# South Industrial Zone

## Energy and Utilities Statement
July 2020

South Tees Development Corporation

# South Industrial Zone

## Energy and Utilities Strategy

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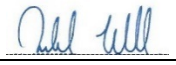
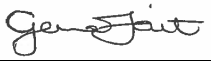
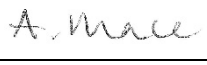
| | | Signature |  |  |  |
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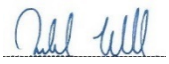
| | | Signature |  |  |  |
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## Appendices

# 1 Introduction

## 1.1 Background

Arup has been commissioned by South Tees Development Corporation (STDC) to develop an energy and utilities strategy in support of a planning application for the development of an industrial facility in part of the South Industrial Zone in Redcar. An outline planning application for the demolition of existing structures and development of up to 418,000m$^2$ (gross) of general industry (Use Class B2) and storage or distribution facilities (Use Class B8) with ancillary office accommodation, HGV and car parking and associated works will be submitted.

The application site forms part of the former Redcar Steelworks site and extends to an area of approximately 174 hectares.

The site is located on the south bank of the River Tees, approximately 4km north-east of Middlesbrough town centre and 4.8km south-west of Redcar town centre.

The site location is shown in Figure 1.


Figure 1: Site location

This document sets out the policy requirements, the existing energy and utilities infrastructure and the current plans for the development of the energy and utilities networks across the wider STDC site. This document is submitted as part of the outline planning application for the proposed development.

The aim of this report is to demonstrate to Redcar and Cleveland Borough Council (RCBC), the local planning authority and its stakeholders, that the development proposals are aligned with relevant planning policy and will not have a significant impact on surrounding utilities networks.

# 2 Planning Policy and Strategy Context

The energy and utilities strategy for the proposed development should evolve to respond to the national context, drivers and policy to lead the way in developing a practical, deliverable and affordable pathway to a net zero carbon industry at scale. This section outlines the national, regional and local energy and utilities policy and planning context within which the development will be assessed. Energy and utilities policies relevant to the development proposal are listed in **Table 1**. Appendix A contains more details on each of the documents.

**Table 1 List of policies and planning documents that are relevant to the development proposal and to energy and utilities**

| | |
|---|---|
| National | Climate Change Act 2008; |
| | Clean Growth Strategy 2017; |
| | UK Industrial Strategy (2017, 2018) and The Grand Challenges (2019); |
| | Climate Change Committee (CCC) Net Zero Analysis and Report (2019); |
| | National Planning Policy Framework (Revised 2019); |
| Regional | Tees Valley Strategic Economic Plan and Industrial Strategy; |
| | Tees Valley Innovation Strategy; |
| | Tees Valley Investment Plan; |
| | Tees Valley – Oil and Gas Climate Initiative's (OGCI) Net Zero Teesside project |
| | Tees Valley Unlimited (TVU) Infrastructure Plan; |
| Local | Redcar and Cleveland Local Plan (2018); |
| | Redcar and Cleveland Renewable and Low Carbon Study (2015); |
| South Tees Specific | South Tees Regeneration Masterplan report (2019); |
| | Redcar and Cleveland South Tees Area Supplementary Planning Document (SPD). |

## 2.1 National Planning Policy

### Climate Change Act (2008):

The UK government has a net zero target for greenhouse gas emissions (GHG) by 2050 as part of Section 1 of the Climate Change Act 2008. To achieve this target, it is likely that more onerous climate legislation will be implemented before 2050. Additionally, it follows that post-2050 more ambitious targets may be set. Developing plans for the proposed development to be part of a larger net zero site will help to future proof developments against tightening climate change legislation over the next 30 years and beyond.

### Clean Growth Strategy (2017):

This is a government developed strategy that outlines the UK's commitment to a low carbon future. The strategy details commitments towards the potential of renewables, smaller scale generation, flexibility, smart metering, the digital revolution, empowering consumers and developing a dynamic market.

There are strong legislative and strategy signals to develop an energy market that is decarbonised, decentralised and digitalised. The STDC would be well placed within this energy market model if it were to consider renewable energy, smart metering and small-scale generation into any development plans.

**UK Industrial Strategy (2017, 2018) and The Grand Challenges (2019):**
The 'Grand Challenges' set out as part of the UK Industrial Strategy aim to provide a focus for industrial development that will put the UK at the forefront of industries of the future. This includes ensuring the UK takes advantage of major global changes, improving peoples' lives and the UK's productivity. The challenges include artificial intelligence as part of a data revolution, an ageing society, clean growth and future mobility. The proposed development, as part of the wider STDC site, has a unique opportunity to contribute towards tackling 2 of the 4 'Grand Challenges' in the UK's industrial strategy as part of the energy and utilities strategy (data revolution and clean growth).

**Committee on Climate Change (CCC) Net Zero Analysis and Report (2019):**
Official advice from the UK Committee on Climate Change in the form of a report which considers a pathway to achieving net zero by 2050. There is a list of key priorities within the report which could provide STDC with an opportunity to lead the way within a national context. These include decarbonisation of electricity (renewables, flexibility etc.), development of hydrogen within the energy market, increased heating efficiency of buildings (heat networks and heat pumps), development of energy and resource efficiency within large industrial clusters and expansion of decarbonised infrastructure.

**National Planning Policy Framework (Revised 2019):**
The framework sets out the government planning polices for England. The framework has three overarching themes related to achieving sustainable development: Economy, Society and Environment. The environmental objective is the most relevant to the proposed development. It includes minimising waste and pollution, mitigating and adapting to climate change and moving to a low carbon economy. The framework encourages and supports planning for a transition to a low carbon future, such as plans that include renewable and low carbon energy and associated infrastructure. The framework also details the need for developments to comply with local requirements for decentralised energy supplies. It is expected that any STDC site development plans which encourage renewable and decentralised energy supplies are likely to be aligned with the National Planning Policy Framework.

## 2.2 Regional planning policy

**Tees Valley Strategic Economic Plan and Industrial Strategy:**
The plan details growth ambitions and priorities for the Tees Valley (2016-2026) and includes an industrial strategy. The overarching aim is to enable a high value, low carbon, diverse and inclusive economy. The plan identifies 'energy' as one of the four core sectors of the Tees Valley economy. Although the economic plan identifies the cost of decarbonising energy use sectors (steel and chemical industry) as a potential threat, it also promotes a focus on reducing emissions.

This includes identifying expertise for the area in offshore wind and energy from waste and highlighting hydrogen as an 'emerging opportunity'.

### Tees Valley Innovation Strategy:

The Tees Valley Combined Authority's (TVCA) Innovation Strategy from 2015 recognises the opportunities for sector growth in process and advanced manufacturing and the role that energy initiatives can play in enabling this growth. The strategy identifies low carbon energy production and carbon capture as sectors with growth potential and has allocated funding to support innovation within these fields. For the proposed development to align with the innovation strategy goals it would consider the use of low carbon energy and carbon capture as enablers to industrial growth.

### Tees Valley Investment Plan:

The TVCA's Investment plan from 2019 outlines an approach to energy and infrastructure funding. The plan sets out achieving growth through investment in enabling infrastructure, sustainable energy production and creating industrial networks that capture and utilise carbon. This includes priorities for energy and utility infrastructure investment in offshore wind, hydrogen fuelled infrastructure projects and Carbon Capture Utilisation and Storage (CCUS). The proposed development could capitalise on these aims with Business Growth funds and Research, Development and Innovation funds as potential enablers.

### Tees Valley – Oil and Gas Climate Initiative's (OGCI) Net Zero Teesside project:

The OGCI's Net Zero Teesside project includes a 2,100 MW Combined Cycle Gas Turbine (CCGT) and CCUS to be based at the wider STDC site. Additionally, the project includes extending carbon pipelines within and beyond the site to bring carbon dioxide from industrial sites across the Tees Valley region to either utilise or store. This net zero project, if realised, would see the proposed development embedded within a wider STDC site and regional carbon capture project. The site would be one of many within a complex integration of multiple companies.

### Tees Valley Unlimited (TVU) Infrastructure Plan:

The TVU Infrastructure plan was developed in 2015 to understand the potential infrastructure requirements and constraints throughout the Tees Valley. This includes themes including utilities, energy and broadband that will impact on strategic developments. The plan sets out several strategic priorities, the most relevant of which are detailed in Appendix A. The implications for the strategic priorities for the proposed development include:

- A priority requirement to ensure the site works closely with utility providers (NGN and NWL) to afford them early notification of development proposals. The benefits to the site of this is more efficient planning of new supplies and possible diversions and therefore reduced delays in utility connections;
- Working with the government to create a business model and to develop cost and investment mechanisms for industrial carbon capture and storage (CCS),

this should allow the best economic pathway for site decarbonisation to be identified and ensure alignment with national drivers;

- A strategic priority is listed to maximise opportunities for de-centralised heating and energy schemes, and energy efficiency programmes. Decarbonisation of heat is one of the biggest decarbonisation challenges, the proposed development has an opportunity to demonstrate solutions for an industrial scale site whilst meeting this strategic priority; and
- The infrastructure plan includes a strategy to roll out high speed digital networks and technologies. Digitalisation of the energy system is also a key national driver. Development in this area would allow the proposed development to remain competitive with other areas of energy digitisation in the UK.

## 2.3 Local Planning Policy

### Redcar and Cleveland Local Plan (2018):

The local plan, adopted in May 2018, sets out a vision and overall development strategy for the period until 2032. The plan aims to contribute towards positioning the Tees Valley as a centre for green technology and renewable energy, with the full range of renewable energy schemes included. The plan includes direct recommendations relevant to the energy and utilities at the proposed development as follows:

- New developments are to be serviced by well-planned and phased utility energy infrastructure;
- Any renewable energy projects and their infrastructure should be reversible where possible;
- Plans to support the development of carbon capture and storage to decarbonise the local economy;
- Policy SD4: New development proposals expected to be sustainable in design and construction, incorporating best practice in energy efficiency, resource management and climate change adaption;
- Policy SD6: Relates directly to renewable and low carbon energy:
    - States renewable and low carbon schemes will be supported and encouraged and will be approved where their impact is acceptable;
    - Incorporation of renewable energy into developments will be encouraged including retrofit and micro-renewables;
    - There will be support for wind and solar energy schemes where located in South Tees industrial areas; and
    - There is active support for community-led renewable energy schemes and development of district heating schemes.

### Redcar and Cleveland Renewable and Low Carbon Study (2015):

The study, published in 2015, seeks to provide an evidence base for recommending appropriate policy options in relation to renewable and low carbon energy futures for a local plan. The study includes a detailed review of relevant background policy frameworks that relate to renewable energy and consideration of the deployment potential of renewable energy in the area. The key findings include noting a significant opportunity for small and medium scale wind projects when compared to large scale wind projects. Additionally, the study finds that there is great potential for large scale biomass within areas where there is a significant heat demand, and which currently have industrial land use.

## 2.4 South Tees Area Specific Documents

### South Tees Regeneration Masterplan (2019):

The masterplan aims to support the delivery of STDC's vision and is founded on ten core principles. Four of these principles are directly relevant to the energy and utilities strategy:

- Principle 2: Form strategic alliances with major operators so that the Tees Valley presents a coordinated, world class offer to the international marketplace;
- Principle 3: Prioritise uses connected with advanced manufacturing and advanced and new technologies;
- Principle 4: Promote and support development uses aligned with a low carbon, circular economy, while delivering redevelopment within a framework of reduced energy costs and waste minimisation; and
- Principle 8: Deliver redevelopment in a way that reduces pollution, contributes to habitat protection and long-term sustainability, and that encourages biodiversity.

The masterplan discusses conceptual energy plans based on renewable and natural gas solutions. There are also high-level considerations for the requirement of water supply and wastewater treatment. The report outlines the need for site-wide strategies. The proposed development will need to develop a coordinated approach with the wider STDC development site.

### Redcar and Cleveland South Tees Area Supplementary Planning Document (SPD):

Launched in conjunction with the South Tees Regeneration Masterplan. The SPD provides a basis for future development and ensures that decisions are made within an agreed coordinated framework. There are two areas of the SPD which are relevant to the energy and utilises, these are as follows:

- STDC6: Energy Innovation, defines the Council's role in supporting the delivery of new energy generation and supporting the promotion of innovative energy projects that are site appropriate and delivered in line with the principles of STDC10;
- STDC10: Utilities, defines the Council's role in supporting infrastructure development including ensuring:

- Existing and permitted utility corridors are regarded and protected as part of development proposals;
- Utilities are developed sustainably that support the other strategies;
- Proposals involving flood and water management include biodiversity/landscape enhancement; and
- Energy infrastructure is delivered to supply the development and further afield, including development of sub-stations, power generation facilities, CCUS and energy storage facilities.

## 2.5 Summary

It is clear from the national, regional and local policy context that the proposed development has a responsibility to plan for the development of a net zero or at least low carbon future. There are strong and consistent policy signals indicating that renewable energy is an encouraged and supported pathway to achieving this (see Table 2). The full range of renewable energy and low carbon schemes are mentioned, however there seems to be a particular encouragement surrounding onshore wind, carbon capture and the use of hydrogen as an energy vector.

The need to consider industrial scale energy efficiency, digitisation and the decarbonisation of heat are also highlighted themes (Table 2). These themes all present significant flagship industrial demonstration opportunities for the proposed development as part of the wider STDC development.

Throughout the documentation clear communication with utilities on the development plans early in the process is seen as mutually beneficial. It is deemed essential this occurs in order to ensure a well-planned, phased and without-delay approach to any utility transition, changes or upgrades.

The suitability of all available options will be considered for the proposed development at the detail planning phase.

Table 2 Summarised policy, strategy and driver key themes

| Scale | Policy, Strategy or Driver | Highlighted Themes | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Renewable energy/ Low carbon tech | Energy Efficiency | Net Zero | Small Scale & retrofitting | Digitalisation | Decarbonise heat | Hydrogen (energy vector) | Carbon Capture |
| National | Climate Change Act (2008) | • | • | • | | | • | | |
| | Clean Growth Strategy (2017) | • | • | • | • | • | • | | |
| | UK Industrial Strategy (2017,2018) Grand Challenges (2019) | • | | • | | • | • | | |
| | CCC Net Zero Analysis and Report | • | • | • | • | | • | • | • |
| | National Planning Policy Framework | • | | | • | | | | |
| Regional | Tees Valley Strategic Economic Plan and Industrial Strategy | • | | | | • | | • | |
| | Tees Valley Innovation Strategy | • | • | | | | • | | • |
| | Tees Valley Investment Plan | • | | | | | | • | • |
| | Tees Valley OGCI | • | | • | | | | | • |
| | Tees Valley Unlimited (TVU) Infrastructure Plan | | • | | | • | • | | |
| Local | Redcar and Cleveland Local Plan (2018) | • | • | | • | | • | | • |
| | Redcar and Cleveland Renewable and Low carbon Study (2015) | • | • | | • | | • | | |
| | Redcar and Cleveland South Tees Area Supplementary Planning Document | | | | | | | | |
| South Tees Specific | South Tees Regeneration Masterplan | • | • | | • | • | • | • | • |
| | South Tees Development Corporation Energy and utilities Strategy | • | | | | | | | • |

# 3 Baseline Conditions

## 3.1 Site description and location

The application site, which is currently vacant, is part of the former Redcar Steelworks site and extends to an area of approximately 174 hectares. The site is located on the south bank of the River Tees, approximately 4km north-east of Middlesbrough town centre and 4.8km south-west of Redcar town centre.

There are numerous utilities networks across the proposed development and the wider STDC site. The existing utilities are described below. The wider STDC site is currently undergoing redevelopment that will involve the extension and/ or replacement of these existing utilities throughout the site, including the proposed development.

## 3.2 Existing local electricity network

Across the wider STDC site there are numerous electrical networks including the STDC site private network, supplied from the National Grid via two connection points, and Northern Power Grid (NPG) connections to various customers within the wider STDC area. The location of the existing electrical network is shown in Appendix B; this is based on information supplied by STDC on 22nd May 2020.

The two points of connection for electricity from the National Grid to the wider STDC area are Grangetown substation in the south, and Tod Point substation to the north. These substations each have two super grid transformers that supply a peak of 360 MW electrical power. Within each of these substations there are 66kV and 11kV subs, which supply the STDC site's private electrical network. The current STDC site's peak demand is around 20 MW.

The power is connected from the overhead 275kV National Grid system at Tod Point, and from the underground 275kV National Grid system at Grangetown. The National Grid overhead power cabling is carried along the south east and south west boundary of the proposed development before crossing the river. The towers and cables have development exclusion zones around them which need to be determined with National Grid on a site by site basis as development proceeds.

Within the proposed development there is existing cabling on the STDC site 11kV network; this is serviced by two existing 11kV substations, Holme Beck and Riverside. There is also a low voltage (440v – 3.3kV) network within the site. and there is a NPG 11kV cable and a 275kV connection along the north east of the proposed development that connects the MGT Teesside biomass plant to the National Grid.

## 3.3 Existing local gas network

There are several industrial gases and natural gas pipelines across the wider STDC site. Their location in relation to the proposed development is shown in the plan in Appendix C, this is based on information supplied by STDC on 22nd May 2020. There are several nationally significant gas pipelines (CATS pipeline and Breagh pipeline) that enter the wider STDC site along the coast. They cross the river in the corridor north of the proposed development.

Within the proposed development there are several industrial pipelines that run along the north east, south east and south west edge of the site. Several of these pipelines, including the fuel oil and the coke over gas main, are now redundant.

There are existing natural gas pipelines on the proposed development including a Northern Gas Networks (NGN) medium pressure pipeline currently supplying Hanson Cement and a NGN low pressure pipeline along the south west boundary. There are several private natural gas pipelines across the wider STDC site, but they are not located within the proposed development.

## 3.4 Existing local water supplies & sewerage

The wider STDC site is supplied with both potable and raw industrial water. Various operational and redundant water mains exist across the site. The location of the water and sewage pipes are shown in Appendix D, and are based on information supplied by STDC on 22nd May 2020.

Information supplied by NWL (in February 2020) to Arup in relation to the development of the South Tees Regeneration Masterplan Energy and Utilities strategy stated that NWL has available existing capacity to supply the STDC site:

- Potable Water - Approximately 1000-2000$m^3$/hr.
- Raw/Industrial - Approximately 3000$m^3$/hr (excluding Heavy Water)
- Heavy Water – Approximately 2000-3000$m^3$/day

Within the wider STDC site there is the existing NWL Bran Sands Waste Water Treatment Works (WWTW), located north-east of the proposed development. The Bran Sands WWTW has a total capacity of 171,000$m^3$/day (1). NWL confirmed (in February 2020) that the treatment works is currently running at 60% capacity, therefore this would equate to approximately 65,000$m^3$/day of available capacity.

There is an NWL potable water transmission main that runs along the south west edge of the proposed development supplying PD Ports Teesport Commerce Park. The NWL potable water transmission main also supplies PD Ports Teesport to the north-east of the proposed development and runs along the north eastern edge of the site before crossing the river.

There are various private industrial and potable water mains across the wider STDC site. The industrial water pipes running across the proposed development run from the private estuary water abstraction main. The existing estuary abstraction licence is currently dormant.

There is a private potable water supply to the south-east of the proposed development currently supplying British Steel and the Grangetown Prairie area of STDC.

There are existing NWL sewers that run along the south west and south east edges of the proposed development from Grangetown, the South Bank Coke Ovens and PD Ports to Bran Sands WWTW. There is also a municipal sewer (Cargo Fleet transfer main) running along the south east edge of the site to Bran Sands WWTW.

# 4 Development Proposals

## 4.1 Energy demand

The current proposal is for the development of an industrial facility at the South Industrial Zone in Redcar. An outline planning application is being submitted for the development of up to 418,000m$^2$ (gross) of general industry (Use Class B2) and storage or distribution facilities (Use Class B8) with ancillary office accommodation, HGV and car parking and associated works. More detailed uses beyond the use classes are not known at this stage, and so, estimates of the site's energy and utilities demand and demand profile can only be very approximate at this stage.

The climate change assessment in the Environmental Statement (ES), which accompanies the outline planning application, has made assumptions about building energy usage during site operations. These assumptions and the estimated energy usage are outlined in **Table 3**.

**Table 3: Development energy consumption assumptions**

| Building type | Total floor area (m$^2$) | Electricity consumption (kWh / year) | Thermal consumption (kWh/ year) |
|---|---|---|---|
| Office | 83,600 (~10% of footprint, 2 storeys) | 7,943,000[1] | 10,033,000 |
| Single storey warehouse | 188,100 (~45% of footprint) | 6,584,000[2] | 33,861,000 |
| Multi storey factory | 376,200 (~45% of footprint, 2 storeys) | 13,168,000[2] | 67,722,000 |

The figures given in **Table 3** are high level estimates and the site's actual energy consumption could vary significantly as a function of:

- the total floor area of buildings built;
- the typology of the buildings built; and
- specific industrial energy demands not accounted for in benchmarks, which uses could add significantly to energy demand.

It should also be noted that the benchmarks above provide an overall energy demand for the year but do not provide the peak demand. The peak demand will be used to size the energy and utilities infrastructure.

Despite the relatively unknown nature of the site energy and utilities demand, the South Industrial Zone's location on the STDC site has significant benefits in terms of the local energy and utilities supply. The proposed development will also

[1] Based on CIBSE TM46 general office benchmark for electricity consumption of 95kWh/m$^2$ per year and thermal consumption of 120 kWh/m$^2$ per year. Figures are rounded to the nearest 1,000.
[2] Based on CIBSE TM46 workshop benchmark for electricity consumption of 35kWh/m$^2$ per year and thermal consumption of 180 kWh/m$^2$ per year. Figures are rounded to the nearest 1,000.

benefit from the developing South Tees Regeneration Masterplan Energy and Utilities strategy for the wider STDC site.

## 4.2 South Tees Regeneration Masterplan Energy and Utilities strategy

As outlined above, the wider STDC site benefits from good local utilities connections and private utilities network across the site. The private site network is currently being maintained by South Tees Site Company (STSC). The condition of the existing utilities varies across the site, and, as stated, above some of the existing infrastructure is now redundant.

As part of the site wide redevelopment of the wider STDC site, the South Tees Regeneration Masterplan Energy and Utilities strategy is currently being developed by Arup. This strategy is being developed in line with the policies outlined in Section 2. This, and other strategies related to the wider STDC site, are due to be completed later in 2020. The South Tees Regeneration Masterplan Energy and Utilities strategy will consider site-wide utilities able to serve each of the STDC development plots, of which the South Industrial Zone is one. As part of the South Tees Regeneration Masterplan Energy and Utilities strategy development, the phasing of the individual developments is being considered. It is likely that, in the near term, some of the existing site infrastructure will be reused to supply energy and utilities to the earlier developments. In parallel, it is proposed that the site wide energy and utilities system would be implemented which meets the STDC vision of an exemplar, world class industrial business park.

The South Tees Regeneration Masterplan Energy and Utilities strategy is being developed in line with the South Tees Regeneration Masterplan guiding principle to '*Promote and support development uses aligned with a low carbon, circular economy, while delivering redevelopment within a framework of reduced energy costs and waste minimisation*.' The South Tees Regeneration Masterplan Energy and Utilities strategy is looking at potential low carbon on site generation options, utilisation of waste heat from industrial uses as well as defining the utilities corridors.

The proposed onsite energy generation facilities options for the wider STDC site includes the following:

- Two energy from waste facilities of around 50 MW each, one of which would be located to the south-east of the proposed development in the Grangetown Prairie area. The option for these facilities to supply electricity directly to the STDC site is currently being explored;
- The Net Zero Teesside project located to the north-east of the proposed development which aims to deliver up to 2,100 MW of electricity to the National Grid; and
- Renewable generation on the land parcels designated renewables reserve in the STDC Masterplan.

These proposed generation facilities are shown in Figure 2.

The main utilities corridor is likely to remain in roughly the same location as it is currently, running along the south eastern edge of the proposed development, as shown in Figure 3.

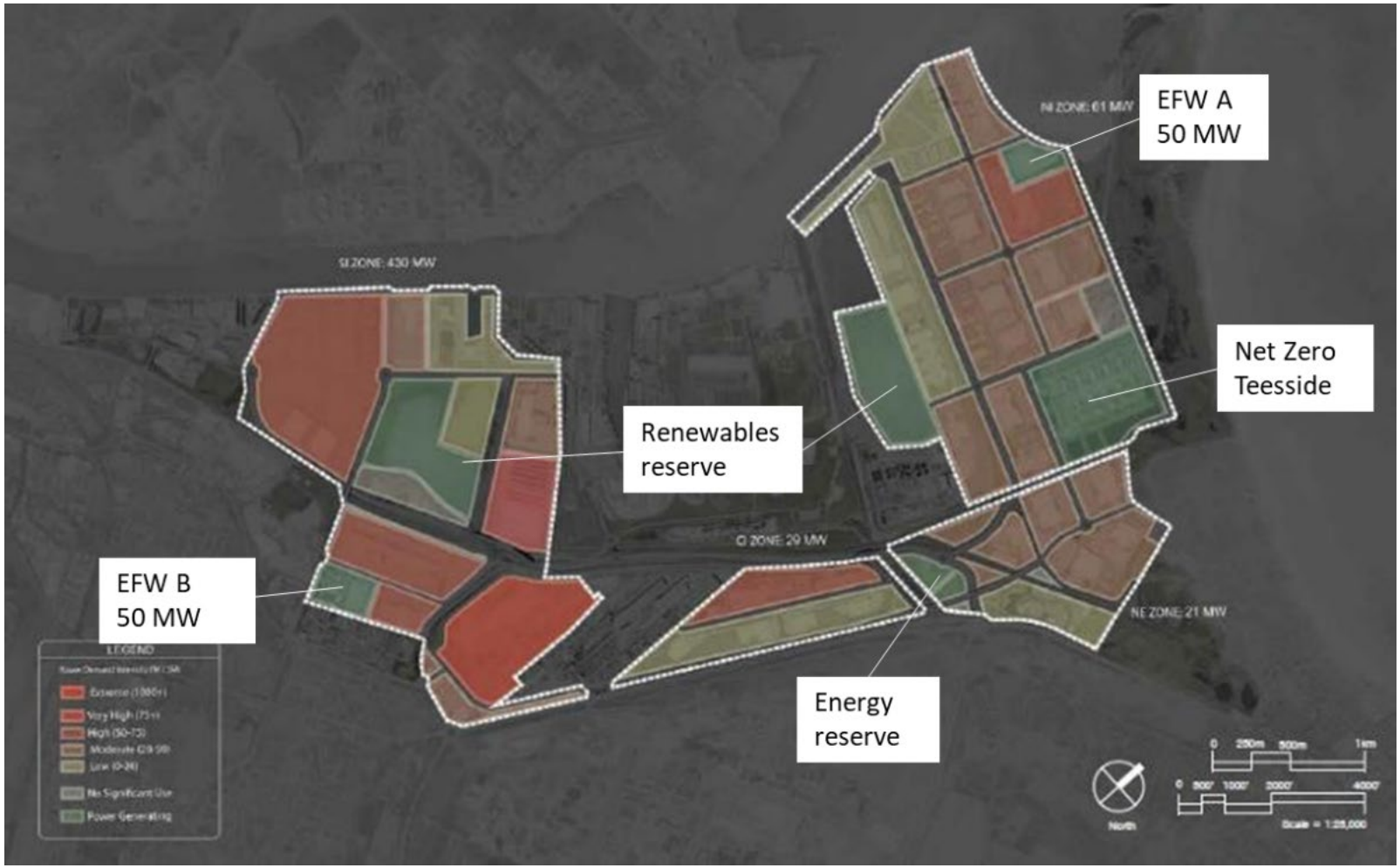



Figure 2: Wider STDC site proposed generation facilities

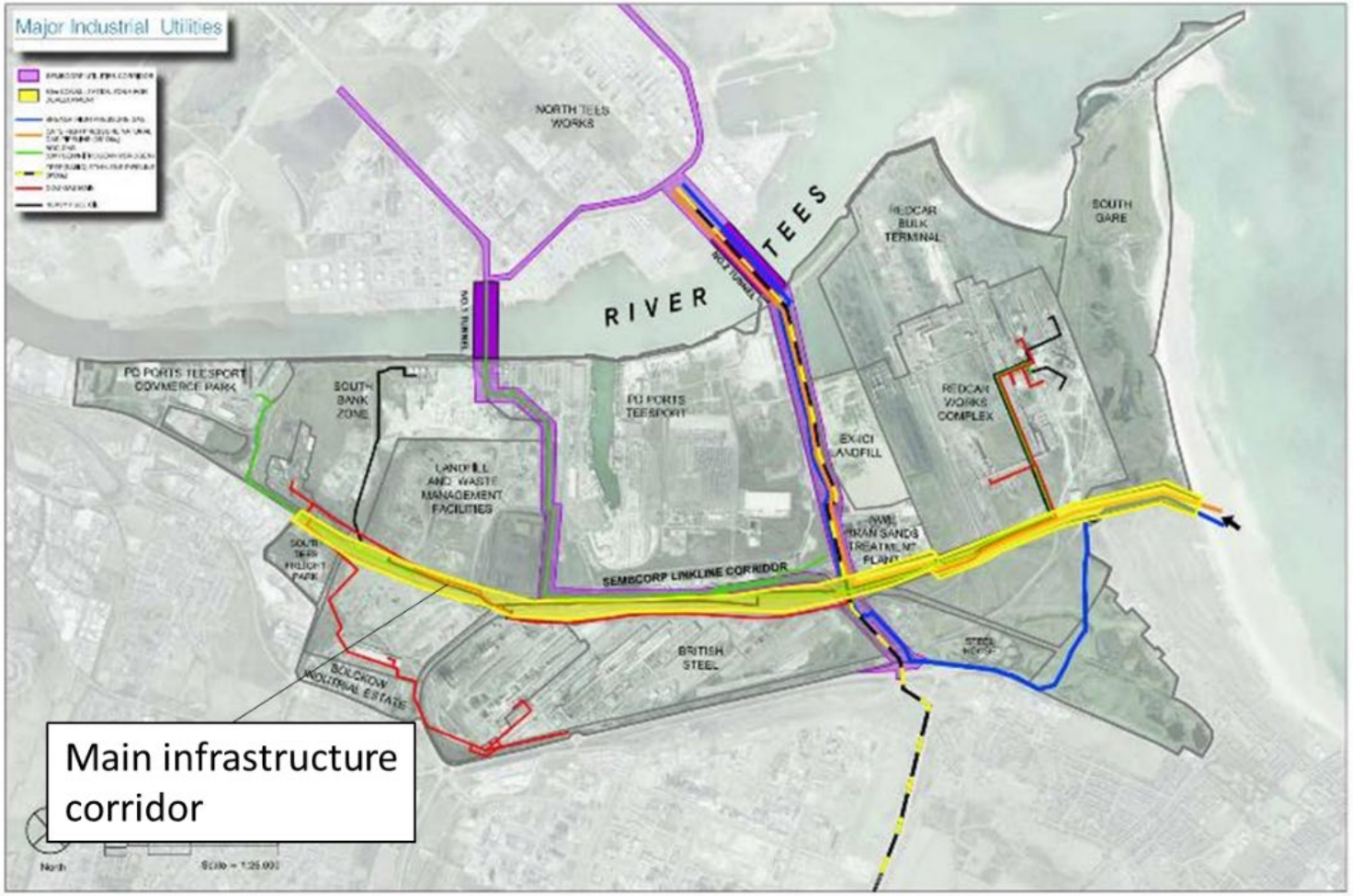



Figure 3: Wider STDC site industrial utilities showing the main infrastructure corridor

The South Tees Regeneration Masterplan Energy and Utilities strategy is currently being developed with consideration of various technology options for generating additional energy and providing heat. Several overarching options are being considered for the wider STDC energy system, each one incorporating a number of technologies:

- Option 1 - Fossil fuels with carbon capture and storage – largely conventional energy supply options, possibly with carbon capture utilising the Net Zero Teesside development to provide a low carbon solution;
- Option 2 - Electrification – site wide use of electricity for power and heating (via range of heat pumps), use of onsite and offsite renewables;
- Option 3 - Hydrogen site – widespread use of hydrogen for heating and power as well as transport uses across the site; and
- Option 4 - The eventual strategy will likely be a hybrid of the three options above, taking the most appropriate solutions from each to develop an energy system that is able to support all uses across the site.

Specific options for the proposed development will be considered during the detailed planning phase.

The utilities requirements will be developed to support the energy system and site wide utilities requirements. This will include requirements for industrial gases for industrial feedstock as well as for energy use.

## 4.3 Energy and utilities for the proposed development

As described above, the South Tees Regeneration Masterplan Energy and Utilities strategy is still emerging. The aim is for the strategy to be developed in line with the phasing of the roll-out of the wider STDC site. The initial sites being developed are likely to include the South Industrial Zone, as well as the Grangetown Prairie site to the south east of the proposed development.

There are utilities available with the required capacity in the vicinity of the proposed development for electricity, gas, water and sewerage. Based on the phasing and timing of the proposed development, utilities connections may need a phased approach. In early stages the site may be supplied using existing utilities infrastructure via, for example:

- Grid electricity supplied through the existing site network;
- Water supplied via the existing NWL infrastructure; and
- Gas (if required) supplied via connection to NGN pipelines.

Although the design of the site has not progressed to include utilities networks, from the work to understand the available capacity within the wider STDC site, there is sufficient capacity in the electricity and water networks to supply the estimated demands, based on the anticipated usage classes and floor areas. NGN

would need to be consulted to ensure there is enough local capacity to supply the proposed development.

As the STDC site develops further, its site wide energy and utilities network will be established, and developments will transfer on to the new utilities infrastructure as applicable. There will also be the potential for the development to incorporate renewables e.g. rooftop solar to supply some of the required energy.

In summary, there is sufficient capacity in the local networks to supply the proposed development, based on the assumptions set out in the outline planning application that the development is general industry (Use Class B2) and storage or distribution facilities (Use Class B8) with ancillary office accommodation, HGV and car parking and associated works.

The initial connection may require upgrades to existing infrastructure. The current aim is for the proposed development to transfer onto the new STDC site wide infrastructure, as that became available. Ideally this would be aligned to the development of the South Industrial Zone site but at this stage the proposed development and the wider STDC energy and utilities network development is not known.

# Appendix A

Policy Review

# A1 Policy review

The key points from each policy reviewed are captured below:

## A1.1 National Policy, Strategy and Drivers

**Climate Change Act**

- Legislation rather than policy;
- Section 1 Climate Change Act 2008 – UK Government set a net zero target for greenhouse gas emissions by 2050;
- GHG emissions over a given period (e.g annually) must be offset by the removal of emissions from the environment, resulting in a net zero emissions;
- Can be removed by natural or technical processes e.g. carbon capture;
- Not impossible that climate change legislation will become more onerous before the 2050 target; and
- Includes established law for the first five carbon budgets covering the period 2008-2032 and is linked with the Clean Growth Strategy (2017).

**Clean Growth Strategy**

- Published 2017 to lead the UK into a low carbon future;
- Sets out ambitious policies across all sectors of the economy delivering carbon budgets covering periods 2023-2027 and 2028-2032; and
- Outlines the UK's commitment towards a dynamic market, empowering consumers, realising potential of renewables, smaller scale generation, flexibility, smart metering and a digital revolution.

**UK Industrial Strategy**

- Published in 2017 and updated in 2018;
- A policy white paper, the industrial strategy sets out a long-term plan to boost productivity and earning 'power of people' throughout the UK;
- The five foundations of the strategy span people, infrastructure, business environment, ideas and places;
- The Grand Challenges policy paper linked to the UK industrial Strategy sets out challenges to tackle that would put the UK at the forefront of industries of the future. The aim is to ensure the UK takes advantage of major global changes, improving people's lives and the UK's productivity; and
- The four grand challenges include: Artificial intelligence and data, ageing society, clean growth and the future of mobility.

## Climate Change Committee (CCC) Net Zero Analysis and Report

- 1st May 2019 the official advice from UK CCC landed in the form of a CCC Net zero report;
- Considers a pathway to achieving net zero by 2050;
- The report states that the net zero ambition is not credible without the supporting policy, regulation and funding;
- Includes large scale transformation of how energy is used in buildings, transportation and industry;
- Reducing electricity emissions close to zero will require sustained and increased deployment of renewables and decarbonisation of back-up generation;
- The overall electricity demand and networks are expected to grow due to demands from buildings (heat pumps) and through electrification of transport;
- There needs to be improvements in system flexibility (battery storage, interconnection, smart controls);
- Decarbonisation of heat for buildings one of the biggest challenges to meeting net zero by 2050;
- Some key priorities include:
    - Largely decarbonise electricity: Renewables, flexibility, coal phase out;
    - Start large scale hydrogen production with carbon CCS;
    - Increase efficiency of buildings, heat networks and heat pumps;
    - Ramp up EV market in transport;
    - Develop energy and resource efficiency along with CCS clusters within industry; and
    - Expand and decarbonise infrastructure, potential use of hydrogen supply.

## National Planning Policy Framework

- Revised in February 2019;
- Sets out the Government planning policies for England;
- Three overarching objectives for achieving sustainable development:
    - Strong and competitive economy;
    - Vibrant and healthy communities; and
    - Protect and enhance the environment.
- The environmental objective for achieving sustainable development within the framework is the most relevant to the proposed development. It includes minimising waste and pollution, mitigating and adapting to climate change, including moving to a low carbon economy;

- The framework encourages the support within planning for the transition to a low carbon future in a changing climate;
- It indicates that planning should help shape places in ways that contribute to radical reductions in GHG emissions, encouraging resilience;
- Strong support for renewable and low carbon energy and associated infrastructure; and
- The framework details that development plans should comply with local requirements for decentralised energy supplies.

## A1.2 Regional Policy, Strategy and Drivers

**Tees Valley Strategic Economic Plan and Industrial Strategy**

- The plan sets out the growth ambitions and priorities for the Tees Valley for period between 2016-2026;
- Overarching aim is a high value, low carbon, diverse and inclusive economy;
- Details four sectors that make up the core of the Tees Valley economy: Advanced manufacturing, energy, digital and health innovation;
- Identifies energy from waste and hydrogen as 'emerging opportunities';
- Includes a framework for economic development which identifies six growth generating themes, one of which is 'Research, Development, Innovation & Energy' – part of the aim of this growth area is to reduce carbon emissions, increase productivity and the availability of high value jobs;
- Highlights Tees valley expertise in offshore wind and waste to energy; and
- Highlights a 'potential threat' of a long-term commitment to and costs of de-carbonising the major energy use sectors, including steel and chemical industries.

**Tees Valley Innovation Strategy**

- Tees Valley Combined Authority's (TVCA) innovation strategy;
- Published 2015;
- Identifies the role of energy initiatives in enabling growth in Process and Advanced Manufacturing;
- Identifies low carbon energy production;
- Highlights use of carbon capture as a sector with growth potential; and
- Allocated funding to support innovation in low carbon energy and CCS.

## Tees Valley Investment Plan

- TVCA's Investment Plan from 2019 outlines a long-term approach to energy and infrastructure funding through both Business Growth funds and Research Development & Innovation funds;
- Outlines investment in enabling infrastructure, investing in sustainable energy production and creating industrial networks that capture and utilise carbon; and
- The TVCA outlines the following priorities for energy and utility infrastructure investment:
    - Dogger Bank Wind Farm;
    - Middlesbrough District Energy Network;
    - Hydrogen fuelled infrastructure projects; and
    - Carbon Capture Utilisation and Storage (CCUS).

## Tees Valley – Oil and Gas Climate Initiative's (OGCI) Net Zero Teesside project

- Nationally significant infrastructure project at the pre-application stage;
- CCUS project planned, with numerous capture units to be based at the overall STDC development site;
- Current proposals include a 2,100 MW Combined Cycle Gas Turbine (CCGT) and associated required gas, electricity and water connections;
- The project also includes plans to extend pipelines across and beyond the site to bring $CO_2$ from industrial sites across the Tees Valle region and either utilising or storing the captured carbon.

## Tees Valley Unlimited (TVU) Infrastructure Plan

- As part of a wider economic plan developed to enable sustainable economic growth and identify key investment opportunities, the TVU Infrastructure Plan was developed in 2015 to understand potential infrastructure requirements and constraints;
- The plan considers infrastructure themes including utilities, energy and broadband, that impact on strategic developments throughout the Tees Valley;
- Related to these areas, the plan sets out the following strategic priorities that align with requirements of a fully developed infrastructure strategy that delivers STDC's Vision:
    - Strategic priority 3: Work with utility providers Northern Gas Networks (NGN), Northern Powergrid (NPG) and Northumbrian Water Limited (NWL) to give as much notice as possible of new development proposals to allow for the planning of new supplies and possible diversions.

- Strategic priority 6: Work with government to develop the business model, cost and investment mechanism for industrial carbon capture and storage
- Strategic priority 7: Maximise opportunities for de-centralised heating and energy schemes, and energy efficiency programmes, across Tees Valley; and
- Strategic priority 9: Further roll-out high-speed digital networks and technologies to ensure that businesses can meet their future needs and the Tees Valley can compete with other areas of the UK.

## A1.3 Local Policy, Strategy and Drivers

**Redcar and Cleveland Local Plan (2018)**

- Local plan adopted in May 2018 sets out a vision and overall development strategy and how it will be achieved for the period until 2032. Key economic aim to investigate opportunities to create a new energy hub to support the offshore wind and sub-sea engineering sectors in the area;
- The plan includes its contribution towards positioning of the Tees Valley as a centre for green technology and renewable energy, with the full range of renewable energy schemes included;
- The plan states a focus renewable energy projects in 'less sensitive' landscapes in terms of environmental impacts as a priority. STDC industrial development has been considered as a 'less sensitive' area;
- Includes direct recommendations relevant to the energy and utilities at the STDC south zone as follows:
  - New developments are to be serviced by well-planned and phased utility energy infrastructure;
  - Renewable energy projects and their infrastructure should be reversible where possible; and
  - Policy SD4: New development proposals expected to be sustainable in design and construction, incorporating best practice in energy efficiency, resource management and climate change adaption.
- Policy SD6: Relates directly to Renewable and Low Carbon Energy:
  - States renewable and low carbon schemes will be supported and encouraged and will be approved where their impact is acceptable;
  - Incorporation of renewable energy into developments will be encouraged including retrofit and micro-renewables;
  - There will be support for wind and solar energy schemes where located in South Tees industrial areas; and
  - There is active support for community-led renewable energy schemes and development of district heating schemes.

**Redcar and Cleveland Renewable and Low Carbon Study (2015)**

- Published July 2015, the study seeks to provide an evidence base for recommending appropriate policy options in relation to renewable and low carbon energy for a local plan;
- Includes a detailed review of relevant of the background policy frameworks within with renewable energy are currently considered within the area;
- The study considers the deployment potential of different renewable energy technologies in the area. It concludes that there is scope for wind, solar and biomass development in Redcar and Cleveland but no real potential for small scale hydro;
- The study highlights the greater opportunity potential of small and medium scale wind projects when compared to large scale wind; and
- There is a great potential for large scale biomass within areas where there is significant heat demand, and which have industrial land use.

## A1.4 South Tees Specific Policy, Strategy and Drivers

**South Tees Regeneration Masterplan report (2019)**

- The masterplan report aims to support the delivery of STDC's vision and is founded on ten core principles. Five of these principles are directly relevant to the energy and utilities strategy:
  - Principle 1: Ensure strong alignment with UK Governments Industrial Strategy;
  - Principle 2: Form strategic alliances with major operators so that the Tees Valley presents a coordinated, world class offer to the international marketplace;
  - Principle 3: Prioritise uses connected with advanced manufacturing and advanced and new technologies;
  - Principle 4: Promote and support development uses aligned with a low carbon, circular economy, while delivering redevelopment within a framework of reduced energy costs and waste minimisation; and
  - Principle 8: Deliver redevelopment in a way that reduces pollution, contributes to habitat protection and long-term sustainability, and that encourages bio-diversity.
- Additional implementation priorities 14, 18 and 20 are relevant to the development of energy and utilities infrastructure and must be considered when developing the strategy:
  - AIP 14: Attract inward investment through best practice, innovative marketing strategies and by creating the right conditions for world-class development;
  - AIP 18: Work with key stakeholders to explore the potential for creating enhanced economic conditions under which to deliver and operate new

industrial development, attract inward investment and stimulate economic activity, e.g., Free Zones; and

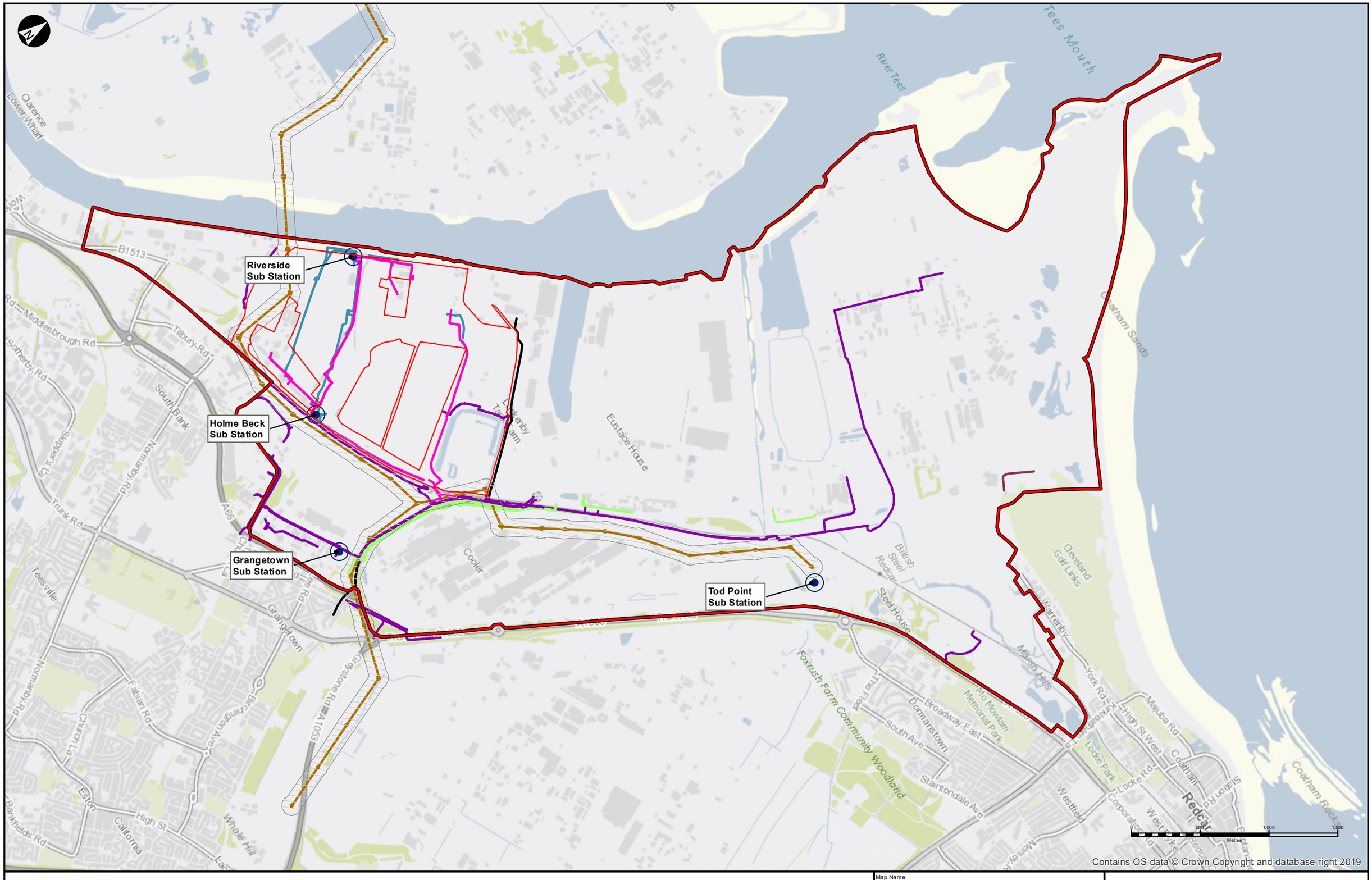
- AIP 20: Ensure the development of a robust, yet flexible exit strategy and that the model is reviewed and revised as appropriate to achieve the best outcomes for continued operation and success of the South Tees Area as a major, international-level industrial zone.

**Redcar and Cleveland South Tees Area Supplementary Planning Document (SPD)**

- Launched in conjunction with the South Tees Regeneration Masterplan;
- The SPD provides a basis for future development and ensures that decisions are made within an agreed coordinated framework;
- There are two areas of the SPD which are relevant to the energy and utilities strategy, these are as follows:
  - STDC6: Energy Innovation, defines the Council's role in supporting the delivery of new energy generation and supporting the promotion of innovative energy projects that are site appropriate and delivered in line with the principles of STDC10;
  - STDC10: Utilities, defines the Council's role in supporting infrastructure development including ensuring:
    - Existing and permitted utility corridors are regarded and protected as part of development proposals;
    - Utilities are developed sustainably that support the other strategies;
    - Proposals involving flood and water management include biodiversity/landscape enhancement; and
    - Energy infrastructure is delivered to supply the development and further afield, including development of sub-stations, power generation facilities, CCUS and energy storage facilities.

# Appendix B

Existing Utilities Networks - Electrical




STDC Site Boundary

South Industrial Zone Red Line Boundary

SubStations

National Grid 65m Consulation Zone

Existing National Grid

66kV NPG Electricity

11kV NPG Electricity

Electrical HV Cable

MGT 275kV

11kV STDC Site Electricity

3.3kV-440v STDC Site Electricity

Map Name: Electricity

Map Number: EU 01

Project Title: Energy & Utilities

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Date:24/06/2020

Scale at A3: 1:25,000

# South Industrial Zone

Redheugh House, Teesdale South, Thornaby Place, Stockton on Tees, TS17 6SG
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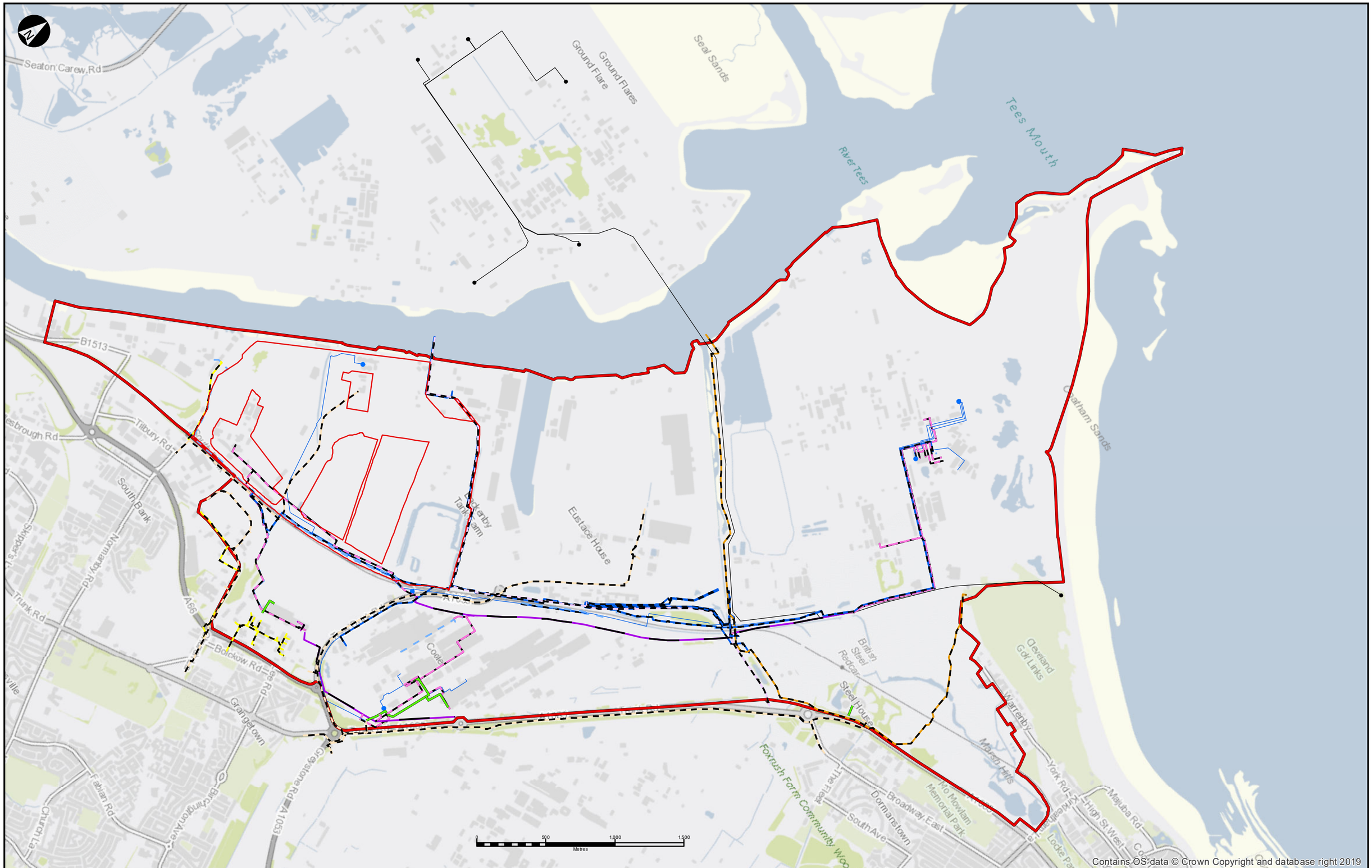
ARUP

South Tees Development Corporation

# Appendix C

Existing utilities networks – Gas and Fuel




STDC Site Boundary

South Industrial Zone Red Line Boundary

BOC Hydrogen

BOC Nitrogen

BOC Oxygen

CAT Pipeline

Coke Oven Gas Above Ground

Coke Oven Gas Underground

Fuel Oil

High Pressure Gas Pipe Line

NGN LP

NGN MP

Natural Gas

Map Name: Gas

Map Number: EU 02

Project Title: Energy & Utilities



Date:26/06/2020

Scale at A3: 1:25,000

# South Industrial Zone

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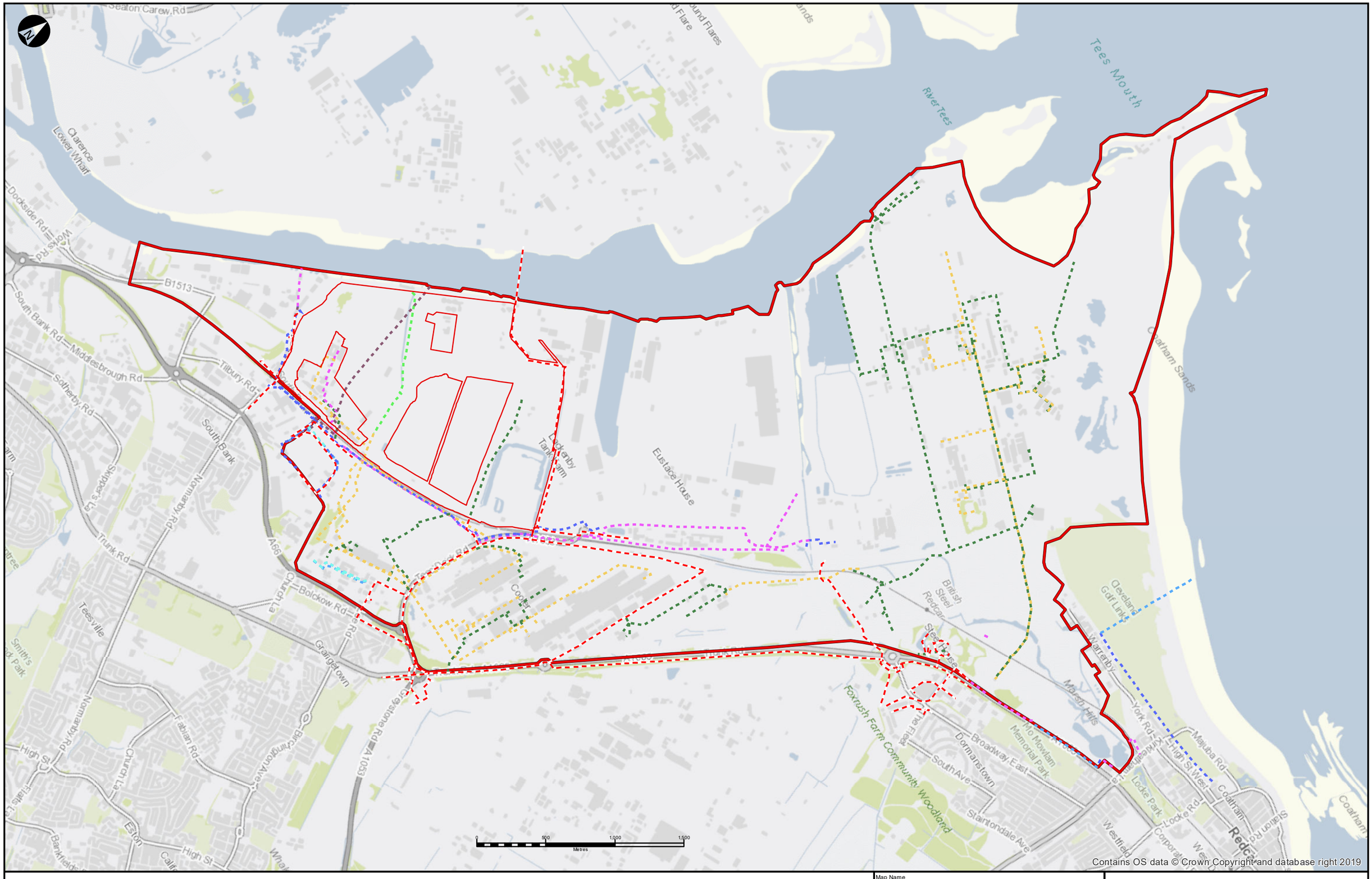
# Appendix D

Existing utilities networks – Water




STDC Site Boundary

South Industrial Zone Red Line Boundary

Abandoned Sewer

Estuary Water

Industry Water

NWL Foul Sewers

NWL Proposed Sewers

NWL SW Sewers

Potable Water

Private Sewer

NWL Water Mains

| | |
|---|---|
| Map Name | Water |
| Map Number | EU 03 |
| Project Title | Energy & Utilities |

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Date:26/06/2020 Scale at A3: 1:25,000

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