



South Industrial Zone
Environmental Statement
July 2020

Volume 2

Chapter N - Cumulative Effects

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N1.0 Introduction

- N1.1 This chapter draws together and summarises the findings from the individual inputs into the Environmental Statement ('ES'); defines inter-relationships between these assessments and any other developments in the area surrounding the site; and establishes whether there are any other residual effects on the identified sensitive receptors which may require additional mitigation not previously identified.
- N1.2 Chapter O then summarises the mitigation and monitoring measures identified within this ES and how this can be delivered and secured.
- N1.3 There are different inter-relationships between the various assessments within the ES and this section identifies the key links between any impacts identified and how these may influence each other. Where these relationships give rise to other combined direct effects arising from the development, it is necessary to identify how these impact on those defined sensitive receptors identified in this ES.
- N1.4 There may also be other indirect effects arising from the development when considered with other proposals or schemes in the surrounding area. These effects may also give rise to the need to consider additional mitigation measures; albeit it is necessary to consider the likelihood of those other schemes proceeding and the ability or necessity of the applicant to mitigate any such effects for other sites.
- N1.5 Accordingly, this chapter considers two types of cumulative environmental effect in association with the proposed development:
- 1 Synergistic – the combined effect of different type of impacts attributable to the proposed development ('direct impacts') in respect of a particular receptor. An example of this could include the combined impact of ecology and water management on designated sites. This includes consideration of the impacts during the construction and operational phases; and
 - 2 Cumulative – these arise from the combined effect of the proposed development with committed development schemes that, individually, may be insignificant, but when combined with other impacts, may be significant.
- N1.6 A number of developments are identified as those requiring consideration in relation to those other indirect or cumulative effects. These have been agreed with Redcar and Cleveland Borough Council ('RCBC') and are listed in Table O4.1, and each development is reviewed further in this chapter.
- N1.7 Sensitive receptors have been identified in individual chapters of the ES and are summarised in Section O2.0. These receptors are those with varying degrees of sensitivity to environmental impact and change as a result of the proposals. Regard has been given to the sensitivity of the identified receptors to ensure consideration is then given to those which are potentially the most susceptible to impact, taking into account the extent of the effects arising. The professional judgement of those undertaking the Environmental Impact Assessment ('EIA') as well as topic specific criteria, legislation or guidelines have been used to identify the degree of sensitivity.
- N1.8 A consideration of the impacts arising from the construction and operational phases of the development has been carried out within this ES and is also addressed in the assessment of the interrelationship and cumulative effects arising from the scheme.
- N1.9 The structure of this chapter is as follows:
- **Section N2.0:** summary of residual effects (following mitigation) identified within the ES and identification of sensitive receptors;

- **Section N3.0:** inter-relationship of direct effects arising from the proposals (synergistic effects) and any additional mitigation measures required to have regard to those effects;
- **Section N4.0:** consideration of any cumulative effects arising from the scheme when considered with the other identified proposals in the surrounding area;
- **Section N5.0:** summary and conclusions from both this chapter and from the ES as a whole; and
- **Section N6.0:** abbreviations and definitions.

N2.0 Identification of Key Sensitive Receptors

N2.1 This section summarises the key residual environmental effects identified in the ES and those sensitive receptors most likely to be affected. It is with regard to those receptors that the analysis of any additional impacts associated with the accumulation of effects has been carried out.

N2.2 This approach accords with EIA legislation and best practice which focuses on the main or significant effects arising from the development. The Planning Practice Guide states (ID: 4-035-20170728, last updated 28 July 2017):

“Whilst every Environmental Statement should provide a full factual description of the development, the emphasis should be on the “main” or “significant” environmental effects to which a development is likely to give rise.”

N2.3 Summary of Residual Effects

N2.4 Table N2.1 provides a summary of the main residual effects (following incorporation of the mitigation measures described in Chapter P) as identified in Chapters C to M of this ES that could be expected to arise during the construction and operational phases of the proposed development.

Table N2.1 Summary of Residual Effects

Environmental Topic	Summary of Residual Effects
During Construction	
A range of effects have been identified during the construction period, many of which have been reduced to negligible (not significant) once mitigation measures have been incorporated into a Construction Environmental Management Plan ('CEMP').	
Transport	Unknown impacts on severance and amenity, but based on operational assessment, expected to be not significant . Any impact will also be temporary.
Biodiversity and Ecology	<p>Negligible effect on Teesmouth and Cleveland Coast SPA and Ramsar, Teesmouth and Cleveland Coast SSSI, Breeding Birds (nest destruction only), bats, otter, marine mammals, migratory fish and hedgehog (not significant).</p> <p>Minor positive effect on invasive non-native species (from their removal).</p> <p>Moderate negative impact on Invertebrates, Breeding Birds (breeding/foraging habitats only) and Brown Hare.</p> <p>The above impacts reflect the habitat that will be lost as a result of the development; which is expected to be significant based on the DEFRA2 metric approach. This will be off-set by compensatory off-site habitat creation and enhancement in order to achieve a biodiversity net gain.</p>
Noise and Vibration	No effect anticipated (not significant).
Air Quality	No effect anticipated (not significant).
Water Management and Flooding	Negligible to moderate beneficial impact (not significant) on the River Tees estuary.

Environmental Topic	Summary of Residual Effects
	<p>Negligible to minor beneficial impacts (not significant) on other surface water bodies (Holme Beck, Knitting Wife Culvert, Cleveland and Lackenby Channels)</p> <p>No significant effects on Groundwater.</p>
Ground Conditions	<p>Negligible (not significant) effects are predicted on all receptors (including human and environmental receptors and waste management facilities).</p>
Socio-Economics	<p>Temporary moderate and substantial beneficial (significant) effects are predicted as a result of construction employment and construction economic output.</p>
Waste and Materials Management	<p>Neutral or slight (not significant) effects are expected on landfill capacity and regional availability of materials.</p>
Climate Change	<p>Substantial residual construction related emissions are expected due to the significant volumes of building materials required, however it is not considered that these emissions will compromise the ability of the UK to meet its carbon target nor are these expected to contribute significantly to overall GHG emissions from Redcar and Cleveland.</p>
Landscape and Visual Impact	<p>Construction effects will range from temporary short term moderate adverse (significant) to short term negligible (not significant).</p> <p>The significant impacts are associated with Viewpoints 1 (Eston Nab Hill footpath users), 4 (South Bank train station footbridge/footpath users) and 5 (Junction of Smith’s Dock Road and Dockside Road – proposed site access point) only.</p>
Below Ground Heritage	<p>Negligible to neutral effects (not significant) expected on archaeological remains.</p>
During Operation	
Transport	<p>Minor beneficial effect on pedestrian and cyclist amenity expected on Smith’s Dock Road.</p> <p>Negligible effect predicted on pedestrian and cyclist amenity (on the A1085(T)/A1053 Roundabout only) and on accidents and safety (at the A66/Normanby Road signalised crossroads).</p> <p>Minor adverse effects are predicted on severance, driver and bus user delay, and pedestrian and cyclist amenity (on the A1053(T) only).</p> <p>No effects are significant.</p>
Biodiversity and Ecology	<p>Negligible effect on Teesmouth and Cleveland Coast SPA and Ramsar, Teesmouth and Cleveland Coast SSSI, Breeding Birds (nest destruction only), bats, otter, marine mammals, migratory fish and hedgehog (not significant).</p> <p>Minor positive effect on invasive non-native species (from their removal).</p> <p>Moderate negative impact on Invertebrates,</p>

Environmental Topic	Summary of Residual Effects
	<p>Breeding Birds (breeding/foraging habitats only) and Brown Hare.</p> <p>The above impacts reflect the habitat that will be lost as a result of the development; which is expected to be significant based on the DEFRA2 metric approach. This will be off-set by compensatory off-site habitat creation and enhancement in order to achieve a biodiversity net gain.</p>
Noise and Vibration	No effect anticipated (not significant).
Air Quality	No effect anticipated (not significant).
Water Management and Flooding	<p>No significant effect on any water environment receptors with some beneficial effects as follows:</p> <p>Moderate beneficial impacts (not significant) on the River Tees Estuary</p> <p>Minor beneficial effects (not significant) on Holme Beck, Knitting Wife Culvert, Cleveland and Lackenby Channels from spillages and leakages causing pollution.</p> <p>Negligible beneficial effects (not significant) on Holme Beck, Knitting Wife Culvert, Cleveland and Lackenby Channels from increased runoff.</p> <p>No groundwater receptors were found to experience any significant residual effects from flow levels, pollution and contamination.</p>
Ground Conditions	Negligible (not significant) effects are predicted on all receptors (human and environmental receptors, and the built environment and landscape).
Socio-Economics	Permanent substantial beneficial (significant) effects are expected from operational employment and operational economic output.
Waste and Materials Management	Neutral or slight (not significant) impacts are expected on regional landfill capacity.
Climate Change	. It is not considered that emissions during operation will compromise the ability of the UK or Redcar and Cleveland to meet respective carbon targets, though there will be an inevitable contribution to greenhouse gas emissions arising from transport emissions associated with the site.
Landscape and Visual Impact	<p>Effects will generally be negligible to minor adverse and therefore not significant.</p> <p>A moderate beneficial (significant) effect has been identified for Landscape Character Area 1 (Industrial).</p> <p>There is the potential for a moderate adverse (significant) effect on Viewpoint 1 (Eston Nab footpath) and Viewpoint 9 (Uvedale Road view from residential housing, recreation space and footpaths). All other viewpoints will experience minor adverse (not significant) impacts.</p>
Below Ground Heritage	No significant residual effects are expected,

Environmental Topic	Summary of Residual Effects
	<p>although minor adverse (not significant) impacts are predicted on the foundations of the World War I submarine base accommodation and the foundations of the World War II HAA battery and associated facilities.</p> <p>Negligible impacts are predicted on all other archaeology receptors (the foundation so South Bank Iron Works boiler House, Foundations of Antonien Works, 20th Century Riverside Pumping House and the 20th Century Custom House).</p>

Summary of Sensitive Receptors

N2.5 The technical assessments contained within this ES have identified a range of sensitive receptors which have varying degrees of sensitivity to environmental impact and change as a result of the proposed development. Those receptors potentially sensitive to the effects identified in Table N2.1 are identified below (in alphabetical order):

- 1 Breeding Birds;
- 2 Brown Hare;
- 3 Bus User Delay;
- 4 Cyclist Amenity;
- 5 Driver Delay;
- 6 Employment and Economic Output;
- 7 Eston Nab Hill Footpath;
- 8 Foundations of World War I Submarine Base Accommodation;
- 9 Foundations of World War II HAA Battery and Associated Facilities;
- 10 GHG Emissions;
- 11 Invasive Non-Native Species;
- 12 Invertebrates;
- 13 Landscape Character Area 1 Industrial);
- 14 On-Site Habitats;
- 15 River Tees Estuary;
- 16 Severance;
- 17 Smith’s Dock Road/Dockside Road;
- 18 South Bank Train Station Footpath/Train Bridge;
- 19 Surface Water Bodies (Holme Beck, Knitting Wife Culvert, Cleveland and Lackenby Channels); and,
- 20 Uvedale Road.

N3.0

Inter-Relationship of Direct Effects

N3.1

This section considers the inter-relationship between the direct effects arising from the development. It takes account of the residual effects only as they relate to the key sensitive receptors identified in section N2.0.

N3.2

The analysis identifies both positive and negative impacts and makes reference to the degree of effect as identified within the technical assessments. The objective is to identify where the accumulation of effects on particular receptors, and the relationship between those effects, may give rise to a need for additional mitigation not identified previously.

N3.3

This section focuses only on those issues where the impact identified is significant; however reference is made to Minor or Moderate ‘insignificant’ residual effects where relevant. The EIA process has identified that for the majority of the technical assessments carried out the residual effects of the development are either Neutral or Negligible and therefore these are not presented in the table below.

N3.4

To assist in this analysis, the table below summarises the effects anticipated against each receptor and identifies where particular receptors may be subject to an accumulation of environmental impacts.

Table N3.1 Direct Residual Environmental Effects for Identified Sensitive Receptors

Receptor	Construction Phase	Operational Phase
Breeding Birds	BE ¹	BE ¹
Brown Hare	BE	BE
Bus User Delay	-	(T)
Pedestrian/Cyclist Amenity	-	(T)
Driver Delay	-	(T)
Employment and Economic Output	SE*	SE
Eston Nab Hill Footpath	LV*	LV
Foundations of World War I Submarine Base Accommodation	-	(BGH)
Foundations of World War II HAA Battery and Associated Facilities	-	(BGH)
GHG Emissions	CC ²	CC ²
Invasive Non-Native Species	(BE)	(BE)
Invertebrates	BE	BE
Landscape Character Area 1 (Industrial)	-	LV
On-Site Habitats	BE ³	BE ³
River Tees Estuary	X-WMF	WMF
Severance	-	(T)
Smith’s Dock Road/Dockside Road	LV*	(T) ⁴
South Bank Train Station Footpath/Train Bridge	LV*	-
Surface Water Bodies (Holme Beck, Knitting Wife Culvert, Cleveland and	X-(WMF)	(WMF) ⁵

¹ Adverse impacts are associated with breeding and foraging habitats only.

² Emissions expected due to significant volumes of building materials required (during construction) and transport emissions during operation, however this will not compromise the ability to meet UK carbon target nor will it contribute significantly to overall GHG emissions from Redcar and Cleveland.

³ To be off-set by compensatory off-site habitat creation and enhancement, to be agreed.

⁴ Pedestrian and Cyclist Amenity (Smith’s Dock Road only).

Receptor	Construction Phase	Operational Phase
Lackenby Channels)		
Uvedale Road	-	LV

Key: T – Transport; BE – Biodiversity and Ecology; NV – Noise and Vibration; AQ – Air Quality; WMF – Water Management and Flooding; GC – Ground Conditions; SE – Socio-Economics; W – Waste and Materials Management; CC – Climate Change; LV – Landscape and Visual; BGH – Below Ground Heritage

RED – adverse effect; **GREEN** – beneficial effect; **BLACK** – unknown; () – minor effect; - negligible/no effect anticipated; * - transitory/short term effect

N3.5 Table N3.1 highlights residual effects on identified receptors after mitigation. This identifies that there are no synergistic effects and therefore no additional mitigation measures are required to manage the effects arising during the construction or operational phase.

N3.6 Mitigation measures are described further in the technical assessment ES chapters and combined in Chapter O of this ES, and are all capable of being secured via planning conditions and/or other agreements.

N3.7 With respect to the above assessment of synergistic effects the following should be noted:

- 1 The majority of the receptors identified within this ES do not experience significant impacts in EIA terms;
- 2 The proposed development is anticipated to provide significant socio-economic impacts throughout both its construction and operational phases. It should be noted that STDC is committed to delivering education, job and training as part of this proposed development;
- 3 There are only two receptors subject to significant impacts in EIA terms and these are the ecological receptors (including designated sites and on-site habitats and species) and nearby sensitive viewpoints. These are discussed in turn below:
 - a Ecological Receptors: significant adverse effects have been identified for both the construction and operational phases of development. The development, by its nature, will result in the loss of existing on-site habitats and species and no mitigation measures have been identified to reduce this impact on-site. However, it is proposed to create off-site habitats to compensate for this loss. The creation of these habitats will come forward in STDC’s wider Environment and Biodiversity Strategy. This strategy is intended to coordinate the off-site compensation approach for most, if not all, of the developments within the STDC Masterplan area. The strategy is currently being progressed in consultation with RCBC, Natural England (‘NE’) and the Environment Agency (‘EA’). This strategy is considered to reduce the effects of the proposed development; and
 - b Nearby Sensitive Viewpoints: only two viewpoints are anticipated to result in significant impacts in EIA terms during the operational phase. These are Viewpoint 1 (Eston Nab) and Viewpoint 9 (Uvedale Road) (see chapter M of this ES for further details). Secondary mitigation measures are proposed that will mean the buildings are articulated in a way that reduced visual scale and massing and building colours and materials will be used to help break up the massing of the development as a whole.

⁵ Beneficial impacts are from the amelioration of pollution caused by spillages and leakages.

N4.0 Cumulative Effects

N4.1 It has been agreed with RCBC that an assessment will be carried out on whether any cumulative effects may arise from the proposed development when considered with various other schemes in proximity to the site.

N4.2 The objective is to identify whether impacts from several developments which individually might be insignificant could, when considered together, cause a significant indirect and cumulative impact requiring mitigation.

Schemes to be Assessed

N4.3 Best practice dictates that cumulative assessments of this nature should have regard to those schemes which are ‘reasonably foreseeable’ (i.e. usually those under construction or with planning permission, as specified in guidance such as IEMA’s “Guidelines for Environmental Impact Assessment” (2004) and the EC’s “Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions” (1999)). This is further clarified in the Planning Practice Guidance (Environmental Impact Assessment) which states that:

N4.4 *“The local planning authorities should always have regard to the possible cumulative effects arising from any **existing or approved development**”* [our emphasis] (ID: 4-024-20170728) (last updated 28 July 2017)

N4.5 It is also clarified in Schedule 4 of the 2017 Regulations (as amended) that the ES should describe the likely significant effects of the development on the environment resulting from, inter alia, the cumulation of effects with other existing and/or approved projects.

N4.6 We interpret this guidance and Schedule 4 to mean schemes that are under construction and those with planning permission. We have also undertaken a pre-cautionary approach and have assessed relevant schemes that are currently pending determination, as schemes that could be approved prior to the determination of this planning application.

N4.7 The assessment is also only capable of being carried out based on the information available at the time.

N4.8 Various schemes have been identified for potential consideration in this EIA. These have been identified via discussion with STDC and a review of planning records held by RCBC to identify projects which have the potential to give rise to cumulative effects as a result of their geographic proximity to the site, scale of development or other relationships which may be relevant. The schemes to be included have also been discussed and agreed with officers at RCBC.

N4.9 The findings are set out in Table N4.1, in which the current know status and available information is provided and a brief review of its potential relevance to this EIA with regard to the guidance summarised above.

Table N4.1 Scheme Identified for Cumulative Assessment

Address		Ref. Number	Type of Application	Current Known Status	Description of Development	Approximate Distance from the Development Site
1	Grangetown Prairie Land East of John Boyle Road and West of Tees Dock Road Grangetown	R/2019/0767/OOM	Outline	Awaiting determination, target determination date 30.06.2020	Outline application for the construction of an energy recovery facility ('ERF') and associated development	500m (south)
2	Land at Former South Bank Works; Grangetown Prairie; British Steel and Warrenby Area	R/2019/0427/FFM	Full	Granted, 25.05.2017	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	On site and surrounding STDC area
3	Land at Low Grange Farm South Bank	R/2014/0372/OOM	Outline	Granted, 31.03.16	Outline application for residential development (up to 1250 dwellings) (all matters reserved)	1.3km (south)
4	Port Blyth Biomass Power Station	DCO Reference. 1873	Development Consent Order	Order made 24.07.2013	Proposed construction of a 300 Mw biomass fired renewable energy power station on land adjacent to the main southern dock at Teesside on the south bank of the River Tees.	65km (north)
5	Land North of Kirkleatham Business Park and West of Kirkleatham Lane Redcar	R/2016/0663/OOM	Outline	Granted, 25.07.2020	Outline planning application for up to 550 residential units with associated access, landscaping and open space	4km (east)
6	Land North of Kirkleatham Business Park and West of Kirkleatham Lane Redcar	R/2019/0485/RMM	Reserved Matters	Granted, 31.10.19	Reserved matters application (appearance, landscaping, layout and scale) following approval of outline planning permission R/2016/0663/OOM for up to 550 residential units with associated access, landscaping and open space	4km (east)

Address		Ref. Number	Type of Application	Current Known Status	Description of Development	Approximate Distance from the Development Site
7	Dogger Bank Wind Farm	DCO Reference. 5192	Development Consent Order	Order made 17.02.15. A Non-Material Amendment was submitted on 11.01.2019	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.	2.5km (south). Distance to nearest onshore development area.
8	Teesside Combined Cycle Power Plant ('CCPP')	DCO Reference. 2019	Development Consent Order	Order made 05.04.19	Construction of a 1,700mwe combined-cycle gas turbine power station at Wilton International was granted permission.	2.5km (south)
9	Land at Wilton International Complex Redcar	R/2017/0876/FFM	Full	Granted, 16.01.18	Construction and operation of a mineral processing and refining facility including ancillary development, car parking and landscaping	2.5km (south)
10	Land at Teesport, Grangetown	R/2006/0433/OO	Outline	Granted 04. 10.07	Outline application for development of a container terminal	500m (north east)
11	York Potash Port and Materials Handling Facilities	The York Potash Harbour Facilities DCO Order 2016 (No. 772)	Development Consent Order	Order made, 20.07.2016	Harbour facilities associated with Bran Sands	2.2km (north east)
12	York Potash Land at Wilton International Complex Redcar	R/2017/0906/OOM	Outline	Granted	Outline planning application for an overhead conveyor and associated storage facilities in connection with the York Potash Project	2.3km (north east)
13	Land at Wilton International Complex	R/2018/0139/VC	Full	Granted, 23.05.2018	Variation of condition 2 (approved plans) of planning Permission R/2014/0626/FFM to allow for minor material Amendments to the approved layout and size of Buildings; site mounding; on-site attenuation ponds, Swales and internal roads following the progression	2.8km (east)

Address	Ref. Number	Type of Application	Current Known Status	Description of Development	Approximate Distance from the Development Site
				Of more detailed design engineering	
14 The York Potash Project - (Doves Nest now known as Woodsmith)	R/2014/0627/FFM	Full	Granted, 19.08.2015	The winning and working of polyhalite by underground methods including the construction of a minehead at Doves Nest Farm involving access, maintenance and ventilation shafts, the landforming of associated spoil, construction of buildings, access roads, car parking and helicopter landing site, attenuation ponds, landscaping, restoration and aftercare and associated works. In addition, the construction of an underground tunnel between doves nest farm and land at Wilton that links to the mine below, comprising 1 shaft at doves nest farm, 3 intermediate access shaft sites, each with associated landforming of associated spoil, construction of buildings, access roads and car parking, landscaping, restoration and aftercare, the construction of a tunnel portal at Wilton comprising buildings, landforming of spoil and associated works	Nearest red line boundary 2.8km (east)
15 Lianhetech Seal Sands Seal Sands Road Seal Sands TS2 1UB (Stockton Council)	19/2161/FUL	Full	Granted, 21.02.2020	Erection of new plant, new buildings and extensions to existing buildings. Works to include Warehouse D Extension, Boiler House Structure, Amenities & Workshop Building, Drum Storage Workshop Extension, Amenities extension, 2 no. Warehouse buildings, Contractors 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.	1.6km (north)

Address		Ref. Number	Type of Application	Current Known Status	Description of Development	Approximate Distance from the Development Site
16	Land to the South of Tofts Road West Graythorp Hartlepool (Hartlepool Council)	H/2019/0275	Full	Awaiting determination, target determination date. 22.01.2020	Energy recovery (energy from waste) facility and associated infrastructure	5.3km (north)
17	Regent Cinema Newcomen Terrace Redcar TS10 1AU	R/2020/0075/F3M	Full	Awaiting determination, target determination date. 31.07.2020	Demolition of existing cinema and replace with new cinema including external terraces; landscaping and temporary sea wall	5.8km (north east)

Consideration of Cumulative Effects

N4.10 Consideration of the potential for cumulative effects in respect of the technical matters scoped in to this ES are set out below.

Transport

N4.11 Cumulative impacts have been considered as part of the future scenario in the transport assessment set out in chapter C of this ES. The results are not repeated here.

Biodiversity and Ecology

Site 1 (R20190700M)

N4.12 Site 1 is in close proximity to the proposed development site. This project will involve further loss of Open Mosaic Habitat ('OMH'), and therefore further reduce resource available for invertebrates. This is albeit at a much smaller scale than the proposed development site. It is considered that there would be potential for cumulative impacts.

Site 2 (R20190427FFM)

N4.13 Site 2 is in close proximity to the proposed development site. This project will involve further loss of OMH, and therefore further reduce resource available for invertebrates. This is albeit at a much smaller scale than the proposed development site. It is considered that there would be potential for cumulative impacts.

Site 3 (R2014037200M)

N4.14 Site 3 is unlikely to feature significant areas of OMH, and would not support significant populations of faunal species impacted by the proposed development. Site 3 is relatively distant to the proposed development. Any anticipated loss to localised invertebrate or bird populations are unlikely to affect the wider locality. The fauna encountered within Site 3 are unlikely to occur on the proposed development site due to different habitat types being present. It is considered that there would not be potential for cumulative impacts.

Site 4 (Port Blyth Biomass Power Station (DCO. 1873))

N4.15 Site 4 is located significantly distant from the proposed development site, in Blyth, Northumberland. Site 4 does not share any overlap with any internationally important designated sites with the proposed development site. It is considered that there would not be potential for cumulative impact.

Site 5 (R20160663OOM)

N4.16 Site 5 is unlikely to feature significant areas of OMH, and would not support significant populations of faunal species impacted by the proposed development. Site 5 appears to feature predominantly arable and grassland habitats. Site 5 is relatively distant to the proposed development. Any anticipated loss to localised invertebrate or bird populations are unlikely to affect the wider locality. The fauna encountered within Site 5 are unlikely to occur on the proposed development site due to different habitat types being present. It is considered that there would not be potential for cumulative impacts.

Site 6 (R20190485RMM)

N4.17 Site 6 is unlikely to feature significant areas of OMH, and would not support significant populations of faunal species impacted by the proposed development. Site 6 appears to feature

predominantly arable and grassland habitats. Site 6 is relatively distant to the proposed development. Any anticipated loss to localised invertebrate or bird populations are unlikely to affect the wider locality. The fauna encountered within Site 6 are unlikely to occur on the proposed development site due to different habitat types being present. It is considered that there would not be potential for cumulative impacts.

Site 7 (Dogger Bank Wind Farm (DCO. 5192))

- N4.18 The offshore element of the Dogger Bank project is significantly distant from the proposed development site. The offshore element does not share any overlap with any internationally important designated sites with the proposed development site.
- N4.19 The onshore element would result in potential impacts upon the Teesmouth and Cleveland Coast SSSI, SPA, and Ramsar sites. Such impacts would be more direct, as opposed to the potential indirect impacts considered as part of the proposed development (which are considered to be of negligible impact). There is potential for the onshore element to lead to loss of similar habitats as within the proposed development site, however these are a significant distance from the proposed development site.
- N4.20 It is considered that there would not be potential for cumulative impacts.

Site 8 (Teesside Combined Cycle Power Plant (CCPP) (DCO. 2019))

- N4.21 Site 8 may feature some areas of OMH, however this is disconnected from the proposed development. Any anticipated loss to localised invertebrate or bird populations within Site 8 are unlikely to affect the local populations encountered within the proposed development site. It is considered that there would not be potential for cumulative impacts.

Site 9 (R20170876FFM)

- N4.22 Site 9 appears to be located in an existing developed, industrial landscape, and consist of a small footprint which is distant from the proposed development site. Any anticipated loss to localised invertebrate or bird populations within Site 9 are unlikely to affect the local populations encountered within the proposed development site. It is considered that there would not be potential for cumulative impacts.

Site 10 (R/2006/0433/00)

- N4.23 Site 10 involves development of a marine and terrestrial section of the River Tees to the north-west of the proposed development site. Potential impacts upon the Teesmouth and Cleveland Coast SSSI, SPA, and Ramsar sites may occur as a result of Site 10. However, potential indirect impacts considered as part of the proposed development are considered to be of negligible impact. It is considered that there would not be potential for cumulative impacts.

Site 11 (York Potash Port and Materials Handling Facilities (DCO. 772))

- N4.24 There is potential for Site 11 to impact upon wetland habitats such as saltmarsh and intertidal mud, where development of Site 11 along with River Tees occurs. Due to potential loss of these habitats, it is considered that there would be potential for cumulative impacts.

Site 12 (R/2017/0906/00M)

- N4.25 Site 12 may feature some areas of OMH, however this is disconnected from the proposed development. Any anticipated loss to localised invertebrate or bird populations within Site 12 are unlikely to affect the local populations encountered within the proposed development site. It is considered that there would not be potential for cumulative impacts.

Site 13 (R/2018/0139/VC)

N4.26 Site 13 may feature some areas of OMH, however this is disconnected from the proposed development. Any anticipated loss to localised invertebrate or bird populations within Site 13 are unlikely to affect the local populations encountered within the proposed development site. It is considered that there would not be potential for cumulative impacts.

Site 14 (R/2014/0627/FFM)

N4.27 The York Potash Mine project mostly features mining works that would not impact upon ecological features scoped into assessment for the proposed development site. Above ground works associated with the York Potash Mine project are limited to an industrial area significant distant from the proposed development. It is considered that there would not be potential for cumulative impacts.

Site 15 (19/2161/FUL)

N4.28 Site 15 may feature some areas of OMH, however this is disconnected from the proposed development. Any anticipated loss to localised invertebrate or bird populations within Site 15 are unlikely to affect the local populations encountered within the proposed development site. It is considered that there would not be potential for cumulative impacts.

Site 16 (H/2019/0275)

N4.29 Site 16 may feature some areas of OMH, however this is disconnected from the proposed development. Site 16 is significantly distant from the proposed development site. It is considered that there would not be potential for cumulative impact.

Site 17 (R20200075F3M)

N4.30 Site 17 is located at a coastal location however works are restricted to an existing building and its immediate footprint. No habitat of interest to the assessment of the proposed development will be impacted, and it is anticipated that no impact upon the Teesmouth and Cleveland Coast SSSI, SPA and Ramsar sites would occur. It is considered that there would not be potential for cumulative impacts.

Summary

N4.31 Three of the above cumulative schemes are identified as having possible cumulative impacts with the proposed development because of the accumulative and loss of habitats and species on site. As explained previously in this chapter STDC is in the process of publishing its Environment and Biodiversity Strategy and this is intended to coordinate the off-site compensation approach for most, if not all of the developments within the STDC area. It is anticipated that through this, the identified impacts will be reduced.

Noise and Vibration

N4.32 Cumulative effects of traffic for the identified cumulative schemes has been included in the future scenario traffic flow data provided by Arup, and therefore cumulative noise effects is considered within the noise chapter of this ES. The results are not repeated here.

Air Quality

N4.33 Cumulative effects of traffic for the identified cumulative schemes has been included in the future scenario traffic flow data provided by Arup, and therefore cumulative noise effects is considered within the air quality chapter of this ES. The results are not repeated here.

Water Management and Flooding

Site 1 (R/2019/0767/00M)

- N4.34 This site is situated on the right bank of the (currently culverted) Holme Burn channel which currently flows into the Lackenby channel. Increases in impermeable surfaces at the prairie site could increase runoff and mobilisation of contaminants. However, the prairie site is within the wider STDC area and will be covered by STDC's water management strategy and shall include mitigation measures for flow and quality of surface and groundwater. The cumulative magnitude of impact with mitigation would be minor and not significant for the low sensitivity receptor of the Holme Burn.

Site 2 (R/2019/0427/FFM)

- N4.35 The former South Bank works are 'pockets' of land within the exterior boundary of the South Industrial Zone site and so there is the potential for cumulative impacts on flow and water quality. The proposal for the South Bank Works is understood to entail the demolition of structures and engineering operations associated with ground preparation and temporary storage of soils, with the final use of the land entailing regeneration and development (which is understood to be part of a later phase of proposed development at the SIZ site). Without mitigation, the works could have a moderate impact on the receptors of the high sensitivity South Tees and low sensitivity surface waterbodies (including the former Holme Beck, Lackenby Channel and Cleveland channel) which would have a substantial (significant) effect and minor (non-significant) effect respectively. However, with mitigation there could be moderate beneficial changes to water and quality which could result in beneficial significant effects.

Site 3 (R/2014/0372/00M)

- N4.36 This site is situated on the right bank of the (currently culverted) Holme Burn channel which currently flows into the Lackenby channel. Increases in impermeable surfaces at the prairie site could increase runoff and mobilisation of contaminants. However, the site is within the wider STDC area and so shall be covered by the water management strategy which is being developed that shall include mitigation measures for flow and quality of surface and groundwater. The cumulative magnitude of impact with mitigation would be minor and not significant for the low sensitivity receptor of the Holme Burn.

Site 4 (Port Blyth Biomass Power Station – DCO. 1873)

- N4.37 It is not anticipated that there will be significant cumulative effects with this proposed development since it is located in Port Blyth, 65 km north of the SIZ site.

Site 5 (R/2016/0663/OOM)

- N4.38 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites and thus lack of a significant effect. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management.

Site 6 (R/2019/0485/RMM)

- N4.39 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites. Further, it assumed that there shall be effective

mitigation measures implemented for the construction and operation phases at both sites for water management.

Site 7 (Dogger Bank – DCO. 5192)

N4.40 It is understood that the wind farm will comprise onshore areas, one of which is located in the vicinity of the Kettle Beck which drains to the Lackenby Channel. However, since the site is 2.5km from the development site it is not anticipated that there will be significant cumulative effects.

Site 8 (Teesside CCPP – DCO. 2019)

N4.41 It is understood that the wind farm will comprise onshore areas, one of which is located in the vicinity of the Kettle Beck which drains to the Lackenby Channel. However, since the site is 2.5km from the development site it is not anticipated that there will be significant cumulative effects.

Site 9 (R/2017/0876/FFM)

N4.42 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites and thus lack of a significant effect.

Site 10 (R/2006/0433/00)

N4.43 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites and thus lack of a significant effect. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management

Site 11 (York Potash – DCO. 772)

N4.44 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the distance between the developments (located on opposite banks of the Tees and the York Potash Port proposed development located inland from the Tees. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management.

Site 12 (R/2017/0906/00M)

N4.45 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites and thus lack of a significant effect. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management.

Site 13 (R/2018/0139/VC)

N4.46 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites and the distance between the sites and thus lack of a significant effect. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management.

Site 14 (R/2014/0627/FFM)

- N4.47 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites and the distance between the sites and thus lack of a significant effect. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management.

Site 15 (19/2161/FUL)

- N4.48 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the distance between the developments (located on opposite banks of the Tees and the Seal Sands proposed development located inland from the Tees).

Site 16 (H/2019/0275)

- N4.49 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the distance between the developments (located on opposite banks of the Tees and the Tofts Road proposed development located inland from the Tees. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management.

Site 17 (R/2020/0075/F3M)

- N4.50 It is not anticipated that there will be significant cumulative effects with this proposed development and the development site due to the negligible connection between the surface water and groundwater bodies at the sites and thus lack of a significant effect. Further, it assumed that there shall be effective mitigation measures implemented for the construction and operation phases at both sites for water management.

Ground Conditions

- N4.51 No cumulative effects are anticipated to occur on ground condition receptors as a result of the cumulative schemes.

Socio-Economics

- N4.52 A review of supporting documentation for the identified cumulative schemes has enabled an estimation of the anticipated employment impacts – during both the construction and operational phases – which are presented here on an aggregate basis. A review of the cumulative schemes indicates a wide variety of major employment-generating schemes ranging from the offshore wind energy sector, to renewables and energy recovery, to a container terminal and a mineral processing and refining facility. The cumulative schemes also include residential development which has the potential to generate employment during construction phases. Due to the variation in approaches to the assessment and the presentation of employment impacts it is not possible to accurately quantify the aggregate employment effects; rather an estimate is presented. This approach does, however, provide a broad indication of the magnitude and significance of cumulative effects.
- N4.53 If all the cumulative schemes came forward for development, without the proposed development, it is likely that the construction of these schemes could lead to the generation of approximately 5,650 jobs (including direct, indirect and induced employment). Subject to there being no issues with regard to the availability of labour, it is reasonable to consider that the delivery of all cumulative schemes could represent a substantial and beneficial effect in terms of

construction industry employment. Given that the cumulative schemes are likely to be built out at different times and that not all labour is likely to be local, the availability of construction labour is unlikely to be an issue.

- N4.54 If all the cumulative schemes came forward for development, with the proposed development, it is estimated that these could deliver in the region of 10,200 operational jobs (encompassing direct, indirect and induced effects). For reasons outlined above, this figure only represents an estimate since it reflects a spread of approaches: for some, only an assessment of gross direct impacts was made whereas others made allowances for net additionality/displacement and considering the multiplier (indirect and induced) employment effects throughout the wider economy. Notwithstanding, it is considered that the scale of estimated operational employment represents approximately 5% of the total workforce within the Area of Impact (comprising Redcar and Cleveland, Middlesbrough and Stockton-on-Tees). Clearly, the delivery of this many jobs could have a significant interaction with the local labour market and could result in a tightening of the job market and bidding up of wages locally. However, the impact of these could be reduced by virtue of the fact that the delivery of these jobs would, in theory, be generated over a wider time period and across a range of sectors. In this context, the cumulative effect during the operational phase is likely to represent a substantial and beneficial effect.

Waste and Materials Management

- N4.55 Materials required for construction as well as the waste arising from the construction of the cumulative schemes would need to be considered against the availability of materials within the region and the remaining regional landfill capacity.
- N4.56 The potential for cumulative impact also needs to be considered alongside STDC's emerging waste strategy for the masterplan area.
- N4.57 For all of the cumulative schemes identified within this chapter there is an opportunity for procurement of locally sourced secondary materials and reuse of materials in accordance with the proximity principle, waste hierarchy, and Definition of Waste: Development Industry Code of Practice. Some of the cumulative schemes also provide the opportunity to act as a local source for primary and secondary materials. Cumulative impacts may be minor to moderate (but not significant).

Climate Change

- N4.58 Greenhouse gas (GHG) emissions are inherently cumulative for the following reasons:
- the environmental impact arising from GHGs is the aggregation and increased concentration of GHGs within the atmosphere;
 - the location of the emissions source is not relevant to the impact arising from it, any proposed development leading to GHG emissions has the same impact whether located near to the scheme or in another region/country; and
 - the climate change impacts on a given location arise from the aggregated GHG levels in the atmosphere, not from the magnitude of GHG emissions in the local area.
- N4.59 Cumulatively, all of the developments under consideration together would further contribute to emissions but it is not considered that this would impact on the ability of the UK or Redcar and Cleveland to achieve its objectives to reduce greenhouse gas emissions. Notwithstanding, all developments should be encouraged to implement measures to reduce emissions from their sites to reduce impacts as far as is possible.

Landscape and Visual Impact

N4.60 The references to viewpoints within this section should be read in accordance with chapter L of the ES.

Site 1 (R/2019/07/00M)

N4.61 Potential minor beneficial cumulative effect through development on the Prairie site reducing the appearance of the massing of the Proposed Development from View Point 1. The exact magnitude of the impact will depend on the final form of the reserved matters for R/2019/07/00M.

Site 2 (R/2019/0427/FFM)

N4.62 No significant cumulative effect with the Proposed Development.

Site 3 (R/2014/0372/00M)

N4.63 Potential minor beneficial cumulative effect upon Viewpoint 8 through an increase in the area of LCZ2 Urban at the expense of LCZ9 Urban Green Space.

Site 4 (Port Blyth Biomass Power Station – DCO. 1873)

N4.64 The cumulative scheme falls within LCZ1 Urban and although the cumulative scheme is of significant scale the overall landscape character will be negligible. Consequently there are not considered to be any significant landscape or visual impacts in cumulation with the Proposed Scheme.

Sites 5 to 16

N4.65 The cumulative schemes falls within LCZ1 Urban and although the cumulative scheme is of significant scale the overall landscape character will be negligible. Consequently there are not considered to be any significant landscape or visual impacts in cumulation with the Proposed Scheme.

Site 17 (R/2020/0075/F3M)

N4.66 The cumulative scheme is remote from the location of the Proposed Development and is of a scale typical of town centre development. There will be no direct views of the Proposed Development and no change in landscape character. Consequently there will be no cumulative impacts in association with the Proposed Development.

Below Ground Heritage

N4.67 As belowground heritage features are standalone features of the proposed development site there are considered to be no cumulative impacts and this is therefore not significant in EIA terms.

N5.0 **Summary & Conclusions**

- N5.1 This chapter has considered the inter-relationships between impacts identified within this ES and whether there is a need for further mitigation (synergistic effects). It also considers the potential for cumulative impacts when the development is considered with other developments in the surrounding area.
- N5.2 The ES has assessed the potential for effects in relation to the following environmental matters:
- Transport;
 - Biodiversity and Ecology;
 - Noise and Vibration;
 - Air Quality;
 - Water Management and Flooding;
 - Ground Conditions and Remediation;
 - Socio-Economic;
 - Waste and Materials Management;
 - Climate Change (Greenhouse Gases);
 - Landscape and Visual Impact; and
 - Below Ground Heritage.
- N5.3 A range of mitigation measures have been identified throughout the ES, some of these are embedded into the design of the scheme whilst others are largely capable of being enforced through the planning process in relation to the proposed development.
- N5.4 Some negative residual effects during construction and operation remain and these relate to ecology and landscape and visual impact. Non-significant impacts are identified for the other environmental areas. The adverse impacts should be balanced against the substantial socio-economic benefits to the scheme.
- N5.5 The relationship between the effects identified onsite do not give rise to the need for additional mitigation measures.
- N5.6 The only potential cumulative impacts, based on the information available at the time of undertaking this EIA relate to:
- Ecology – there is potential for cumulative impacts associated with the development of the wider Grangetown Prairie/South Bank sites, however these should be considered within the context of STDC’S Environment and Biodiversity strategy that aims to provide a means of compensation for the loss of on-site habitats and species as a result of development in the area.
 - Water Environment – there may be additional beneficial impacts to Holme Burn and other surface water bodies from the implementation of the wider STDC Water Management Strategy, which will improve surface water flow and water quality.
 - Socio Economic – additional benefits associated with direct, indirect and induced employment are expected.
 - Waste – Additional impacts may arise from waste and materials management, however this will be addressed in the context of STDC’s emerging Waste Strategy for the Masterplan area.

- Climate Change – Further greenhouse gas emissions are expected from transport movements and material sourcing associated with the construction and operational phases of the development, however this will not impact on the ability to meet the climate change objectives of the UK or Redcar and Cleveland.
- Landscape and Visual – Additional impacts are predicted however these are very localised. Potential minor beneficial cumulative impacts are predicted on Viewpoint 1 (Eston Nab Hill Footpath/Vantage point) as the development of the Prairie site will reduce the appearance of the massing of the proposed development. Minor beneficial cumulative impacts are also predicted on Viewpoint 8 (Junction with Tesco Extra).

N6.o

Abbreviations & Definitions

1	CEMP	Construction Environmental Management Plan
2	EA	Environment Agency
3	EIA	Environmental Impact Assessment
4	ES	Environmental Statement
5	DCO	Development Consent Order
6	RCBC	Redcar and Cleveland Borough Council
7	GHG	Greenhouse Gas
8	NE	Natural England
9	OMH	Open Mosaic Habitat
10	SPA	Special Protection Areas
11	SSSI	Site of Special Scientific Interest
12	STDC	South Tees Development Corporation

N7.0

References

- 1 Town and Country Planning (Environmental Impact Assessment) Regulations 2017
- 2 Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018
- 3 Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018
- 4 Planning Practice Guidance