TOWN AND COUNTRY PLANNING ACT 1990

ENVIRONMENTAL STATEMENT : VOL 1

Lithium Hydroxide Monohydrate Refinery

Green Lithium Refining Limited

Kinkerdale Road, Teesport, TS6 6UE

Prepared for:
Green Lithium Refining Limited

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CONTENTS

Tables

Figures

Abbreviations

AOD Above Ordnance Datum

AQAL Air Quality Assessment Level

AQAP Air Quality Action Plan

AQOs Air Quality Objectives

AQS Air Quality Strategy

AQMA Air Quality Management Area

BAT Best Available Techniques

BGS British Geological Survey

BNL Basic Noise Level

BPM Best Practicable Means

CCC Committee on Climate Change Report

CCIA Climate Charge Impact Assessment

CCPP Combined Cycle Powerplant Project

CEMP Construction Environmental Management Plan

Crow Act Countryside & Rights of Way Act

CRTN Calculation of Road Traffic Noise

CTMP Construction Traffic Management Plan

DEFRA Department for Environmental, Food & Rural Affairs

DfT Department for Transport

DMP Dust Management Plan

DMRB Design Manual for Roads & Bridges

DPDs Development Plan Documents

DS Drainage Strategy

ECIA Ecological Impact Assessment

EIA Environmental Impact Assessment

ELV Emission Limit Values

ES Environmental Statement

EV Electric Vehicle

FRA Flood Risk Assessment

GEART Guidelines for the Environmental Assessment of Road Traffic

GHG Greenhouse Gas Emissions

HDV Heavy Duty Vehicle

HGV Heavy Goods Vehicle

HRA Habitat Regulations Assessment

IEMA Institute of Environmental Management and Assessment

LAQM Local Air Quality Management Technical Guidance

LDV Light Duty Vehicle

LEP Local Enterprise Partnership

LHM Lithium Hydroxide Monohydrate

LI_2SO_4 Lithium Sulphate

LioH, H2 O Lithium Hydroxide

LFA Local Flood Authority

LNR Local Nature Reserve

LOAEL Lowest Observed Adverse Effect Level

LPA Local Planning Authority

LSM Lithium Sulphate Monohydrate

LWS Local Wildlife Site

MAGIC Multi-Agency Geographical Information for the Countryside

MCPD Medium Combustion Plant Directive

NAQS National Air Quality Strategy

NNR Natural Nature Reserve

NOEL No Observed Effect Level

NPPF National Planning Policy Framework

NPSE Noise Policy Statement for England

NSRs Noise Sensitive Receptors

NWL Northumbrian Water Limited

OEM Original Equipment Manufacturers

PDAs Planning & Design Access Statement

PDT Passive Diffusion Tubes

PPE Personal Protective Equipment

PPG Planning Policy Guidance

PS Planning Statement

RCBC Redcar and Cleveland Borough Council

SAC Special Area of Conservation

SLM Sound Level Meter

SOAEL Significant Observed Adverse Effect Level

SPA Special Protection Area

SPD Supplementary Planning Document

SSSI Site of Special Scientific Interest

SuDS Sustainable Drainage Systems

TCPA Town & Country Planning Act

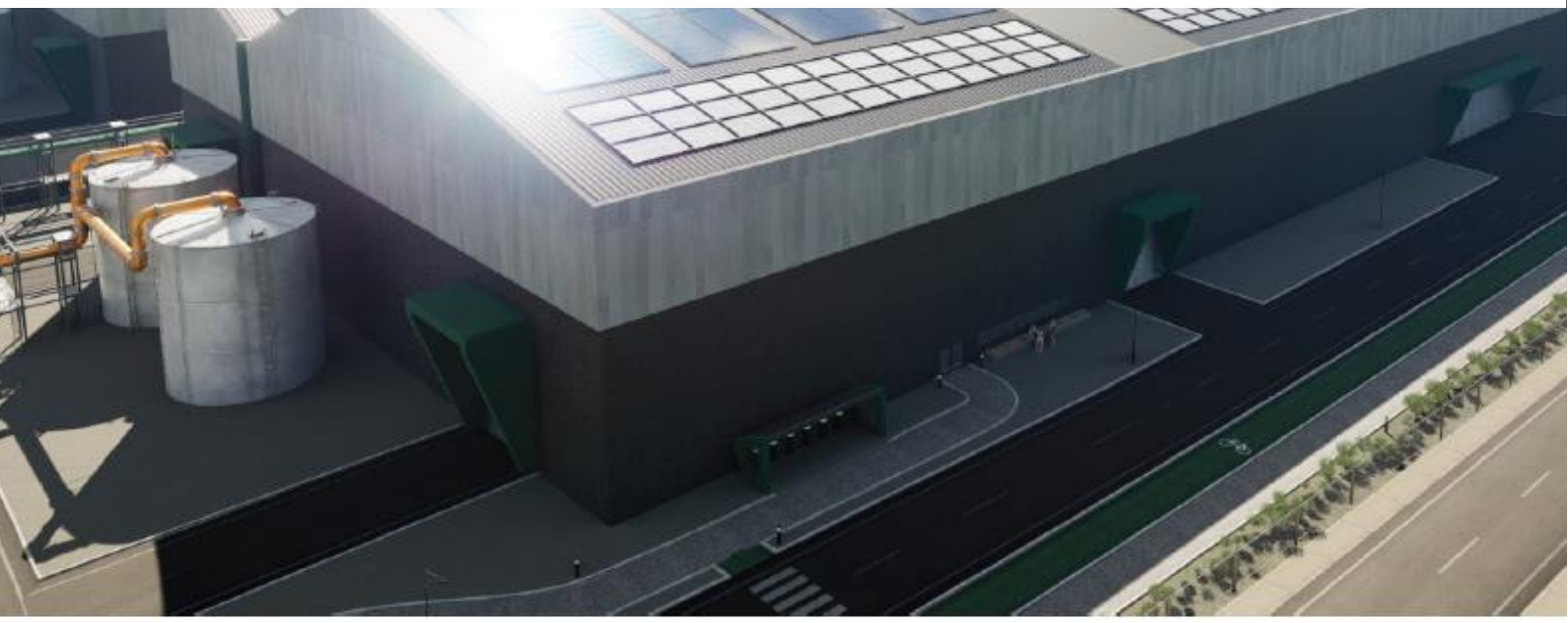
WFD Water Framework Directive

WRMP Water Resources Management Plan

WRI Word Resource Institute

ZTV Zone of Theoretical Visibility

CHAPTER 1 INTRODUCTION



1. INTRODUCTION

1.1. Green Lithium Refining Limited (the 'Applicant') is seeking Outline Planning Approval from Redcar and Cleveland Borough Council (the '*RCBC*') seeking planning permission (under the provisions of the Town and Country Planning Act 1990) for the construction and operation of a Lithium Hydroxide Monohydrate (LHM) Refinery Plant processing spodumene ore, located at Kinkerdale Road, Teesport, TS6 6UE, located around 4 kilometres west of the centre of Redcar.

1.2. This document forms Volume 1 of the Environmental Statement (ES) and has been prepared on behalf of The Applicant by Sol Environment Ltd, an independent environmental and sustainability consultant, to accompany the Applicants Outline planning application for the proposed "Construction and operation of a Lithium Hydroxide Monohydrate ('*LHM*') Plant."

1.3. This ES has been prepared in accordance with the of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as the EIA Regulations).

1.4. The centre of the Site is at approximate National Grid reference 455549 , 523469.

THE APPPLICANT

1.5. Green Lithium Refining Limited, founded in 2017, is an innovative technology development company with a vision to become one of Europe's first manufacturers and suppliers of battery-grade LHM to EV manufacturing in Europe.

1.6. Details about Green Lithium Refining Limited can be found on their website https://www.greenlithium.co.uk

THE PROPOSED DEVELOPMENT

1.7. Outline Planning permission is being sought for the establishment of a low carbon LHM refinery which has been designed to extract lithium hydroxide from imported lithium ore (spodumene), and associated dockside reception, handling, storage, and manufacturing activities.

1.8. The Proposed Development will utilise a phased approach, for the construction of up to 3 lines to enable the manufacture and export of up to 75,000 tonnes per annum. Although the Applicant is currently only committed to the development of two production lines, however with possibility of an additional line added, the ES has considered all potential phases of development to account for the largest potential

impacts to the environment. . This phased approach is further discussed within Chapter 5 of this document.

1.9. The primary raw material of the LHM plant is calcined spodumene concentrate with an option to also feed Technical Grade Lithium Carbonate to the process. The product is Battery Grade LHM.

1.10. The hydrometallurgical lithium refinery plant will be based on Metso Outotec's proprietary technologies which include pressure leaching, conversion and ion exchange process stages.

1.11. The development is proposed to be constructed over 6 defined phases, each of which will be subject to a separate Reserved Matters Application (RMA) for the relevant phase or phases of the project.

1.12. The detailed design and layout of each phase has yet to be determined and will be confirmed at part of the various RMA applications that will be submitted to the Planning Authority by the Applicant.

1.13. An outline Phasing Plan is included within Section 5, Figure 5.1.

1.14. The basic parameters of the development that are being established as part of this outline application assume the following:

- All production and office buildings will have a maximum height that will not exceed 45m;
- Building Footprint not to exceed 180,000m^2 of occupied manufacturing and office space across 3-line production lines; and
- Total Production capacity not to exceed 75,000 tonnes of lithium product.

1.15. When completed the refinery is designed to process approximately between 350,000 and 510,000 tonnes per annum of mineral ore material and undertake an organo-alkali metal production process to manufacture between 50,000 and 75,000 tonnes per annum of LHM dependant on number of production lines installed.

1.16. Further technical details of the facility are described in Chapter 5 – The Proposed Development.

1.17. The site location is shown in Figure 1.1 overleaf.

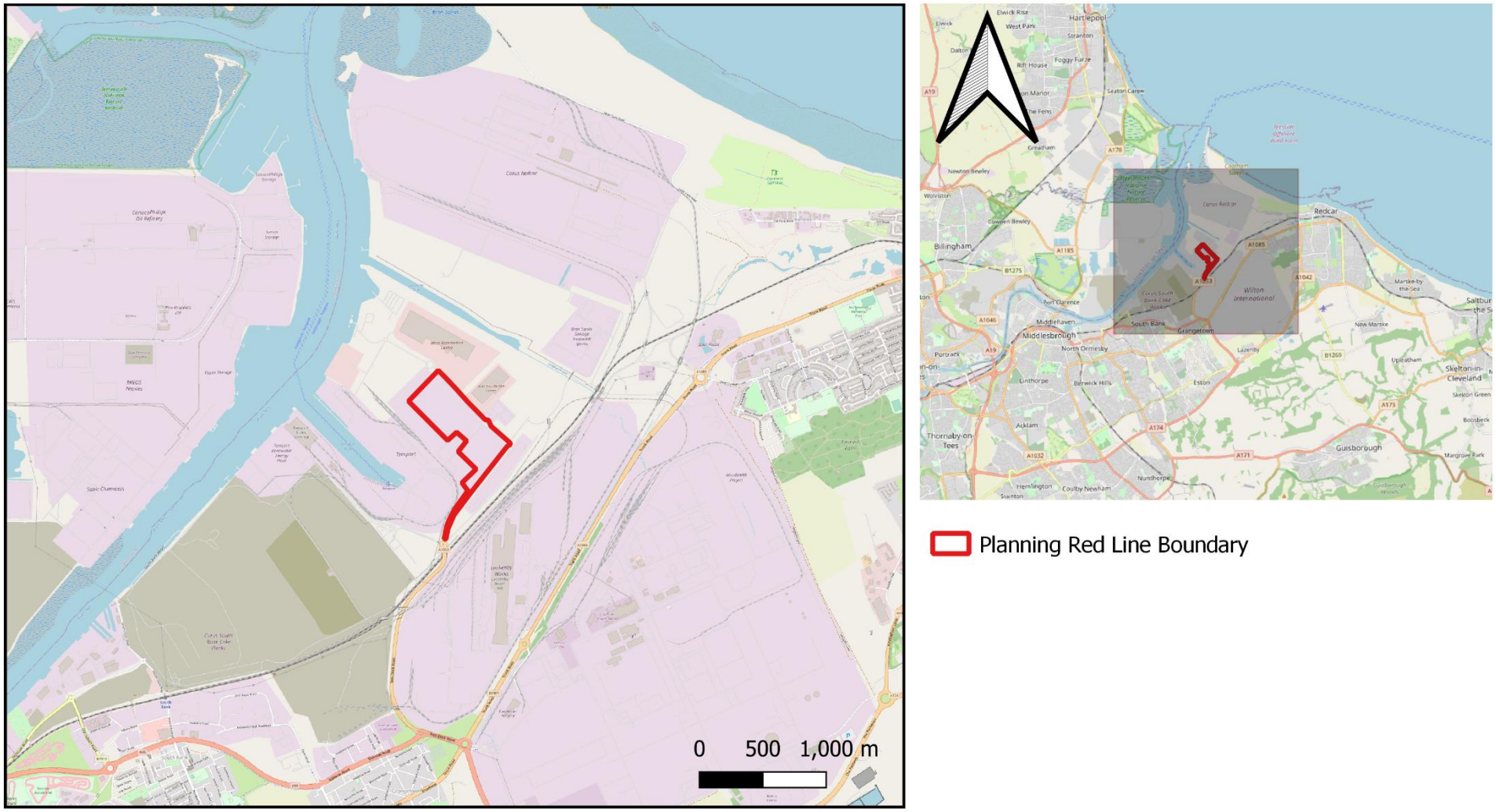


Figure 1.1: Site Location

Figure 1.2: Site Layout showing two process lines with space left outlined for the third line.

LEGISLATIVE FRAMEWORK FOR THE EIA

1.18. This ES has been prepared in accordance with the requirements set out in The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as the EIA Regulations).

1.19. The EIA Regulations require that, before consent is granted for certain types of development, an EIA must be undertaken. The EIA Regulations set out the types of development which must always be subject to an EIA (Schedule 1 development) and other developments which may require assessments if they give rise to significant environmental impacts (Schedule 2 development). The reporting of an EIA takes the form of an ES.

1.20. The Proposed Development has been screened by both the applicant and by RCBC who concur that the Installation meets the definition of a Schedule 1 EIA development according to Paragraph 6 which states:

6. Integrated chemical installations, that is to say, installations for the manufacture on an industrial scale of substances using chemical conversion processes, in which several units are juxtaposed and are functionally linked to one another and which are—

(a)for the production of basic organic chemicals;

(b)for the production of basic inorganic chemicals;

(c)for the production of phosphorous–, nitrogen– or potassium-based fertilisers (simple or compound fertilisers);

(d)for the production of basic plant health products and of biocides;

(e)for the production of basic pharmaceutical products using a chemical or biological process;

(f)for the production of explosives.

1.21. Alongside the EIA Regulations the following legislation has also been followed;

- The Town and Country Planning Act 1990 (UK Government, 1990);
- Planning (Listed Buildings and Conservation Areas) Act 1990 (UK Government, 1990);
- The Town and Country Planning (Development Management Procedure, Listed Buildings and Environmental Impact Assessment) (England) (Coronavirus) (Amendment) Regulations 2020 (UK Government, 2020)

- National Planning Policy Framework (Ministry of Housing, Communities & Local Government, 2021);
- Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping (UK Government, 2020);
- Guidelines for Environmental Impact Assessment, Institute of Environmental Management and Assessment (IEMA, 2006);
- Environmental Impact Assessment Handbook: A practical guide for planners, developers and communities, Third edition (ICE, 2019); and
- The Redcar and Cleveland Local Plan (Redcar and Cleveland Borough Council, 2018) and related supplementary guidance.

SCOPING REPORT

1.22. An EIA Scoping exercise was undertaken by RCBC (Ref R/2022/0675/SCP) to determine what topics the EIA should include. It was based on a review of the Proposed Development provided by the Applicant and the conclusions it reached on likely significant environmental effects.

1.23. The following environmental topics were scoped into the EIA and are addressed within this document:

- Air Quality;
- Ecology;
- Flood Risk, Hydrology and Drainage;
- Landscape and Visual;
- Waste;
- Noise and Vibration;
- Greenhouse Gas and Climate Change; and
- Contaminated Land.

1.24. RCBC have scoped out the following:

- Transport;
- Socio-Economic; and
- Cultural Heritage.

1.25. A copy of the scoping opinion is provided within Appendix 5.14 of Volume 2 of the ES which details the consultee responses and their associated technical justification for the inclusion or exclusion of a particular technical chapter.

EIA ASSESSMENT

1.26. The EIA will consider all likely environmental effects that could occur from the Proposed Development.

1.27. The purpose of the ES is to inform all parties regarding the full effects in order to make sound choices in the decision-making process that are fully informed. This leads to more sustainable choices which have less adverse effects on the environment.

1.28. The following steps will be followed through the various assessments carried out;

- Baseline survey, either desktop or field survey. In order to gain surface level information on the sites character and surrounding area;
- Prediction of the likely environmental effects of the development, including construction and operational phases. Using reliable methods including modelling and surveying;
- Mitigation measures provided are used to avoid, reduce or off-set any adverse effects.
- Assessment of significance of any residual effects after mitigation.

STRUCTURE OF THE ENVIRONMENTAL STATEMENT

1.29. The ES has been prepared on behalf of the Applicant, by a team of specialist consultants and also draws on existing studies and information where necessary. The consultant team of specialists providing input to the Environmental Impact Assessment are identified in Table 1.1 overleaf.

Table 1.1: Environmental Impact Assessment Consultant Team			
Discipline	**Consultancy**	**Lead Specialist**	**Qualifications and Professional Experience**
Air Quality	Entran	Alison Banks	BSc (Hons) Biology, MSc Environmental Science, Member IAQM, Member of Institution of Environmental Sciences (IES), Chartered Environmentalist, 25 years' experience
Ecology	INCA	Ian Bond	Chartered Environmentalist, Full Member of CIEEM, 24 years' experience
Flood Risk, Hydrology and Drainage	Worley RMA	Alison Caldwell	MSc Professional Engineering (Environmental)
		Melissa Seymour	BSc Earth and Environmental Science, 6 years' experience in FRA's
Landscape and Visual Impact	Tyler Grange	Charlie Davies	Ba (Hones) PgDip
Waste Resources	Sol	Dudley Saunders	MSc Environmental Consultancy, Member IEMA
Noise and Vibration	Sol Acoustics Entran	Brian Horner Stuart Berry	BSc (Hons) Acoustics (First Class), Member IOA MSc Architectural and Environmental Acoustics
Greenhouse Gas and Climate Change	Sol	Naomi Rumley	MSc Sustainability Consultancy, IEMA Practitioner, Qualified ISO Lead Auditor Greenhouse Gas Lead Verifier
		Sam Hunt	BArch, BREEAM Accredited Professional
Contaminated Land	WSP Sol Environment	Tom Middleton Emily Hingston	BSc Biology, Environmental scientist for a decade MSc Geology, Chartered Geologist

1.30. The ES comprises three volumes – the Main Text (Volume 1), the Figures and Technical Appendices (Volume 2) and the Non-Technical Summary (Volume 3).

1.31. The ES provides:

- An introduction to the Proposed Development and the EIA (Chapter 1);
- A description of the Application Site and its surroundings (Chapter 2);
- An overview of the approach and methodology of the EIA (Chapter 3);
- Development Programme and Construction (Chapter 4);
- A description of the Proposed Development and alternatives (Chapter 5); and
- Identification of the planning policy, both national and regional (Chapter 6).

1.32. The results of the analysis of the potentially significant environmental effects of the Proposed Development for the following disciplines:

- Air Quality (Chapter 7);
- Ecology and Nature Conservation (Chapter 8);
- Flood Risk, Hydrology and Drainage (Chapter 9);
- Landscape and Visual Impact (Chapter 10);
- Waste Resources (Chapter 11);
- Noise and Vibration (Chapter 12);
- Greenhouse Gas and Climate Change (Chapter 13)
- Contaminated Land (Chapter 14); and
- Summary and Conclusions (Chapter 15).

Cumulative Impacts

1.33. Cumulative impacts are assessed within each of the Chapters where relevant.

1.34. During consideration of the environmental impacts of the appeal proposals, a review was undertaken of existing and proposed projects and plans which could have a cumulative effect with the appeal proposal. These comprise either comparable developments that are already in existence, developments which are currently not yet built but which have or are seeking planning consent, and developments which are proposed within local plan documents. To do this a number of sources were consulted.

- Correspondence was undertaken with RCBC to confirm whether they were aware of any relevant projects;
- A review was undertaken of the Redcar and Cleveland Local Plans; and
- A review was undertaken of the planning records of the RCBC council.

1.35. The principal areas identified that have the potential to have cumulative effects with the development were in the areas of air quality (and human health) and noise have been assessed taking into consideration the wider masterplan assessments associated with the proposed Teesworks development.

1.36. In the matter of air quality and noise, no relevant existing or proposed projects were identified by either RCBC or the appellant that were not already within the public domain or subject to planning approvals. As such the background datasets that have been used for modelling are considered to incorporate all existing and proposed new developments and the cumulative affects assessed accordingly.

ES Structure

1.37. Each of the technical sections of the ES comprises: an introduction; a methodology of assessment, review of relevant policy context, a description of the baseline (existing) conditions, an assessment of the likely environmental effects of the development, a description of mitigation measures and discussion on residual effects. Technical Appendices in relation to these chapters are provided as Volume 2.

1.38. In conclusion, with reference to the EIA Regulations, the ES contains those matters which must be included:

- A description of the development comprising information on the Site, design, and size of the development;
- A description of measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects;
- The data required to identify and assess the main effects which the development is likely to have on the environment;
- An outline of the main alternatives studied by the applicant; and
- A non-technical summary of the above information (Volume 3).

DESIGN OF THE DEVELOPMENT

1.39. With respect to the overall Proposed Development, project design iteration has been on-going throughout the EIA process. The design process has considered the following key environmental design objectives:

- Following best practice guidance e.g., CIEEM (2018; 2019) which identifies a hierarchy of mitigation for potential impacts:
    - avoid and prevent adverse ecological impacts in the first place, especially those that would likely be significant to important receptors;
    - minimise and reduce adverse impacts that cannot be avoided; and
    - compensate and offset for any remaining likely significant residual impacts.
- Avoiding and minimising construction and operational disturbance to legally protected species;
- Minimising construction and operational disturbance to sensitive habitats and ecological receptors;
- Avoiding noise and air quality impacts on nearby sensitive human and ecological receptors;
- Minimising greenhouse gas emissions associated with construction and operation of the Proposed Development; and
- The development of a rational, efficient, and environmentally responsive design.

Assumptions and Limitations

1.40. The EIA process is designed to enable informed decision-making based on the best available information about the environmental implications of a Proposed Development. However, there will always be some uncertainty inherent in the scale and nature of the predicted environmental effects as a result of the level of detailed information available at the time of assessment, the potential for minor alterations to the Proposed Development following completion of the ES and/or the limitations of the prediction processes.

1.41. A number of assumptions have been made during the EIA process and are described below:

- The principal land uses around the Proposed Development will remain unchanged during the course of the Proposed Development's lifetime.

- Information provided by third parties, including publicly available information and databases, are correct at the time of submission.

1.42. Specific assumptions may also be made with regard to the individual technical disciplines. A applicable, these are detailed within each technical chapter.

1.43. Any limitations to the EIA are summarised in each technical chapter, where relevant, together with the means proposed to mitigate these.

1.44. The likely construction impacts of the Proposed Development have been developed by the Applicant's project team based on the most likely methods of construction, plant, access routes and working areas etc. for the purposes of the EIA.

PUBLICATION

1.45. Paper copies of the planning submission can be obtained from Sol Environment Ltd at the following address if requested:

Sol Environment Ltd,

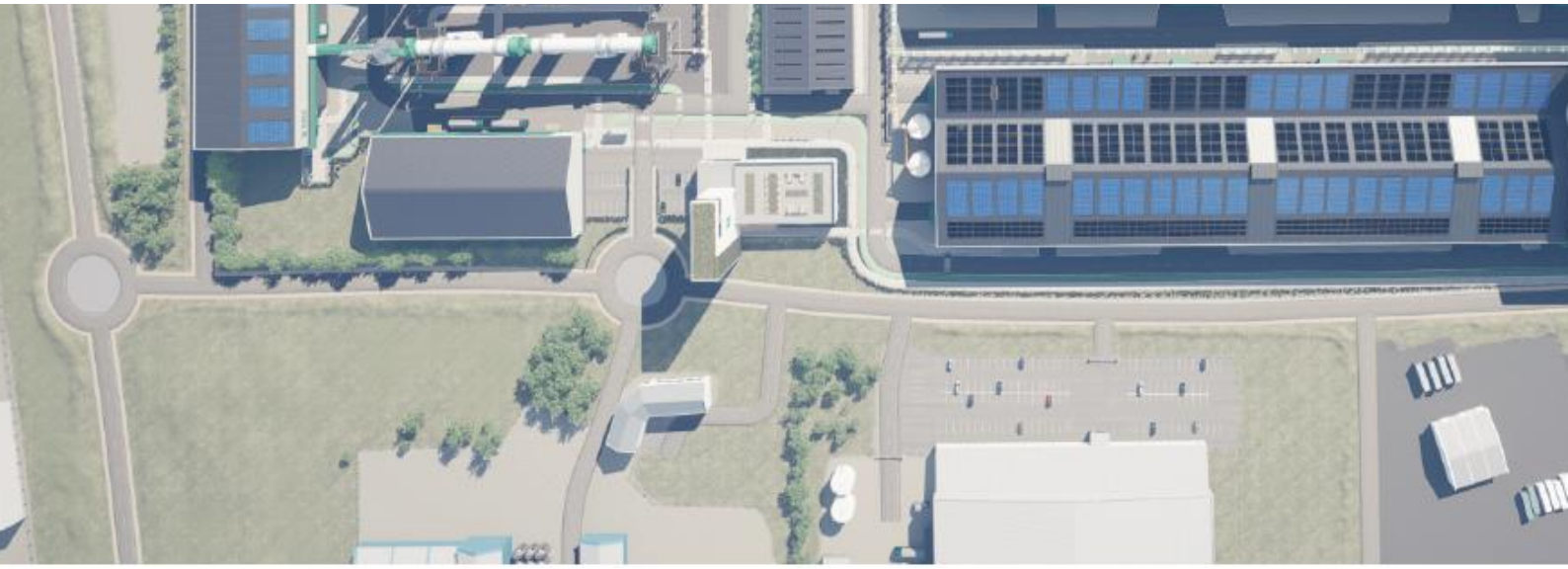
Unit 5.3 Paintworks,

Arnos Vale, Bristol,

BS4 3EH

1.46. The planning submission is available in both paper and CD-ROM format, for which a charge of £150 and £25 is applicable respectively. In addition, an electronic version of the planning application can be downloaded from the Planning Portal and Redcar and Cleveland Council website.

CHAPTER 2 SITE AND SURROUNDINGS



2. SITE AND SURROUNDINGS

2.1. This chapter summarises the predominant existing land uses and activities occurring on the Site and within its surrounds. The chapter also identifies the key environmental characteristics of the Site and its adjacent areas, thereby identifying potential sensitive receptors which may be affected by the Proposed Development.

2.2. A full description of the baseline conditions relevant to each environmental topic is provided in each of the technical chapters within this ES.

SITE LOCATION AND SETTING

2.3. The Application Site (the 'Site') is located on land within forming part of the wider Teesport Estate and is located adjacent to Kinkerdale Road. The area is on the outskirts of urban areas including Redcar (approximately 3.8km east of the site) and Grangetown (approximately 2.5km southwest of the site). The city of Middlesbrough is located approximately 6.5km southwest of the site.

2.4. The centre of the Site is at approximate National Grid reference 455549 , 523469.

2.5. The Site will be approximately 23.53 ha in size. The Site is generally level, varying from 5.8 metres to 6.8 metres above ordnance datum (AOD). The southern area of the Site is currently undeveloped grassland and scrubland, with the remainder of the Site being on porous tarmac hardstanding, utilised for storage of cars and shipping containers by the adjacent PD Teesport.

2.6. A number of heavy industrial businesses are located surrounding the site, comprising PD Teesport as well as Teesworks. To the north of the site beyond the River Tees are further industrial estates of North Tees. The closest residential receptors are located approximately 2km south of the Site, known as Grangetown.

2.7. The land uses around the Site can generally be summarised as follows:

- North: Bounding to the northern Site boundary is further tarmac hardstanding, owned by PD Teesport and used as an automobile storage site. At approximately 100m from the site a rectangular area of brownfield site is present, ending at Dabholm Road. After this a large industrial warehouse development used by Tesco can be found, 340m from the northern site boundary. Past this Dabholm Gut of the River Tees is found approximately 500m north, this is bounded (north east side) by the Redcar Bulk Terminal aggregate importation and storage terminal, found approximately 1.2km north and extending past 2km.

- East: Adjacent to the eastern boundary lies Dabholm Road, which serves a further PD Teesport Ro-ro Terminal, and the wider Teesport Estate. The area includes an Asda Importation Warehouse and Kimera Chemical. The vacant land to the east up to the Dabholm Gut forms part of the wider Teesport Northern Gateway development area found approximately 600m from the site. Northumbrian Water is found approximately 1.1km east of the site boundary.
- South: The south side of the site is bounded by the main site Teesport Estate access road (Teesport Road), immediately to the south of the road lies the BOC Teesport industrial gas production facility. Beyond this lies the main Network Rail line from Saltend to Darlington, the Lakenby Steel Works (now part of the wider Teesworks Development area then the main A1085 road from Middlesbrough to Redcar and beyond. Past this are a number of smaller industrial sites including Suez recycling and recovery and Telcoss, found approximately 1.4km from the development boundary.
- West: Adjacent to the western boundary of the Site is PD Teesport primary container terminal and port operations, with Cleveland Potash Marina also present. After crossing the port, the industrial estate continues, with MGT TeesREP Biomass Power Station and the Highfield Environmental Landfill site. Beyond this is the wider Teeworks Development area of Southbank and the SeAH Wind Turbine manufacturing construction site.

2.8. Access to the Site is via Tees Dock Road and utilizes the shared entrance that has been constructed as part of the wider development. Access from the Site to the A66 is achievable without having to pass through any residential areas via the industrial estate roads.

2.9. The surrounding land uses are outlined within Table 2.1 below.

Table 2.1: Surrounding Land Uses

ID	Name and Address	Nature of Business	Planning Use
1	Tesco 380, Middlesbrough TS6 6UD	Storage, Distribution	B8
2	ASDA Dabholm Rd, Middlesbrough TS6 7RU	Storage, Distribution	B8
3	PD Teesport Container Terminal, Tees Port, Middlesbrough TS6 6UD	Storage, Distribution	B8
4	BOC Ltd, Tees Dock Rd, Grangetown, Middlesbrough TS6 7RT	Industrial Gas Supplier	B2
5	British Steel Lackenby, Middlesbrough TS6 8JH	Steel Stockholder and Supplier	B2
6	Northumbrian Water, Tees Dock Rd, Middlesbrough TS6 6UE	Distribution	B2

7	Tees REP Power Station, Middlesbrough TS6 6AF	Power Station	B2
8	PD Teesport, Middlesbrough TS6 6UD	Office	B2

Figure 2.1: Site and Surrounding Use Classes

Figure 2.2: Planning boundary (in red) with surrounding neighbours, corresponding with Figure 2.1.

ENVIRONMENTAL DESIGNATIONS

2.10. This section has utilised MAGIC Maps alongside national databases for information regarding designated sites with the program QGIS, in order to determine the environmental designations which could be in the area.

2.11. The nearest designated site to the Proposed Development is the Teesmouth & Cleveland Coast ('SPA', 'SSSI'), found approximately 500m north of the site. However, due to the large amount of development in the area which is more involved with the designated site this is not thought to be a constraining issue.

2.12. A map of the nearby designations can be found in Figure 2.3.

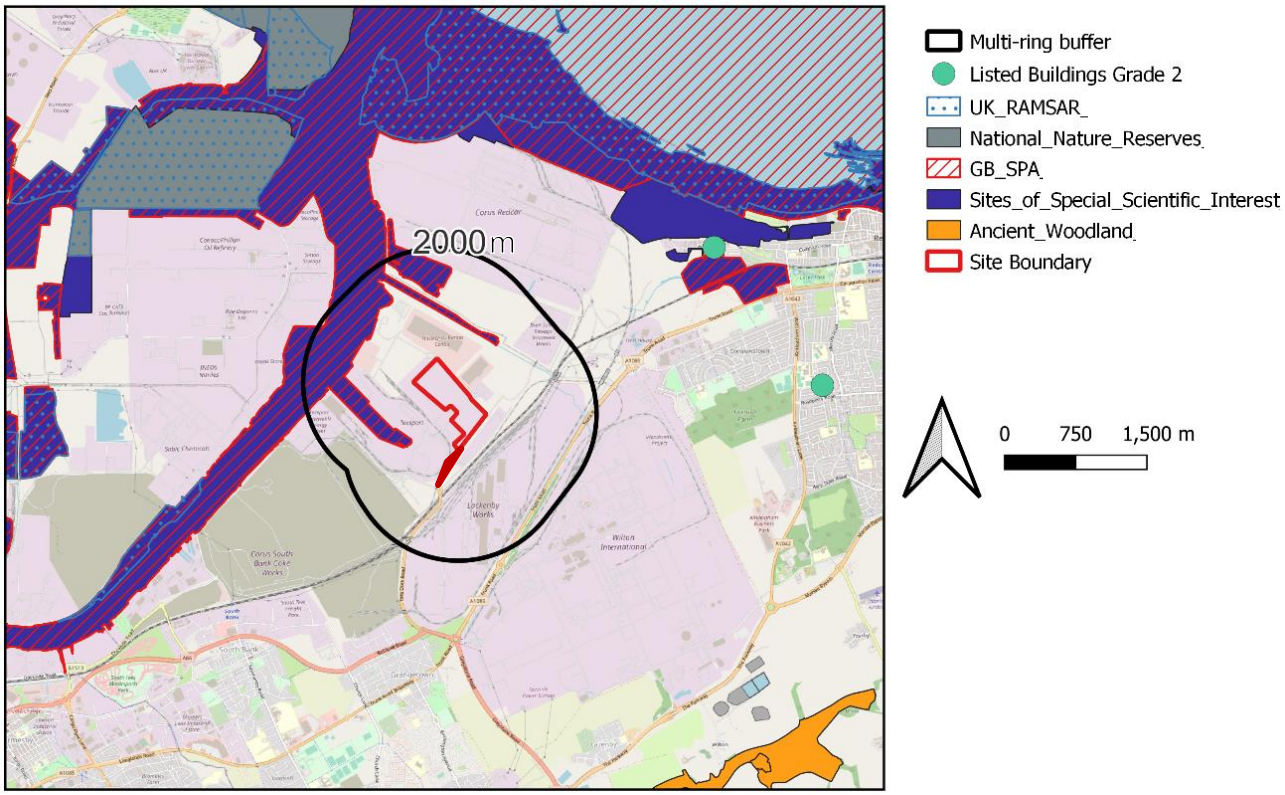


Figure 2.3 A map of the Designated Sites in the surrounding area

FLOOD RISK

2.13. The Environment Agency's flood map for planning also shows that the site is found all in Flood Zone 1, shown in Figure 2.4 overleaf.

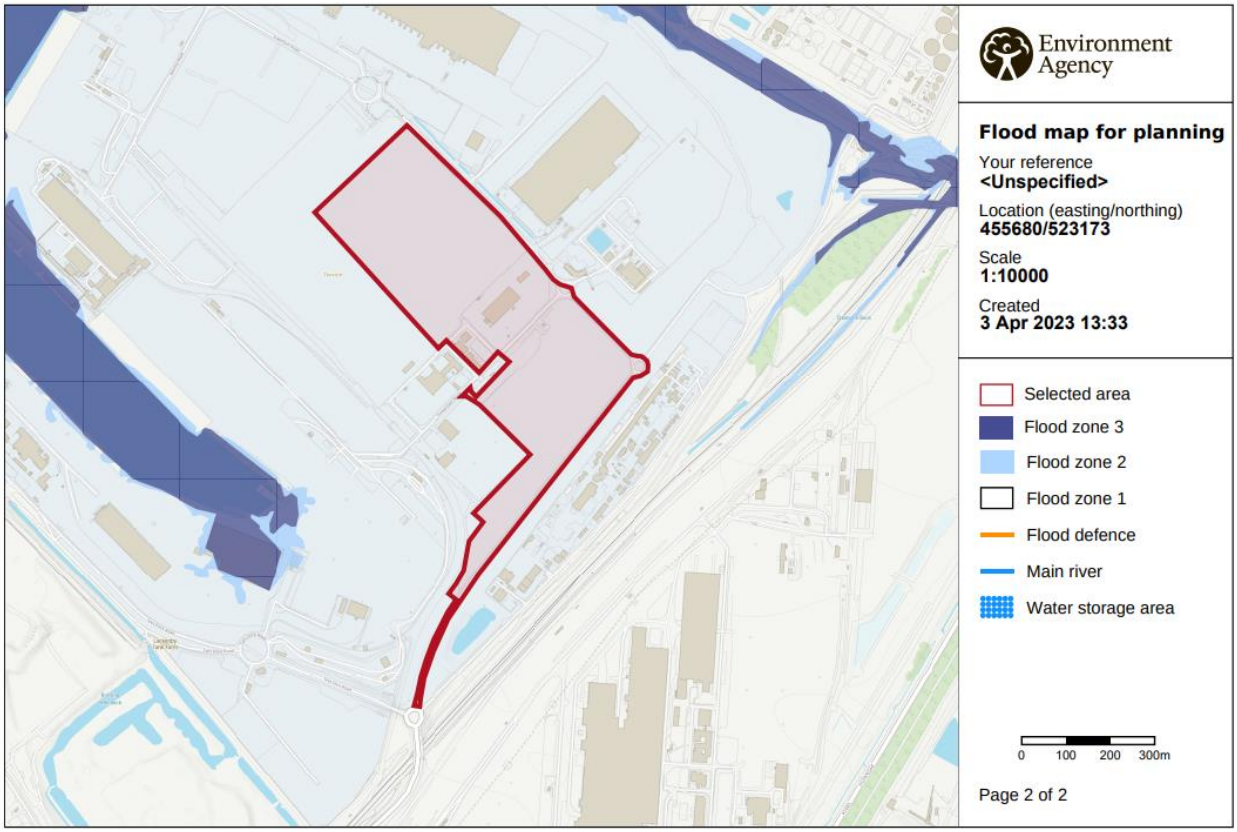


Figure 2.4 A flood map for planning.

EXISTING SITE USE

2.14. The Teesport site is owned by PD Ports and is essentially undeveloped, with the exception of a very large area of secured and purposely constructed hardstanding for the external storage of containers and motor vehicles. As such the site is largely unvegetated, with the exception of the southernmost area of the site having some grassland and scrubland present.

2.15. A satellite view of the site can be seen overleaf in Figure 2.5.

Figure 2.5 Site Context

HISTORICAL USES OF THE SITE

2.16. The site and surrounding areas have a long and layered industrial history. The development site previously formed the site of the Teesport Refinery developed in 1968 by Shell Oil which subsequently mothballed in 1989 and later closed. Historical mapping of the site as well as the surroundings has been thoroughly covered in the Planning Statement which accompanies this submission.

GEOLOGY

2.17. According to the BGS Geology of Britain Viewer and BGS Geology Mapping the Site is underlain by:

2.18. Superficial Deposits – the Site is underlain by Tidal Flat Deposits, which compose sand, silt, and clay. This is described by the BGS lexicon as '*Tidal flat deposits, including mud flat and sand flat deposits, form extensive nearly horizontal marshy land in the intertidal zone that is alternately covered and uncovered by the rise and fall of the tide. They consist of unconsolidated sediment, mainly mud and/or sand. They may form the top surface of a deltaic deposit.'.*

2.19. Bedrock Deposits – the underlying bedrock geology is the Mercia Mudstone Formation. This is described by the BGS Lexicon of named rock units as: '*Grey, fossiliferous, fissile mudstones and siltstones with subordinate thin beds of shelly limestone in lower part, and fine-grained carbonate-cemented sandstone in upper part; argillaceous limestone concretions occur throughout.'*

2.20. BGS mapping indicates the site is entirely underlain by Made Ground. Previous site investigations have identified that this ranges in thickness between 0.4 – 6.1 m and is noted to comprise clay, slag, ash and gravel. This Made Ground was historically part of the reclamation from the River Tees (as well as a result of previous site uses), which involved the construction of sea defenses made from slag, as such thicknesses of Made Ground are expected to be deeper at such locations across the site.

HYDROGEOLOGY

2.21. A review of the Site's hydrogeology has been carried out using publicly available BGS and Environment Agency (EA) Mapping.

2.22. The aquifer classification system was updated on 1st April 2010 which provided new aquifer designations to replace the old system of aquifer classifications, such as Major, Minor and Non-Aquifer. This new system is in line with the EA's Groundwater Protection Policy (GP3) and the Water Framework Directive (WFD) and is based on BGS mapping.

2.23. From a review of the EA on-line maps the Site is located on:

- *Superficial Deposits* – the area has been classified as a Secondary Undifferentiated aquifer.
- *Bedrock Aquifer* – the mudstone of the Redcar Formation has been classified as a Secondary B aquifer.

2.24. The EA have defined Groundwater Source Protection Zones (SPZs) for 2,000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones are designated to protect the location from the risk of contamination from any activities that might cause pollution in the area, i.e. the closer the activity, the greater the risk.

2.25. The purpose of SPZs is to provide additional protection to safeguard drinking water quality through constraining the proximity of an activity that may impact upon the quality of a drinking water abstraction. They are split into various subdivisions:

2.26. Zone 1: (Inner Protection Zone) - This zone is defined by a travel time of 50-days or less from any point within the zone at, or below, the water table;

2.27. Zone 2: (Outer Protection Zone) - This zone is defined by the 400-day travel time from a point below the water table. Additionally, this zone has a minimum radius of 250 or 500 meters, depending on the size of the abstraction; and

2.28. Zone 3: (Total catchment) - This zone is defined as the total area needed to support the abstraction or discharge from the protected groundwater source.

2.29. The third-party database (Groundsure) and EA website indicate that the Site is not located within an SPZ.

2.30. The European Water Framework Directive (WFD) came into force in December 2000 and became UK law in December 2003. The EA has a duty to analyse the characteristics of the 11 River Basin Districts in England and Wales and assess the impact of human activity on the water bodies (including groundwater) within these districts. In addition, the EA are required to monitor the status of water bodies against the objectives set for them and prepare, review, and keep an up to date a register of protected areas for each River Basin District whilst preparing and consulting on River Basin Management Plans. No current water quality data is available on the EA website.

2.31. According to the database, there is no active groundwater abstraction license within 2km of the site.

HYDROLOGY

2.32. The closest surface water feature to the Site is an inland river not influenced by normal tidal action, located 22m NE of the site. This water feature travels along the NE boundary of the site, adjacent to Dabholm Road.

2.33. A number of ponds and drains are present to the south and east of the site.

2.34. The Environment Agency's flood risk map indicates that the Site lies within Flood Zone 1; an area where there is a low risk of flooding from rivers and the sea. This is land assessed as having a chance of flooding of less than 1 in 1000 (0.1%) each year.

2.35. The Site is located in an area at low risk of flooding from groundwater sources.

2.36. The Site is located in area at low risk of pluvial flooding from extreme rainfall events. Drainage networks onsite are designed to include an attenuation pond designed for all events up to and including the 100 year plus climate change allowance (20%).

2.37. For each River Basin District, the WFD requires a River Basin Management Plan to be published. These are plans that set out the environmental objectives for all the water bodies within the River Basin District and how they will be achieved. The plans are based upon a detailed analysis of the pressures on the

water bodies and an assessment of their impacts. The plans must be reviewed and updated every six years.

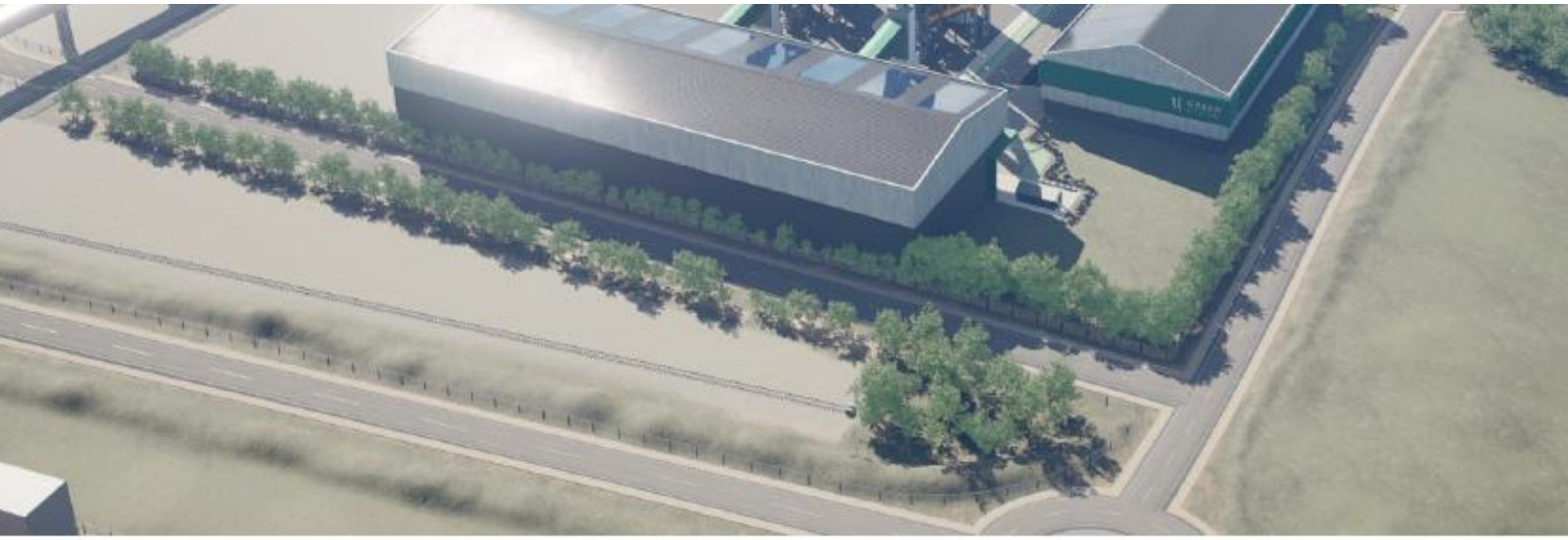
2.38. The ecological status of surface water bodies is based on the following quality elements: biological quality, general chemical and physio-chemical quality, water quality with respect to specific pollutants (synthetic and non-synthetic), and hydro morphological quality.

2.39. There are five classes of ecological status (i.e., high, good, moderate, poor or bad). Ecological status and chemical status together define the overall surface water status of a watercourse.

2.40. The closest watercourse is the River Tees which runs in an easterly direction approximately 500m to the north of the Site. The Tees Estuary South Bank Water Body, in the third cycle of water body classification (2019), achieved '*fail* chemical classification, and a '*moderate*' ecological classification.

2.41. There are no on-site surface water features.

CHAPTER 3 ENVIRONMENTAL STATEMENT METHODOLOGY



3. ENVIRONMENTAL STATEMENT METHODOLOGY

INTRODUCTION

3.1. The main objectives of the ES comprise:

- Establishing the existing baseline environmental conditions and the sensitivity of receptors. This task was divided into two phases:
  - (i) collection and review of existing data relating to the Site, including a review of information held by statutory and non-statutory consultees; and
  - (ii) the enhancement of existing data, where necessary with information collected through site investigation and surveys.
- Identifying, predicting and assessing the significance of the environmental impacts including beneficial, adverse, direct, indirect, long term, medium term, short term, temporary, permanent and cumulative impacts which could be expected as a result of the development proposals on those environmental issues that were considered to be potentially significant during the scoping process carried out on behalf of the Applicant;
- Determining mitigation and management measures, which would be required in order to prevent, reduce or remedy any significant adverse effects along with consideration of enhancement measures which could be implemented to ensure positive benefits as a result of these proposals; and
- Identifying any residual significant effects once mitigation has been taken into account.

3.2. European Directive 2014/52/EU (European Union, 2014) requires that certain projects, both public and private, must be assessed with regards to their impacts on the environment. The Proposed Development falls under the Directive implemented in England by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (UK Government, 2017).

CONSULTATION

3.3. Consultation is an essential part of the EIA process and has been used to:

- Identify available baseline data and the need for any further field surveys; and
- Identify the main environmental issues that need to be assessed in detail.

3.4. Both statutory and non-statutory consultees have been consulted as part of the EIA. In addition, the Applicant is committed to consultation with local interested residents and parties regarding the development proposals. This updated ES will be formally published on RCBC's website, and notification of this will be sent by RCBC to all parties who have made comments on the planning application previously.

3.5. The Local Authority planning team have been consulted as part of the planning pre-submission programme. The main stages of consultation were:

- Liaison and pre-application discussions with the relevant Planning Officers at Redcar and Cleveland Borough Council in relation to the installation of a Lithium Refinery Plant at the Site;
- Public consultation event held online to allow for members of the public to comment and discuss the Proposed Development;
- A presentation to the local MP's and councilors, showing the plans of the development, and why it is being proposed;
- Engagement with local MP's and Councilors; and
- Further public consultation will be carried out with members of the public as part of the statutory consultation during the planning determination period.

3.6. A copy of the Scoping Opinion provided by Redcar and Cleveland Borough Council has been included as Appendix 5.14 of Volume 2 of the ES.

3.7. Details of the names and addresses of all public consultees can be found in the Statement of Community Involvement, provided as part of the wider planning application document.

ASSESSMENT CRITERIA

3.8. A number of criteria have been used to determine whether or not the potential effects of the development proposals are significant. Where possible the effects have been assessed quantitatively.

3.9. The significance of effects have been assessed using one or more of the following criteria:

- International, national, and local standards;
- Relationship with planning policy;
- Sensitivity of receiving environment;
- Reversibility and duration of effect;

- Inter-relationship between effects; and
- The results of consultations.

3.10. The effects that were considered to be significant prior to mitigation have been identified within the ES. The significance of these effects reflects judgement as to the importance or sensitivity of the affected receptor(s) and the nature and magnitude of the predicted changes. For example, a large adverse impact on a feature or site of low importance will be of lesser significance than the same impact on a feature or site of high importance.

3.11. The following terms have been used to assess the significance of effects where they are predicted to occur:

- Major Beneficial or Adverse effect – where the development would cause a significant improvement (or deterioration) to the existing environment;
- Moderate Beneficial or Adverse effect – where the development would cause a noticeable improvement (or deterioration) to the existing environment;
- Minor Beneficial or Adverse effect - where the development would cause a barely perceptible improvement (or deterioration) to the existing environment; and
- Neutral / Negligible – no discernible improvement or deterioration to the existing environment.

3.12. Where individual assessment sections deviate from these terms, the alternative terminology has been explained as appropriate within the relevant chapter.

3.13. A summary impact table that describes the potential impacts, mitigation measures and any residual effects for each of the environmental issues considered is provided at the end of each chapter, where relevant.

3.14. A non-technical summary of the ES is provided as Volume 3.

CUMULATIVE EFFECTS

3.15. Cumulative impacts from proposed or committed developments in the vicinity of the Proposed Development have been considered within each of the following technical Chapters.

3.16. There are no identified already constructed and established refineries or other technically similar facilities within close proximity to the site for which cumulative effects have been considered.

3.17. In addition, the Applicant has investigated the details of any other projects which could in combination the Proposed Development, give rise to cumulative significant effects.

3.18. These facilities include the following facilities1:

- Combined Tees Valley Authority Municipal Incinerator (Dorman's Point) – consented and proposed for construction and operation during 2026;
- Circular Fuels Ltd DME production facility (Plot 10 Dorman's Point - Teesworks) – currently in planning determination by RCBC;
- Tees Valley Lithium (Plot 1 – Wilton International) - Granted Planning Approval by RCBC; and
- Redcar Energy Centre (Redcar Bulk Terminal, the former Corus Steel works).

3.19. No other such other schemes have been identified.

[1] It is acknowledged that the wider Teesworks development at Dorman's Point and Prairie Grange will introduce a significant quantum of new regional development, however by in large a majority of this development will not introduce any new significant combustion sources.

CHAPTER 4 DEVELOPMENT PROGRAMME AND CONSTRUCTION

4. DEVELOPMENT PROGRAMME AND CONSTRUCTION

4.1. This chapter describes the anticipated programme of development works and the key activities that would be undertaken on the Site during the construction phase of the project at this outline planning stage. It identifies, in general terms, the likely potential effects associated with construction activities and outlines proposals for their mitigation.

4.2. Detailed consideration of construction related environmental effects upon the various technical topics assessed, together with their associated mitigation measures, are provided in each of the technical assessment chapters of this Environment Statement and will be further established within the Construction Environmental Management Plan (CEMP) will accompany each Phase of this project.

4.3. It is proposed that a CEMP be provided and agreed with the Local Authority prior to the commencement of each Phase of works at the Site and will form part of each Reserved Matters Application (RMA). An outline of the content of the CEMP is provided in this chapter.

4.4. Planning for construction is necessarily broad at this Outline Planning stage and may be subject to changes as each phase of this project is progressed through detailed design. Consequently, where uncertainty exists the assessment has assumed a reasonable worst-case situation. It is considered, however, that sufficient information is available at this stage to enable the likely significant environmental effects relating to the construction works to be identified and their significance assessed.

PROGRAMME OF WORKS

4.5. The main elements of the Proposed Development are described in Chapter 5: Description of the Proposed Development and Alternatives and graphically illustrated in Appendix 5 of Volume 2 of the ES.

4.6. Construction works, installation and commissioning of each major phase of the technology is estimated to take approximately 24 months, with operation of the plant commencing immediately thereafter. As the development is phased, this will be spread with approximate 12 month gaps between construction of each line.

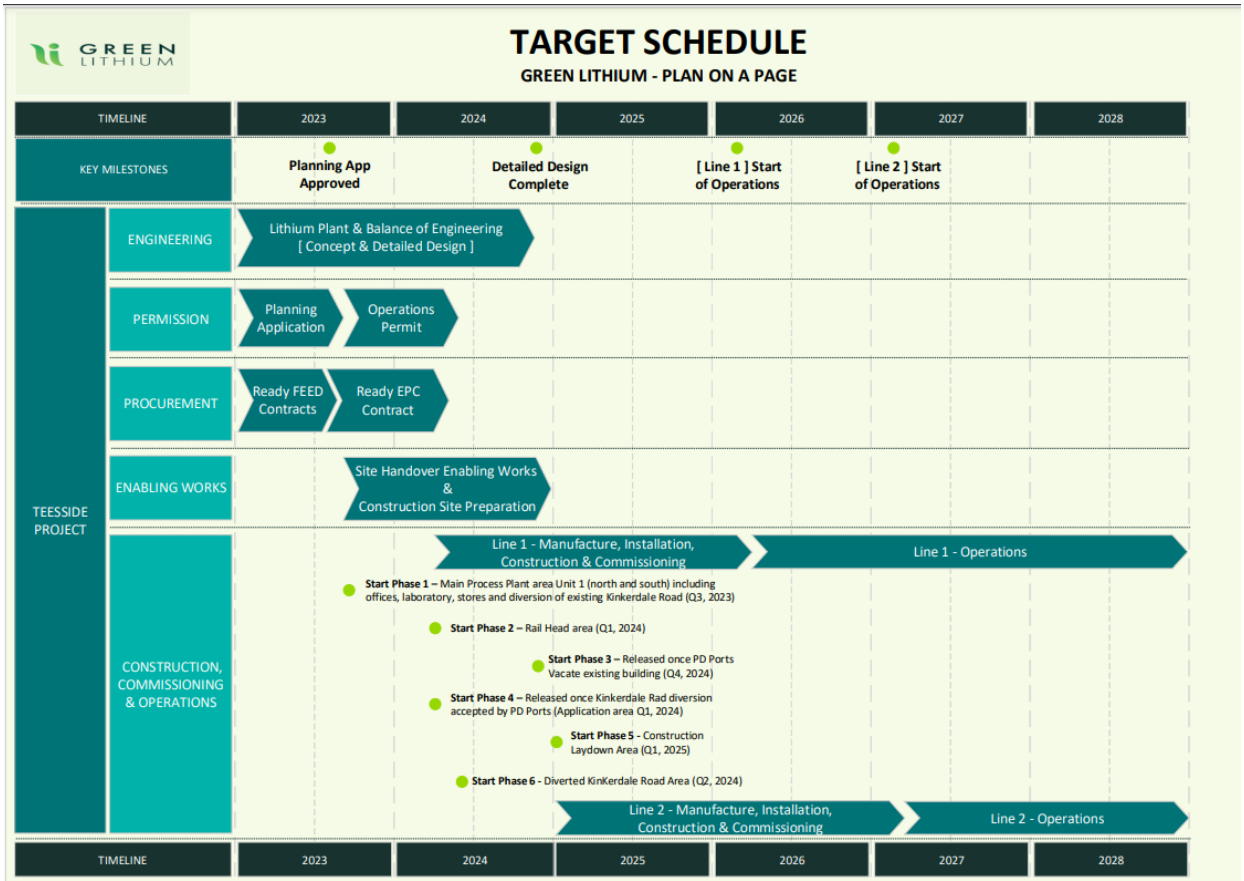


Figure 4.1: Target schedule

4.7. Figure 4.1 provides an indicative construction works programme, as this application is an Outline Planning Application full detail will not be speculated, and instead will be decided in the Reserved Matters Application.

DESCRIPTION OF THE WORKS

Enabling Works and Site Preparation

4.8. All non-critical infrastructure within the development site will be removed. All site investigation work, contamination and remedial works (if required) will be completed prior to the main construction works commencing.

4.9. In the absence of any significant removal of buildings, site preparation works are therefore limited to infrastructure works and earthworks. This is due to the existing buildings on site either being retained, or consisting of small, clad buildings which will be easily dismantled and demolished.

4.10. All internal and external process areas will be constructed with impermeable concrete hardstanding which will be designed in accordance with the load bearing requirements of the processing equipment and vehicles used at the facility. Typically, all non-structural concrete areas will comprise reinforced concrete hardstanding of at least 300mm thickness. All other load bearing elements will be significantly thicker as required and determined.

4.11. The construction of the facility will introduce significant new process buildings and structures, and hence new impermeable internal and external areas which will require rainfall capture and runoff retention and attenuation of surface water.

Construction of New Buildings and Infrastructure

4.12. Refer to Chapter 5 – Description of the Proposed Development and Alternatives for information on the proposed building and infrastructure.

Services, Utilities, Drainage and Infrastructure

4.13. As part of the preparatory works, the Site would involve provision of utilities (e.g. electricity, etc) and new drainage infrastructure.

4.14. The operation of construction vehicles and general construction activities may give rise to the potential for surface runoff to become contaminated with hydrocarbons, silt or other construction materials. This may in turn lead to a contamination event should site drainage be allowed to enter watercourses. Excavations may require dewatering (of accumulated rainfall or runoff) during construction. In such circumstances, it will be important to ensure that the quality of this water is sufficiently high to allow discharge to an appropriate point. Further details on drainage and mitigation are provided in Chapter 7 (Water Quality, Hydrology and Flood Risk).

4.15. The Site would require new mains water, IT, telephone and electricity connections.

EXCAVATIONS, FOUNDATIONS AND SUBSTRUCTURE CONSTRUCTION

4.16. Although the detailed foundation design is yet to be completed, the initial proposals includes piling for all major structures, buildings and plant.

4.17. All roadways, external storage areas, plant and equipment foundations will generally be constructed with a re-enforced concrete slab.

SUPERSTRUCTURE, CLADDING AND ROOF CONSTRUCTION

4.18. The main process buildings will be constructed around a structural steel frame which will support the cladding between the main structural members without secondary steel.

4.19. Some lateral restraint members will be required between the main frames, both to enable erection and to maintain stability. However, these members can be designed as removable to facilitate the installation of plant and equipment by removing individual cladding panels, when required.

4.20. The building would be an engineered sealed industrial construction using a portal steel frame with composite external cladding panels. The structural steel frame would be fabricated off-site and delivered in the largest possible sections that could be safely lifted into place by a mobile crane. Unloading from lorries would take place on-site, as close to the working areas as possible.

4.21. As above, building cladding would be made of an external panelised system, maximising the amount of off-site fabrication to minimise construction timescales as well as the waste generated on-site. The preferred method would be to use a module size that could be erected using mobile cranes.

4.22. The roofs would be of sandwich-style construction and, similarly, would be fabricated off-site and installed using mobile cranes.

4.23. The detailed building design will be provided as part of the respective Reserved Matters Application.

INTERNAL FINISHING WORKS, PLANT INSTALLATION AND COMMISSIONING

4.24. All major mechanical plant and equipment will be delivered to site pre constructed on a flatbed trailer. All plant will then be offloaded internally and installed using cranes and fork-lifts.

4.25. A detailed commissioning programme will be prepared and submitted, approved and overseen by the Environment Agency as part of the EPR permit. The period of the commissioning phase would be determined by EA but is expected to be a minimum of 3 months.

EXTERNAL FINISHING WORKS

4.26. The agreed landscaping and access would be completed during the commissioning phase once all construction work is complete.

4.27. The final landscape design will be submitted and agreed with the local authority as part of the relevant Reversed Matters Application.

PLANT AND EQUIPMENT

4.28. The following plant and equipment is anticipated to be used during the construction works, seen in Table 4.1.

Table 4.1: Indicative Plant used During Construction

Plant and Equipment	Enabling works	Construction of foundations and substructure	Construction of the structural envelope, shell and core;	Infrastructure	Services installations;	Fit out	Landscaping
Concrete silo and ready-mix lorries		■	■	■			
Concrete cutter, saws and splitters	■	■	■				
Cranes and hoists	■	■	■	■	■	■	■
Cutters, drills and small tools			■	■	■	■	
Excavators and breakers	■	■	■	■			■
Floodlights		■	■	■	■	■	
Fork lifts trucks		■	■	■	■	■	
Hydraulic benders and cutters		■	■		■	■	
Road Brush Vehicles		■	■	■	■	■	
Lorries/vans		■	■	■	■	■	
Tarmac laying equipment				■		■	
Scaffolding and access platforms			■	■	■	■	■
Temporary supports			■	■		■	
Tipper lorries		■		■		■	■
Wheel washers		■	■	■		■	■
Skips & Skip trucks		■	■	■	■	■	■

HOURS OF WORK

4.29. It is anticipated that the construction of the LHM Facility will take approximately 48 months including a 3-month commissioning period for all of the three lines, however Line 1 will be operational after 24 months.

4.30. Across this period major external civils work will normally take place between the following hours with minor installation works (fitout, mechanical and electrical installation, commissioning works etc) carried out outside of these hours:

- 07:00 – 19:00 Monday to Friday;
- 07:00 – 13:00 Saturdays; and
- No construction works are likely to take on Sundays or Public Holidays.

4.31. These proposed hours would be agreed with the Local Authority Planning department prior to commencement of the works. Special working outside these hours, such as heavy plant deliveries, and crane and equipment assembly, would be kept to a minimum and would be subject to prior agreement with reasonable notice by Local Authority's Environmental Health Officer (EHO).

POTENTIAL ENVIRONMENTAL EFFECTS

4.32. All construction sites have the potential to cause temporary disruption to neighbouring occupants, highway users, pedestrians, and other sensitive receptors. Due to the location of the site in relation to the residential neighbours, these impacts are considered to be minimal.

4.33. Detailed assessments of potential environmental effects resulting from each phase of the construction works will be fully described, with all required mitigation measures detailed within the approved CEMP.

ENVIRONMENTAL MANAGEMENT AND MITIGATION

Environmental Management Plan

4.34. A Principal Contractor will be responsible for all aspects of the construction operations. In line with best practice, the Principal Contractor will subscribe to the CCS (Considerate Contractors Scheme).

4.35. A Construction Environmental Management Plan (CEMP) would be prepared by the Principal Contractor for each phase of the development, which would include all details of relevant environmental management controls necessary for environmental protection during the construction works. This would follow best practice guidelines and would be agreed with the Local Council Environmental Health Department.

4.36. The CEMP would place stringent contractual and procedural performance obligations upon trade contractors. These would be maintained and reinforced by commitments detailed below and, where relevant, within Chapters 7 – 13. Such obligations would be enforced through subsequent detailed agreements with, and consents provided by the Local Authority. A clear management structure and description of the responsibilities and authority of a specific Project Environmental Manager (PEM) would be included.

4.37. The PEM would have primary responsibility for liaising with the Planning Authority and other statutory agencies on environmental matters. It is anticipated that regular meetings would take place to review progress and to agree necessary options. Notwithstanding this, it is recognised that positive action and reaction by site operatives at the time of any environmental incident or breach of targets are essential components for effective environmental management.

4.38. The CEMP would address requirements in relation to environmental controls and would allow for, and include the following:

- The appointment of an experienced PEM responsible for the preparation and implementation of the CEMP;
- Details of the phasing of the works, including information on construction works that may be carried out by trade contractors;
- Procedures for construction activities, highlighting any operations likely to result in adverse environmental effects, with an indication of the mitigation measures to be employed;
- Reference to, and provision of a framework for compliance with all legislation that would be relevant;
- Emergency procedures that would be implemented on the Site;
- Prohibited or restricted operations;
- Control limits of target criteria for environmental issues, where practicable;
- Requirements for monitoring and record-keeping;
- Mechanisms for third parties to register complaints and the procedures for responding to complaints;
- Provisions for reporting, public liaison and prior notification, especially where dispensations would be required;

- Details of construction operations, highlighting the operations most likely to result in disturbance and / or working outside core working hours, together with an indication of the expected duration of each activity;
- Possible departures from target criteria, and details of how any adverse effects would be minimised, or potential complaints addressed;
- Details of proposed routes for HGVs travelling to and from the Site;
- Provisions for auditing by the PEM, Local Authority and other regulatory authorities where appropriate;
- Details of plant to be used;
- Details of all construction works involving interference with a public highway, including temporary carriageway/footpath closures, realignments and diversions; and
- Housekeeping procedures and environmental management controls.

Contract Conditions

4.39. Individual trade contracts would incorporate appropriate requirements in respect of environmental control, based largely on the standards of 'good working practice' outlined in the CEMP in addition to statutory requirements. Contractors would therefore be required to demonstrate how they would achieve the provisions of the CEMP, how targets would be met, and how potential adverse environmental effects would be minimised.

Management of Construction Works

4.40. The PEM would deal with queries from the public and other complaints and enquiries. This nominated individual would be named at the site entrance, with a contact number, and would be identified to the Local Authority and community groups, prior to the start of the Site activities, and whenever a change of responsibility occurs.

4.41. Any complaints would be logged and reported to the relevant individual within the Local Authority (and vice versa) and soon as practicable.

4.42. The CEMP would specify the roles and responsibilities of the PEM and the appropriate Officers within the Local Authority in respect of any breaches or complaints from the public. The required actions would be different in each specific case, depending on the operation, equipment or location.

Emergencies and Accidents

4.43. The civils contractor and the process plant contractor will be required to maintain high safety standards on-site, and to be fully compliant with current health and safety legislation.

4.44. An Emergency Incident Plan would be in place to deal with potential spillages and/or pollution incidents. Any pollution incidents would be reported immediately to the regulatory bodies.

Materials Storage and Handling

4.45. Environmental issues would be considered in the procurement of raw materials and manufactured building components and all such materials would be appropriately stored on the Site to minimise damage by vehicles, vandals, weather or theft. Deliveries of hazardous materials would be supervised, and a just-in-time deliveries system would be implemented to minimise storage times and reduce the risk of spillage on-site. Tanks and drums of liquid chemicals and fuels would be stored in bunded compounds. Packaging materials would be returned, where possible.

4.46. Any excavated material used on site would be landscaped, or if this is not possible will be loaded into HGVs for transportation to nearby construction sites for re-use (if not contaminated) or to suitable disposal sites.

4.47. Contractors and their sub-contractors would be expected to maintain a tidy site and where practical, to operate a 'just-in-time' policy for the delivery and supply of materials for the works.

4.48. Where possible, prefabricated elements would be lifted directly into position from delivery vehicles. This would assist in reducing on-site storage and labour requirements and construction noise levels to surrounding sensitive receptors.

4.49. Mobile cranes would be used for general unloading and hoisting during the structural and envelope works. Passenger / goods materials hoists, fork lift trucks and other electric or hydraulically operated plant may be used to distribute and transport materials around the Site.

Waste Management and Minimisation

4.50. Waste would be generated during all stages of the construction works. Although specific materials cannot be identified at this stage of the design, major and potential sources of waste within the construction process are anticipated to comprise:

- Excavated material;
- Packaging – including plastics, wooden pallets, expanded foams;

- Waste materials generated from inaccurate ordering, poor usage, badly stored materials, poor handling, spillage; and
- Dirty water, for example from site runoff containing silt.

4.51. At this stage, it is estimated that on-site excavations would generate minimal material for off-site disposal. It is the intention of the project to use all excavated material, wherever possible.

4.52. In accordance with the projects BREEAM requirements, a Site Waste Management Plan (SWMP) would be developed and implemented detailing how waste created during the construction phase would be managed.

4.53. The SWMP will be prepared by the Principal Contractor in accordance with the non-statutory guidance on preparation of SWMPs. All relevant contractors would be required to investigate opportunities to minimise waste arisings at source and, where such waste generation is unavoidable, to maximise the recycling and reuse potential of construction materials. Recycling of materials would take place off-site, where noise and dust are less likely to result in effects to the occupants of surrounding properties. Appropriate waste management and recycling centres, close to the Site would be identified prior to the construction works and contracts would be established with registered waste carriers and authorised waste disposers for the construction waste.

4.54. All waste would be stored on the Site in accordance with the relevant legislation, in particular the Duty of Care Regulations, 1991 (as amended) (Ref 4.1) and no burning of construction waste would be undertaken at the Site.

4.55. The destination of all waste or other materials removed during construction would be notified to the relevant authority by the Principal Contractor for approval. Loads would only be deposited at authorised waste treatment and disposal sites. Deposition of waste would be in accordance with the requirements of EA and other regulatory controls.

Traffic and Access Management

4.56. As assessment of the potential effects of the Proposed Development on traffic and the local transportation network is presented in the Transportation Statement provided as part of the Planning Application.

4.57. Specific detail relating to the detailed management of the construction traffic will be detailed within a dedicated construction transportation plan, which will be submitted for approval by the Local Authority post planning.

4.58. Deliveries would be phased and controlled on a 'just-in-time' basis, wherever possible. This would minimise travel time and traffic congestion around the Site.

4.59. Abnormally large loads will only be associated with the delivery of the major mechanical plant and equipment and the chimney stack during the construction phase of the plant. The delivery of these components will be subject to an agreed special access and delivery agreement with the Local Police and Highways Authority.

4.60. The majority of all deliveries would be made by standard HGVs, with no special access / delivery requirements.

4.61. The Traffic Management Plan would detail the management of the above measures as well as the management of car parking on the Site and the site labour force travel to the Site. No parking on public roads would be allowed and the Principal Contractor / Construction Manager would be responsible for enforcing this requirement. Provision would be made within the Site for essential on-site parking. Any local traffic management measures for Site access would be agreed with the relevant authorities.

Air Quality and Dust

4.62. Site-specific best practice measures would be implemented by contractors to minimise the disturbance to neighbouring receptors. These measures would include:

- Damping down surfaces during dry weather;
- Providing appropriate hoarding and / or fencing to reduce dust dispersion and restrict public access;
- Sheeting buildings, chutes, skips and vehicles removing wastes with the potential for dust generation;
- Appropriate handling and storage of materials, especially stockpiled materials;
- Restricting drop heights onto lorries and other equipment;
- Fitting all equipment with dust control measures such as water sprays wherever possible;
- Using a wheel wash, limiting speeds on site to 5mph, avoiding unnecessary idling of engines and routing of site vehicles as far from sensitive properties as possible;
- Using gas powered generators rather than diesel if possible (these are also quieter) and ensuring that all plant and vehicles are well maintained so that exhaust emissions do not breach statutory emission limits;

- Switching off all plant when not in use;
- No fires would be allowed on the Site; and
- Ensuring that a road sweeper is available to clean mud and other debris from hardstanding, roads and footpaths.

4.63. An assessment of the potential effects of the construction works on air quality are presented in Chapter 7 – Air Quality.

Hazardous Materials and Contaminated Land

4.64. Based on the historical land uses of the Site, with the northern portion historically being the site of Teesport Refinery (between 1974-1992), there is moderate potential for sub-surface ground contamination to be present. Prior to construction, the contractor would be required to prepare a Method Statement and Risk Assessment demonstrating how the safety of construction workers and the public would be addressed in terms of potentially harmful substances should they be identified. Protective measures would include:

- Provision of adequate facilities and procedures for personal washing and changing;
- Provision and use of personal protective equipment (PPE);
- Implementation of dust suppression methods; and
- Implementation measures to avoid surface water ponding and the collection and disposal of the site runoff.

4.65. Such measures should be carried out in accordance with the Protection of Workers and the General Public during the Development of Contaminated Land document and CIRIA Report 132: *A Guide for Safe Working on Contaminated Sites* (Ref 4.2).

Site Drainage and Effects on Water Resources

4.66. The assessment of the potential effects of the development proposals on water resources is presented in Chapter 9 – Flood Risk, Hydrology and Drainage. In summary, a precautionary approach would be adopted to appropriately manage construction-derived surface water run-off. As such, particular care would be taken to prevent any release or mobilisation of pollutants, which could pose a potential risk to receptors such as groundwater.

4.67. Best practice pollution prevention measures would be put in place to isolate environmentally damaging substances and prevent their release. These measures would be agreed in consultation with the Environment Agency and would include:

- Secure, careful siting and bunding of fuel storage facilities and any areas used for the storage of potentially hazardous materials;
- Use of drip trays when filling smaller containers from tanks or drums to avoid drips and spills;
- Works involving concrete would be carefully controlled and ready-mix concrete wagons would be washed out in a safe designated area;
- The avoidance of stockpiling materials wherever possible to prevent spills and where undertaken, sheeting and covering these stockpiles and haulage vehicles loads;
- Management of the site drainage to prevent sediment laden / contaminated runoff entering the wider environment;
- Surface drainage would pass through settlement and oil interceptor facilities where required;
- Provision for the treatment and safe disposal of wastewaters, including water from dewatering pumping operations;
- Appropriate management and transportation of the site waste including the establishment of dedicated waste storage areas designed to prevent pollution, regular inspections and the implementation of waste minimisation and management plans as described above; and
- Ensuring that any water which may have come into contact with contaminated material would be disposed of in accordance with EA requirements.

4.68. An Emergency Plan would be implemented, forming part of the CEMP, outlining procedures to follow in the instance of any accidents involving spillages. This would involve the provision of on-site equipment for containing spillages, such as emergency booms and chemicals to soak up spillages.

Protection of Ecological Resources

4.69. An assessment of the potential effects of the Proposed Development on ecological resources is presented within the Planning Statement, which identifies relevant mitigation.

4.70. Any necessary protection measures will be incorporated in the CEMP.

4.71. Should the site be required to undergo decommissioning and site closure, similar protection measures will be incorporated into a formal Site Closure Plan, decontamination and demolition environmental management plan in accordance with the Environmental Permitting Regulations.

SUMMARY

4.72. The construction effects of each Phase of the Proposed Development would be managed through the development of a project and site-specific CEMP. The CEMP would be agreed with the Local Authority and other relevant bodies prior to the commencement of works, which as a minimum would comply with the mitigation measures, set out in this ES.

4.73. The CEMP would outline methods for contractor and general public liaison, hours of work, methods to deal with complaints, and outline management practices to control dust, traffic and access, waste, water resources and ecological effects, ensuring a high level of control throughout the construction works.

4.74. The procedures within the CEMP would ensure the delivery of a high level of environmental control throughout the construction phase, thereby minimising the potential for adverse effects. Further detail regarding specific mitigation during construction works for the Proposed Development is presented within Chapters 7 to 14 of this ES.

REFERENCES

Ref 4.1: HMSO (1992) 'The Controlled Waste Regulations' 1992 (as amended).

Ref 4.2: CIRIA (2002) CIRIA Report 132 Good Practice Guidance For The Management of Contaminated Land. Safe Working Practices on Contaminated Sites.

CHAPTER 5 DESCRIPTION OF PROPOSED DEVELOPMENT AND ALTERNATIVES

5. DESCRIPTION OF PROPOSED DEVELOPMENT AND ALTERNATIVES

INTRODUCTION

5.1. The EIA Regulations require that the EIA Report must include "*a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases*". As such this chapter will discuss the Proposed Development, and detail the equipment which is suggested for installation.

5.2. It is acknowledged by the applicant that the detailed design of the site and processes have yet to be completed, so as such all equipment description is considered provisional and will be subject to clarification as each phase of the development is implemented.

5.3. This chapter also sets out the need for the Proposed Development and the main alternatives considered by the Applicant.

THE NEED FOR THE PROPOSED DEVELOPMENT

5.4. There is an identified national and global demand for lithium, primarily driven by the Government's net zero strategy and the decarbonisation of the UK transport sector.

5.5. Currently the lithium market is predominantly controlled in China, who control approximately 90% of the global lithium supply. The UK/EU currently depend on Chinese refined lithium chemical imports, driving major price/volume uncertainty. Onshore lithium refining is essential to meet the c.800,000 tpa European 2030 demand from EVs, noting further/fast-emerging demand from storage is unbudgeted in forecasts.

5.6. Ultimately, without localised supply, European automotive/storage sectors will fail.

5.7. The reducing amount of fossil fuels have accounted for alternative solutions to energy needs being considered. In order to limit global temperatures from increasing by 1.5°C the UK has set an agenda to have net-zero emissions by 2050. One of the primary methods of achieving this goal is through the decarbonisation of the transport and power sector with increasing demand and predicted growth for Electric Vehicles (EV) and battery storage technology. Lithium is a key element in battery technology with the demand predicted to grow by 600% over the next decade and beyond.

PROPOSED DEVELOPMENT

5.8. The Proposed Development comprises the construction and operation of a LHM refinery, taking α -spodumene as a virgin product and processing it into the final product of LHM. The refinery will include all necessary associated infrastructure including office facilities, workshop, supply warehouse/stores, reagent storage and water management infrastructure.

5.9. The development will be constructed on a phased basis, to a maximum of three process lines and the ability to process approximately 510,000 TPA of α -spodumene concentrate, resulting in a final product output of 75,000 TPA of LHM.

5.10. The 6 separate phases of the scheme will be developed in accordance with the proposed phasing plan, with Phase 1 comprising a single production line (Line 1) scheduled to commence construction during Q1 2024.

5.11. As a precautionary approach, this ES has assumes that all 6 phases (i.e. 3 production lines) will be developed and therefore assesses the realistic worst case impacts associated with the development.

5.12. The proposed layout for the scheme is provided in Drawing DR-C-00017_S2_P01.

5.13. Each line of the LHM plant will consist of the following process stages:

- Storage and transfer of spodumene concentrate;
- Calcination of α-spodumene to β-spodumene within the Rotary Kilns and coolers;
- Grinding of the ß-spodumene calcine;
- Pressurized autoclave leaching of the β-spodumene within the Soda Leaching Plant that includes;
    - Solid/liquid separation of the pressure leach slurry;
    - Conversion of the autoclave residue;
    - Leach residue filtering and handling;
    - Ion exchange and solution polishing;
    - Crystallization of lithium hydroxide and product handling;
    - Crystallization mother liquor bleed distribution and carbonation;
- Effluent treatment within the '*Zero Liquid Discharge Plant'.*

5.14. The process plant consists of various building and equipment structures with a maximum building height of 45m. All buildings will be of a modern industrial steel-framed and composite metal clad construction.

Longitudinal strip and individual pad footings are anticipated for the majority of the structural footings, with 200 mm thick ground slabs for all process areas and 300 mm thick for heavy trafficable areas. Piling will be required for the heavier structures and process plant where required.

5.15. Inside the plant, equipment is supported on structural steel with associated maintenance access operating platforms.

5.16. Given that the project will be developed over 6 phases, detailed building design, slab, piling design and drainage designs will be provided as required during the relevant and associated Reserved Matters Application.

5.17. Table 5.1 below demonstrates the inputs and outputs of the Proposed Development with all process trains.

Table 5.1: Inputs and Outputs of Proposed Development assuming all 3 Process Trains	
Substance	Tonnes Per Annum (TPA)
Inputs	
Spodumene Concentrate	510,000
Sodium Carbonate	102,000
Calcium Hydroxide	85,500
Hydrochloric Acid	6750
Sodium Hydroxide	2025
Sodium Phosphate	4500
Sulfuric Acid	2250
Outputs	
LHM	75,000
Analcime	714,000
Salt	9450

CONSTRUCTION PHASE

5.18. A Construction Method Statement will be developed following appointment of a Principal Contractor and submitted to RCBC for agreement and approval prior to any construction activities commencing at the Proposed Development.

5.19. Prior to commencement of construction of each phase of the Proposed Development, the Applicant will prepare and submit a Construction Method Statement and detailed Construction Environmental Management Plan (CEMP) to RCBC for approval. Once in receipt of approval, any required mitigation

tasks will be carried out in accordance with the finalised CEMP, ES and all relevant environmental legislation.

5.20. The Principal Contractor will establish a preliminary site compound area for use in the initial stages of construction during the mobilisation stage. Once the preliminary site compound area is established, site clearance and earthworks operations will commence.

Earthworks

5.21. Excavation works will be undertaken as part of the initial enabling works within the first three months and, before any works are carried out, a works plan will be produced that will divide donor and receptor areas into a range of cells to be worked sequentially.

5.22. The bulk earthworks will consist of preliminary works including clearing vegetation and stripping topsoil. Topsoil and vegetation matter will be stockpiled to nearby designated locations. Embankment and pad construction will be achieved by a mix of cut to fill from the process plant area and imported general fill sourced from nearby borrow sources.

Construction Works

5.23. Once the above works have been completed, the Principal Contractor will commence the construction of the LHM manufacturing plant. Foundations will be completed prior to steelwork erection for the building, cladding and roofing. Structural steel and concrete structures across the Proposed Development will include process equipment buildings, access and maintenance platforms, pipe racks, equipment plinths, building and equipment footings, conveyor footings, retaining walls, trafficable slabs, tank foundations, containment bunds and sumps.

5.24. After the cladding and roofing is completed the floor slabs will be constructed. The final task will be the interior fit-out and installation of the mechanical and electrical processing plant within. Associated roads, hardstanding areas and drainage construction works will then be carried out.

5.25. All construction works will be subject to a CEMP in order to minimize environmental harm, this will be submitted as part of the Reserved Matters Application that accompanies the specific phase of construction.

OPERATIONAL PHASE

5.26. The primary raw material of the LHM plant is calcined spodumene concentrate with an option to also feed Technical Grade Lithium Carbonate to the process. The product is Battery Grade LHM.

5.27. The hydrometallurgical lithium refinery plant will be based on Metso Outotec's proprietary technologies which include pressure leaching, conversion and ion exchange process stages.

5.28. The principal components of the Proposed Development are described within the sections below.

5.29. A process schematic can be seen in Figure 5.1 overleaf.

5.30. The following reagents will be used in the process:

- Sulfuric Acid;
- Hydrochloric Acid;
- Sodium Hydroxide;
- Sodium Phosphate;
- Sodium Carbonate;
- Calcium Hydroxide; and
- Carbon Dioxide.

5.31. The Proposed Development will operate continuously, 365 days a year, with the exception of planned and unplanned maintenance outages.

PHASED APPROACH

5.32. The applicant is seeking outline approval for all three LHM production lines, constructed over 6 phases in accordance with the proposed Phasing Plan (Figure 5.1 overleaf).

5.33. Although it is only likely that 2 LHM production lines will be constructed during the initial phases, the applicant have made provision for a third line and included it within this outline application. Accordingly, the ES associated with this outline application has assessed the potential impacts of the entire proposed development in order to ensure that in the event that the third line is constructed the associate impacts have been accounted for.

5.34. A simplified process schematic can be seen in Figure 5.2 overleaf.

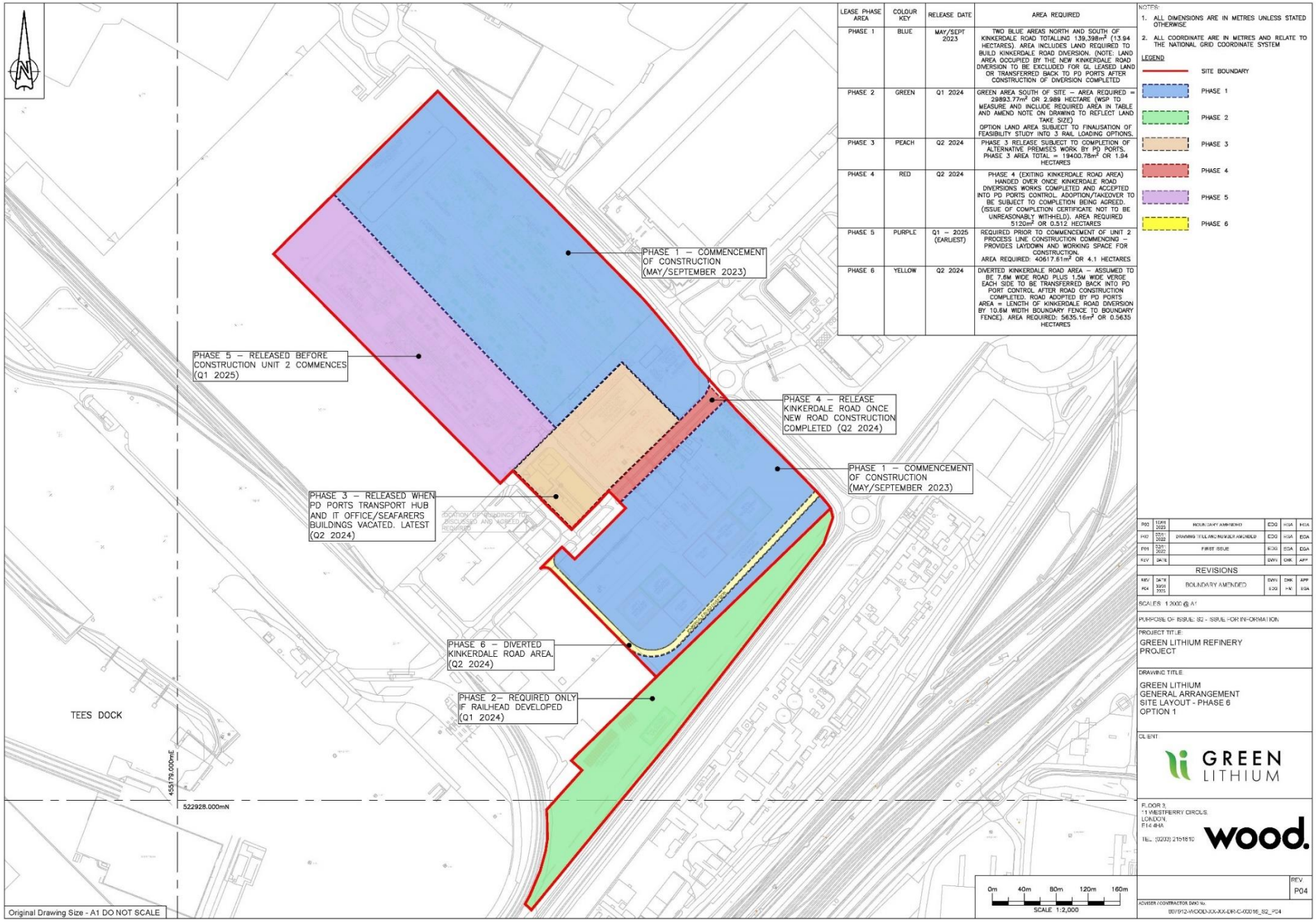


Figure 5.1 Phasing Plan

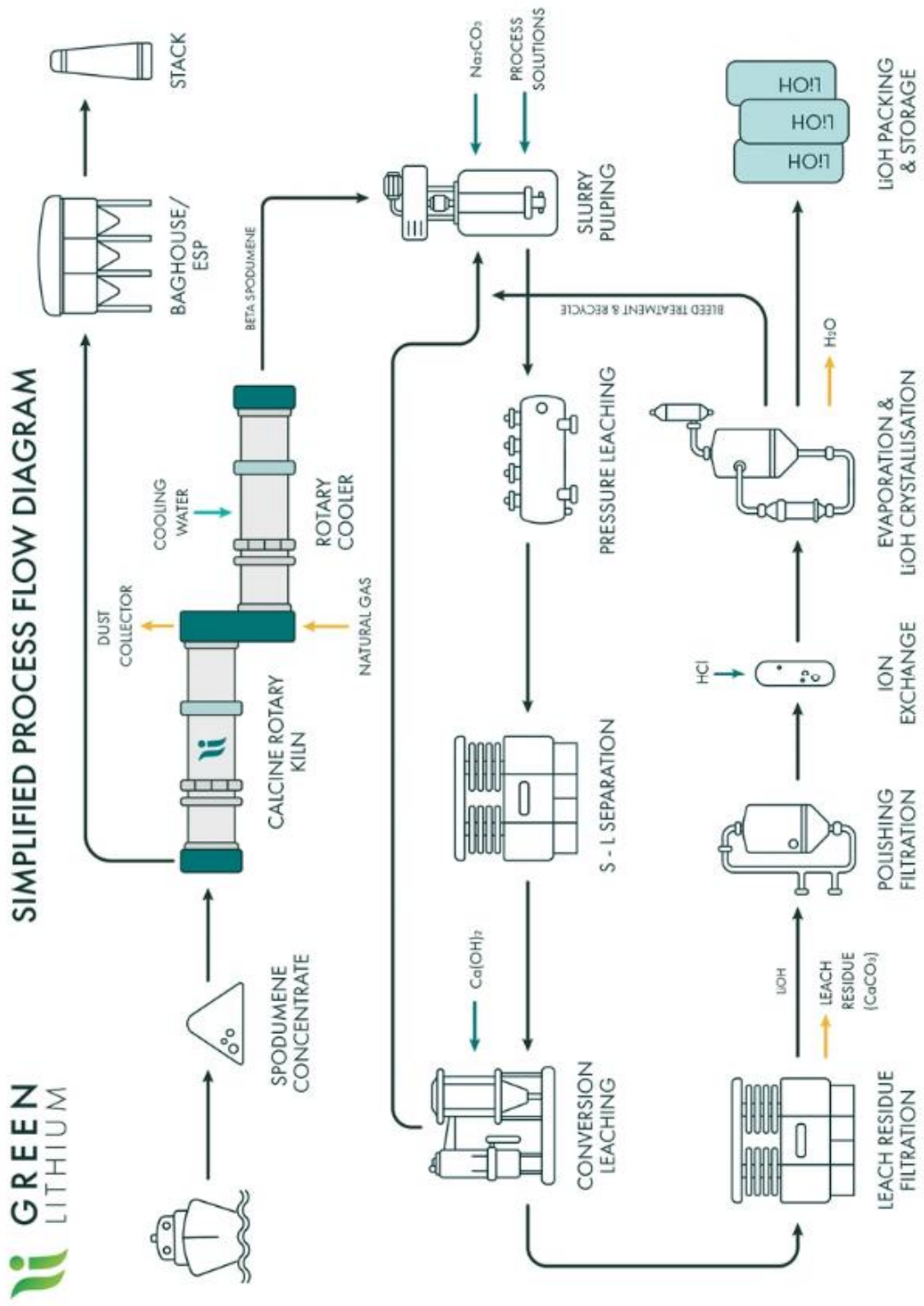


Figure 5.2 Process schematic

Ore Storage

5.35. The spodumene concentrate will be received from the neighbouring PD Teesport dockside, and subsequently stored in buildings prior to processing.

5.36. The storage building is equipped with a number of docking stations that will permit the secure and safe delivery of the ore from the HGV vehicles. Within the ore reception the site operators will use mechanical loading shovels to load the fuel into storage, whereby it is automatically fed into the processing system when required.

5.37. This storage area is fully covered and on hard standing.

5.38. When required, the ore will be transferred to the feeding system that will convey the contents of the bin into the calciner. The ore will be fed into the calciner by the feed belt mechanism. Finally, LHM is produced by crystallisation.

Calcination

5.39. The Calcination process breaks down the raw materials (also known as spodumene concentrate) by heating the material using natural gases within a large calcine rotary kiln, reaching extreme temperatures in excess of 1000°C. Once the material passes through the rotary kiln, it then passes into a rotary cooler to help reduce temperatures faster, allowing for safe handling of the material as it is prepared for the next stage.

Hydrometallurgy

5.40. The Hydrometallurgy process starts with grinding and pulping process, where calcinated material is wet ground and pulped into a slurry using recovered process water. This slurry is then passed into the autoclave unit where the alkali-leaching process (soda pressure leaching) takes place, using high pressure, high temperature steam and air.

5.41. The resultant post leach slurry (comprising a lithium carbonate and analcime solid solution) is then transferred to the S-L separation/filtration unit where the material is washed and dried. The dried material or leach residue filter cake is then transferred to a two stage Lithium Hydroxide conversion leaching process, where the cake is further broken down, repulped with recycled wash filtrates, mixed with calcium hydroxide and then passed through conversion reactor tanks.

5.42. A further filtration process separates solids and liquids, with the resultant liquids being feed to the second stage conversion process. The second stage conversion removes unwanted impurities that may contaminate the final product. Filtrate from both stages of the conversion process is then filtered,

polished and cleaned before being passed to the Ion Exchange units where any remaining impurities are removed from the solution prior to the crystallisation stage.

Pressure Leaching

5.43. Pressure leaching is then performed, in which the slurry is heated to 160°C using steam in an autoclave to form lithium carbonate and analcime via a reaction with sodium carbonate in a two-stage controlled vacuum flash chamber. Off-gases from the process are collected and treated in a gas scrubber and solids are bled out via wash water. Soda leach residue filtration is then performed, in which the slurry is water-cooled to 80°C in an agitated tank, and leach residue it filtered, pressed, washed, and air-dried to form a filter cake composed of analcime, lithium carbonate, and gangue minerals. The filtrate is recycled back to grinding and pulping stages.

5.44. The filter cake is then pulped and mixed with calcium hydroxide at 40°C to form lithium hydroxide and calcium carbonate, then mixed with a smaller amount of calcium hydroxide to precipitate the remaining solids. The converted lithium hydroxide solution is then filtered and separated from all other co-products and conveyed to the next stage. The solution is processed via a fixed-bed column ion exchange system in which hydrochloric acid and sodium hydroxide is used to remove multivalent impurities like calcium and other divalent ions.

Crystallisation

5.45. A two stage Crystallisation Process will be provided to ensure product quality. The dilute lithium hydroxide liquor received from the Hydrometallurgy is essentially heated to evaporate the liquids producing crude lithium hydroxide crystals that are then further filtrated and dried to ensure all impurities are removed.

5.46. The output of this stage is then forwarded to the product storage and packing area for distribution to the supply chain.

5.47. The design output of the plant is to produce 75,000 tons per annum of battery-grade LHM, assuming all 3 process lines are constructed. It is proposed that the 3rd line would be installed at a later stage once the first two operational lines plant are in steady state of operations.

5.48. Throughout the process above, the plant re-uses excess liquids and heat by re-introducing them at various stages to ensure we not only reduce our waste but also our carbon footprint.

Zero Liquid Discharge (ZLD) system

5.49. Process effluent is transported to this system after a final pre-treatment step, this involves acidification of the effluent by sulfuric acid feed, changing the pH to 5.5. Carbon dioxide is produced from this process, which is vented to the CO_2 off-gas scrubber.

5.50. Feed flow containing predominantly sodium chloride and lithium chloride from the neutralization/feed storage tank, will be passed through a plate and frame heat exchanger to recover heat from the clean distillate.

5.51. Sodium sulfate is added to the feed water to form Lithium Sulfate and Sodium Chloride, this reduces the boiling point of the brine, and as a result select salts are eliminated from the solution.

5.52. The feed solution is then sent into the crystalliser recirculation duct, the solution is heated and then flashed, converting the sensible heat to latent heat in the form of vapour. Boiling of the liquid occurs, with agitation from a high circulation rate, achieving a good heat transfer and minimising salt build-up on the bottom cone of the vapour body.

5.53. The vapour travels through the mist eliminator chevrons to remove any water droplets and/or entrained solids prior to exiting the vapour body. Crystals are continuously formed within the solution in the vapour body.

DECOMMISSIONING

5.54. Although the Proposed Development does not have a pre-determined operational lifespan, it is anticipated to be operational for at least 25 years and possibly more. As appropriate, a Decommissioning Plan will be prepared following cessation of activities, based on contemporary approaches to decommissioning at that time.

ALTERNATIVES

5.55. The EIA Regulations (Ref 5.1) states that an ES should include:

"An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for the choice made, taking into account the environmental effect".

5.56. The EIA Regulations do not expressly require the Applicant to study alternatives; however, the nature of certain developments and their location may make the consideration of alternative sites a material consideration. Moreover, case law indicates that the EIA regulations do not require an assessment of alternatives.

5.57. The following sections describe the main alternatives to the Proposed Development considered by the applicants. In accordance with best practice guidance, consideration has also been given to and commentary is provided to provide an outline of any alternatives or options considered by the Applicant:

- The *'No Development'* alternative;
- Alternative Sites;
- Alternative Technologies; and
- Alternative Designs.

'NO DEVELOPMENT' ALTERNATIVE

5.58. Guidance on the preparation of ES's (Ref 5.2) suggests that it is good practice to consider the evolution of a site in the absence of specific proposals, i.e., the '*Do-nothing'* or '*No-Development'* alternative.

5.59. There is an immediate local, national and global need for the production of lithium batteries, utilised for EV's.

5.60. Currently there is no production capacity for lithium hydroxide in the UK, the Proposed Development would enable the supply of between 50,000 to 75,000 TPA, providing the ability to supply all of the expected national demand until 2036, as expected by The Faraday Institution (Ref 5.3). Demand for EV's is expected to increase by 600% in the next decade, demonstrating the requirement for further production. A '*No-Development'* alternative would lead to the production staying in China, which currently controls 90% of the Lithium Hydroxide supply, further reducing our national energy security.

5.61. The proposed project will significantly reduce the transportation impacts associated with the importation of Lithium Hydroxide batteries, and result in a more sustainable process.

5.62. The 'No-Development' option refers to leaving the Site in its current state and continuing with the current methods for acquiring Lithium Hydroxide. Key issues are summarised below:

5.63. The failure to supply a sustainable national source of Lithium Hydroxide;

- Further loss of national energy security; and
- Encouragement of using combustion engines, due to the demand of EV's not being met.

SITE SUITABILITY AND ALTERNATIVE SITES

5.64. The applicant has actively pursued a number of alternative site locations but has selected this site following consultation with the RCBC Sustainability Team and having regard to a series of practical and commercial considerations.

5.65. At feasibility stage the development team engaged with local land agents and RCBC's Asset Strategy Officer to explore land availability and suitability options across a broad range of physical, legal and planning constraints. The site search included available plots as far as Rosyth, and several other sites around Teesside including the South Teesside Development Corporations Dorman's Point, Prairie Grange and Former Metals Recovery sites, Redcar Bulk Terminal and Wilton International.

5.66. An alternative location, within Teesworks, had been considered for this development, however, this location was unable to be pursued for commercial reasons.

5.67. The proposed location, being allocated for industrial use and within the vicinity of the PD Teesport, is considered highly suitable as it provides direct dockside access for the international import of materials, as well as good access to the local highway for export of final product.

5.68. In concluding the development appraisal, the applicant site offers low potential negative environmental impact, sits within a supportive planning policy context and offers a simple freehold legal interest when compared against the other sites being appraised.

5.69. The Proposed Development would be constructed within an area owned by PD Teesport, with the current operations being able to be moved to a nearby area.

5.70. The Applicant has considered national and local planning policies which have been assessed and set out in the Planning Statement in support of this outline planning application. The proposals are compliant with the Development Plan.

5.71. The Site does not contain any designated ecological, habitat, heritage features, landscapes or views.

5.72. Due to the nature of the Proposed Development, there will be no direct impact to off-site conservation.

ALTERNATIVE TECHNOLOGIES

5.73. A review of available refinery processes has been carried out by the project design team.

5.74. The findings of this review identified that although there are a number of small-scale technologies which are capable of processing spodumene ore, many have been discounted on the basis of unsustainability, producing hazardous biproducts.

5.75. The technology chosen for the process was chosen due to producing no hazardous discharge, the process also has a ZLD system, with the final product from this being able to be utilised by the aggregate industry.

5.76. The traditional acid leach technologies for the production of lithium hydroxide have significant environmental impacts relating to discharges, carbon footprint, air emissions and chemical use. Therefore, no further consideration has been given to their potential use.

ALTERNATIVE DESIGNS & LAYOUTS

5.77. The PD Teesport site has been orientated to ensure ease of access from Kinkerdale Road and Tees Dock Road and to minimize the internal traffic routing of the site.

5.78. A constraints analysis of the Site has determined building layout is ideally situated in the northern portion of the site in a north / south orientation for the following reasons:

- Offsets the main development to the back of the site when viewed from Tees Dock Road and provide physical distance between the green boundary thus minimising the potential visual impacts from the road.
- The building and plot size prohibits the ability to orientate the building in an east/west orientation and therefore constrains the layout to being north/south.
- The construction of the site in the northern portion of the development plot allows some of the existing scrubs along the southern boundary to be retained, or lightly modified, instead of removing this habitat.
- The chosen configuration minimises the interface between HGV's, employee vehicles and pedestrians and thus significantly reduces the health and safety risks associated with the site layout.

5.79. An alternative, earlier layout iteration has been provided in Figure 5.3 overleaf. Noting that this was discounted for the following reasons;

- Not fitting the new site boundary; and
- Internal routing working more efficiently with the chosen layout.

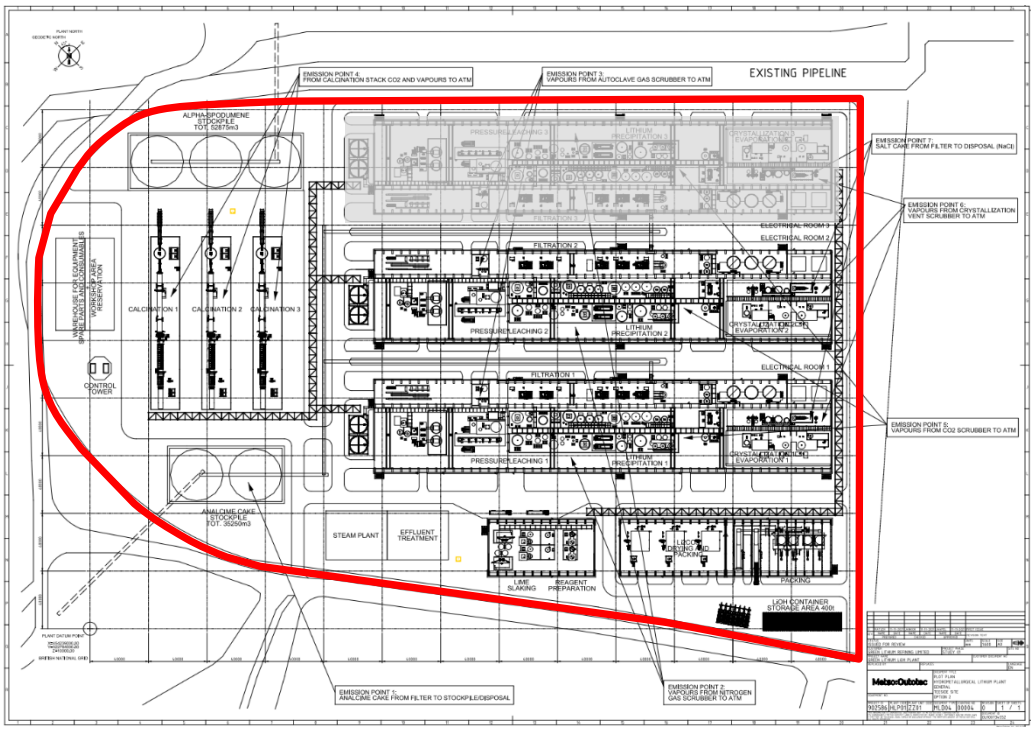


Figure 5.3 Alternative Layout Iteration

SUMMARY

5.80. The Proposed Development has evolved over a number of design iterations, responding to local authority planning and development aspirations and taking account of the Applicant's development objectives, design aspirations and prevailing environmental constraints.

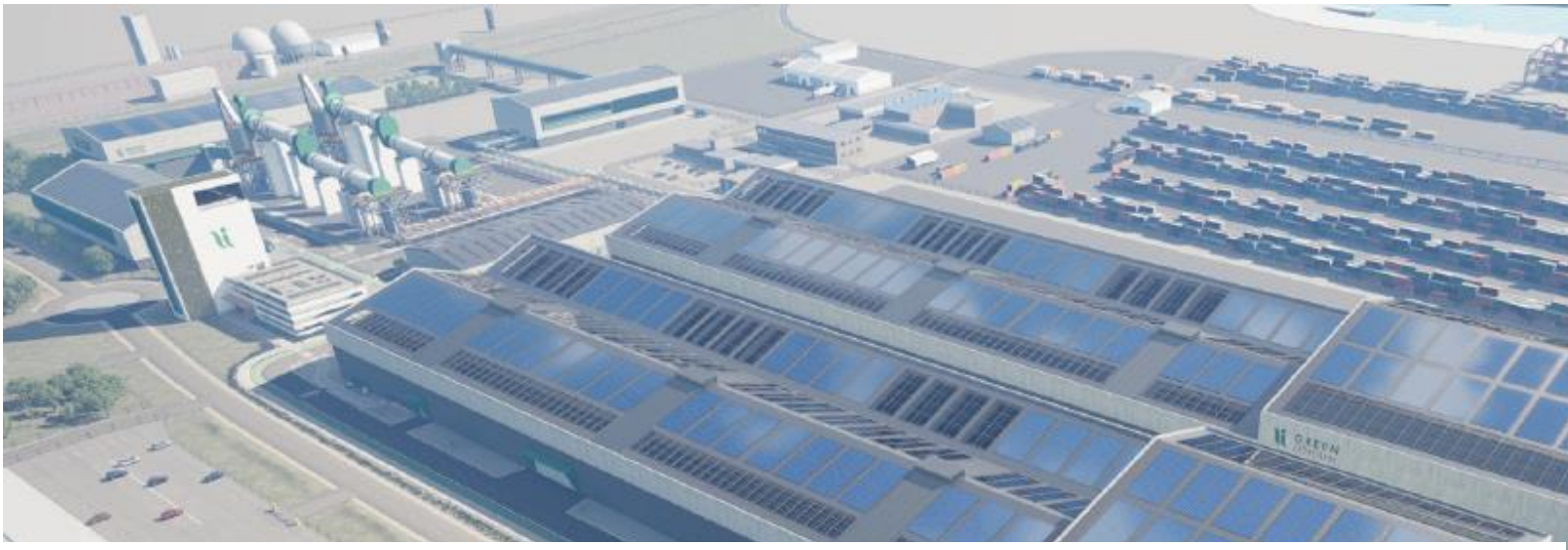
5.81. The evolution of the Proposed Development has therefore responded to a variety of design and environmental issues and the resultant proposals are considered to offer the most advantageous design solution.

REFERENCES

Ref 5.1: The Town and Country Planning (Environmental Impact Assessment) Regulations (2017)

Ref 5.2: Impact Assessment Guidelines and ES Review Criteria from the Institute of Environmental Management and Assessment (IEMA), 2004.

Ref 5.3: Lithium, Cobalt and Nickel: The Gold Rush of the 21st Century, The Faraday Institution, 2022



CHAPTER 6 PLANNING POLICY

6. PLANNING POLICY

INTRODUCTIONThis chapter of the ES provides an overview of the development plan policy that may be material to the Proposed Development and refers to national planning, energy and climate change policy that may also be material and relevant to the determination of the planning application.

6.2. This section serves as an overview of policy, whereas a full breakdown has been done in the Planning Statement.

Summary of Local Policies

6.3. This section will summarise local policies of RCBC which may be relevant to the Proposed Development, these have been extracted from the Development Plan of RCBC, the RCBC Local Plan as well as the Tees Valley Joint Minerals and Waste document.

6.4. A more detailed view can be found in Chapter 5 of the Planning Statement, which goes through the compliance of each policy with the Proposed Development.

Table 6.1: Summary of Local Policies in alignment with the Proposed Development

Policy	Summary
ED6 – Promoting Economic Growth	RCBC created a Policy Map, where employment zones have been identified, alongside a review of these sites. These zones have increased development potential, with encouragement given to investors and certain barriers removed. Specialist uses, such as heavy processing industries and port logistics, have been identified as being developed in certain areas. With the land of the Proposed Development in South Tees as one of them. In these areas proposals falling within Use Classes B1, B2, B8 and suitable employment related sui generis uses will be supported.
TA1 – Transport and New Development	The Council will ensure that adverse impacts and effects from new developments onto the local transport network does not occur. This will be done by identifying developments that have potential to negatively impact the transport network, and requiring sufficient travel plans, as well as promotion of sustainable travel to minimise environmental impacts to support residents' health and wellbeing.
MWC3 – Alternative Materials for Aggregates Use	This policy is in relation to sourcing and the production of materials used as alternatives for primary aggregates, including sand gravel. This policy will support applications which are proposing developments including this practise.
MWC4 – Safeguarding of Mineral Resources from Sterilisation (Salt & Gypsum)	The proposed site resides on a designated mineral safe guarding area, the Teesside area specifically protects Salt and Gypsum reserves. These areas are there to permit only non-mineral developments only. Developments which have the potential to sterilise or put at risk the minerals in these areas will not be permitted. Developments which could impact a reserve will only be approved if it can be shown that either an

	alternative extraction can be undertaken, or if the reserve can be removed prior to the development.
MWC10 – Sustainable Transport	This policy is in regard to utilising other forms of transport than road based. Teesside is well connected to both rail lines alongside being the largest freeport in the UK. The policy also aims at encouraging proposals to allow easy access to the development via walking, public transport and cycling and minimise the need to travel by road.
MWC11 – Safeguarding of Port and Rail Facilities	The aim of this policy is to ensure that no developments within specified areas of Teesside have the potential to interfere or adversely impact the freeport activities.
N1 – Landscape	The outcomes of this policy are to protect and enhance the areas landscape alongside preventing the unnecessary loss of features important to said landscape. A Landscape Character Assessment will be utilised to add context to developments. Developments which have the potential of leading to a loss of features important to the character of the landscape, or its quality and uniqueness , unless benefits clearly outweigh these.
N2 – Green Infrastructure	This policy has objectives rooted in enhancing the green infrastructural network of the area, including green belts and the need for developments to provide adequate open space. The policy asks for developments to include green infrastructure in the proposal, which can include the following: open space, green belts, green wedges, and infrastructure corridors.
N4 – Biodiversity and Geological Conservation	This policy is in regard to protecting and enhancing biodiversity and geological features and resources. Its primary focus is surrounding encouraging developments which are not significantly impacting a valued area or habitat including a forest or wetland. Instead, developments should focus on areas which have low value, including brownfield and already developed sites. Internationally important sites including the Teesmouth & Cleveland Coast SPA and Ramsar site will be provided special treatment and protection, to ensure that developments do not adversely affect them. If potential adverse effects are expected from a development onto an internationally designated site, then the benefits must outweigh the effects, or the proposals will not be accepted.
LS4 – South Tees Spatial Strategy	The Proposed Site is within the area identified as South Tees, this encompasses, South Tees Industrial Estate, Wilton International, Teesport among others. The policy piece sets out to set a precedent in the area that economic development supporting investments and job growth will be heavily favoured, and recognises the area as the single largest employment opportunity in the UK.
SD1- Sustainable Development	RCBC have created this policy piece to show the viewpoint of favouring sustainable developments. This eludes to developments benefiting all spheres of sustainability, improving economic, social and environmental standings of the area. Developments which demonstrate commitment to the sustainability principles will be looked upon favourably by RCBC and will be more likely to succeed in the planning process

SD2 - Locational Policy	SD2's focus is to ensure that developments are in the most suitable place, new development will be primarily in urban and coastal areas, specifically South Tees for industrial developments. This is due to the large amount of previous industry, which was in the area, this resulted in brownfield sites covering the majority of South Tees. The policy protects areas which have ecological designations or have high environmental value, such as the Teesmouth Estuary SPA.
SD3 – Development Limits	Developments will be prioritized if they comply with this policy piece, which specifies that new developments will adhere to specific circumstances, for example if the proposed site is in a sensitive location such as a woodland this may be outside of the development limits, and therefore less likely to succeed through the planning stage.
SD4 – General Development Principles	This policy piece is also in reference to assessing the suitability of a site for development. This will be judged through factors including if it has been specified in documents, including the Local Plan and if it will have an adverse effect on operational, commercial or residential receptors. If the development has the potential to adversely affect the surrounding receptors, resulting in damage to human health, loss in ecological habitats or impacts to the wider environment. Developments will be expected to utilise their space efficiently and tacitly. If it is deemed that a development has the potential to adversely affect the above stated receptors, it will be looked upon negatively, and will be unlikely to proceed through planning.
SD5 – Developer Contributions	Certain developments have the potential to create significant adverse effects which would require mitigation and cause financial burdens on the area, this policy is created to ensure that appropriate funding is set aside from developments to ensure that any adverse effects onto the surrounding environment or population have been suitably contemplated, with suitable funds set aside for the worst case scenario.
SD6 – Renewable and Low Carbon Energy	Any developments which propose creating Low Carbon or Renewable energy which have the potential or impacting airport radar, unless demonstrated that mitigation is possible and agreed with the airport that has potential to be affected.
SD7 – Flood and Water Management	This policy is regarding developments that are in a flood prone area or areas larger than 1 hectare. Developments such as these will require a Flood Risk Assessment, this assessment will need to show that the development does not have a potential to increase the flood risk of the area or will be at risk of flooding.
HE2 – Heritage Assets	This policy will aim to protect and enhance designated and non-designated heritage assets of archaeological interest, either nationally or internationally. With requirements to show that developments do not have the potential of adversely impacting these.

NATIONAL LEGISLATION

6.5. In recent years, the government announced the continuation of its Decarbonisation strategy, with multiple legislation pieces aimed at this. Some of the primary pieces include '*Decarbonising Transport 2022'* and '*Net Zero: Build Back Greener'.* These legislations detail the importance of reducing carbon emissions, and identify the primary industries which cause them.

6.6. A full analysis of national policy has been undertaken in Chapter 4 of the Planning Statement.

Decarbonising Transport 2022

6.7. In particular '*Decarbonising Transport 2022'* sets out the UK's desire to decarbonise the transport sector, both for public and personal transport.

6.8. The primary strategies employed are zero emission buses and coaches, decarbonisation of railways, and zero emission personal transport options.

6.9. The strategy which most aligns with the Proposed Development is in reference to zero emission personal transport options, through this the UK government will consult producers of EV's to confirm phase out dates for new vehicles. As well as continued support for EV's through a package of financial and non-financial incentives. As part of this an aim for 25% of the government car fleet will be ultra-low emission producing or EV by 2022 and 100% by 2027.

6.10. All of these incentives and strategies show the viewpoint of the UK government towards EV's production and the phasing out of combustion engines in the transport sector. The Proposed Development strongly aligns with the strategy, currently there is no lithium hydroxide production capacity in the UK, with the development having potential to be the first of its kind. Producing valuable resources for the continued deployment of the EV's, one of the primary methods of achieving this goal.

Net Zero: Build Back Greener 2021

6.11. The government announced this strategy in 2021, with the aim to deliver a long term plan for reducing emissions from each sector of the UK economy over the next 3 decades, with the goal of achieving net zero carbon emission by 2050. The primary objective of the plan that are relevant to the Proposed Development are as follows:

"We will work with businesses to continue delivering deep cost reductions in low carbon tech through support for the latest state of the art kit to bring down costs for consumers and deliver benefits for businesses."

6.12. A section of the Net Zero plan is specifically focused onto the transport sector, in this area the government's viewpoint towards how the transport sector should follow is laid out:

"A zero emission vehicle mandate to improve consumer choice and ensure we maximise the economic benefit from this transition by giving a clear signal to investors. This will deliver on our 2030 commitment to end the sale of new petrol and diesel cars, and 2035 commitment that all cars must be fully zero emissions capable. Further funding of £620 million for zero emission vehicle grants and EV Infrastructure, including further funding for local EV Infrastructure, with a focus on local on street residential charging. Allocating a further £350 million of our up to £1 billion Automotive Transformation Fund (ATF) to support the electrification of UK vehicles and their supply chains."

6.13. The transport sector is one of the primary carbon emitting industries in the UK, with 24% of emissions resulting from transport in 2022. The aim of the government achieving net zero relies on this industry changing dramatically. Currently for personal transport options for large and medium journeys there are no other carbon neutral choices other than EV's, therefore the Net Zero plan is reliant on the EV industry to succeed. Being able to produce a necessary resource to construct this solution nationally also aligns with this policy, as less carbon emissions will be emitted in transport.

NATIONAL PLANNING POLICY FRAMEWORK

6.14. The NPPF does not change the fundamental premise of Section 38(6) of the Planning and Compulsory Purchase Act 2004. Paragraph 2 clearly states that:

"Planning law requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise".

6.15. It goes on to add that the NPPF must be considered in the preparation of local and neighbourhood plans, and is a material consideration in planning decisions.

6.16. Beyond the general principles of the plan-led system, sustainable development and the approach to decision making, much of the main guidance relates to the development of the built environment. Those parts relevant to the Proposed Development are considered within the subsequent sections.

6.17. Paragraph 8 states that that achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways so that opportunities can be taken to secure net gains across each of the different objectives. These are:

- An economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support

growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

- A social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- An environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

6.18. It is thus concluded that the scheme represents a sustainable development, which is entitled to the presumption in favour of granting permission for sustainable development, noting the advice in NPPF that for decision taking, the presumption in favour of sustainable development means approving development proposals that accord with the development plan without delay (ref para. 11).

6.19. NPPF continues by emphasising that significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development (ref para. 80).

6.20. The Proposed Development is fully consistent with these principles, delivering as it would, from a current brownfield and storage site, instead produce vital metals used for the greening of the UK and worldwide.

6.21. These objectives are not criteria against which every decision can or should be judged. Paragraph 9 of the NPPF provides that "Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area".

NPPF Policies of interest

6.22. The following chapters of the NPPF have been taken into consideration as they are thought to contain policies relevant to the determination of the planning application for the Proposed Development. These include:

- Chapter 2: Achieving sustainable development.
- Chapter 6: Building a strong, competitive economy.

- Chapter 9: Promoting sustainable transport.
- Chapter 11: Making effective use of land.
- Chapter 12: Achieving well designed places.
- Chapter 14: Meeting the challenge of climate change, flooding and coastal change.
- Chapter 15: Conserving and enhancing the natural environment.
- Chapter 16: Conserving and enhancing the historic environment.

NATIONAL CLIMATE CHANGE AND ENERGY POLICIES

6.23. Recent UK Government energy and climate change policy is also considered to be both material and relevant to the Proposed Development.

6.24. The UK has set out to drastically reduce carbon emissions across the economy by 2050. On 27 June 2019, the 'Climate Change Act 2008 (2050 Target Amendment) Order 2019' came into force. The Order enshrines within UK law, the commitment to achieve net zero in terms of greenhouse gas emissions by 2050. The Order amended the previous target (within the Climate Change Act 2008) which was seeking achievement of a reduction in greenhouse gas emissions of 80% by 2050 compared to 1990 levels.

6.25. The determination to reach net zero is shown in the following policies, which have been gone through in detail in the PS;

- British Energy Security 2022;
- Decarbonising Transport 2022;
- Net Zero: Build Back Greener 2021;
- Climate Change Act 2008;
- Energy White Paper 2020; and
- Ten Point Plan for a Greener Industrial Revolution, November 2020.

6.26. By delivering much needed Lithium Hydroxide (a key component in the manufacture of electric vehicle batteries) production capacity in North East England, the Proposed Development will make a very positive contribution toward the decarbonisation of the UK transport sector