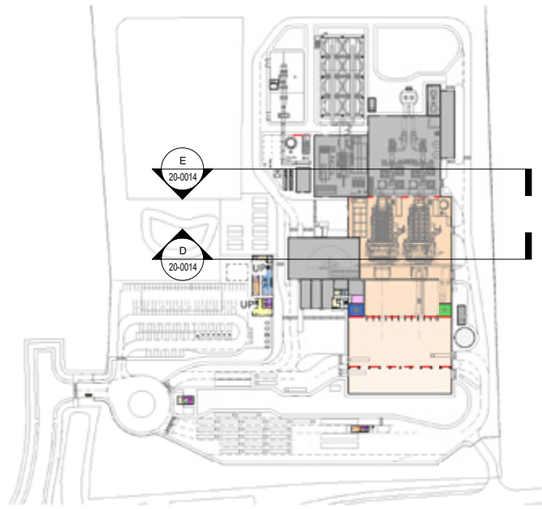
Section D

Ground FFL: 10m AOD



Section E

0 10m 25m



Section Key

General Notes

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P0	Planning pack first issue	16.10.2021	JDC	RT

Status **S2 Information**
Drawn By **JDC**
Checked By **RT**
Date **04.04.2022**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
Section D & E

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -20-0014 P8

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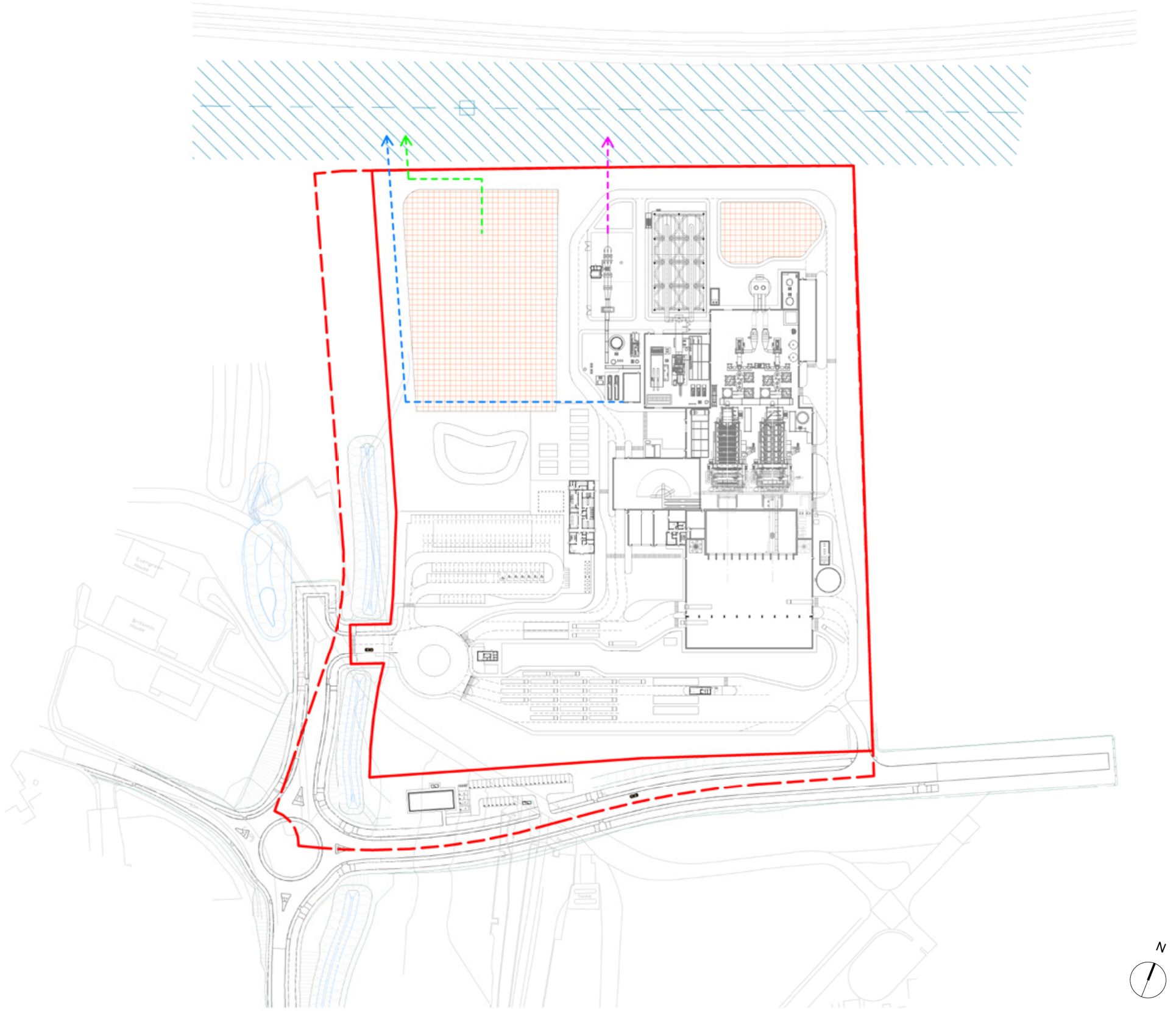

0 10m 25m 50m

Site Plan - Power Off Take Diagram

General Notes

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All site dimensions shall be verified by the Contractor on site prior to commencing any works.

- CO2 Pipeline Off-site
- Grid Connection Off-site
- Combined Heat & Power (CHP) Off-site
- CCUS Area

NOTE: Power off-take routes are indicative only

Rev.	Description	Date	ISS	APP
P2	Amendments to drawing title & other general amendments	21.02.2023	JDC	RT
P1	Planning / Bid Issue	14.02.2023	JDC	RT
P0	DRAFT ISSUE	07.02.2023	JDC	RT

Status **S2 Information**
Drawn By **JDC**
Checked By **RT**
Date **07.02.2023**

Client:
VIRIDOR

Project:
TEES VALLEY ERF

Sheet Name:
Energy & CCUS Off-take Diagram

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -90-0027 P2

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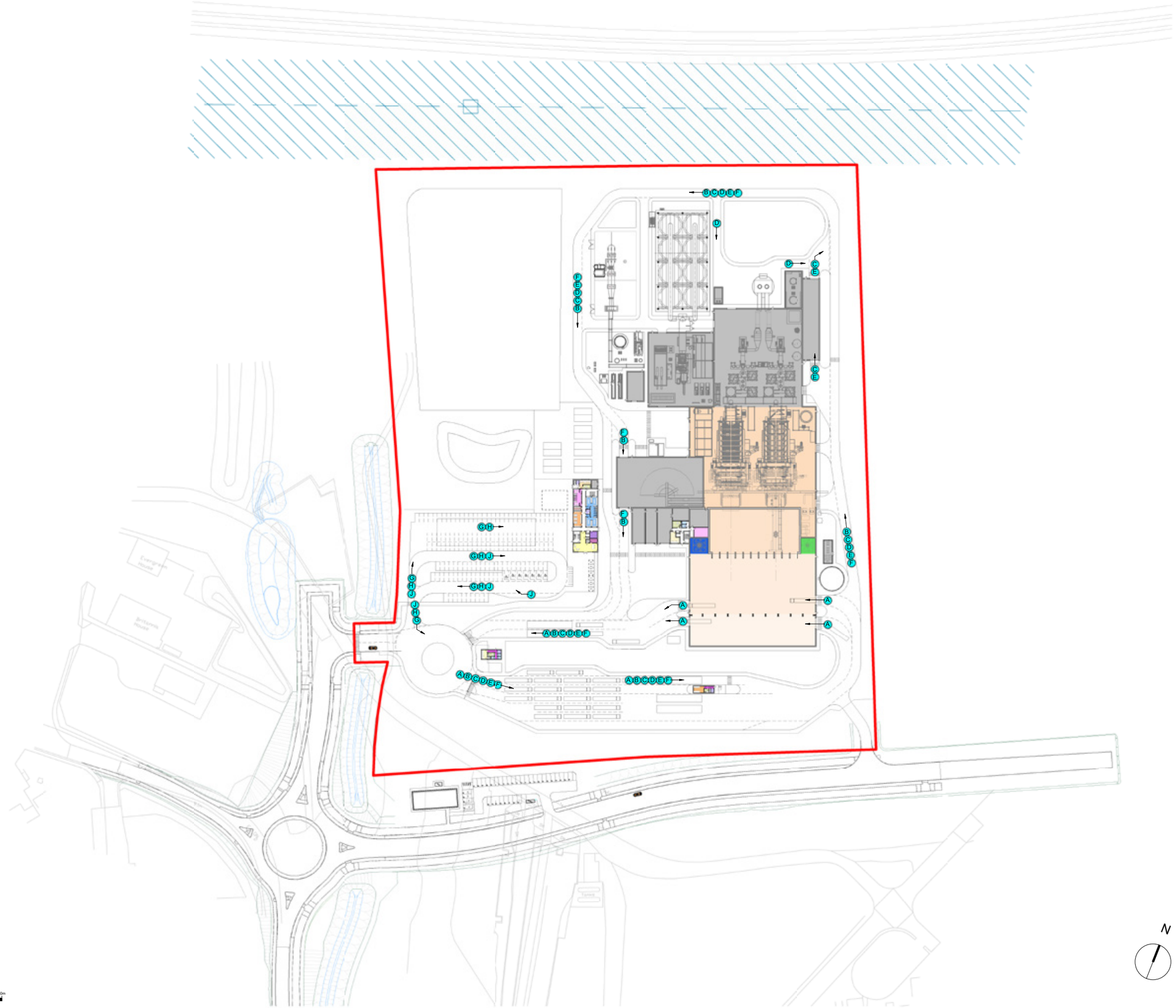
Reserved matters application boundary

0 5,250 m

N

Figure 3.5 Strategic highway network



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Status **S2 Information**
Drawn By **JDC**
Checked By **RT**
Date **04.04.2022**

Client:
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Project:
TEES VALLEY ERF

Sheet Name:
On-site Vehicle Circulation

Project No. Orig. Zone Level Type Role Cls Dwg No. Rev
20044-FRA-00-00-DR-A -90-0023 P11

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