Cleveland Potash Ltd

Continuation of operations at Boulby Mine

Planning Statement

Wood Environment & Infrastructure Solutions UK Limited – October 2019

wood.

Report for

David Mcluckie
External Affairs Manager
Cleveland Potash Ltd
Boulby Mine
Saltburn
TS13 4UZ

Main contributors

Neil Marlborough
Frances Wilkinson

Issued by

pp Sue Birnie
Frances Wilkinson

Approved by

Neil Marlborough

Wood

Partnership House
Regent Farm Road
Gosforth
Newcastle upon Tyne NE3 3AF
United Kingdom
Tel +44 (0) 191 272 6100

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Document revisions

No.	Details	Date
1	Initial draft for client review	7 Oct 2019
2	Final report	29 Oct 2019

Contents

1. Introduction

1.1 General Introduction

1.1.1 Boulby Mine is an underground mine, which has been operational since 1973 extracting sylvinite, polyhalite and salt. The surface site (the Mine Site) is located between the villages of Staithes and Easington, just inside the northern boundary of the North York Moors National Park. The Mine Site is shown in Figure 1.1.

1.1.2 The current planning permission for Boulby Mine requires the cessation of mineral extraction by May 2023. Boulby Mine has access to a large extent of additional minerals resource which will not be able to be extracted prior to 2023 and so Cleveland Potash Ltd is seeking planning permission for the continuation of polyhalite and salt mining operations for a further 25-year period (the 'Proposed Development'). The proposals would also see the deconstruction of certain buildings and structures at the Mine Site during this 25-year period as processing activities are moved to a new facility on Teesside.

1.1.3 The Mine Site and the majority of the current onshore underground extraction area is within the North York Moors National Park, however part of the currently permitted underground mining area is within the administrative boundary of Redcar and Cleveland Borough Council. A planning application is therefore submitted to both North York Moors National Park Authority (NYMNPA) and Redcar and Cleveland Borough Council.

1.1.4 This report provides a Planning Statement in support of this planning application. It provides background information to the proposals, describes the Mine and the Proposed Development being applied for and assesses the Proposed Development against relevant planning policies and material considerations.

1.2 Application Submission

1.2.1 The planning application consists of the following documents:

- Covering letter;
- Application form;
- Planning Statement;
- Flood Risk Assessment;
- Statement of Community Involvement;
- Travel Plan; and,
- Environmental Statement including technical appendices and a non-technical summary.

1.2.2 This Planning Statement has been prepared on behalf of Cleveland Potash Ltd in support of the planning application for the continued operation of the Mine. It is intended to facilitate the decision making process through a comprehensive review of the Proposed Development against relevant provisions of the development plan, relevant national planning policy and guidance and other relevant material considerations.

1.2.3 The planning application is also supported by an Environmental Impact Assessment (EIA) under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. This Planning Statement does not form part of the EIA but accompanies it.

1.2.4 The structure of this Planning Statement is as follows:

- Section 1 provides an overview of the application submission and applicable statutory requirements;
- Section 2 provides an overview of the applicant and the Proposed Development, including an outline of its planning history;
- Section 3 provides more detail on the Proposed Development;
- Section 4 provides an overview of the Development Plan and applicable policies along with other material relevant considerations;
- Section 5 provides an assessment of the Proposed Development; and,
- Section 6 sets out the overall conclusions as to why the Proposed Development should be granted planning permission.

Key

Boulby Mine boundary

Proposed planning boundary

0 500 1,000 1,500 m

Scale at A3: 1:35,000

Boulby Mine New Development
Planning Statement

Figure 1.1
Boulby Mine location

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2. Background to the Planning Application

2.1 Cleveland Potash Ltd

2.1.1 Cleveland Potash Limited is a business unit of ICL Fertilizers and now trades under the name of ICL Boulby in the UK. This names reflects that the company is part of the ICL company but also differentiates between the historic potash production at the mine and the future proposals which move away from potash. For the purposes of clarity the company is referred to as ICL Boulby throughout this document.

2.1.2 ICL Boulby produces and supplies potash fertilisers for agriculture and industry uses and operates the United Kingdom's only working polyhalite mine from Boulby in the North York Moors National Park, from which salt is also extracted. Boulby Mine has historically also produced potash, chiefly in the form of Muriate of Potash (MOP), using sylvinite extracted at the mine. However, the extraction of sylvinite and production of potash ceased in 2018.

2.1.3 In 2010 Boulby Mine became the first mine in the world to mine polyhalite, a fertilizer carrying the benefits of sulphur, potassium, magnesium and calcium. Whilst polyhalite can be considered as a potash mineral due to the potassium content (14% K_2O equivalent), the higher proportion of sulphur (48% SO_3 equivalent) in the mineral has seen ICL Boulby brand the mineral as Polysulphate. This is marketed as a sulphur mineral, with added benefits of potassium, magnesium and calcium. ICL Boulby's long term business plan for Boulby Mine centres on the extraction of polyhalite and its sale as Polysulphate, or use in the production of other fertiliser products by ICL Boulby and the wider ICL business. In addition to polyhalite, Boulby Mine will continue to extract rock salt: current supply from Boulby Mine provides around half of the de-icing rock salt used on the UK road system during the winter.

2.1.4 Boulby Mine also hosts the Science and Technology Facilities Council's underground laboratory project. The laboratory, located 1,100m underground in the mine, provides an environment free of background radiation in which particular science projects benefit, including the search for dark matter. Boulby is one of just a handful of facilities world-wide suitable for hosting ultra-low background and deep underground science projects. Such experiments have been ongoing at Boulby Mine for over 20 years and a new laboratory has recently been completed underground.

2.2 Background and Context

2.2.1 Boulby Mine was originally granted permission in 1968 following a public inquiry, and production commenced in 1973. The introduction of the Environment Act 1995 required a planning application to be submitted for the review of the original permission and Boulby Mine currently operates under the permission, granted in 1998, on this application.

2.2.2 Boulby Mine currently has planning permission to extract potash and salt. Potash is a term used for "a variety of potassium-bearing minerals and refined products" (BGS/CLG Mineral Planning Factsheet. Potash April 2011. The majority of potash produced from Boulby Mine has been used as, or to produce, fertilisers with a smaller amount to the chemical industry. The conditions of the current permission do not control the type or form of potash produced. The main mineral which has been extracted over the life of Boulby Mine to date has been the sylvinite form of potash, with polyhalite also being extracted since 2010. The sylvinite was sold as a raw product or used to create various products (at Boulby Mine) based around MOP, commonly referred to simply as potash. Whilst polyhalite contains potassium and therefore can be classed as a potash mineral, it contains greater amounts of sulphur and ICL Boulby market the polyhalite in its raw form as Polysulphate.

2.2.3 ICL Boulby is also developing new products using polyhalite as a base ingredient. The primary product to date is a combination of MOP and polyhalite and is marketed as PotashpluS. PotashpluS contains all the benefits of polyhalite, including a large sulphur content, magnesium and calcium, plus an increased potassium content from the addition of MOP.

2.2.4 Salt (halite) is also extracted from the Mine in the form of rock salt and is used mainly as road salt but also in certain agricultural practices.

2.2.5 For the purposes of this planning application, potash is used in reference to all potassium bearing minerals and products, but wherever possible the specific forms of mineral/product are named. This will avoid confusion between Boulby Mine's historic sylvinite extraction and MOP production, and its current and planned polyhalite extraction. This approach also avoids confusion in referring to polyhalite as a 'potash' mineral all of the time, as it also contains significant quantities of sulphur and can be considered as a sulphur mineral as well.

2.2.6 Minerals are extracted from seams which are around 1,100m to 1,400m below sea-level. At present, ICL Boulby have planning consent to undertake mining within an onshore area of 13,740 hectares, shown in Figure 2.1. The area extends from Brotton in the west, to the outskirts of Whitby in the east and the southern boundary of the area is generally formed by the A171 road between Cross Butts Farm in the east and the Moorsholm road in the west, with the exception of an area around Roxby High Moor, where the boundary falls to the south of the A171. The currently permitted onshore underground area covers land falling beneath the minerals planning authorities of both the North York Moors National Park Authority (NYMNPA) and Redcar and Cleveland Borough Council. To the north of Boulby Mine, working takes place offshore under a licence issued by the Crown Estate.

2.2.7 Due to geological conditions, not all of the underground area is economically viable for extraction. The underground area also includes several restricted areas (by virtue of condition 4 of the planning permission reference NYMR/003/0043B/PA) where extraction is only permitted with the prior approval of the NYMNPA. These include the area around Loftus, Skinningrove, Brotton and Easington, and within a 1.5 km distance (inland) of the high-water mark on the coastline.

2.2.8 Once brought to the surface there are facilities available to crush and screen the minerals and plant which can process minerals into various fertiliser products. The majority of products are taken from Boulby Mine via rail and there is also an allowance for a restricted number of HGV deliveries to be made.

2.2.9 The existing Mine Site plan is shown at Figure 2.2. This shows the centre of the site containing the surface mine buildings and plant and a buffer zone around this of open fields and woodland planting.

2.2.10 Over recent years, the extraction of sylvinite became increasingly difficult and inefficient, as existing seams were worked out and potential, additional resources largely lie beyond significant fault lines. Coupled with uncertainty over the price that MOP can be sold at, ICL Boulby had to review their business plans to find an efficient and profitable manner in which to continue operations. This review led to the cessation of sylvinite extraction in 2018, and a focus on polyhalite and salt extraction going forward.

2.2.11 The current planning permission requires minerals extraction to cease by 6 May 2023 with restoration to be completed by 6 May 2025. Around 600 million tonnes of polyhalite resource is available in the offshore underground extraction area[1]. This planning application therefore seeks consent to continue the current mining operations for polyhalite and salt, and retain a surface mine

[1] Minerals resources are minerals which can be quantified from geological knowledge and may be of economic interest. Figure of 600 million tonnes comes from internal ICL Boulby estimates produced by Timothy Daffern, a Qualified and Competent Person as defined by the JORC (2012) code.

with operational area plant, equipment and supporting buildings for an additional 25 years from 2023.

2.2.12 As part of these proposals, ICL Boulby is committed to the consolidation of surface mine plant and buildings, to ensure that any structures not required for use in the future are removed from site and the future mine is served by appropriate and modern facilities. Further details are provided in Chapter 3.

2.2.13 At the end of the additional 25-year period, the Mine Site would then be decommissioned and restored over a further three year period.

2.3 Consultation Activities

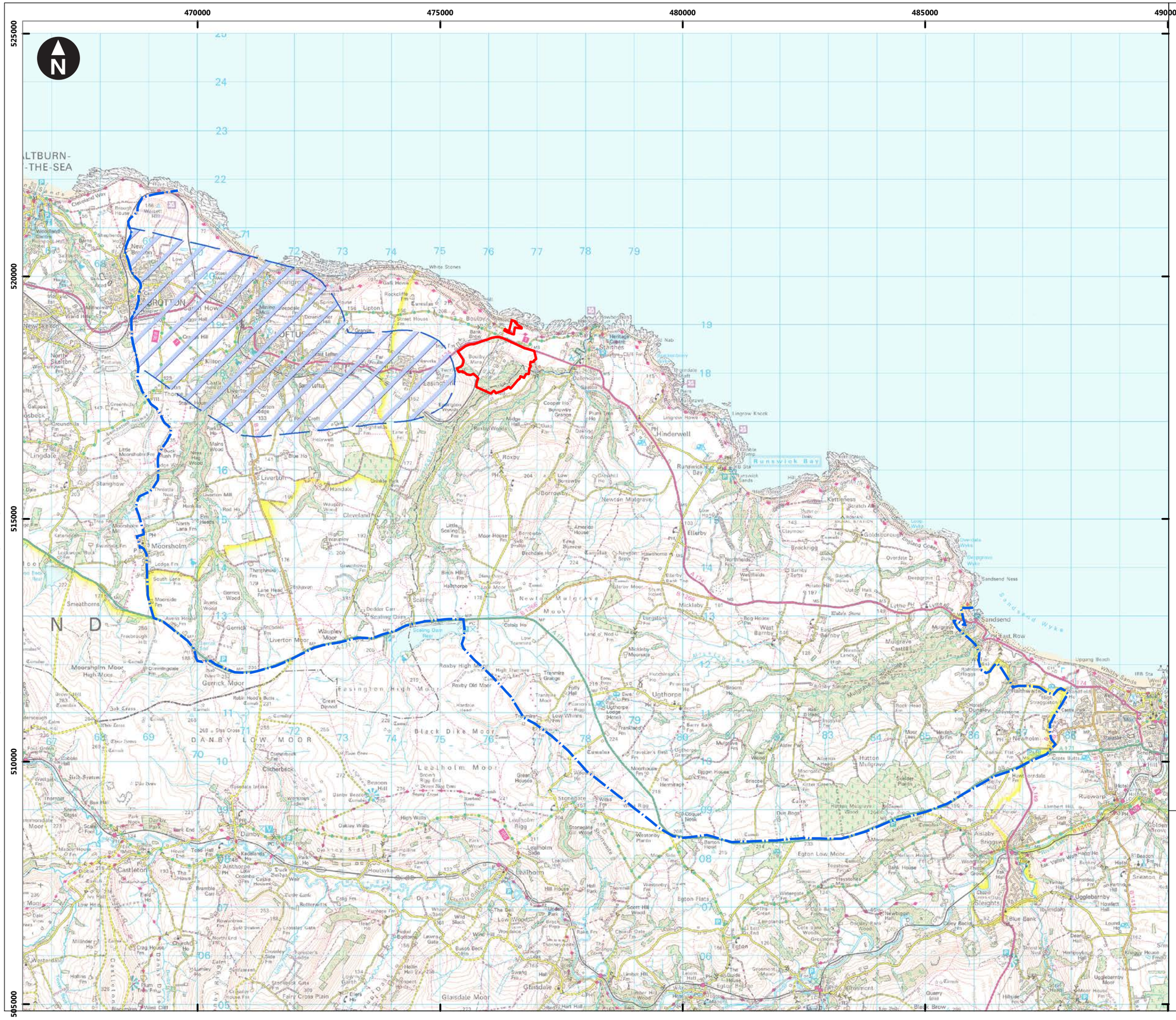
2.3.1 ICL Boulby initially carried out extensive pre-application consultation between April and June 2017 on a proposed scheme which would have seen all currently permitted operations continue in to the future. This would have been a more extensive development, as the extraction of sylvinite and production of MOP was to be included, and no surface structures were proposed to be removed. In September and October 2019 a further round of public consultation events have been undertaken on the proposed development set out in this planning application. The consultation events undertaken in 2019 to date are set out in the Pre-Application Consultation report that accompanies the planning application and are summarised below:

- Community events/exhibitions at eight venues in the area;
- Meetings with Loftus Town Council, Redcar and Cleveland Borough Council and Skelton and Brotton Parish Council.

2.3.2 These consultation events will continue throughout November 2019, with:

- 10 more community events being held;
- Meetings with Mickleby, Saltburn, Marske and New Marske, Guisborough, Lockwood, and Castleton and Danby Parish/Town Councils.

2.3.3 ICL Boulby has also been liaising with the NYMNPA over a number of years on their proposed ideas for the future of the site. This has included meetings with planning officers from NYMNPA, as well as a presentation and briefing with NYMNPA members in October 2019. This has enabled the scope of the EIA to be established as well as ensuring that the planning application meets the NYMNPA's information requirements and answers the key questions they believe to be relevant.



Boulby Mine New Development
Planning Statement

Figure 2.1
Existing onshore extraction area

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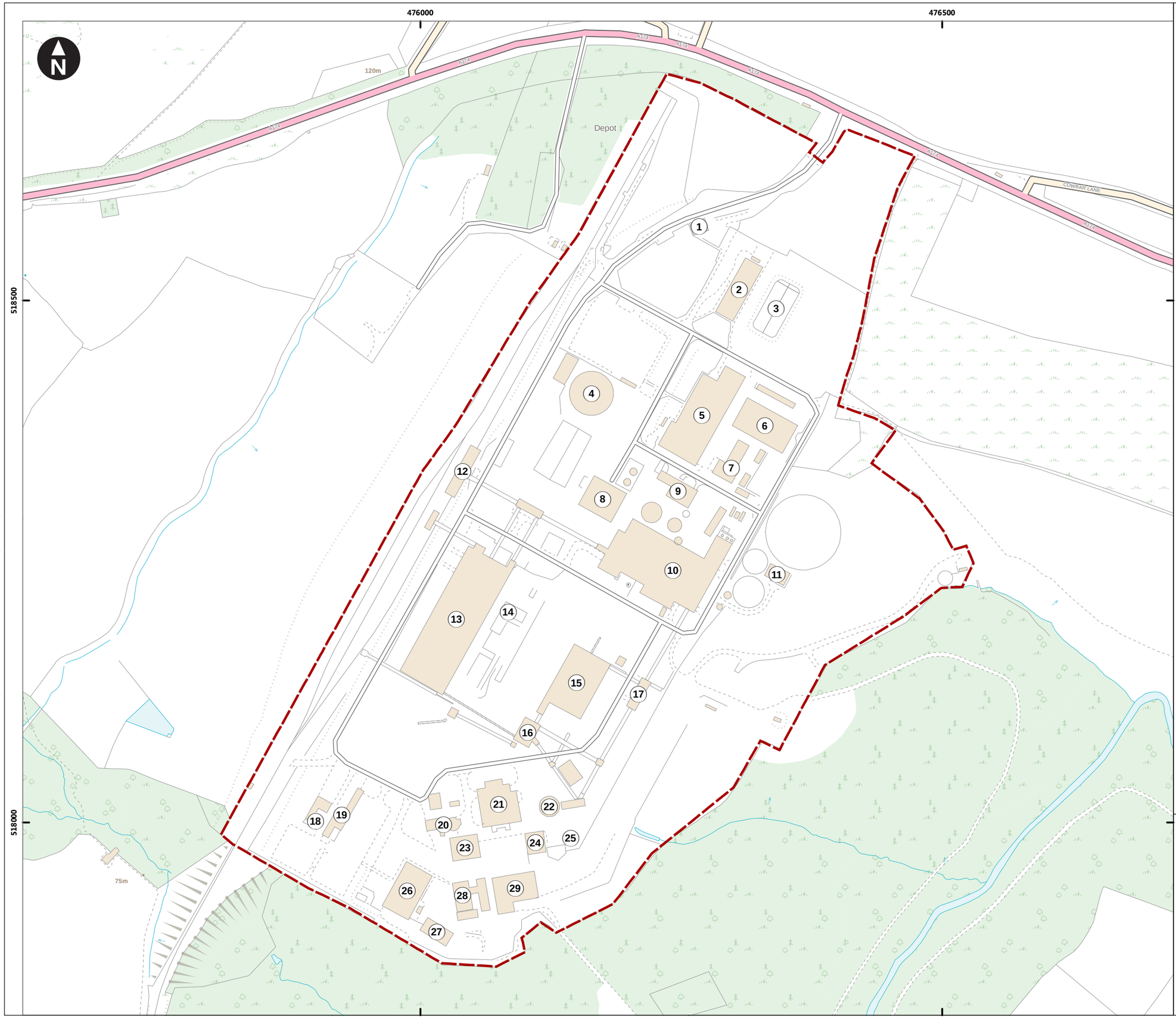

Key

Operational area

1. Gatehouse
2. Admin building
3. Sea water reservoir
4. Sports dome
5. Engineering services building
6. General stores
7. Garage
8. Combined heat and power (CHP) plant
9. Plant maintenance building
10. Treatment plant building
11. Thickeners and pump house
12. Rail load house
13. Finished product silo
14. Polyhalite plant
15. Raw ore silo
16. Salt plant
17. Raw ore surge bunker (2000 tonne bunker)
18. Sub-station
19. Switch house and transformers
20. Main shaft
21. Warden house
22. Rock shaft
23. Surface fan house
24. Blacksmiths
25. Vent house
26. Underground services building
27. Dark matter research building
28. Techniical services
29. Fabrication bays

0 100 200 m

Scale at A3: 1:3,500

Boulby Mine New Development
Planning Statement

Figure 2.2
Existing Mine site plan

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3. Site and Proposed Development

3.1 Introduction

3.1.1 This section provides an overview of the application site, the surrounding area and the Proposed Development that is the subject of this planning application.

3.2 Mine Site and Surrounding Area

3.2.1 The Mine Site, the area of the surface operations and surrounding non-operational area in the ownership of ICL Boulby, is located on the North Yorkshire coast within the North York Moors National Park. The Mine Site is located on flat ground surrounded by rising land to the south and west. To the west, the land rises steeply up to the cliff tops at Boulby and to the south, the land rises more gently up towards the moorland plateau. To the north, the mine site is located a few hundred metres away from the coastal cliffs and to the east, the land follows the coast to the villages of Dalehouse and Staithes. Land in the immediate surrounding area is mainly used for agriculture purposes, as well as including woodland and small settlements.

3.2.2 The Mine Site consists of two areas. There is the main Mine Site to the south of the A174 which includes two mine shafts and headgear, the ore processing plant and product storage silos. Other buildings house workshops, stores, laboratories and offices. The second area is located to the north of the A174, approximately close to the cliff top, where a pump house is located which pumps water from the underground extraction area sea. The pump house also includes associated infrastructure including transformers, tailings shaft and wind house and related plant. Both areas of the Mine Site have road access from the A174 which passes between the two areas. The main Mine Site also has a dedicated rail loading facility and rail link to Teesside for the transport of products for export and storage.

3.2.3 The Mine Site covers an area of approximately 32 hectares. The pump house site covers an area of approximately 3.6 hectares. The non-operational land around both sites comprises mainly of agricultural and woodland land uses.

3.2.4 The nearest settlements (as measured from the operational area boundary are as follows:

- Staithes, 1.55 km to the east;
- Dalehouse 1.15 km to the east;
- Roxby, 1.55 km to the south;
- Easington, 1.27 km to the south west; and,
- Boulby, 0.54 km to the west.

3.2.5 The currently approved onshore underground extraction area extends from Brotton in the west to the outskirts of Whitby in the east. The current planning permission includes a condition that requires the prior approval of the NYMNPA before any mineral extraction takes place within two areas:

- In the area around Loftus, Skinningrove and Brotton and Easington and
- Within 1.5km of the coastline, high water mark, (mining, extraction or other form of underground development).

3.2.6 The current underground extraction area also extends offshore and extraction in this offshore area currently takes place offshore under a licence issued by the Crown Estate.

3.2.7 The location of the Mine Site and the current onshore underground mining area is shown in Figure 1.1.

3.2.8 There are a number of ecologically designated sites in the vicinity:

- North York Moors Special Area of Conservation, approximately 2.88km;
- North York Moors Special Protection Area, approximately 2.8km;
- North York Moors Sits of Special Scientific Interest (SSSI), approximately 2.8km;
- Boulby Quarries SSSI, approximately 1km;
- Staithes-Port Mulgrave SSSI, approximately 2km;
- Runswick Bay Marine Conservation Zone, approximately 2.2km;
- Oneham's Pasture and Easington Beck Local Wildlife Site (LWS) within ICL Boulby land ownership adjacent to Mine Site operational area;
- Saltburn to Staithes Coast LWS, approximately 1.8km north west.

3.2.9 Staithes is the nearest conservation area, approximately 2km to the east. The nearest listed buildings to the mine site are (distances from the main mine site):

- Three properties at Boulby Grange (grade II), approximately 370m to the north;
- Red House Farmhouse (grade II), approximately 450m to the north east;
- Dalehouse Bridge (grade II), approximately 1.27km to the east;
- Fox and Hounds pub at Dalehouse (Grade II), approximately 1.34km to the east;
- The Old Mill Dalehouse (grade II), approximately 1.35km to the east.
- Oak House, Roxby Lane (grade II) approximately 1.34km to the south east;
- The remains of a medieval well east of Ings Farmhouse (grade II), approximately 420m to the west;
- Boulby Barns Cottage (grade II), approximately 900m to the north west;
- Listening post to the north of Boulby Barns Cottage (grade II), approximately 950m to the north west;
- A number within the built up area of Easington and Staithes.
- The nearest Scheduled Ancient Monuments are:
- WWI early warning acoustic mirror to the east of Boulby Barns Farm, approximately 900m to the north west;
- Boulby Alum Quarries and Works, approximately 1.2km to the north west;
- Site of Rockcliff Beacon, approximately 1.4km to the north west;
- Moated manor and medieval settlement at Easington, approximately 1.35km to the east; and,
- Cross base, All Saints Church, Easington, approximately 1.4km to the east.

3.2.10 The North Yorkshire and Cleveland Heritage Coast is located to the north of the A174 which forms the northern boundary of the Mine Site. The pump house is located within the Heritage Coast. The Cleveland Way National Trail provides a coastal path along the whole length of the Heritage Coast. The England Coast Path and associated access rights is now open along the North Yorkshire coast.

3.2.11 The implications of these various designations for the Proposed Development are assessed in section 5 of this Planning Statement.

3.3 The Proposed Development

Introduction

3.3.1 This planning application is for:

- The winning and working of polyhalite and salt over a 25 year period from 2023;
- The temporary importation of MOP to allow the production of fertiliser products;
- The retention and operation of all surface installations, buildings, plants etc, subject to a phased deconstruction plan within this 25 year period; and
- A three year period for site decommissioning and restoration at the end of the 25 year period.

3.3.2 The extent of the onshore underground area would be reduced from 13,740ha to 3630ha. The Proposed Development would see the extraction of polyhalite and salt from the underground extraction area. Extraction of sylvinite ceased in 2018 and it is not proposed to recommence this extraction. The only extraction to take place in the on-shore underground area would potentially be the driving of access roadways between the shaft area and the working areas off-shore. All actual mining extraction would take place in the off-shore underground area only. Outside of the shaft area and roadways to the off-shore workings, the remainder of the on-shore underground area is retained in the planning application only to allow for the water pumping activities and other maintenance work required to allow continued operations of the mine as a whole. The Proposed Development boundary is shown in Figure 3.1.

3.3.3 All of the currently permitted capacities (amount of product to be dispatched via road, number of vehicles which can be used for this dispatch, times of day these vehicles can enter or leave the site) will be retained: it is not proposed to increase any of these limitations.

3.3.4 The polyhalite and salt extracted would be crushed and screened by existing plant and equipment on the Mine Site to create products suitable for sale or use in the manufacture of other products.

3.3.5 Following the cessation of sylvinite extraction in 2018, and MOP subsequently not being produced at Boulby Mine, ICL Boulby have been importing MOP into the site by HGV to allow the processing of polyhalite and MOP to produce PotashpluS. This MOP comes from other ICL Fertiliser sites and is therefore a secure and cost-effective supply. ICL Boulby is investigating land options in Teesside for the development of a permanent processing plant and once this site is operational, importation of MOP to Boulby Mine will cease and all production process to manufacture blended/compound products will all cease at Boulby Mine. At this point, Boulby Mine would only produce forms of polyhalite and salt in their raw form. It is expected that ICL Boulby will need up to 10 years to acquire and develop an appropriate site on Teesside, and to switch operations fully over from Boulby Mine to Teesside. It is estimated that until this point, a maximum of 400,000 tonnes of MOP will be required to be imported to Boulby Mine annually.

3.3.6 Salt would continue to be mined to suit the needs of the market and extraction capabilities.

3.3.7 It is proposed that a detailed restoration scheme would be developed and submitted to NYMNPA closer to the end date of any permission granted, to allow for a scheme which reflects the best use of land at that time and the most up to date guidance to be followed in its design. It is however likely that the Mine Site would be restored to primarily agricultural and woodland uses. Further details of site restoration are provided below.

Method of Extraction

3.3.8 The method of extraction proposed is the same as that currently undertaken.

3.3.9 Underground access to the workings would be gained via the two existing mine shafts, No1 and No2 Shaft which are used to transport ore, workers and materials respectively. The proposed method of extraction is by pillar and stall methods using strata control techniques. This method is designed to provide an optimum balance between extraction and stability of the workings.

3.3.10 Different dimensions of pillars and working panels are used in the different minerals mined. Sylvinite is more elastic than salt and polyhalite and the workings here were therefore designed to collapse (to a certain degree) in on themselves after working. This controlled collapse prevents sudden rock falls and thereby restricts underground dangers and surface subsidence events. The polyhalite and salt seams are more stable over longer periods of time and less prone to future collapse. For sylvinite extraction, the main arterial roadways were driven in the salt seam below the sylvinite for this reason. The transport of workers, materials, ore, ventilation and services would all occur in these salt roadways. In the polyhalite workings, both the main roadways and extraction panels would occur in the polyhalite seam.

3.3.11 Polyhalite extraction would mainly take place offshore, although provision is also made in this planning application for working under the onshore area as well. Mechanised mining techniques are currently used to extract the polyhalite and this is expected to be the main method of extraction.

3.3.12 Salt is currently mined in two districts, one offshore and one onshore and this would continue.

Processing

3.3.13 At present, different processing activities take place depending on the type of mineral extracted and the end product to be produced. It is proposed that all of these processing activities would continue for a temporary period of time.

3.3.14 The polyhalite and rock salt would be hoisted to surface and received by the polyhalite crushing and screening plant. This plant consists of a number of screening stages together with a crushing stage to reduce the size of the larger particles. The combination of crushing and screening would produce three primary polyhalite products - a granular grade product (2-4mm in size), mini granules (1-2mm) and a standard grade product (the fines from the crushing process used to create the granular products). The granular grade product continues to be refined through research and development at Boulby Mine, in order to find an exact product make up that can stand up to the rigours of transportation but retain the release rates and organic qualities that are attractive to the market.

3.3.15 PotashpluS is also processed at the Mine Site, with polyhalite fines and imported MOP combined to make this product. This will continue at the Mine Site under the Proposed Development for a maximum of 10 years, before moving over to the planned Teesside facility.

Transport

3.3.16 It is proposed that products created at the Mine Site would continue to be dispatched from the site by rail and by road. Road exports are currently limited by the planning permission and the terms of the accompanying legal agreement to a maximum of 150,000 tonnes in any 12 month period, and to a maximum of 66 loads of product leaving the Mine Site each day. The routes to be used by HGVs delivering the Mine's product are also defined under the legal agreement, with minor roads in the vicinity of the Mine being avoided unless for specific delivery purposes. The A174, north and south, is the therefore the principal route which HGVs would use to reach the wider highway network.

3.3.17 Currently, the majority of products are despatched using the existing rail link to Teesside and Teesdock, and this would continue. Train wagons would be loaded at the rail loading facility to the west of the Mine Site. They would then travel on a private rail line (owned by ICL Boulby) to Carlin How where the track joins a line owned by Network Rail. The track is shared from this point to Saltburn by rail services for the British Steel plant at Skinningrove, and from Saltburn by passenger rail services into Teesside. When the Teesside processing facility is developed, polyhalite from Boulby Mine will be able to be transported via rail to this facility.

3.3.18 The majority of workers would continue to travel to the Mine Site by car, which is necessary due to the rural location and the shift working patterns in place, and the Mine Site includes car parking areas for workers. Most deliveries would also continue to be brought to the Mine Site by road.

Buildings and Plant

3.3.19 The Mine Site currently contains a range of buildings and structures which, in simple terms consist of the following (from south to north across the Mine Site):

- Underground services: helipad (for emergency use), car parking, workers amenities, man shaft, surface fan house and winder house;
- Battery storage system;
- Technical services and fabrication bays;
- Dark matter research building,
- Substation and transformers;
- Rock shaft and vent house;
- Raw ore, salt, polyhalite and finished product storage;
- Salt and polyhalite plant buildings;
- Sewage plant;
- Potash treatment plant building;
- Rail loading facility;
- Combined heat and power plant;
- Water interceptor pit;
- General stores and engineering services;
- Sports dome (for workers);
- Gatehouse, car parking and administration building; and

- Sea water reservoir.

3.3.20 Also connected to the Mine Site are buildings used in the discharge of brine to the sea, which are located close to the coastal cliff line to the north of the site. These include transformers, a shaft to the discharge pipeline, a small winder house and related plant.

3.3.21 It is proposed that a phased deconstruction of a number of structures at the Mine Site will take place as part of the Proposed Development. This will remove a number of structures at the Mine Site which will not be required for the future operations at the site, reduce the size of other buildings where the larger size is no longer required and consolidate the spread of built development on site to a smaller footprint. All of these proposals will reduce the visual impact of the mine in the landscape and provide a more efficient operational site. A phased approach is required in order to allow a transition from the current activities to those required for future operations and provide some degree of flexibility to ICL Boulby in how this transition is managed. A phased deconstruction approach is also proposed, rather than a single demolition approach, as the Mine Site will remain an operational site during this time and the removal of these structures must fit in around though operational activities ongoing. The proposals would see the following structures deconstructed and removed in two phases, as shown on Figure 3.2 (Phase 1) and Figure 3.3 (Phase 2):

- Phase 1
  - Slimes and tails thickeners and associated pumping infrastructure;
  - Centrifuges and belt filter building connected to the potash treatment plant;
  - Oil storage building;
  - Sports dome and construction store;
  - General stores building;
  - Administration building.
- Phase 2
  - 2,000 tonne surge bunker, and associated conveyor belts;
  - Old boiler house;
  - Engineering services building (across phases 1 and 2).

3.3.22 It is expected that Phase 1 will take place over a 5-year period from 2023 (or as agreed in any planning condition), and Phase 2 over a further 5-year following Phase 1. The area to the north of the man Mine Site will therefore be largely cleared of buildings and structures. The car park would be relocated closer to the remain built structures to further consolidate the spread of built development. The cleared land will be converted to pasture land for grazing, which is compatible with the longer-term restoration ideas for the site (Appendix A).

3.3.23 As ICL Boulby move processing facilities to a new site on Teesside, there will also be an opportunity to reduce the size of other buildings on site. Principally this is likely to involve a reduction in the size of the potash processing building and the removal of its stack. At this point in time, ICL Boulby are unable to confirm exactly how this building would change and decisions on now it could be amended would need to consider the exact nature of operational activities in the future, the practicalities of amending a building that will still be required for operational purposes during this time and the exact date a new Teesside processing facility becomes operational. ICL Boulby therefore commit to a review of site operations with NYMNPA every 5 years through the permission to confirm what additional deconstruction activities can take place, when these will happen and

secure agreements on any replacement/amended building/structure designs. This could be secured by a condition on any planning permission granted.

3.3.24 The administration building would be replaced by an office building constructed on the site of the existing technical services building at the southern end of the Mine Site during Phase 1. This would be a 2-3 storey building, designed to fit in with the bulk and height of the existing buildings, structures and nearby woodland planting in this part of the Mine Site. Initial estimates of the size would indicate a building up to 50m by 50m in area and around 15m in height, although ICL Boulby would expect a condition to be placed on any permission granted to allow final designs to be agreed with NYMNPA prior to the building's construction.

Utilities

3.3.25 The use of electricity and gas is difficult to predict over the Proposed Development period, as the ongoing refinement of the processing activities and the switch over the processing operations at Teesside provide uncertainties which cannot be estimated at this point in time. An assumption has therefore been that all processing activities will remain at Boulby Mine until 2033 (the latest year they could remain at Boulby Mine under the Proposed Development) and then they will switch to Teesside for 2024. Also, predictions of how gas use would change over the period to 2033 are more difficult to develop than electricity, as it is the activities using gas which will be subject to most potential change as the processing activities are refined. An assumption has therefore been made that gas usage will increase at the same rate as the electricity usage estimated for the processing activities, in response to the increase in volume of product being processed.

3.3.26 Annual electricity consumption consists of a fixed baseload amount and a variable operational amount. The fixed baseload comes mainly from the operation of the underground working, where the same amount of electricity is required to operate the underground pumps and fans/ventilation regardless of the amount of mineral being extracted in any particular time. This equate to around 51GWh per year and, not accounting for efficiency improvements from new technology, is likely to remain fixed throughout the Proposed Development period of 25 years. The variable operational amount covers the actual extraction activities underground and the surface processing activities. As the volume of mineral being extracted and subsequently processed changes over time, this amount also varies.

3.3.27 In 2020, at an extraction rate of around 1 million tonnes per year, the total electricity usage at Boulby Mine is expected to be around 89GWh. If all processing activities were to remain on the Boulby Mine site, the total electricity requirements would reach around 163GWh per year in 2033 at 3 million tonnes capacity. This figure would then drop as the processing switches to Teesside to around 112GWh per year from 2033 to 2048.

3.3.28 In addition, the mine also uses gas to power the boilers and dryers used in the processing activities, and to power the Combined Heat and Power (CHP) plant when this is used. The use of the CHP plant depends on the price of the gas, when it rises above a certain level it is more economical to buy electricity from the National Grid. As the processing of sylvanite to MOP required significant use of the boilers and dryers, historic energy use required for these activities was high. The current processing of polyhalite and the creation of PotashpluS on site does not require such intense heat use.

3.3.29 In 2020, at an extraction rate of around 1 million tonnes per year, the total gas usage at Boulby Mine is expected to be around 114GWh for both the processing activities and use of the CHP plant. If all processing activities were to remain on the Boulby Mine site, the total gas requirements would reach around 209GWh per year in 2033 at 3 million tonnes capacity. This figure would then drop as the processing switches to Teesside to around 58GWh per year from 2033 to 2048.

3.3.30 Overall total energy requirements are therefore predicted to rise from around 204GWh in 2020, up to a maximum of around 372 GWh per year in 2033 when 3 million tonnes capacity is reached. Total energy usage would then drop to around 170GWH per year from 2033 through to 2048.

3.3.31 With the cessation of sylvinite processing at Boulby Mine, there is currently no large demand for heat on site and the CHP plant mainly function as a power plant when the gas price means it is more efficient to generate electricity on site than using National Grid supply. In addition, the recently constructed battery storage units on site can take electricity generated by the CHP plant, or supplied form the National Grid at off-peak times, and hold this power until it was ready to be used during times of greater demand.

3.3.32 Boulby Mine is supplied by fresh water from the mains supply. Annual consumption in 2017, the last year of MOP production on site, was 790,000 m^3 and this is expected to drop to around 428,000 m^3 in 2020 when polyhalite extraction is around 1 million tonnes. This is due to the processing activities required to make MOP requiring substantial amounts of water. As polyhalite extraction increase over the Proposed Development period to reach 3 million tonnes per year, water consumption will also increase as greater dust suppression will be needed from the greater volumes of material being handled. This is expected to require water consumption of around 610,000 m^3 a year.

Groundwater

3.3.33 Due to previous extraction activity, a pathway has been created for saline groundwater from the overlying Sherwood Sandstone to enter the underground extraction area. It is proposed that this water would continue to be pumped out of the underground extraction area to the effluent stream and then discharged out to sea. Without these pumping operations, the mine would slowly fill up with water making the underground extraction area unsafe to work in. Ongoing maintenance would be undertaken the roadways and void spaces left by previous mining operations to ensure that the pumping can operate successfully and that safe access is provided to employees to manage these works.

Water Disposal

3.3.34 The operational area is bunded and surface water run-off from the Mine Site is diverted through the on-site drainage system into an interceptor in the north eastern corner of the site. Water from the culverted streams also feeds into the interceptor. Foulwater flows from the Mine Site pass through an onsite sewage treatment plant before feeding into the interceptor. The pit has a capacity of approximately 2,500 m^3 and helps to collect and separate any silt and dirt from the water flows before discharge.

3.3.35 All surface water run-off, as well as all treated foulwater, is therefore currently prevented from entering the Easington Beck, the closest surface water course to the Mine Site.

3.3.36 The contents of the interceptor pit are pumped into the effluent stream, which already contains a mixture of mine brine and any plant effluents, mixed with seawater (of which around 1000m^3 is used per day) and discharged via outfall to the North Sea. The use of sea water as a transport medium ensures that there will be no adverse impacts from the discharge of warm saline waters into the sea by virtue of the dilution. It also eliminates any potential problems with crystallisation of salts in the pipeline. This effluent and seawater mix has previously been used as the transport medium for the refinery tailings. All of this tailing material came from the processing of sylvinite however, because sylvinite will no longer be processed on the Mine Site, no refinery tailings will be included in the discharge to the North Sea.

3.3.37 No change is proposed to this system although the amount of surface water and foul water entering the system will reduce as deconstruction activities take place and buildings and areas of hard-standing at the Mine Site are removed.

Atmospheric Emissions

3.3.38 The processing of the minerals gives rise to a number of atmospheric emissions, including:

- The emission of combustion gases and particulate material from three product driers, which are vented to atmosphere via an 87.5m high dryer stack; and,
- Fugitive emissions of dust.

3.3.39 It is proposed that emissions to atmosphere from the various processes carried out at the Mine would continue to be made subject to regulations imposed by the Environmental Protection Act 1990 Part 1. The surface operations at the Mine Site are classified as a Part B process and are currently regulated by Redcar and Cleveland Borough Council under Authorisation reference MP-CPL-209.

3.3.40 There are two permits relating to the CHP, one of which licences the emissions to air through the CHP stack. Permit Number BL7973IW under the Environmental Permitting Regulations, the second is related to Greenhouse Gas Emissions under the EU ETS Scheme.

Employment

3.3.41 ICL Boulby currently employs just 560 employees on its Boulby Site, working underground in various mining and engineering roles, on the surface processing plant in engineering and processing roles and administrative and support roles which range from management, administration, training, safety and planning. In addition, 60 staff are employed at Teesdock operating the port facility. It is envisaged that as extraction of polyhalite increases over the coming years, staff numbers will rise to around 820 in 2023 and then remain at that level for the remainder of the permission period.

Economic Activity

3.3.42 Boulby Mine currently contributes to local economic activity. This includes a £37m wage bill per annum, business rates of £912,000 per annum and a community fund of £30,000 per annum, all of which will, in turn, generate a significant supply chain of economic activity. In addition, ICL Boulby spends around significant amounts every year with suppliers (£65.8 million in 2018). Around 90% of this is with companies in the UK, 60% (£38.3 million in 2018) to companies in the North East and Yorkshire and over 20% (£13.4 million) with companies in the TS and YO postcode areas.

Restoration and Aftercare

3.3.43 Upon completion of mining the site would be decommissioned, restored and become subject to a five year aftercare period.

3.3.44 It is proposed that a detailed restoration scheme would be developed and submitted to NYMNPA closer to the end date of any permission granted, to allow for a scheme which reflects the best use of land at that time and the most up to date guidance to be followed in its design. It is however likely that the Mine Site would be restored to a mix of semi-natural woodland and grassland habitats, pastoral fields, public access and industrial/mining heritage interpretation. This would follow the general principles established in the 1998 Closure and Restoration plan submitted

pursuant to condition 6 of NYMR/003/0043B/PA and the subsequent 2012 landscape enhancement work undertaken by Estelle Warren.

3.3.45 The key objectives developed to inform the overall design of the restoration scheme in these documents were:

- Create an undulating landform which is sympathetic to local topographical character and enables culverted watercourses under the mine head to be returned to open channels;
- Create a strong, long-term landscape structure which reflects key local characteristics and contributes to the National Park setting;
- Provide early visual improvement and/ or screening of the Mine Site during the operational phase in local views;
- Provide increased site security through use of dense thorny planting to the perimeter of the Mine Site;
- Retain and manage existing biodiversity habitats and enhance through provision of new habitats in the restored area, supporting existing initiatives where possible;
- Interpret site history, in particular mining history, and reflect within the scheme design as patterns and earthworks;
- Retain existing heritage features and improve settings where possible through management;
- Retain existing agricultural land uses and consider provision of additional agricultural land within the framework established through historical, landscape and biodiversity influences; and
- Explore opportunities for improving connections within the local public rights of way network.
- Key landscape characteristics identified for incorporation into the restoration plan were:
- Restore site topography close to pre-mining landforms, including removal or softening of the screening embankment, formation of minor gills along restored watercourses and general softening of the current development plateau;
- Extend woodland cover along the existing Boulby Gill and restored minor gills, to reflect the presence and key local characteristics of mature woodland within incised valleys (as noted along the valleys of Easington Beck and Roxby Beck to the south of site);
- Reinforce and/or restore degraded hedgerow field boundaries to the area north west of the minehead and within the parcel of open farmland north of the A174 near Red House Nab;
- Use tree and shrub species which are local to the area and able to withstand the exposed maritime climate.

3.3.46 A restoration concept plan has been prepared on the basis of these design parameters and accompanies this Planning Statement (Appendix A).

Site Decommissioning and Restoration

3.3.47 The plant and above ground structures would be decommissioned and demolished in accordance with the relevant legislation and best practice guidance available at the time of closure. All existing surface structures would be removed with the possible exception of the concrete winding towers where there may be an option to retain these in situ as historic features. Foundations for the removed structures will either be removed or left in situ where regrading proposals enable a minimum cover depth of 1m of new soils to be achieved. Shafts would be filled and capped. Culverts running below the Mine Site would be uncovered and retained as open channels. Culvert

headwalls and settling pond structures would be broken out and replaced with soft construction detailing. Rails would be removed from the railhead but the stone ballast trackbed would be retained in situ as a historic feature. All other hard surfaces would be broken out and removed to the full depth of construction except in areas where a minimum of 1m soils cover could be achieved. In these instances, existing surfaces would be punctured or broken up to aid drainage and left in situ below soil cover. All utilities and services will be disconnected at the site boundary and removed from areas within the Mine Site.

3.3.48 For the underground extraction area, all fixed plant would be left in-situ unless it can be re-used on other mine developments. Any equipment containing potentially polluting materials would be cleaned, drained and the materials removed. The effluent tunnel would be stopped up and the nozzles and sea water intakes plugged or capped.

3.3.49 All reasonable attempts would be made to reuse and recycle materials arising from the demolition of the structures and hardstanding.

3.3.50 Following decommissioning, the Mine would be restored to the landform detailed in the approved restoration design.

3.3.51 Restoration of the Mine would include regrading of the existing plateau area to form a landform in keeping with the surrounding countryside, which is likely to include the creation of a series of undulating terraces falling from the high ground in the north west to the Easington Beck valley in the south and south east. Existing culverts running below the operational Mine Site would be opened up and reformed as surface channels, running across the new landform and connecting to existing watercourses on the north western flank of Easington Beck valley. The existing wide ditch running along the western edge of the screening mound would be retained. A series of permanent ponds and flushes would be introduced. Subsoil and topsoil materials would be replaced to maximise the value of the limited topsoil available.

3.3.52 It is anticipated that decommissioning and site restoration (i.e. to soils levels) would take approximately 3 years.

Aftercare

3.3.53 Aftercare would commence at the completion of final restoration i.e. the replacement of topsoil. The aftercare period would extend for a minimum of 5 years beyond the completion of restoration, in which time the following actions would be undertaken:

- Woodland and hedgerow planting;
- Cultivations and seeding;
- Drainage works, including underdrainage;
- Field boundary treatment, including fencing;
- Footpath, tracks, roads, any car parking, stiles, gates and signage; and,
- Ponds and wetlands creation.

3.3.54 The type and nature of woodland planting, wildflowers, field boundaries etc. would be agreed with the NYMNPA.

3.3.55 The progress of the Mine through the aftercare period will be monitored through the production of annual monitoring reports and site meetings with representatives of the NYMNPA, Natural England and the landowners.

Key

Proposed planning boundary

0 500 1,000 1,500 m

Scale at A3: 1:35,000

Boulby Mine New Development
Planning Statement

Figure 3.1
Proposed development boundary

October 2019

wood.

40513-Gos43

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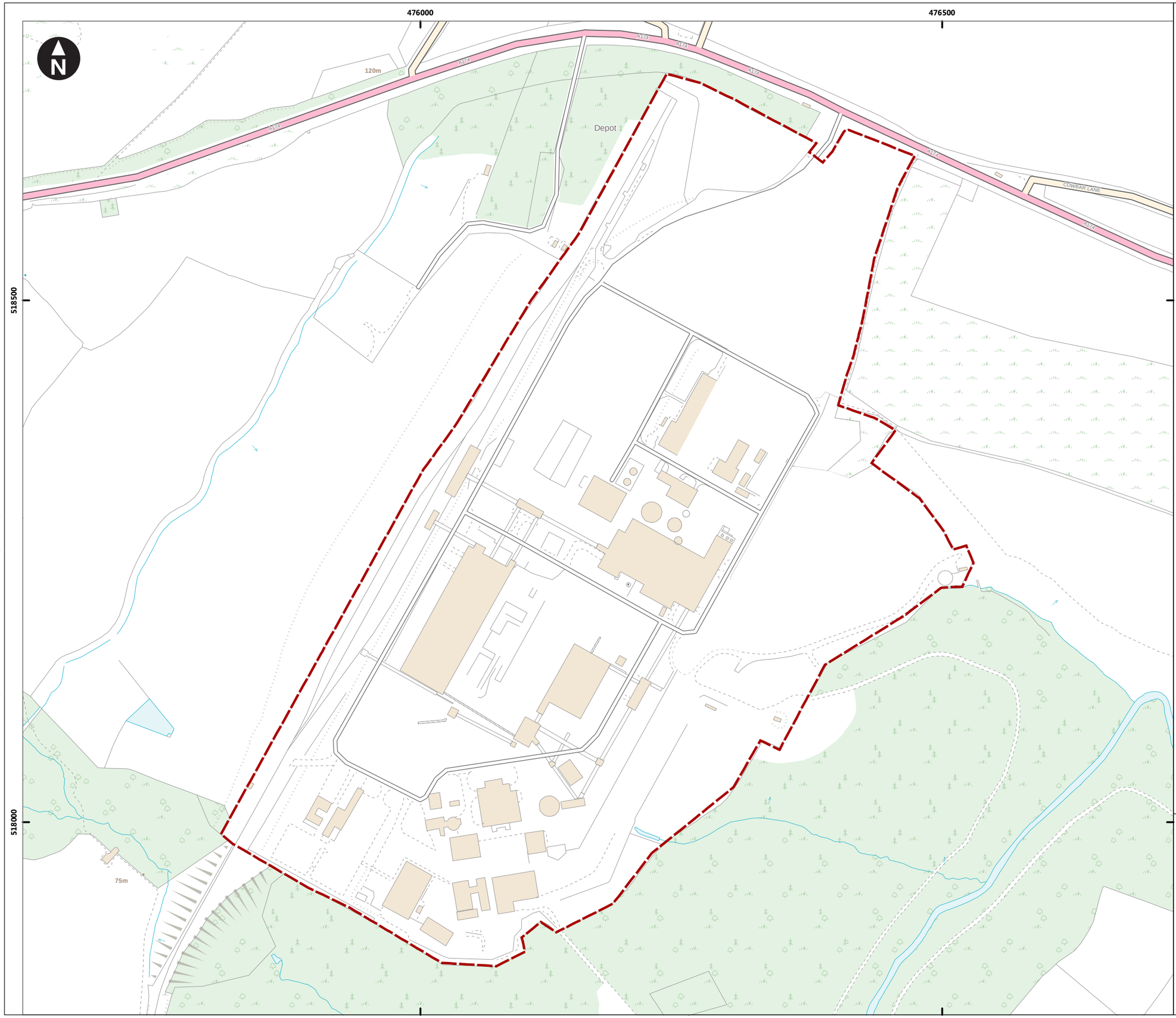

Key

Operational area

0 100 200 m

Scale at A3: 1:3,500

Boulby Mine New Development
Planning Statement

Figure 3.2
Phase 1 Deconstruction

October 2019

wood.

40513-Gos44

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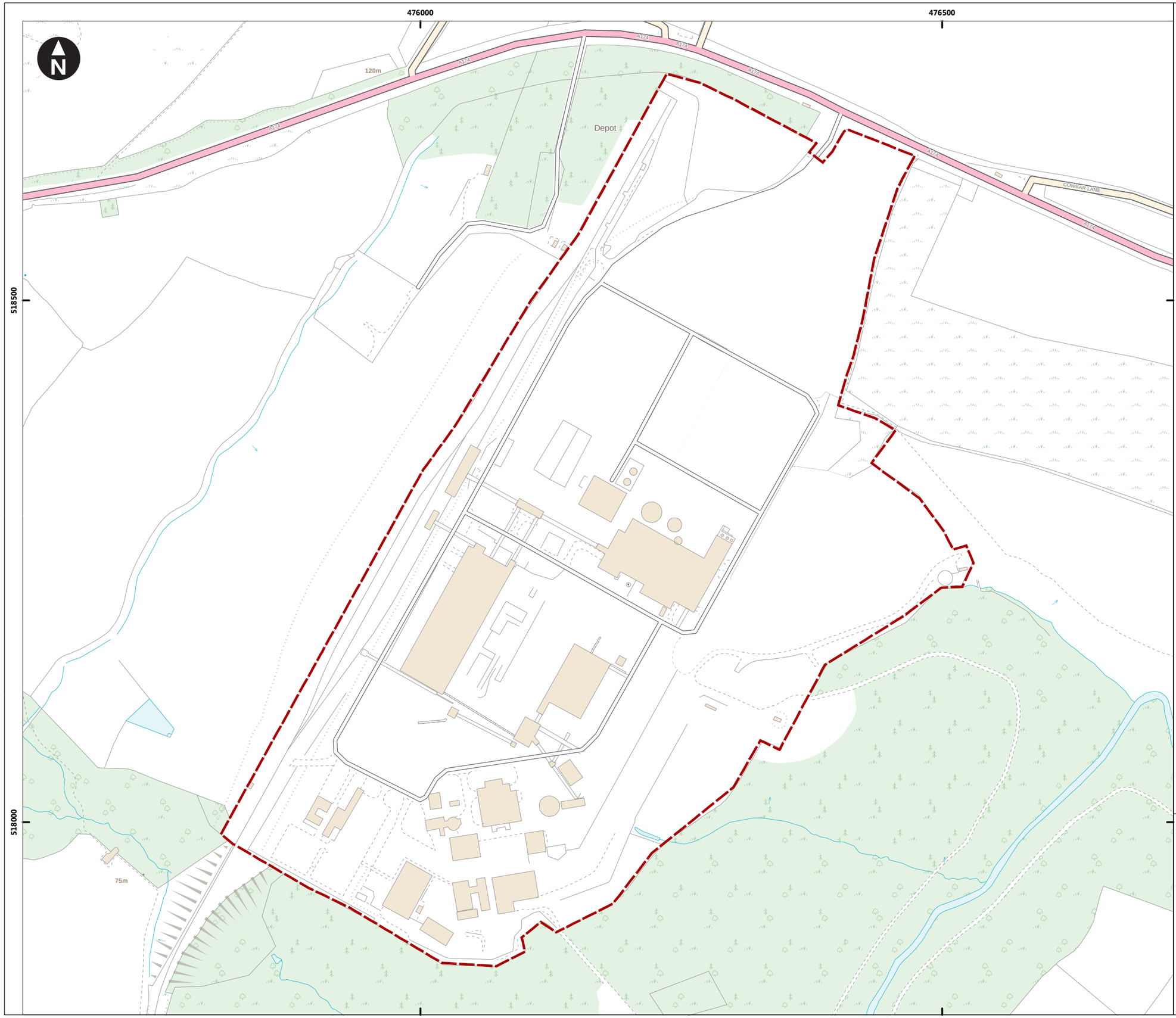

Key

Operational area

0 100 200 m

Scale at A3: 1:3,500

Boulby Mine New Development
Planning Statement

Figure 3.3
Phase 2 Deconstruction

October 2019

wood.

40513-Gos45

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4. Planning Policy Framework

4.1 Introduction

4.1.1 This chapter outlines the planning policy context applicable to the Proposed Development. Section 4.2 summarises the regulatory context, section 4.3 sets out the relevant Development Plan policies and section 4.4 outlines other relevant considerations of relevance to the Proposed Development including national planning policies and guidance.

4.2 The Regulatory Context

4.2.1 Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires that decisions on planning applications are made in accordance with the Development Plan unless material considerations indicate otherwise.

4.3 The Development Plan

Introduction

4.3.1 As the majority of the red line boundary, all surface activities and the bulk of the on-shore underground activities for the planning application fall within the North York Moors National Park, the main focus of the planning policy context is also focused on the National Park. This section therefore identifies the relevant Development Plan policies of the North York Moors National Park Authority.

4.3.2 The current Development Plan for the Proposed Development comprises:

- The North York Moors National Park Core Strategy and Development Policies document (adopted in November 2008);
- The Whitby Business Park Area Action Plan (Adopted in November 2014); and,
- The Helmsley Local Plan (Adopted in July 2015).

4.3.3 Whilst all Development Plan documents must be considered as a whole, the key Development Plan policy of relevance to the Proposed Development within the Core Strategy and Development Policies document is Core Policy E on minerals. This policy sets out a specific approach for Boulby Mine. It was developed in recognition of the national need for potash and means that proposals in respect of potash extraction at Boulby mine will be treated differently from other mineral types. The policy states that the continued extraction of potash at Boulby will be permitted provided that any detrimental effect on the environment, landscape or residential or visitor amenity is not unacceptable in the context of any overriding need for the development.

4.3.4 Other relevant Development Plan policies are set out in table 4.1 below.

- Core Policy A: Delivering National Park purposes and sustainable development;
- Core Policy B: Spatial Strategy;
- Core Policy C: Natural environment, biodiversity and geodiversity;

- Core Policy D: Climate change. Includes a requirement for major development to include renewable energy to displace 10% of CO_2 emissions predicted to be raised from the development;
- Core Policy G: Landscape, Design and Historic Assets;
- Development Policy 1: Environmental Protection;
- Development Policy 2: Flood risk;
- Development Policy 3: Design;
- Development Policy 5: Listed Buildings;
- Development Policy 7: Scheduled Ancient Monuments;
- Development Policy 14: Tourism and Recreation;
- Development Policy 23: New Development and Transport.

4.3.5 Where local plans have not been updated to take into account the policies in the National Planning Policy Framework (NPPF), as is the case with the Core Strategy and Development Policies Document, due weight should be given to relevant policies according to their degree of consistency with the NPPF, i.e. the closer the policies in the plan to the policies in the NPPF, the greater the weight that may be given. The Core Strategy and Development Policies document was prepared prior to the NPPF. The National Park Authority has however reviewed the plan against the NPPF and found that it was in general conformity with the NPPF.

4.4 Other Material Considerations

National Planning Policy Framework

4.4.1 The NPPF was originally published in March 2012, and most recently updated in 2019, and sets out the Government's policies for achieving sustainable development. This includes the Government's policies for building a strong and competitive economy, conserving and enhancing the natural and historic environment and facilitating the use of minerals. At the heart of the NPPF is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking.

4.4.2 Paragraph 2 confirms that the NPPF is a material consideration in planning decisions and the NPPF confirms the principles of the plan led system and requires that planning applications are determined in accordance with the development plan unless material considerations indicate otherwise. The NPPF is clearly an important material consideration in the determination of the planning application.

4.4.3 Paragraph 205 identifies that *"great weight should be given to the benefits of mineral extraction, including to the economy"*. Paragraph 172 looks to refuse major development within National Parks except *"in exceptional circumstances, and where it can be demonstrated that the development is in the public interest"*. It also identifies that when considering such applications, assessments should include:

- The need for the development;
- The impact on the local economy for approving or refusing;
- Whether it could be developed outside of the national park or the need met in some other way; and

- The effects on the environment, landscape and recreation and how those effects could be moderated.

4.4.4 These parts of paragraph 172 have evolved from the 'major development test' found in previous national planning policy documents and are often still referred to by this title.

4.4.5 The other sections within the NPPF considered to be most relevant to the determination of this planning application include the following:

- Chapter 6, building a strong, competitive economy;
- Chapter 8, promoting healthy and safe communities;
- Chapter 9, promoting sustainable transport;
- Chapter 14, meeting the challenges of climate change, flooding and coastal change;
- Chapter 15, conserving and enhancing the natural environment;
- Chapter 16, conserving and enhancing the historic environment; and
- Chapter 17, facilitating the sustainable use of minerals.

4.4.6 Polyhalite and salt are identified within the Glossary as minerals of national importance that are necessary to meet society's needs.

Planning Practice Guidance

4.4.7 In March 2014 the Government published the Planning Practice Guidance (PPG) as an online resource. Its purpose is to provide guidance on the implementation of policies of the NPPF. The PPG covers a wide range of topic areas with relevant sections noted below, but of particular relevance to the determination of the Proposed Development is the guidance given on minerals, including working and restoration and the environmental issues, that should be addressed. :

- Minerals;
- Climate Change - concerning the challenges that can be addressed through plan making, including mitigating climate change and adapting to a changing climate;
- Planning and Flood Risk - setting out the Sequential test and Exception test to developing in areas of flood risk;
- Health and Wellbeing;
- Light Pollution;
- The Natural Environment, in particular heritage coasts, biodiversity and agricultural land;
- Conserving and enhancing the historic environment;
- Noise;
- Air quality;
- Land stability;
- Land affected by contamination;
- Open space, sports and recreation facilities, public rights of way and local green space; and,
- Travel plans, transport assessments and statements.

Emerging Development Plan

North York Moors Draft Local Plan

4.4.8 The Draft Local Plan will cover the period from 2016-35 and when adopted it will replace the current Core Strategy and Development Policies document. The Draft Local plan was submitted for examination in July 2019 and an Examination in Public will commence in November 2019. The policies which are proposed which would be key to the determination of this planning application are Strategic Policy D, which generally repeats the major development test found in Paragraph 172 in the NPPF, and Policy ENV8 which repeats the requirement of Core Policy D from the Development Plan. The National Park has undertaken an internal exercise to provide advise on how much weight it believes can be given to the policies in the Draft Local Plan. This assessment considers that no weight can be attached to Strategic Policy D due to significant objections having been received to this policy. It considers that weight can be given to Policy ENV8 as no substantial objections have been received to it that could fundamentally change the policy[2].

4.4.9 Other policies which could be relevant (and the National Park's opinion of the weight which can be afforded to them) are:

- Strategic Policy A: Achieving National Park purposes and Sustainable Development (no weight);
- Strategic Policy E: the Natural Environment (no weight);
- Strategic Policy F: Climate Change Mitigation and Adaption (weight);
- Strategic Policy G: The Landscape (weight);
- ENV2: Tranquillity (no weight);
- ENV4: Dark Night Skies (no weight);
- ENV5: Flood Risk (weight);
- ENV6: Land Instability (no weight);
- ENV7: Environmental Protection (weight);
- Strategic Policy I: The Historic Environment (some weight);
- ENV9: Historic Landscape Assets (some weight);
- ENV10: Archaeological Heritage (some weight);
- ENV11: Historic Settlements and Built Heritage (some weight);
- C02: Transport (weight);
- CO4: Public Rights of Way and Linear Routes (weight).

Draft Minerals and Waste Joint Plan

4.4.10 The Minerals and Waste Joint Plan is being prepared jointly by North Yorkshire County Council, the City of York and the NYMNPA. The draft Joint Plan was submitted for examination in November 2017, and an Examination in Public was held to consider the plan. Following the initial examination sessions, further hearings were then held and the Inspector's report is still awaited.

[2] Weight Attributed to the North York Moors National Park Pre-Submission Draft Local Plan (April 2019) Policies, North York Moors National Park Authority, 5 September 2019.

4.4.11 The Draft Joint Plan includes a specific potash policy (Policy M22) which confirms that the extraction of potash, salt or polyhalite from new sites within the National Park and renewed applications for the existing two sites (which includes Boulby) beyond their current planning permissions will be assessed against the criteria for major development in Policy D04. Policy D04 includes criteria which are similar to the NPPF Paragraph 172 although there are differences (it also includes specific reference to the contribution to the national economy). The policy has been the subject of objections at the publication stage.

4.4.12 Table 4.2 below sets out the key policies of relevance to the Proposed Development within the Publication Draft Minerals and Waste Joint Plan that were considered in the examination. Once adopted, Policies M15, M22, S01, S02, D04 and D10 of this plan will replace Core Policy E of the Core Strategy and Development Plan Policies document.

- M22: Potash, polyhalite and salt supply;
- I01: Minerals and waste transport infrastructure;
- D01: Presumption in favour of sustainable minerals and waste development;
- D02: Local amenity and cumulative impacts;
- D03: Transport of minerals and waste and associated traffic impacts;
- D04: Development affecting the North York Moors National Park and the AONBs;
- D06: Landscape;
- D07: Biodiversity and geodiversity;
- D08: Historic environment;
- D09: Water environment;
- D10: Reclamation and afteruse;
- D11: Sustainable design, construction and operation of development.

4.4.13 In accordance with paragraph 48 of the NPPF, decision-takers may give weight to relevant policies of emerging plans according to: the stage of the emerging plan; the extent to which they may be the subject of unresolved objections; and their degree of consistency to policies of the NPPF.

4.4.14 Relevant policies contained in the Publication Draft Minerals and Waste Joint Plan (as amended by the Addendum of Proposed Changes) are a material consideration and an assessment of the Proposed Development against its policies has been provided. A number of the relevant draft policies including Policy D04 (which sets out the requirements for major development within the National Park) were subject to unresolved objections during the examination process and no information is yet available on how those objections may influence the final policy content. It is therefore considered that while some weight can be given to policies in the Draft Joint Plan, this weight is limited by these circumstances.

The English National Parks and the Broads: UK Government Vision and Circular 2010

4.4.15 The circular provides guidance and information about the statutory purposes and management of National Parks and the Broads. It establishes a joint vision for the National Parks to guide the long-term planning and strategic decision making of National Park Authorities.

4.4.16 It sets out that the Government expects National Park Authorities to be exemplars in achieving sustainable development, which they should deliver through their statutory purposes.

4.4.17 Paragraph 31 reiterates the approach for major developments in National Parks although it should be noted that this reflects the policy approach that was in place in 2010 rather than the policy approach set out in paragraph 116 of the NPPF. It is considered that the requirements of paragraph 116 of the NPPF would take precedence.

4.4.18 The Circular also recognises that communities are a fundamental part of the character of National Parks and sufficient weight should be given to socio-economic interests. The Circular notes the importance of a diverse and balanced economic base.

4.4.19 Paragraphs 141 - 145 are specific to mineral working. Paragraph 141 notes that the Parks are a vital source of some of the minerals that society and the economy needs and that quarries may also provide employment within the Park boundary. It goes on to state that it is important that the need for minerals and the impacts of extraction and processing on people and the environment are managed in an integrated way.

North York Moors National Park Management Plan

4.4.20 The Management Plan was approved in June 2012. It was subject to a "light touch refresh" in Autumn 2016, with minor amendments being agreed in December 2016. The Management Plan sets out a vision for the National Park and defines its special qualities:

- Great diversity of landscape;
- Sudden dramatic contrasts associated with this;
- Wide sweeps of open heather moorland;
- Distinctive dales, valley and inland headlands;
- An abundance of forest and woodland;
- Ancient trees and woodland rich in wildlife;
- Special landforms from the Ice Age;
- Exceptional coastal geology;
- Majestic coastal cliffs and sheltered harbours;
- Distinctive coastal headlands;
- A special mix of upland, lowland and coastal habitats;
- A wide variety of wildlife dependent on these;
- Settlements which reflect their agricultural, fishing or mining past;
- Locally distinctive buildings and building materials;
- Long imprint of human activity;
- A wealth of archaeology from prehistory to the 20th Century;
- A rich and diverse countryside for recreation;
- An extensive network of public paths and tracks;
- Strong religious past and present;
- Ruined abbeys and ancient churches;

- Strong feeling of remoteness;
- A place for spiritual refreshment;
- Tranquillity;
- Dark skies at night and clear unpolluted air;
- Distinctive skills, dialects, songs and customs;
- Strong sense of community and friendly people;
- A place of artistic, scientific and literary inspiration; and,
- A heritage of authors, artists, scientists and explorers.

4.4.21 It sets out a number of policies - under the headings of environment, understanding and enjoyment, business and land management and communities - to help ensure that the National Park purposes are being delivered. The Plan notes that the National Park is important on a national level for its reserves of potash.

Other Policy Considerations

Strategic Economic Plan

4.4.22 The York, North Yorkshire and East Riding Enterprise Partnership published its Strategic Economic Plan in March 2014. Its vision is to make York, North Yorkshire and East Riding the place in England to grow a small business, combining a quality business location with a great quality of life. It sets 5 strategic priorities. One of these is the growth of the food manufacturing, agritech and biorenewables sectors and the major supply chain and innovation opportunities this will create. Opportunities include those from investment in potash mining. This Plan was updated in 2016, with a review of delivery during the 2014-2016 period and establishing a focus for the period 2016-21. This did not alter the 5 strategic priorities.

5. Assessment of the Proposed Development

5.1 Introduction

5.1.1 This section of the Planning Statement provides an assessment of the Proposed Development against relevant national and Development Plan policies and other material considerations (as set out in Section 4).

5.2 Policy Context

5.2.1 The starting point for the determination of planning applications is the development plan, as required by section 38(6) of the Planning and Compulsory Purchase Act 2004. This states that the determination of planning applications shall be made in accordance with the development plan unless material considerations indicate otherwise. This is restated in the NPPF. Paragraph 11 of the NPPF establishes the presumption in favour of sustainable development which, for decision taking, means approving development proposals that accord with the development plan without delay (unless material considerations indicate otherwise); and where the development plan is absent, silent or relevant policies are out of date) granting permission unless:

- Any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole; or
- Specific policies in this Framework indicate development should be restricted.

5.2.2 Paragraph 213 of the NPPF states that due weight should be given to relevant policies in existing plans according to their degree of consistency with the NPPF (the closer the policies in the plan to the policies in the NPPF, the greater the weight that may be given).

5.2.3 The policy background described in chapter 4, shows a situation where relevant policies, regardless of the degree of weight which can currently be given to them, contain a common theme of the 'major development test'. The matters which are covered in the major development test also overlap with a range of other policies throughout the Development Plan and the documents making up material considerations. The assessment provided in this Chapter therefore follows the contents of the major development test, referencing other relevant policies as appropriate, before considering any additional relevant policies.

5.2.4 As a reminder, the major development test in this context relates to major developments within National Parks, and states that such development should be refused unless:

- The Proposed Development represents an exceptional circumstance and it can be demonstrated to be in the public interest. The consideration of these two matters should include an assessment of:
  - The need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
  - The cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and
  - Any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

5.3 Need for the Development

5.3.1 The main need for polyhalite is as a fertiliser itself, or as an ingredient in the manufacture of fertilisers. Appropriate fertilisers, with the correct balance of nutrients, are important to ensure that the nutrient content of soil is not depleted, thus limiting the efficient and sustainable production of growing plants. Population growth, changing diets and the effects of climate change on crop yields is likely to increase the global use of fertilisers to help address global food security.

5.3.2 The major nutrients which are potentially most likely to be, or become limiting have traditionally been nitrogen, phosphorous and potassium in the UK, but sulphur is now also becoming increasingly important. Appendix B provides more information on the importance of polyhalite as a fertiliser product.

Sulphur: Need

5.3.3 Sulphur is required for many of the growth functions of plants, and like nitrogen, it is principally an essential constituent of protein. A lack of sulphur will therefore impact on growth rates and yields. Sulphur can only be taken in by plants in a sulphate form, which is the naturally occurring form in polyhalite.

5.3.4 Use of sulphur fertilisers has been increasing in the Great Britain over recent years, rising from around 70,000 tonnes in 2002 to around 218,000 tonnes in 2017. This is largely due to the continued improvement of emissions to air, which are limiting the amount of sulphur dioxide released to the atmosphere. Previously, this deposition of sulphur from these emissions in the atmosphere provided the sulphur required for plant growth. As deposition rates have decreased, the need for sulphur fertiliser has correspondingly increased to a point where greater amounts of sulphur are consumed through fertilisers than phosphorus (approximately 180,000 tonnes in 2016/17) [3].

5.3.5 ICL Boulby's review of internal data from the Agricultural Industries Confederation and import data purchased from HMRC (not publicly available) shows that in the UK, sulphur used in fertilisers comes from the importation of ammonium sulphate (approximately 80%) with the remainder largely coming from the import of nitrogen fertilisers containing sulphur as well. Therefore almost the entire supply of sulphur for UK agricultural fertiliser is imported from abroad. The ammonium sulphate is generally a by-product of the plastics industry and the use of ammonium sulphate to provide sulphur for fertilisers can result in large releases of ammonia, especially on soils with pH values above 7.5. It is estimated that around 36% of UK soils used in arable farming have a pH value greater than 7.0[4] and ICL Boulby calculate that the use of polyhalite instead of ammonium sulphate based fertilisers across the UK could reduce ammonia releases by around 17%. The current reliance in the UK on sulphur supply from the imports of a by-product of an unrelated manufacturing process would therefore be reduced, as would the environmental impacts of ammonia releases. There is therefore considered to be a national need for sulphur as a fertiliser mineral, which cannot currently be met from within the UK.

[3] Agricultural Industries Confederation. Fertiliser Statistics 2017, Page 4 (https://www.agindustries.org.uk/latest-documents/aic-fertiliser-statistics-report-2016/ accessed 12/09/2019); and Agricultural Industries Confederation (2017). Fertiliser Statistics Summary 2018, Page 5 (https://www.agindustries.org.uk/latest-documents/fertiliser-statistics-summary-2018/ accessed 12/09/2019).

[4] Professional Agricultural Analysis Group. Collation of date from routine soil analysis in the UK 2016/2017, Table 3 (http://www.nutrientmanagement.org/paag-report-2016-17-web/ accessed 12/09/2019).

Sulphur: Meeting the Need

5.3.6 Current UK demand for sulphur (SO_3) was 218,000 tonnes in 2017[1]. To supply this amount of sulphur, ICL Boulby would need to supply around 450,000 tonnes of Polysulphate, 900,000 tonnes of PotashpluS, or 770,000 tonnes if sales are split 30% Polysulphate and 70% PotashpluS. As PotashpluS is roughly 50/50 polyhalite and MOP, the same amount of polyhalite, 450,000 tonnes, would be needed to meet any of these scenarios. Polyhalite extraction at Boulby Mine is expected to reach around 700,000 tonnes per annum in 2019 and therefore the mine would be able, in theory, to supply the full, current, UK requirements this year.

5.3.7 Industry estimates are that only one-third of the UK's sulphur fertiliser needs are being met, which could indicate a future market requirement of 600,000 tonnes of sulphur per year. However, there has also been a traditional undersupply of fertiliser across all nutrients types and ICL Boulby therefore predict that the need could increase to around 300,000 tonnes per year over the next 10 years. ICL Boulby then expect UK need to plateau at between 300-350,000 tonnes per annum. This annual need would equate to a supply of around 730,000 tonnes of Polysulphate. With an increase in polyhalite extraction from around 700,000 tonnes per annum in 2019 to a maximum of 3 million tonnes over the planning period, Boulby Mine has the capacity to, in theory, supply all of the UK's sulphur fertiliser needs.

5.3.8 In practice, the polyhalite produced by ICL Boulby will be used in a variety of ways: as a straight product in the Polysulphate sales or mixed with MOP to create PotashpluS. Not all UK buyers will choose to but ICL Boulby's products, they will choose to remain with current suppliers or there are a limited number of alternatives in the market (e.g. calcium sulphate products). In addition, a proportion of ICL Boulby's sales will go to international markets. However, due to the additional benefits provided by polyhalite based products (additional potash supply, environmental benefits, secure UK supply) it is expected that ICL Boulby can realistically supply at least 50% of the UK's sulphur requirements over the lifetime of the Proposed Development. This would equate to around 360,000 tonnes of polyhalite being required.

Potash: Need

5.3.9 Potassium regulates many of the internal processes carried out by plants such as photosynthesis, and starch formation. Without potassium, plants would struggle to undertake these processes, resulting in poorer quality crops and smaller yields. A competitive supply of fertiliser potassium is therefore key to sustainable and productive agricultural systems.

5.3.10 UK potash use has reduced in total terms over the past 10 years, from a figure of 317,000 tonnes in 2007 to 286,000 tonnes in 2017. This reduction however includes a steep drop down to 208,000 tonnes in 2009 followed by a rise back up to the current levels[1]. ICL Boulby research shows that the average need over the last 15 years has been 270,000 tonnes per annum, and ICL Boulby forecast that the annual need going forward is likely to remain steady around the 275,000 tonnes per annum level.

5.3.11 Up until recently, around 66% of the UK's potash has been supplied by Boulby Mine[5] mainly from its production of MOP from sylvinite (alongside small amounts of other potash products which were also produced from the sylvinite). The remainder of the UK's requirement was met by imported material. With the cessation of sylvinite extraction from Boulby Mine in 2018, there are currently no other indigenous sources of potash mineral extraction in the country.

5.3.12 Whilst Sirius Minerals hold a planning permission for a polyhalite mine in North Yorkshire, this project is still in the construction phase. Sirius Minerals have a stated objective to prioritise the

[5] British Geological Survey and Department of Communities and Local Government (2011). Minerals Planning Factsheet Potash (http://www.bgs.ac.uk/mineralsUK/planning/mineralPlanningFactsheets.html accessed 12/9/2019).

export of polyhalite to international markets rather than serving the UK market. The UK will therefore become reliant on imported potash if the Proposed Development is not approved.

5.3.13 It is therefore considered that there is a national need for potash in the UK and that this is unlikely to be met from any other indigenous source over the timeframe of the Proposed Development.

Potash: Meeting the Need

5.3.14 Over the past 15 years, the average requirement for potash in the UK of 270,000 tonnes per annum has been supplied by, approximately: 180,000 tonnes of MOP from Boulby Mine, 57,000 tonnes of potassium contained within imported compound fertilisers and 33,000 tonnes from imported MOP or other straight potash products. ICL Boulby's forecast research indicates that need is likely to increase slightly to an average of 275,000 tonnes per annum over the Proposed Development period. The amount supplied from within imported compound fertilisers is unlikely to change significantly as customers continue with existing suppliers, especially given the relationship between demand on the south coast and imports from across the channel. However, for the purposes of this application the contribution of Boulby Mine to meeting the UK's need is considered against the total figure of 275,000 tonnes.

5.3.15 In order for Boulby Mine to match its historic supply of 66% of the UK's annual requirements (around 182,000 tonnes of the forecast figure), an equivalent amount would need to be supplied by a combination of Polysulphate and PotashpluS sales. Polyhalite has a K_2O content of 14%, so to supply a similar 66% proportion of the future need would require approximately:

- 1.3 million tonnes per annum of Polysulphate (straight polyhalite); or
- 500,000 tonnes of PotashpluS (which would need 250,000 tonnes of polyhalite); or
- 390,000 tonnes Polysulphate and 350,000 tonnes of PotashpluS in a 30% / 70% split of supply (which would need 656,000 tonnes of polyhalite).

5.3.16 The above figures show that Boulby Mine is currently capable of meeting 66% of the UK's need for potash from its current annual extraction capacity (700,000 tonnes in 2019), if the polyhalite was used alongside MOP to create PotashpluS. With annual extraction capacity expected to increase to 1.3 million tonnes by 2023, Boulby Mine could also be able to meet the requirements solely from Polysulphate sales in the next 4 years. A combination of sales from Polysulphate and PotashpluS is however considered to be the most realistic means of supplying the UK market.

Potash and Sulphur

Table 5.1 Possible Supply Scenarios

Polyhalite extraction (tonnes per year)		100% Polysulphate		100% PotashpluS		30% Polysulphate / 70% PotashpluS	
		Tonnes	% of UK need	Tonnes	% of UK need	Tonnes	% of UK need
250,000	Sulphur Supply	120,000	34%	60,000	17%	78,000	22%
	Potash Supply	35,000	13%	92,500	34%	75,250	27%
500,000	Sulphur Supply	240,000	69%	120,000	34%	156,000	45%
	Potash Supply	70,000	25%	185,000	67%	150,500	55%
750,000	Sulphur Supply	360,000	103%	180,000	51%	234,000	67%
	Potash Supply	105,000	38%	277,750	101%	225,750	82%
1,000,000	Sulphur Supply	480,000	137%	240,000	69%	312,000	89%
	Potash Supply	140,000	51%	370,000	135%	301,000	109%
2,000,000	Sulphur Supply	960,000	274%	480,000	137%	624,000	178%
	Potash Supply	280,000	102%	740,000	269%	602,000	219%

The 'Tonnes' figure represents the tonnes of SO_3 and K_2O equivalent, that would be provided by the polyhalite extraction figure. The "% of UK need" figures are based on an annual requirement of 350,000 tonnes SO_3 per year and 275,000 tonnes per year of K_2O.

5.3.17 The table above represents a range of extraction scenarios for polyhalite, and how each scenario would meet the UK requirements for sulphur and potash fertiliser if that polyhalite was used to make either Polysulphate only, PotashpluS only or where 30% was used to make Polysulphate and 70% PotashpluS. At this point in time, ICL Boulby consider it to be a reasonable assumption that between 500,000 and 750,000 tonnes per year would be supplied to the UK market (which would leave between 2.25 and 2.5 million tonnes for international sales), and that the 30%/70% split between the two products is most likely to represent the split between the two products. This scenario would see at least 45% of the UK's sulphur requirements and 55% of the UK's potash requirements supplied using polyhalite from Boulby Mine in tonnage terms.

5.3.18 As Polysulphate and PotashpluS have been new products introduced to the fertiliser market, uptake from customers takes time to build. Arable farmers often have extensive land coverage (2000ha farms are not unusual), and a mistake made with a new fertiliser product on a farm of this size would be very costly. They therefore rely on agronomy experts to advise them of which products they should use and will only change when they have the assurance from these advisors it is acceptable to do so. The sales strategy for Polysulphate and PotashpluS is therefore to sell to a number of established fertiliser producers and suppliers, who have FACTS[6] qualified agronomists to convince their customers of the technical benefits of the products. These companies include one company with national market exposure, one northern and one southern company and then two specialist organic fertiliser companies. This approach allows national coverage, supplemented by additional support to fully cover regional areas and specialist support in organic markets.

5.3.19 This approach is seeing success, as sales of granular Polysulphate and PotashpluS have proven popular and fertiliser manufacturers can see that there is a market for products of, or containing, polyhalite. Particularly strong markets for these products have been seen in the UK, as well as Brazil and certain European countries. This will then drive interest in manufacturers buying standard grade polyhalite in particular (sales of which have been slower to date than granular and PotashpluS) as they realise they can use this material to create their own products for sale. Overall sales of all polyhalite products have increased on an average of 50% each year since 2011 as the market responds to increasing use and evidence of its effectiveness. Forecast sales will continue to increase over the next few years, and further details of the market situation is provided in the confidential report (Appendix C) accompanying this Planning Statement.

5.3.20 The Proposed Development can therefore be seen to meet a national need for sulphur and potash which is in the public interest, and the level of contribution to the supply of these minerals which it is likely to make is considered to be exceptional.

5.3.21 In this regard, the Proposed Development is considered to accord with the 'national need' part of Paragraph 172 of the NPPF, Strategic Policy D of the draft Local Plan, Policy M22 and D04 of the draft Minerals and Waste Joint Plan and it establishes the 'over-riding need' relevant to Core Policy E of the Development Plan.

Rock Salt

5.3.22 Rock salt is required in the UK principally for the use as a de-icing agent on the road network. The need for rock salt is therefore closely related to the weather conditions in any year, but the BGS Factsheet on Salt[7] identifies that close to 2 million tonnes of rock salt was produced in the UK in 2004, although ICL Boulby understand that recent years have seen the need in the UK average at just over 1 million tonnes per year. Boulby Mine expect to supply around 350,000 tonnes per year to the UK market, around one third of the national need. Boulby Mine does however have the capacity to increase production to meet around half of the current UK need if this was required.

[6] Fertiliser Advisers Certification and Training Scheme.
[7] British Geological Society and office of the Deputy Prime Minister Mineral Planning Factsheet Salt, 2006.

With other suppliers in the UK being located in Northern Ireland and Cheshire, Boulby Mine has a key role in keeping supplies available in the east of the UK, including shipping products via Tees Dock to ports along the east coast. A supply averaging 350,000 tonnes per year however can be easily accommodated without disrupting polyhalite extraction whilst meeting a regular and predictable national need.

5.3.23 The proposal can therefore be seen to contribute around one third of the national need for rock salt which is required to keep highways clear and safe for driving on in winter weather conditions. These proposals are therefore clearly in the public interest.

National Economy

5.3.24 A further consideration of the national need relates to the value to the national economy that exported product from Boulby Mine would create. Where a product from the UK is sold to an international market, the value of those sales has an impact on the national balance of payments: if the country is buying a greater value of products from abroad than we sell internationally, then there is a negative balance of payments. If the country was selling more than it was buying, there would be a positive balance and country would be 'in profit'. From the figures provided above, it is likely that between 2.25 and 2.5 million tonnes of polyhalite (in Polysulphate and PotashpluS products) would be sold by ICL Boulby to international customers each year. Polysulphate has a wide range of prices due to differing customer interest depending on what nutrients in the product they are most interested in. The confidential report at Appendix C provides full detail of the typical prices that Polysulphate products are sold for and where the markets for them are. The predicted sales would bring in tens of millions of pounds to the UK economy each year, assisting with the re-balancing of the national trade deficit.

5.3.25 The supply of fertiliser products to the UK market would also assist with the trade deficit, by keeping money in the UK which would otherwise need to be spent with suppliers abroad. A lesser figure than that brought in by export sales, this would still be a figure in the tens of millions of pounds and again assist with balancing the national trade deficit.

5.3.26 In this regard, the Proposed Development is considered to provide a clear benefit to a 'national consideration', the national economy, and which is in the public interest. The proposals therefore accord with the 'national need' part of Paragraph 172 of the NPPF, Strategic Policy D of the draft Local Plan, Policy M22 and D04 of the draft Minerals and Waste Joint Plan and it establishes the 'over-riding need' relevant to Core Policy E of the Development Plan.

Local Economy

5.3.27 ICL Boulby is a major employer in the National Park and wider area, currently employing around 560 staff at Boulby Mine and 60 staff Teesdock. In addition, there currently 84 full time contractors working at the Mine Site as well. Records over time show that between 80-90% of employees at Boulby Mine live within a 12 mile radius (which covers an area from extends around Redcar and Guisborough in the west, Whitby in the east and to Goathland in the south. It is anticipated that the local profile of the employees would continue during the proposed extended period of operations, with the number of people employed increasing to a maximum of around 840 people.

5.3.28 A major component of the Park's economy relates directly and indirectly to tourism and recreation; figures used in the National Park Management Plan identify that tourism is worth some £416 million to the local economy and supports some 4,000 FTE jobs in the Park and some 7,800 in the wider area. Farming and forestry and woodland are also important also play important roles in the economy of the Park. The National Park has a relatively buoyant economy and its prospects over the short to medium term are relatively good when compared to other areas of the UK; however

the economy of the National Park does face some challenges that other similar areas face such as under-employment, generally lower than average wage rates and economic seasonality.

5.3.29 The socio-economic considerations relating to the Proposed Development impact not just on the National Park but also on the wider area. Boulby Mine is located in a rural coastal area on the boundary between Redcar and Cleveland Borough and Scarborough Borough. At a more local level, it lies within the Loftus Ward area.

5.3.30 In 2011 Loftus ward had the 8th highest level of unemployment, at 13.2%, out of the 47 wards within Redcar and Cleveland and Scarborough Borough areas. This was higher than the average unemployment rate in England and the UK during 2011 (8.1%). The distribution of employment within Redcar and Cleveland is heavily skewed towards the South Tees area with far lower concentrations of employment in East Cleveland. The largest employment sectors in the Borough in 2014 were manufacturing and health. The 2015 Index of Multiple Deprivation showed that Redcar and Cleveland Borough is in the top third of the most deprived local authority areas in England, ranked 78 out of 326.

5.3.31 In terms of Scarborough Borough, the economy has depended historically on fishing and tourism. Employment in fishing has been in decline and tourism continues to form a key part of the economy, with the Borough relying heavily on the yearly influx of visitors to the area. This does result in a lower than national average percentage of full time jobs within the Borough. Other important economic areas within the Borough are local service industries and manufacturing. However, work done as part of the evidence base to support the recently adopted Local Plan considers that the extent to which new manufacturing businesses can be attracted to the Borough will be limited by the perceived geographical isolation of the area and the limited capacity of the transport network. Scarborough and Whitby Business Parks are seen as being economic drivers for these towns and their hinterlands. The 2015 Index of Multiple Deprivation showed that Scarborough Borough is in the top third most deprived local authority areas in England, ranked 90 out of 326.

5.3.32 The annual wage bill for ICL Boulby employees was over £34 million in 2018, which equated to an average salary of nearly £58,000 for its employees. This equals a weekly salary of £1,111 which compares very favourably to the average weekly pay in the UK of £497 per week[8], and within Redcar and Cleveland Borough (£450), Scarborough Borough (£423), the North East (£494) and Yorkshire and Humber (£497)[9]. These figures are consistent with average salary figures seen across recent years and are expected to remain at similar levels (not accounting for inflation) across the proposed planning period.

5.3.33 ICL Boulby spend considerable amounts each year directly with their suppliers on a range of products from specialist mining equipment to office supplies and catering. In 2018, this spend totalled over £65 million. On average around 90% of this spend goes to UK companies and in 2018, 58% went to companies in the North East and Yorkshire (£38 million) with over 20% (£13 million) with companies in the TS and YO postcode areas.

5.3.34 The Department of Business, Energy and Industrial Strategy (BEIS) publishes information on the employment multipliers relevant to different sectors of the economy. These multipliers show how a single job in the sector being considered will lead to additional jobs in the rest of the economy through direct and indirect spending. So an employee at Boulby Mine will spend their wages in

[8] Figure for January 2019: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/averageweeklyearningsingreatbritain/march2019 accessed 1 October 2019.

[9] Annual Survey of Hours and Earnings, 2018 provisional data. Table 8.1a. Office for National Statistics, October 2018. https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/placeofresidencebylocalauthorityashetable8

local shops which will support the staff who work in those shops (direct effect). Those shops will in turn use the money spent with them to buy goods and services from other businesses which would support jobs in those businesses as well (indirect effects). The latest information available from BEIS dates from 2015[10]. For Boulby Mine the most appropriate category is 'Other Mining and Quarrying' which has an employment multiplier of 2.39. This means for every job at Boulby Mine, another 1.39 jobs are supported in the wider economy. With 560 current employees at Boulby Mine, this means that 778 other jobs are supported, a total of 1,338 jobs. With a predicted increase to 838 jobs by 2023, this would see 1,165 jobs supported; a total of 2,116 jobs. With an average of 85% of employees living within 12 miles of Boulby Mine, as similarly high proportion of these supported jobs will also be within this local area.

5.3.35 The continued employment at Boulby Mine is considered to be vitally important for the economy of the local area and closure of the Mine would have a significant adverse effect on local employment, services and amenities.

5.3.36 In addition to these figures, ICL Boulby currently pays around £800,000 in business rates every year from its operations at Boulby Mine, plus an additional £250,000 from Tees Dock It also operates a Community Fund which has £30,000 available every year for local organisations to apply for and spend on projects to benefit local communities (Appendix D).

5.3.37 If approved, it is estimated that during the life of the Proposed Development £1,372m will be paid to UK companies through payments to suppliers and vendors, of which over £1.4billion would be invested in the local area (not accounting for inflation over this time). This is made up from the following:

- Around £325 million going to local suppliers;
- Over £25m in business rates;
- £1,250m in wages to staff, of which around £1,062m will go to staff in the local area;
- £750,000 community fund.

5.3.38 The effects on the local economy from approving the Proposed Development would therefore be substantial. These benefits are already being provided by Boulby Mine and so there is a high level of certainty that the level of economic benefits identified would be delivered during the extended period of operations. ICL Boulby's business plan currently factors in Sirius Mineral's Woodsmith Mine becoming operational over the timeframe of the Proposed Development and therefore any benefits arising from employment and economic activity from the Proposed Development would be in addition to that arising from Sirius' project, if that project proceeds as planned.

5.3.39 Whilst refusing permission for the Proposed Development would enable the site to be restored and agricultural and wildlife uses established, it would result in the loss of a significant number of jobs in the local area, which includes some of the most deprived wards in the country, significant reductions in the income streams for local companies and reduced business rate payment to the local authorities. These job losses would be both directly from the Mine but also in the supply chain that services the Mine's operations. The agricultural land which would be created from the Mine Site's restoration is not large enough to create any new employment in this sector, only supporting existing employment in the farming industry.

5.3.40 In this regard, the Proposed Development is considered to provide exception al circumstances in this area of the country, it accords with the 'local economy' part of Paragraph 172 of the NPPF,

[10] https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/adhocs/009747ftemultipliersandeffectsreferenceyear2015bespokeindustrygroups, accessed 23 October 2019.

Strategic Policy D of the draft Local Plan, Policy M22 and D04 of the draft Minerals and Waste Joint Plan and it establishes the 'over-riding need' relevant to Core Policy E of the Development Plan.

Effects on Other Employment

Tourism

5.3.41 The major economic sector within the National Park is tourism. The presence of the National Park is an important factor in the tourism offer in the wider area. The special qualities of the National Park which act as key reasons for visiting the area are its peace, tranquillity and the natural beauty of the landscape. The importance of the National Park's peace, tranquillity and landscape quality for the tourism industry is recognised, as are the impacts that the Mine Site has on these special qualities. However, the Mine has been operational at its current location for over 40 years and during this time visitor numbers to the Park and the wider area have continued to grow, as demonstrated by the various STEAM reports prepared on behalf of the NYMNPA.

5.3.42 Using the STEAM report for 2016, the figures in here indicate that the value of tourism for the North York Moors and its influence area reached £646.8 million in 2016, with 7.93 million visitors, of which 6.2 million were day visitors and around 10,900 FTE employees in related businesses. All of these figures were a growth on those seen in 2015 and continues a trend seen over the preceding few years. Furthermore, the visitor surveys undertaken at a number of locations around the National Park, including at Runswick Bay (5km from the Mine Site), indicate that the National Park attracts a large number of regular, repeat visitors, supporting the position that the presence of the Mine Site does not adversely affect visitor perceptions of the National Park to a large degree.

5.3.43 The ES demonstrate that there would be no unacceptable effects on nearby tourism receptors as a result of noise or dust nor would there be any significant effect on users of the roads in the vicinity of the Mine Site due to delay, severance or an increased risk of accidents. The continued presence of the Mine for a further period of 25 years is therefore not considered to hinder the aspirations of the National Park Management Plan to increase employment in the tourist sector.

Other Sectors

5.3.44 In terms of other employment sectors, the majority of the Park's businesses are located in the Esk valley, around Whitby and across the eastern coastline boundary of the Park with particular concentrations around Robin Hoods Bay. It is considered that, given the distances from the Mine Site, these areas would not be affected by the Proposed Development.

5.3.45 Other key business areas in the National Park include agriculture, shooting and fishing, timber production and associated forestry and woodland management. The Proposed Development would not have any effects on these business sectors, with site restoration providing opportunities for providing additional agricultural land.

Conclusion

5.3.46 Whilst the Proposed Development would extend the presence of the Mine Site within the National Park for a further 25 years there is no evidence to suggest that this would have any adverse effect on tourism, tourism related employment or other employment sectors within the National Park or wider area. However, even if some negative effects on other employment and therefore some displacement effects did occur, the local employment opportunities, GVA impacts and other local economic benefits provided by the Proposed Development would remain as substantial.

5.3.47 In this regard, the Proposed Development is considered to accord with the 'local economy' part of Paragraph 172 of the NPPF, Strategic Policy D of the draft Local Plan, Policy M22 and D04 of the draft Minerals and Waste Joint Plan.

Other Benefits

5.3.48 For a number of years Boulby has hosted the UK's Dark Matter research studies, operating some of the most sensitive detectors in the world to try to detect Weakly Interacting Massive Particles (WIMPs) the strongest candidate for the missing matter in the universe. With over 1100m of rock overhead reducing cosmic rays and with the surrounding rock salt being low in natural background radioactivity, the laboratories make an ideal site for ultra-low background and deep underground science projects. The Boulby Underground Laboratory is one of just a handful of facilities world-wide that, because it is almost entirely free of interference from natural background radiation, is suitable for hosting ultra-low background and deep underground science projects. The facility employs 4 people on a full time basis and attracts visiting academics who all contribute to the local economy through accommodation, transport and sustenance spending.

5.3.49 Access to work-space in a deep underground environment is highly valuable in a broad range of science areas beyond astrophysics. This can be seen at Boulby where there are a number of new studies underway or evolving, including studies of cosmic rays and climate, astrobiology and life in extreme environments, development of techniques for deep 3D geological monitoring and various gamma spectroscopy studies of radioactivity in the environment.

5.3.50 If Boulby Mine was to cease operations one of only a few suitable facilitates worldwide for this type of research would be lost.

5.4 Alternatives

Locating the Proposed Development Outside of the National Park

5.4.1 The Proposed Development is an unusual proposal in mining terms, in that it is essentially for the continuation of operations at an existing deep mine which is already located within the North York Moors National Park. The ability to consider alternative locations outside of the National Park is therefore restricted due to the costs associated with this approach. Either Boulby Mine would need to be decommissioned and restored and a new mine then developed or a new mine would need to be developed whilst Boulby Mine was still operating before a 'handover' process is undertaken. This would require either a period of time where ICL Boulby had no income coming in from mining activities or a period where they had additional costs from operating one mine and constructing another, neither of which is a financially viable position. Notwithstanding this financial situation, there a number of basic requirements for the location of any mine which will dictate the location and availability of alternative sites. Those relevant to the proposed Development are:

- A viable mineral resource;
- Suitable geology for accessing the resource;
- Sufficient land for the various buildings and processes required;
- Access to the transport network - road, rail, sea;
- Electricity supply;
- Water supply;
- Mine water drainage; and,

- Sea water and a tailings outlet.

5.4.2 Geology is the main determining factors of location as this determines where an economically viable resource could be mined.

5.4.3 The Polyhalite deposits are found under on-shore land in the UK in a stretch of land from around Boulby Mine to a point east of Hull, and extending, generally, around 10 miles or so inland. Whilst the deposit is therefore located outside of the National Park around Whitby and Scarborough, and from the Vale of Pickering southwards, the deposit is at a greater depth and in a more fractured state in these areas which would making mining polyhalite unfeasible here. Alternative sites within this area were considered during the application for the Woodsmith Mine. Through this the NYMNPA agreed to rule out the Vale of Pickering given the depth of the mineral resource and the extent of faulting. An area called the 'Whitby Enclave' and an area at Cloughton were also considered further through the Woodsmith Mine application process. The NYMNPA concurred that the area at Cloughton would not be appropriate because of the traffic implications for Scarborough, the proximity to faults and Groundwater Source Protection Zones and the need for substantial landform alteration. In terms of the site considered within the 'Whitby Enclave', the NPA accepted that there was no robust evidence to conclude that a viable option exists to build a mine head at the Whitby Enclave due to the probable geological conditions and associated mining feasibility constraints. It is not considered that any matters have changed since the consideration of that application to alter these conclusions.

5.4.4 To the north of the National Park, a mine could theoretically be developed and underground tunnels driven out to sea to access the offshore deposits of polyhalite found under the North Sea. Whilst there is more flexibility on the location of a mine site outside of the National Park, there are still a number of considerations that have the potential to limit its location. These include the geology, in terms of its proximity and its nature as these can influence the viability of access from a technical and cost point, the size and availability of plots of land available and the environmental and amenity issues that would need to be addressed for any new mine development. These include nature conservation designations, heritage assets, proximity to residential areas and suitability of the road network.

5.4.5 The mine site requirements outlined above limit further the potential alternative sites outwith the National Park. To the north of the existing mine site ICL Boulby has identified four sites that, based on a very high level consideration of topography and broad location in relation to services, could in theory satisfy most of these requirements. These are:

- Land to the west of Skinningrove Steel Works;
- Land between Saltburn and Marske;
- Land between Marske and Redcar (adjacent to Coast Road); and,
- Land near to Coatham Sands

5.4.6 These sites would all be able to access the sea (for effluent discharge), the rail and road network and are sufficiently large to accommodate a minehead the size required by the proposed Development. Sites further inland would not have access to the sea, nor to a rail line with capacity to accommodate the freight movements.

5.4.7 From ICL Boulby's geological investigations, the areas of the polyhalite deposits that are to be mined during the Proposed Development are located around 9km north east of the Boulby Mine shafts. The four potential locations identified would be between 15km and 28km away from these deposits, increasing the costs and labour required to transport the mineral underground to the shaft.

5.4.8 The Coatham Sands site is within a number of national and internationally important environment designations, and the environmental impacts on birds and their habitats is likely to rule out any development of the nature of a mine in this location. The sites at Marske and Saltburn are both located very close to residential areas, where amenity value for local people could be significantly affected by the construction and operation of a mine. Both sites are also identified as green spaces that should be kept free of development to avoid the built up areas of Redcar, Marske and Saltburn joining together and are within a buffer zone designed to protect the international environmental designations around Coatham Sands and Teesmouth. Carlin How is located within the Heritage Coast designation and would also lead to the loss of a Local Wildlife Site and be adjacent to other Local Wildlife and Geological Sites. Whilst further away from residential areas than the Marske or Saltburn sites, it would be close to Huntley Hotel and Golf Club with impacts on the leisure and recreational offer found here.

5.4.9 As noted above, the fact that the Mine Site already exists is an important factor when considering the potential alternative locations. Even if an alternative site was available, which is not considered to be the case, it is not economic, sustainable or reasonable to close an existing mine site, develop a new mine site outside the National Park and tunnel to the mineral resource, with the associated costs and construction impacts this would create.

Meeting the Need in Another Way

5.4.10 Boulby Mine is currently the only operational polyhalite in the world and there are no other sources of polyhalite available for either the UK or global markets. Almost all of the UK's sulphur fertiliser requirements are met through imported products, and while there is some capacity for alternative sources to be utilised form the UK these are limited in both quantity and their attractiveness to the market (given their make-up with other minerals). The UK also has no other current indigenous potash supply. The UK requirements for sulphur and potash is therefore almost entirely reliant on imports at the present time.

5.4.11 Sirius Minerals do have planning permission for the Woodsmith polyhalite mine within the National Park, although this project is still in the construction phase and it will be a number of years before this project could become operational. Sirius Mineral's operational plans for the polyhalite are for the product to almost wholly supply international markets, rather than the UK market. Their planning application stated that only between 125,000 and 175,000 tonnes were expected to be sold into the UK market each year, if they hit their projected sales rates for Phase 1 and Phase 2 of their operations (Phase 1: 6.5 million tonnes a year of polyhalite, Phase 2: 13 million tonnes a year). It is not clear whether Sirius Minerals would still expect to supply the UK market to this degree if their expected sales figures were not met, or whether they would focus all of the polyhalite they do extract to the international markets. However, taking a figure of 125,000 tonnes per year possibly being supplied from the Woodsmith Mine, this would only equate to 17% of the UK's sulphur fertiliser requirements, or 6.5% of the UK potassium fertiliser requirements. The UK would therefore still be very heavily reliant on imports to meet its requirements.

5.4.12 In terms of rock salt, there are other suppliers located in Cheshire and Northern Ireland who could take up some of the supply which currently comes from Boulby Mine. However, their position to the west of the country means that customers on the east coast, or in Scotland (which Boulby Mine can supply by ship if needed), are more remote and increased costs and emissions from greater transport distances would result.

5.4.13 The British Geological Society Minerals Planning Factsheet on potash[11] gives consideration to the availability and use of alternatives to potash. It acknowledges that potassium fertilisers are

[11] British Geological Survey and Department of Communities and Local Government, Mineral Planning Factsheet Potash, 2011. https://www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html

essential for healthy plant growth and concludes that there are no substitutes, highlighting that unconventional sources of potassium have been examined in the past but without success. Research has continued into potash alternatives, driven in particular by the lack of potassium resources in the southern hemisphere and costs associated with sourcing potash from the northern hemisphere. However, these alternatives have yet to be used at a commercial scale. It is not considered there are any realistic alternatives to potash for the UK at the current time, nor are there likely to be over the timeframe of the Proposed Development.

Conclusion

5.4.14 In this regard, the Proposed Development is considered to accord with the 'alternatives' part of Paragraph 172 of the NPPF, Strategic Policy D of the draft Local Plan, Policy M22 and D04 of the draft Minerals and Waste Joint Plan and it establishes an 'over-riding need' for the development in the National Park, relevant to Core Policy E of the Development Plan.

5.5 Effects on the Environment, Landscape and Recreation

Landscape and Visual Impact

Assessment

5.5.1 The importance of protecting the landscape qualities of the National Park is given prominence in national and local planning policy. An assessment of both landscape and visual receptors has been carried out as part of the EIA and is contained within Chapter 5 of the ES. This identifies both landscape and visual receptors in a 5km study area which provide an appropriate representation of the area. The assessment used a combination of desk based studies, site visits, photography and photomontage production to assist in assessing the landscape and visual impact of the Proposed Development. It considers the effects of the Proposed Development on landscape character and visual amenity, and on the cumulative effects arising from the Proposed Development in conjunction with other relevant developments. Given that the mineral extraction operations take place underground and therefore would have no effects on the landscape or visual amenity, the Landscape and Visual Impact Assessment (LVIA) focussed on the effects of brought about by the Mine Site over the timeframe of the proposed Development.

5.5.2 The main features of the Mine Site that gives rise to landscape and visual effects are:

- The main stack which is 87.5 m high, including the steam plume produced;
- The two circular, concrete shaft winding towers (headgear);
- The CHP stack;
- The main treatment plant building which is the tallest and most prominent building;
- The '2000 tonne' bunker;
- The surge bin, rail loadout and associated conveyors;
- The winder house;
- The raw ore and product silos; and
- The sports dome.

5.5.3 There is an area of non-operational land around the Mine Site and pump house which is in the ownership of ICL Boulby. This largely consists of agricultural and woodland uses. ICL Boulby has

undertaken a programme of woodland management over many years, aimed at improving the ecological value of the woods and providing screening effects. The woodland enhancement program has mixed results, with planting undertaken close to the operational areas largely being unsuccessful due to poor soil conditions (the soils were formed from the movement of material forming the previous ironstone workings, rather than being proper, clean soils). Planting away from the operational areas, for example alongside the A174 up Boulby Bank, has had better take up rates but growth has been slower than usual growth rates due to the more exposed locations on higher ground, in a coastal environment.

5.5.4 A summary of the landscape and visual effects as set out in the LVIA are considered below.

5.5.5 A number of measures are proposed to mitigate the effects of the Proposed Development for landscape and visual receptors. The measures have been developed following consultation with NYMNP and include: the protection of existing areas of woodland and scrub within the site during the operational period; the introduction of additional planting to provide screening of the building in key views and the application of a uniform colour finish to unify and improve the appearance of the mine buildings.

5.5.6 With the implementation of these mitigation measures, and the conditions of the landscape in which the Mine Site sits, likely significant effects arising as a result of the Proposed Development would be contained within a radius of approximately 5km from the Proposed Development. The LVIA has identified that there will be significant landscape effects experienced within this area to a maximum distance of 1.5km from the site. Significant effects **also** would be experienced in relation to three of the twenty eight special qualities of the North Yorkshire Moors National Park and for a restricted area of the North Yorkshire and Cleveland Heritage Coast.

5.5.7 The LVIA has also considered the visual effects on a number of identified receptors including settlements, transport and recreation routes and the closest individual properties and groups of properties within 2km of the Mine Site. Significant visual effects have been identified on three settlements, six property groups, two transport routes, three regional recreational routes, and six areas of the public right of way network all of which are contained within approximately 2.5km of the Proposed Development.

Residential Amenity

Noise

5.5.8 The noise assessment in the EIA undertook sound monitoring at 7 locations around the Mine Site, with 4 of these locations taking readings during a period of shutdown at the Mine when noise immissions are greatly reduced and would be more representative of the natural background noise without a Mine being in this location. The assessment considered the noise immissions from the Mine Site against the baseline readings and considered the changes against the relevant British Standards for noise levels for this type of development. The assessment considers the noise generated from plant and equipment working on the Mine Site, as well as from road traffic as a result of the Mine and takes a worst case view that plant would be operating 100% of the time, that that the lowest baseline noise levels recorded are relevant and that operations would continue at the existing levels across the Proposed Development. In relation to the last point, as buildings are deconstructed on the site and operations moved to Teesside, the noise generated from Boulby Mine will in fact decrease. The assessment finds that some noise immissions will be generated by the Proposed Development that will be above the existing background noise levels in the area. However, all of the predicted noise impacts from the Mine would be within the same scale as existing ambient noise in the locality (road traffic, agricultural workings, weather) and the night-time assessment does not take into account the noise attenuation offered by people mostly being

indoors at this time of day. Overall, the assessment finds that there are no significant effects arising due to noise from the Mine.

Dust and Air Quality

5.5.9 Operational activities on site are expected to be similar to those which are currently undertaken at the Mine and which generally do not create significant effects from the arisings of dust or from the emissions of pollutants of particle matter from the stacks. Over the Proposed Development, a number of processing operations will switch to a site on Teesside which will further reduce the levels of emissions generated from Boulby Mine. It is understood that occasional, localised effects can impact on those residents who live closest to the Boulby Mine site but it is not considered that these effects occur with a regularity or intensity to create significant effects on residential amenity from dust or air quality.

Conclusion

5.5.10 The levels of operation activity proposed will be, as a worst-case scenario, no greater than any of the operational activities that are currently permitted at Boulby Mine. However, due to the change in minerals being extracted and the phased removal of the more intensive processing activities on the Mine Site, operational activities will in practice be reduced from those associated with the existing development. The ES details how the Proposed Development would not lead to adverse effects that on the health, safety or amenity of residents or the public, from dust, air quality, noise or vibration. The Proposed Development is therefore considered to accord with Development Policy 1 of the Development Plan, Policy ENV7 of the draft Local Plan, Policy D02 of the draft Minerals and Waste Joint Plan and Paragraphs 170 and 205 of the NPPF. (as they apply to residential and public amenity).

Traffic and Transport

5.5.11 Given the location of the Proposed Development and the shift patterns in place, it is the case that the majority of the employees currently travel to the site by private car and will continue to do so over the Proposed Development. An important consideration is the fact that minerals can only be worked where they are found so there is not the same choice of location for minerals developments (for example, close to public transport routes) as there are for other types of developments such as housing; a fact recognised in the NPPF at paragraph 142.

5.5.12 It is proposed that a Travel Plan will be prepared for the Mine Site which would identify alternative modes of travel available to employees of the Mine and establish an action plan that promotes choice and sustainable travel of staff and visitors to the Mine Site. This would be secured by a condition on the planning permission.

5.5.13 Chapter 8 of the ES assesses the environmental significance of traffic levels that would be generated during the operational phase of the Proposed Development and during its decommissioning and restoration. Consideration has been given to heavy goods vehicles (i.e. the lorries entering and leaving the site to deliver minerals), staff journeys and deliveries to the Mine Site. The assessment in the ES has included a consideration of severance, driver delay, pedestrian delay and pedestrian amenity and how these may affect the following receptors:

- People at home;
- People at work;
- Sensitive groups including children, elderly and disabled;
- Sensitive locations such as hospitals, churches, schools and historical buildings;

- Pedestrians;
- Cyclists; and,
- Open spaces, recreational areas and shopping areas.

5.5.14 Although some of the product from the Mine would be transported by road, the majority would continue to be transported by rail from an onsite rail loading facility without the need to use road transport. There would be no increase in the number of vehicles entering or leaving the Mine site and the existing site access remains a suitable and safe means of access.

5.5.15 The Mine site access is directly on to the A174. For vehicles using the local road network, the ES has demonstrated that the traffic routes can accommodate the number of HGVs and other traffic associated with the Proposed Development without any adverse effects on capacity. Effects on severance, driver and pedestrian delay and pedestrian amenity are also considered to be not significant.

5.5.16 Cumulative effects are considered within the ES. Traffic growth has been applied to the baseline and the traffic generated by the Proposed Development would not give rise to any significant effects even with this traffic growth. There are no known proposed new developments within the A174 route that would give rise to cumulative effects.

5.5.17 The legal agreement currently in place limits the number of HGVs that can leave the site per day and the hours during which they can leave the site. It also prevents the use of the C20 road, thus ensuring that only routes appropriate for HGVs are used. It is intended that these same requirements would apply to the Proposed Development.

5.5.18 Adequate car parking is currently provided onsite for staff and visitors and there are no proposals to alter this provision.

5.5.19 The assessment shows that while Boulby Mine does create a significant volume of traffic within the local area, through the use of HGVs to transport product and supplies and from staff travelling to and from the Mine Site, this traffic does not cause any significant effects on the local highway network or to the people along the route. Non-Mine related traffic numbers using the local highway are so low, and the highway is of such a standard, as to be able to accommodate the traffic from the Proposed Development without any problems.

5.5.20 It is therefore considered that the Proposed Development accords with Policy 23 of the Development Plan, Policy C02 of the draft Local Plan, Policy D03 of the draft Minerals and Waste Joint Plan and Paragraphs 102, 108 and 109 of the NPPF.

Biodiversity

5.5.21 The nearest internationally designated sites are the North York Moors Special Area of Conservation (SAC) and the North York Moors Special Protection Area (SPA) located approximately 2.88km from the Mine Site. The SAC is designated for wet and dry heath and blanket bog habitats. Given the separation distance and the nature of the designation it is not considered that there would be any significant effects on the integrity of the SAC and this topic was specifically scoped out of the ES with the agreement of the NYMNPA. The SPA is designated because its supports populations of European importance of golden plover and merlin.

5.5.22 The nearest nationally designated sites are the Boulby Quarries SSSI and Staithes-Port Mulgrave SSSI. These are both designated for geological reasons. It is not considered that there would be any significant effects on their interest features and they were specifically scoped out of the ES with the agreement of the NYMNPA. The Runswick Bay SSSI is located approximately 4.5km to the south east of the mine site and is designated for its fossil flora. It is not considered that there

would be any significant effects on its interest features. The North York Moors SSSI is located approximately 2.88km to the south of the mine site. It has been designated because of its mire and heather moorland vegetation communities and breeding bird populations, particularly merlin and golden plover as well as supporting a number of other species that are listed as Red Data Birds.

5.5.23 The Mine Site is not subject to any statutory nature conservation designations.

5.5.24 Oneham's Pasture and Easington Beck Complex Local Wildlife Sites (LWS) are located / partly located within the area of the Mine Site, and the Saltburn to Staithes Coast LWS's are located approximately 1.8km to the north west. There are a number of other LWSs and Local Nature Resrsves in the wider area although at greater distances. These were all specifically scoped out of the ES given their distance from the Mine Site and the fact that the integrity of these sites would not be affected.

5.5.25 Baseline surveys have been carried out at the site to inform the ecological impact assessments following current guidelines and best practice. A desk study was undertaken in September 2016, with an initial Phase 1 habitat survey undertaken in September/October 2016. More detailed surveys were then undertaken to inform the ES through 2017 including bat surveys, otter surveys, water vole surveys and great crested newts. A site walkover survey was undertaken in October 2019 to confirm there had been no changes to the habitats and features on the Mine Site which would change any of the original findings.

5.5.26 Whilst the Mine Site is a busy industrial development, which may appear to be unwelcoming to wildlife, the nature of industrial buildings not being used or maintained to the same levels as residential properties, and the undisturbed nature of much of the surrounding woodland areas, mean that the existing Mine Site is home to fairly wide variety of biodiversity. A future baseline scenario without the Mine is therefore not greatly dissimilar to the current, working site in ecological value. Of the species which do inhabit the Mine Site, a range of measures are recommended to support them and increase their numbers, bringing the Site closer to the future baseline position from a species point of view. It is therefore considered that the proposed Development would continue to provide appropriate habitats for the range of species which currently use the Mine Site, and beneficial effects should occur from the proposed environmental measures.

5.5.27 The Proposed Development is therefore considered to accord with Core Policy E and Development Policy 1 of the Development Plan, Strategic Policy E and Policy ENV7 of the draft Local Plan, Policy D07 of the draft Minerals and Waste Joint Plan and Paragraphs 170 and 175 of the NPPF.

Cultural Heritage

5.5.28 There are no designated heritage assets within the Mine Site and so there would be no direct effect on any designated heritage assets. The only land which would be subject to disturbance would be where buildings are being deconstructed and land restored to agricultural use to the northern end of the main Mine Site. This land was fully excavated prior to construction commencing on Boulby Mine in the late 1960s, and the land then was cleared and reprofiled before construction started. Any potential features of archaeological interest in this area have therefore previously been excavated and recorded, and/or removed. The continuation of underground mining would have no adverse impact on any archaeological interests given the depth of working and the low predicted levels of differential settlement and lateral strains that can cause subsidence.

5.5.29 Within the wider area, heritage assets were considered with the aim of assessing the impact of the Proposed Development on the setting of these assets. The nearest Scheduled Ancient Monument (SAM) is located approximately 900m from the mine site, with other SAMs located over 1km away. The nearest listed buildings (Grade 2) to the Proposed Development are located at Boulby Grange approximately 370m to the north, Red House Farm approximately 450m to the north east and near

to Ings Farm approximately 420m to the west. The Staithes Conservation Area is located approximately 2km from the mine site. The distance between the proposed Development and these assets mean that the settings of these assets would not be significantly affected by the Proposed Development.

5.5.30 The Proposed Development is therefore considered to accord with Development Policies 5 and 7 of the Development Plan, Strategic Policy I and Policies ENV9, ENV10 and ENV11 of the draft Local Plan, Policy D08 of the draft Minerals and Waste Joint Plan and Paragraphs 192, 194, 196 and 197 of the NPPF.

Hydrology and Hydrogeology

Flood Risk

5.5.31 The Mine Site is within Flood Zone 1, which is the lowest risk of flooding. However, given the site area is greater than 1 hectare, a flood risk assessment is required. A flood risk assessment has been carried out and a Flood Risk Assessment report (FRA) has been submitted in support of the planning application. This takes a worst case view that all buildings, structures and hard-standing at the site will remain in-situ (as they will over the initial years of the Proposed Development). Given that some site clearance will take place and areas of built development returned to greenfield as part of the proposals, the surface water run-off rates will actually decrease over the timeframe of the Proposed Development and the flood risk levels identified will also reduce.

5.5.32 The principal flood risk to the main site is from pluvial (rainfall) events, with surface water flood risk mapping indicating a number of flow-paths and areas of ponding on the main site. The industrial nature of the mine/processing activities mean any localised ponding is deemed to be of low consequence.

5.5.33 The main site is not assessed as being at risk of fluvial flooding, however, due to exceedance of the Mine's drainage system (into the adjacent Easington Beck) there is a potential that the Mine is increasing flood risk downstream compared to a future baseline (no mine) 'greenfield' situation.

5.5.34 There is negligible risk of groundwater flooding at the main site due to limited scale of the groundwater bodies and the likely emergence of any groundwater to watercourses situated below the levels of the site.

5.5.35 The residual risk of flooding from artificial sources within the site is deemed to be negligible due to the regular maintenance and checks as part of the operations at the main site.

5.5.36 The FRA has considered ICL Boulby's records of spillages/exceedance events, which show that these occur on average twice every year. Excess water will follow local topography and spill offsite into the adjacent Easington Beck. There are potential flood risk receptors in the downstream area of Easington Beck, principally several properties at Onehams Farm, parts of the settlement of Dalehouse and a caravan park at Staithes. The FRA discusses the results of the modelling work done to predict the potential effects of the existing mine's runoff on these receptors. This hydrological assessment demonstrates that due to the location of the point where runoff from the main site enters the downstream catchment, the timing and duration of any spills, and the elevation of the potential receptors identified, the presence and operation of the site does not lead to unacceptable increases in flood risk.

5.5.37 The FRA goes on to present potential drainage improvement/mitigation measures:

- Additional attenuation storage added to the drainage system;
- Increasing the pump capacities which would increase the capacity of the drainage system; and

- The creation of storage features on Boulby Gill between the interceptor pit and Easington Beck.

Surface Water

5.5.38 The surface water hydrology of the application area comprises four catchment areas which outfall to the sea at Skinningrove, Staithes, Runswick Bay and Sandsend. Closest to the Mine Site, the main water courses are the Easington Beck, flowing through the valley just to the south, and the Roxby, Dales and Mounter Becks which join to form Staithes Beck at Staithes. To the north, the catchment comprises a number of streams which join the Kilton Beck at Loftus and then drain into the sea at Skinningrove.

5.5.39 Prior to the construction of the mine, three small natural valleys ran through the site providing natural surface drainage. The valleys were partially filled and the ground levelled during mine construction with the streams from these valleys incorporated into the mine drainage system via culverts. The Mine Site is bunded so all water captured by the operational area surface and sub surface drainage systems is directed to the interceptor pit which is then pumped into the mine effluent stream which is disposed of at sea. The interceptor pit helps to collect and separate silt and dirt from the collected surface water and pollution control measure son site mean that any contaminants are at very low levels. Further dilution of the surface waters from the seawater and brine used to create the effluent stream mean that any remaining pollutants are at inconsequential levels.

5.5.40 No change is proposed to the drainage system and so all surface water run off would continue to be directed to the onsite drainage system.

Groundwater

5.5.41 Groundwater inflows from deep aquifers occur into certain areas of the underground workings. This is controlled by pumping the groundwater to the surface, it then joins the effluent stream and is discharged out to sea.

5.5.42 There are several groundwater abstractors from minor, shallow aquifers located within the application area. The Flood Risk Assessment confirms that the minor aquifers in the vicinity will not be in hydraulic continuity with the mine workings due to the presence of significant thicknesses of low permeability strata above the potash seam.

5.5.43 Given the nature of the groundwater and the low permeability of the geology it is considered that there would be no impacts on groundwater, in terms of both quality and quantity, from the continued mining operations. Similarly, it is considered that there is a very low potential for the leaching of salts to groundwater from the salt and potash that would continue to be stockpiled on site.

Hydrology and Hydrogeology Conclusion

5.5.44 The Proposed Development is therefore considered to accord with Development Policies 1 and 2 of the Development Plan, Strategic Policy E, Policy ENV5 and ENV7 of the draft Local Plan, Policies D02 and D09 of the draft Minerals and Waste Joint Plan and Paragraphs 155 and 163 of the NPPF.

Marine Environment

5.5.45 There are no specific policies on the marine environment within the Development Plan, draft Local Plan or Minerals and Waste Joint Plan, as the marine environment general falls outside of the geographic jurisdiction of local planning authorities.

5.5.46 The NPPF requires LPAs to take account of the UK Marine Policy Statement and marine plans and seek to reduce risk from coastal change. The Marine Policy Statement (2011) is the framework for preparing Marine Plans and taking decisions affecting the marine environment. It establishes that the UK's vision for the marine environment is for "clean, healthy, safe, productive and biologically diverse oceans and seas".

Boulby Sand Patch

5.5.47 The Proposed Development would continue to see effluent streams from discharged to sea although this discharge would no longer include any mine tailings material as sylvinite is no longer being extracted and processed. The discharge is therefore proposed to consist solely of brine (from extracted sea water), plus groundwaters pumped out of the mine and treated surface waters and foul water flows from the Mine Site.

5.5.48 The previous tailings discharge pumped out a slurry of the brine effluent and the tailings materials. These materials settled on the sea bed over the Boulby Sand Patch, and ICL Boulby undertook annual monitoring to determine what effects this was having on the benthic communities in this location. This monitoring showed, over many years, that there were no significant effects occurring on the habitats or creatures occupying the Boulby Sand Patch. Now that this tailings discharge has ceased, the build up of material in the Boulby Sand Patch will gradually disperse with the movement of the tides until the sea bed returns to a more natural state.

5.5.49 As no significant effects were taking place during the discharge of the tailings, and the discharge going forward will simply be brine, no significant effects will take place in the future due to the Proposed Development.

Sea Water Quality

5.5.50 The coastline in the vicinity of Boulby lies within the North Yorkshire and Cleveland Heritage Coast and attracts thousands of visitors every year. Maintaining the quality of bathing waters is therefore an important consideration. Within the Heritage Coast, there are designated bathing beaches are Runswick Bay, Sandsend and Robin Hood's Bay. However, due to the Proposed Development only discharging brine to the sea, no effects on the water quality of the sea will occur.

Commercial Fishing

5.5.51 The North Yorkshire Coast still represents an important area for many fish species including cod, whiting, sole salmon and sea trout which are all caught commercially. The wider area is also important as a nursery for many other species which spend their early years in inshore waters e.g. plaice, turbot and brill. Both crab and lobster are of major commercial importance in the area.

5.5.52 The monitoring work which has taken place by ICL Boulby on the tailings discharge and effects on marine creatures, has never found any evidence that the tailings discharge was affecting the species of interest to commercial fishing. As the tailings discharge is no longer to occur, no future effects on these species will occur.

Marine Environment Conclusions

5.5.53 The Proposed Development is not considered to create any adverse effects on the marine environment and therefore the proposal is considered to accord with the Marine Policy Statement and the NPPF.

Subsidence

5.5.54 The underground extraction of minerals inevitably has some subsidence effects which are apparent at the surface. Subsidence caused by Boulby Mine has been monitored on a regular basis since 1976 and so a good knowledge of the subsidence patterns has been established. The results of the subsidence monitoring indicate that the area affected by the workings is wide but that, as a result, the ground subsides in a uniform manner and that the possible effects of potentially damaging differential settlements and lateral strains are of a very low magnitude.

5.5.55 The subsidence which has occurred since 1976 is predominantly a result of the extraction of sylvinite. Sylvinite has more elastic properties than the salt or polyhalite which is also extracted, and the voids left behind by its extraction slowly close up over time. The slow rate of this closure, and the control measures that are in place through the mining activities to further reduce the closures, mean the subsidence at the surface is uniform and low. No further sylvinite extraction and take place and while some of the sylvinite voids will continue to close up over time, there will also be some of the major roadways and voids kept open through engineering solutions which will continue to restrict subsidence at the surface form these workings.

5.5.56 The rock salt and polyhalite materials which are worked have very different qualities to the sylvinite. These are much harder seams with less elastic properties than sylvinite. These properties, plus the methods of working, mean that the risk and rate of any subsidence is vastly reduced. The extraction to take place within the Proposed Development, plus the continued management of the sylvinite subsidence, will mean the rates of subsidence occurring at the surface will be no worse than is currently seen, and may even improve over time.

5.5.57 The mining method used, the depth of working and the geological conditions combine to reduce the extent of the effects from subsidence such that the effects are not significant. Should a new planning permission be granted, subsidence would continue to occur, but as the mining method, depth of working and geological conditions would remain similar to the current position, then subsidence would not result in unacceptable environmental impacts.

5.5.58 The Proposed Development is therefore considered to accord with Development Policy 1 of the Development Plan, Policy ENV6 of the draft Local plan, Policies D02, D11 and M22 of the draft Minerals and Waste Joint Plan and Paragraphs 170 and 178 of the NPPF.

Recreation and Leisure

5.5.59 The Mine Site is located on the boundary of the National Park and occupies a gateway position to a major tourist area. The National Park attracts around 7million visitors each year. The major attractions are the scenery, opportunities for outdoor activities, the rich and varied cultural heritage and the coastline and beaches. A large proportion of the Park's economic activity comes from sectors that supports these activities and recreational and leisure pursuits represent major components of the spend of visitors to the National Park. Adverse effects on opportunities for recreation and leisure pursuits have the potential to affect the attractiveness of the National Park to visitors. The impacts of the Proposed Development on recreational facilities is also important given that the second statutory purpose of National Parks is to promote opportunities for the understanding and enjoyment of the special qualities by the public.

5.5.60 The coastline in the vicinity of the Mine Site forms part of the North Yorkshire and Cleveland Heritage Coast. The Cleveland Way and the England Coastal Path long distance footpaths pass across Boulby Cliffs, on the edge of ICL Boulby's landholdings for the sea discharge pumping house and around 150m to the north of the main Mine Site entrance. There are no public rights of way within the operational area of the Mine Site, although a handful of public rights of ways run through the non-operational land in the ownership of ICL Boulby around the Mine Site (in the

woodland and agricultural areas). All of these public rights of way will remain open as part of the Proposed Development.

5.5.61 A key factor in establishing any potential for impacts on tourism and recreation is the extent to which any adverse effects on the physical environment (due to landscape changes, changes in visual amenity, noise, dust etc) may reduce the attractiveness of individual destinations or attractions thereby potentially resulting in a reduction in visitor or user numbers and expenditure.

5.5.62 The National Park Management Plan identifies that outdoor activities such as walking and cycling are amongst the most popular recreational activities undertaken by visitors. Guidance from SNH (Handbook on EIA 2013) notes that factors which might lead to changes in recreational behaviour include loss, closure, or diversion of access routes; obstructing access routes; enhancing access; reduction or enhancement in amenity and changes in the setting of recreational receptors. The Guidance identifies potential impacts from mineral extraction on open air recreational uses in the countryside as being from noise, dust, vibration, visual impact and the closure or diversion of linear facilities for long periods of time, noting that the effect of these impacts are generally reversible.

5.5.63 There would be no direct impacts on any recreation or leisure facilities as a result of the Proposed Development.

5.5.64 The ES considers the indirect effects of the Proposed Development on Public Rights of Way, the Cleveland Way and the England Coast Path, National Cycle Route 1, the Heritage Coast and bathing beaches. There is an inherent difficulty in this assessment as there is no real way of knowing how the public would use these features if Boulby Mine was not there. The Cleveland Way, England Coast Path, National Cycle Route 1 and Heritage Coast were all established after Boulby Mine was developed, with ICL Boulby allowing Sustrans to use part of their landholding for the purpose of creating National Cycle Route 1. Other features such as the bathing beaches have remained popular recreational features over the 50 years of construction and operation of the Mine. In addition, records do not exist to show how popular recreational activities in this area were prior to the development of the Mine, or how the previous ironstone workings on the site may have affected recreational activities.

5.5.65 If Boulby Mine was removed from the site, it is however clear that the landscape would see improvements and the scenic qualities of the locality would improve. Users of the bathing beaches are unlikely to see any real difference when they are on the beaches themselves as Boulby Mine is not visible from these locations. The beneficial effects on the area though would see it become more attractive to recreational users although it is impossible to quantify whether this would lead to any increases in recreational activity as a result. A restored site would provide opportunities for increasing public access through the development of a number of paths across the restored site, linking the wider Public Rights of Way network with the Heritage Coast. However, these would replicate existing Public Rights of Way links and provide locally important links only. There are no other regional or national trails, or other recreational or tourist attractions to link up to in the surrounding area.

5.5.66 The proposed Development is therefore considered to accord with Development Policy 14 of the Development Plan, Policy C04 of the draft Local Plan and Paragraphs 92and 98 of the NPPF.

MDT Conclusions

5.5.67 The information provided within this Planning Statement shows that the Proposed Development would provide a supply of sulphur and potassium fertiliser products that would be exceptional in terms of meeting a UK need, in that it could theoretically supply all of the UK's requirements for both products and is likely to supply at least 45% of the UK sulphur fertiliser need and 55% of the UK's potassium fertiliser need. In addition, Boulby expect to supply around one third of the rock salt needed in the UK for road de-icing purposes.

5.5.68 The Proposed Development is considered to provide economic benefits which will be in the national interest. It will support local jobs, both through direct employment and indirect benefits, rising from around 1,300 now to over 2,100 by 2023. Direct employment from the Mine currently pays out salaries averaging £58,000 a year, and with 85% of employees living with 12 miles of Boulby Mine, the Mine provides high paid, skilled jobs in some of the most deprived areas of the UK. Including wages, over £1.4billion will be paid into the local economy over the Proposed Development period.

5.5.69 These points are considered to be clearly in the public interest and provide an exceptional case as to why there is a need for the development.

5.5.70 It is not considered that are any viable UK based alternatives to the need that Boulby Mine would meet, with the Woodsmith Mine focussing operations on the international market and the being no appreciate sites located outside of the National Park boundary for a mine of this scale and nature. Whilst material is currently supplied by imports it is not considered that the continuation of such a heavy reliance on imported material represents a sustainable future supply, especially given where the sulphur products come from.

5.5.71 Whilst the Mine does have an adverse environmental effect due to the scale and nature of operations, many of the effects that it does create are not significant in EIA terms due to the location, topography and operational practices in place. Mitigation measures are also proposed to reduce the visual impact of the Mine and promote further beneficial effects on biodiversity in the local area. Boulby Mine has made substantial improvements to its carbon emissions since the last application in 1996 and the company is committed to continuing this improvement in future years to help with climate change.

5.5.72 It is not considered that the adverse environmental effects which have been identified within the Environmental Statement are such that they outweigh the benefits that are provided by the Proposed Development. The Proposed Development is considered to be in the public interest and to be an exceptional circumstance that would justify a planning permission being approved within this national Park location.

5.6 Sustainable Development and Climate Change

Energy Use and Carbon Emissions

5.6.1 The principal matter which will affect the consideration of sustainability and climate change from the Proposed Development is the energy needed to operate Boulby Mine. The underground extraction, transportation of minerals from the working face to the surface, pumping of water from the mine, ventilation of the mine and processing of the minerals at the surface all require large amounts of energy. However, over time ICL Boulby have been able to reduce the amount of energy used as plant and machinery is replaced or upgraded to newer and more efficient models, working practices are refined to more efficient practices and energy saving measures are introduced across the Mine Site.

5.6.2 Annual energy consumption by Boulby Mine is predicted to rise from 204 GWH per year to reach a maximum of 372GWh per year when the 3 million tonnes a year extraction target is reached in 2033, before dropping to around 170GWh per year from 2033 to 2048 as processing switches to Teesside. However, this does not take into account any improvements to energy efficiency which may occur over time from improved technology and more efficient working practices being developed. This energy consumption would consist of:

- Electricity use for the operate the underground and surface pumps, and the ventilation and fans which service the underground working area;

- Electricity use for the extraction of polyhalite and salt a year, and send this to the surface;
- Electricity use for the processing of minerals to create Polysulphate and PotashpluS products;
- Gas use for the processing of minerals to create Polysulphate and PotashpluS products;
- Gas use for generating electricity from the CHP plant.

5.6.3 In 2020 the electricity use would generate around 256 tonnes of CO_2e per GWh used[12]. This figure is projected to drop to 41 tonnes per GWh by 2035[13] as the electricity generation sector rapidly decarbonises. From the predicted electricity requirements of Boulby Mine and the conversion factors available, it is estimated that the Mine would use an average of 10,167GWh of electricity per year over the Proposed Development period.

5.6.4 Gas is predominantly used by the processing facilities to make PotashpluS and the generation of electricity from the CHP plant. Gas as fuel gives rise to 184 tonnes of CO_2e for every GWH used. No projections are available for how this figure may change in the future, so the same figure has been used for each year of the Proposed Development. This would equate to 29,582 tonnes of CO_2e arisings of reach year proposed.

5.6.5 For comparison, this is 35% lower than if all of the processing facilities stayed on Boulby Mine which would see an annual figure of 45,791 tonnes of CO_2e arising from Boulby Mine.

5.6.6 Core Policy D of the adopted Core Strategy and Policy ENV8 of the Draft Local Plan both require that 10% of carbon emissions generated by large developments should be displaced by on-site renewable energy generation. A 10% displacement of Boulby Mine's predicted energy requirements would require a maximum of around 4,579 tonnes of CO_2e to be displaced per year by the use of renewable energy technology if processing stayed on Boulby Mine, but this drops by 35% to 2,958 tonnes in the Proposed Development.

5.6.7 The movement of the processing activities will not however simply displace this energy requirement to the new Teesside plant. The existing processing facilities at Boulby Mine have been developed from the previous MOP processing facilities and are therefore not as efficient as they could be for the current processing activities. The new Teesside plant would be a bespoke, modern design introducing efficiencies from using up-to-date equipment which is being used for the purposes it is designed for. As a comparison though, the improvements which were made to the processing of sylvinite and production of MOP from 1996 resulted in energy savings of around 35% (241GWh of gas equivalent on 1996, to 158GWh in 2012[14]). Similarly, the wider ICL group which the company is a part of can show around a 20% reduction in the greenhouse gas emissions from 2008 to date through the use of more efficient working practices and a switch to fuels producing lower greenhouse gas emissions.

5.6.8 Core Policy D and Policy ENV8 are both designed so as to reduce the CO_2 emissions of development within the National Park. Whilst the policy primarily seeks to do this by the use of on-site renewable energy generation to cover 10% of the energy needs of the development, the supporting text for both policies acknowledges that for some major developments, it may not be possible to achieve this in a way which is environmentally acceptable due to the scale of the renewable energy generation facilities themselves. In such cases, it is acknowledged that other ways to achieve the aims of the policy can be considered, or the policy requirement could be varied in exceptional circumstances.

[12] BEIS and DEFRA, UK Government GHG Conversion Factors for Company Reporting, 2019.
[13] BEIS, Updated Energy and Emissions Projections 2018, April 2019.
[14] 2012 has been used as a comparison year as it is the earliest year that annual gas usage figures are still available for, and MOP production was still at comparable levels to the 1996 ES, with polyhalite production still being low enough to no unduly affect the figures.

5.6.9 The Proposed Development is considered to be a major development where the ability to provide renewable energy on-site is unlikely to be viable due to the scale of the generation facilities required, as these are likely to have significant adverse environmental impacts in their own right.

5.6.10 As part of their proposals to continue working Boulby Mine for a period of 25 years, ICL Boulby are aware that there will be a need to develop a long-term strategy to reduce energy consumption and carbon emissions in order to adhere to the UK's long-term commitment to move towards a carbon neutral society. This complies with both ICL Boulby's company strategy and that of the wider ICL group. ICL Boulby are working towards the ISO 50001 accreditation over the next few years and there are a number of different options available to the company which will help drive savings on energy use and carbon emissions. Given the energy savings and the subsequent savings on carbon emissions that Boulby Mine have achieved over the past 25 years, and the commitments from both ICL Boulby and the wider ICL group to continue to drive down energy use it is expected that the 10% reduction in CO2 emissions will be able to be met from a number of measures which can be implemented at the Mine. It is proposed that the exact details of these measures are confirmed during the planning application determination and secured by appropriate conditions or Section 106 agreement clauses.

5.7 National Park Purposes and Special Qualities

5.7.1 Two important material considerations in the determination of the Proposed Development are the effects on the National Park Purposes and the Special Qualities of the National Park

Statutory Purposes

5.7.2 The National Park has statutory purposes:

- To conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park;
- To promote opportunities for the understanding and enjoyment of the special qualities of those areas by the public;
  - And in so doing the Authority has a duty to seek to foster the economic and social wellbeing of local communities within the National Park.

5.7.3 The ES shows how the Proposed Development would see the existing levels of natural beauty and cultural heritage within the National Park maintained, and then enhanced over time as the phased deconstruction activities take place and operations at the Mine Site are moved to Teesside. The wildlife of the National Park will also be enhanced by the Proposed Development, through the environmental measures that are proposed to increase habitats and species in the areas around the Mine Site. The proposed Development will also have no detrimental effects on the ability of people to enjoy the National Park, with no additional road transport being proposed and no Public Rights of Way or recreational routes significantly affected. Th effect which the Proposed Development would have on the special qualities of the National Park are set out below.

Special Qualities

5.7.4 The special qualities of National Parks are identified within the North York Moors National Park Management Plan and Core Policy A of the Development Plan confirms that the planning policy of the National Park seeks to further National Park purposes whilst conserving and enhancing the Park's special qualities. Development Policy 1 then outlines a number of principles that must be met in order to conserve and enhance the special qualities of the National Park.

5.7.5 The following paragraphs assess the Proposed Development against the special qualities of the NYMNP both during the operational phase but also on decommissioning/restoration.

5.7.6 Special qualities 1 and 2: great diversity of landscape; sudden dramatic contrasts associated with this. The LVIA identifies that there will be significant adverse effects on this special quality, but this will be restricted to an area of the National Park within 2km of the Mine Site. It is therefore not considered that the Proposed Development would have an inappropriate affect on this special quality when the National Park is considered as a whole.

5.7.7 Special qualities 3 and 4: wide sweeps of open heather moorland; distinctive dales, valley and inland headland.

5.7.8 There would be no loss of heather moorland as a result of the Proposed Development and the visual effect on these areas of the National Park would be occasional and minor. No significant effects have been identified on this special quality in the EIA.

5.7.9 Special qualities 5 and 6: an abundance of forest and woodland; ancient trees and woodland rich in wildlife.

5.7.10 There are a number of woodlands in the vicinity of the Mine Site, mainly comprising wooded valleys running down towards the coast. Newton Gill Wood extends to the southwest, Boulby Mine Wood extends to the south and east as far as Easington Beck, and Long Ridge Lane Wood extends further east between Easington Beck and Long Ridge Lane. Some of the woodland adjacent to the Mine Site is ancient and semi natural woodland and ancient replanted woodland.

5.7.11 The Proposed Development would not result in the loss of any forest, woodland or ancient trees. And the restoration strategy for the mine site provides further opportunities to enhance appropriate woodland. The Proposed Development would therefore make a positive contribution to these special qualities maintaining existing woodland and augmenting tree cover in the area in the longer term as the new planting matures and following site restoration.

5.7.12 Special qualities 7 and 8: special landforms from the ice age; exceptional coastal geology.

5.7.13 No geological landscape features would be affected by the Proposed Development. Boulby Quarries SSSI is located approximately 645m to the north west of the mine site. This has been designated because of its geological interest and value, providing a series of highly important cliff-top exposures which cut through the base of the mid-Jurassic Ravenscar Group into Upper Lias deposits of the Lower Jurassic Period. However, given the nature of the designation and the distance from the mine site is considered that there would be no effect on this SSSI nor on these special qualities. In addition, the coastal monitoring work undertaken by ICL Boulby over many years shows that any effects of subsidence caused by Boulby Mine's operations cannot be discerned from the natural process which cause erosion on the same coastal features. There is therefore no evidence available which shows that Boulby Mine's previous or proposed operations will have any significant subsidence effects.

5.7.14 Special qualities 9 and 10: majestic coastal cliffs and sheltered harbours; distinctive coastal headlands.

5.7.15 The nature of the topography in this part of the National Park means that the Proposed Development would not generally be visible for the coastal side of the cliff or from the sheltered harbours. The visual impact of the Mine Site from the coastal headlands and cliff tops during the Proposed Development will be very localised to an area close to the Mine Site itself. None of these affects are identified as being significant in the EIA.

5.7.16 Special qualities 11 and 12: a special mix of upland, lowland and coastal habitats; a wide variety of wildlife dependent on these.

5.7.17 The Proposed Development would not see any significant effects occur on protected species or habitats. In addition a range of environmental measures would be introduced to improve the habitats around the Mine Site for use by those species of interest. Restoration of the mine site then provides further opportunities to enhance habitats and ecological interest.

5.7.18 Special qualities 13 and 14: settlements which reflect their agricultural, fishing or mining past; locally distinctive buildings and building materials.

5.7.19 There would be no direct effects on any element of the built environment. The Proposed Development has the potential to affect the setting of locally distinctive buildings and settlements through the retention of the Mine Site buildings and plant for a further 25 years. In terms of listed buildings and conservation areas, there would be no significant adverse effects given the distances from the Mine Site and the nature of the setting of the listed buildings.

5.7.20 Special qualities 15 and 16: long imprint of human activity; a wealth of archaeology from prehistory to the 20th Century.

5.7.21 No new buildings or other development is proposed that is expected to disturb below ground archaeology. There would be no loss of any designated or undesignated archaeological features as a result of the Proposed Development. The nearest Scheduled Ancient Monuments (SAM) are Boulby Alum Quarries and Works, approximately 820m to the north west and a moated manor and medieval settlement at Easington, approximately 1.16km to the east. Given the distance between the Mine Site and these SAMs, there would be no significant effects on their setting as a result of retaining the Mine Site for a further 25 years. In the longer term, site restoration would provide opportunities for increasing the interpretation of the industrial heritage of the area

5.7.22 Special qualities 17 and 18: a rich and diverse countryside for recreation; an extensive network of public paths and tracks.

5.7.23 No Public Rights of Way or other recreational routes would be directly affected by the Proposed Development. In the longer term, site restoration provides the potential to increase public access opportunities through the provision of public footpaths through the Mine Site and connections to the wider Public Rights of Way network.

5.7.24 Special qualities 19 and 20: strong religious past and present; ruined abbeys and ancient churches.

5.7.25 These special qualities are concerned with the religious heritage of the National Park. The Proposed Development would have no effect on ruined abbeys or ancient churches. Given the absence of heritage features with any religious connotation within the area of the Mine Site, the Proposed Development would not impact on peoples understanding and enjoyment of the National Park's strong religious past and present.

5.7.26 Special qualities 21 and 22: feeling of remoteness; a place for spiritual refreshment.

5.7.27 Section 2.4 of the Management Plan states that "the sense of remoteness engendered by the extensive, open, undeveloped spaces is a valued quality, contributing to people's enjoyment of 'getting away from it all'". A lack of man-made development, open landscapes located away from centres of population are considered to contribute to a perception of remoteness.

5.7.28 Given the location of the Proposed Development, in particular the Mine Site where all the surface activities would take place, on the fringe of the National Park adjacent to one of the main roads in the area, it is not considered that the area is particularly remote when compared to other locations within the National Park.

5.7.29 Special qualities 23 and 24: tranquillity; dark skies at night and clear unpolluted air.

5.7.30 The CPRE has defined tranquillity as "the quality of calmness experienced in places with mainly natural features and activities, free from disturbance from man-made ones". The CPRE undertook a national mapping of tranquillity based on a complex modelling process involving a wide range of factors based on what can be seen and heard. This includes positive factors such as remote and wild landscapes, streams and rivers and native trees, and those that are considered to be negative such as urban development, people, powerlines and traffic noise. Within the North York Moors National Park, the less tranquil areas broadly correlate with the road network and the fringes which are close to urban areas. The sense of tranquillity at the site of the Proposed Development is not as strong as the more remote parts of the National Park, as shown by the tranquillity map within the Management Plan (page 38).

5.7.31 The Management Plan identifies that tranquillity can be affected by increases in road traffic. There is no proposal to increase the number of HGV movements and the majority of the minerals would continue to be transported by rail.

5.7.32 No intensification of use or additional processing activities are proposed that would increase noise or general disturbance. The Proposed Development would not therefore result in a decline in the level of tranquillity. Rather, the existing situation - buildings, plant, processes and transport movements associated with an industrial activity - would be prolonged and therefore so would the level of general disturbance and man-made activities, factors which it is acknowledged can affect people's perception of tranquillity.

5.7.33 Operations at the mine site are on a 24-hour basis and so lighting would be required. Although the lighting from the site would not cause significant effects to residential amenity, there is the potential for the lighting to affect the ability for residents and visitors to enjoy the 'dark sky'. However, there is no proposal to increase the amount of site lighting and any lighting mitigation that can be proposed? Furthermore, the Mine Site (where the lighting would be) is on the fringe of the National Park which, as can be seen from the maps available on the CPRE website, experiences the influence of night lighting from outwith the National Park. However, it is acknowledged that the Proposed Development would result in the continuation of a source of lighting in the area for a further 25 years, which would extend the period over which this part of the National Park experiences some sky glow and therefore a potential for diminution of the dark sky.

5.7.34 There are controls in place through the environmental permitting process to control the emissions from the various processes. These measures would continue to be in place during the extended period of operations, thus ensuring that any emissions are within acceptable limits.

5.7.35 Special qualities 25 and 26: distinctive skills, dialects, songs and customs; strong sense of community and friendly people.

5.7.36 It is not considered that the Proposed Development would have any effects on the cultural traditions of the National Park during the operational or decommissioning/restoration phase. A local business with a large, skilled workforce would provide a range of attractive jobs to local people, which could see more people remain in local communities and help to retain local customs and culture.

5.7.37 Special qualities 27 and 28: place of artistic, scientific and literary inspiration; a heritage of authors, artists, scientists and explorers.

5.7.38 It is not considered that the Proposed Development would have any effects on any natural or built environment features with an artistic, scientific or literary association during the operational or decommissioning/restoration phase. The continuation of mining operations would enable the Science and Technology Facilities Council's underground laboratory project to continue with its research work, so positively contributing to the scientific heritage of the National Park.

Conclusion

5.7.39 The statutory purposes of the National Park are fundamental to the ongoing success of the National Park as a special place for people to live, work and visit, and the special qualities of National Parks are important in identifying what makes each one special. In undertaking the two statutory purposes, the National park Authority also has a duty to seek and foster the economic and social wellbeing of local communities within the National Park. The ES shows how the natural beauty, wildlife and cultural heritage of the North York Moors National Park will be conserved and enhanced by the proposed Development, how it will not affect the Special Qualities or the ability of people to enjoy them and at the same time provide a significant economic boost to the local economy and it's communities which would be lost if the proposals were refused. It is therefore considered that the Proposed Development is consistent with National Park purposes.

6. Conclusions

6.1.1 This Planning Statement has identified and assessed the Proposed Development against the Development Plan, relevant emerging planning policies, national planning policy and National Park purposes.

6.1.2 The assessment in Chapter 5, and the accompanying ES, establish the environmental acceptability of the Proposed Development in principle, but also regarding more detailed considerations relating to ecology, cultural heritage, transport, flood risk, ground suitability and residential amenity, having regard to the provisions of the Development Plan as a whole and the NPPF.

6.1.3 The Proposed Development represents a major development within the North York Moors National Park and the assessments acknowledge the landscape and visual impact that the Mine Site has and that, whilst mitigation is proposed, the effects are still significant. However, it is also established that there are exceptional circumstances and an overriding public interest in granting planning permission for the Proposed Development. The Proposed Development is shown to be in supported by Core Policy E of the Development Plan, and to accord with the other relevant policies of this Plan, it is also considered to accord with the draft North York Moors National Park Local Plan, draft Minerals and Waste Joint Plan and to be consistent with the NPPF. The proposed Development has been screened out of a HRA and due to this, and the accordance with policy, therefore benefits from the presumption in favour of sustainable development in paragraph 14 of the NPPF.

6.1.4 Paragraph 172 of the NPPF states that great weight should be given to conserving and enhancing the landscape and scenic beauty, wildlife and cultural heritage in National Parks. It goes onto say that applications for major development in National Parks should be refused other than in exceptional circumstances and where the development is in the public interest. The assessment in Chapter 5 shows that the Proposed Development does present exceptional circumstances and that it would be in the public interest, and also that the value of the benefits which would arise would outweigh the adverse effects created.

6.1.5 Paragraph 203 of the NPPF recognises that minerals are essential to support needs of the country and Paragraph 205 states that great weight should be given to the benefits of minerals extraction, including to the economy. The NPPF also identifies both polyhalite and salt as minerals of national importance. Chapter 5 sets out the national need for the minerals to be extracted and the benefits to both the local and national economy that would result.

6.1.6 In conclusion, and based on the findings of this Planning Statement, the Proposed Development is supported by the Development Plan and it accords with other material considerations including emerging local planning and national policy. It is therefore submitted that the planning assessment provides justification for the granting of planning permission.

Appendix A
Restoration Concept

Project No. 2274

CLEVELAND POTASH LTD, BOULBY MINE

Restoration Proposals

Version: No. 2

Date: 17 December 2012

Royal Haskoning DHV
Marlborough House
Marlborough Crescent
Newcastle upon Tyne
NE1 4EE
Tel: 0191 211 3256
Web: www.royalhaskoningdhv.com

Estell Warren Ltd
5B Chevin Mill
Leeds Road
Otley, West Yorkshire
LS21 1BT
Tel:01943 464384
E-mail: mail@estellwarren.co.uk
Web: www.estellwarren.co.uk

Cleveland Potash Ltd
Boulby Mine
Loftus
Saltburn-by-the-Sea
Cleveland
TS13 4UZ

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1. Introduction

Boulby Mine lies midway between Easington and Staithes within the Borough of Redcar and Cleveland on the North Sea coastline. The site is located within the North York Moors National Park and operates under planning permission NYMR/003/0043B/PA (with an accompanying Section 106 Agreement dated 8 April 1998) as granted by the North York Moors National Park Authority (NPA). The permission is due to expire on 6 May 2023, with Condition 5 requiring the site to be restored in accordance with details to be agreed under Condition 6 by 6 May 2025.

Condition 6, requires:

Within two years of the date of this permission a detailed scheme for the restoration of the whole surface of the mine site shall be submitted to the National Park Authority for its written approval. The scheme shall make provision for the removal from the surface of the mine site of all buildings, plant, machinery, roadways and surfaced areas, the regrading of the site to specified contours and the restoration and after-care of the whole site. The scheme shall provide for such steps as may be necessary to bring the restored site to a condition suitable for agriculture and nature conservation after-use including the planting of woodland and hedgerows. Thereafter the site shall be restored in accordance with the approved details or in accordance with such other details as may be approved in writing by the National Park Authority.

Condition 12 requires details of 'ongoing landscaping and screening implementation works' to be submitted to the NPA for written approval.

The extent of the site that is covered by the above permission is shown on Figure 2274.1.

This report sets out landscape restoration proposals which have been prepared to meet the requirements of Condition 6.

Outline details of proposed landscape screening works, which form advanced parts of the overall site restoration measures, are included in this report. These will be supplemented in due course with full details (eg planting plans) to be submitted to the NPA under separate cover. Outline details of overall implementation methods are provided in this report.

This report has been prepared by Estell Warren Ltd, acting as sub-consultants to Royal Haskoning DHV on behalf of Cleveland Potash Ltd (CPL), operators of the mine.

2. Existing Site

The existing site is considered in two parts (as shown on Figure 2274.1):

- The operational mine area, including surface buildings, processing plant, winding towers, access roads, parking etc extending to 31.8ha

- Land surrounding the operational mine, within the ownership of CPL and extending to a further 90.6ha directly around the operational mine and 16.4ha north east of the A174 near Red House Farm.

In total operational and non-operational areas occupy a landtake of 138.8ha.

Although the planning permission only applies to the operational mine area a holistic approach has been taken with landscape proposals being prepared for areas within the complete CPL land holding.

The mineral railway extends beyond the site boundary to Saltburn but is not included in this exercise.

Operational Mine

The mine is sited on the south side of Rockcliff Hill on a development plateau that lies at elevations mainly between 89-82m AOD and falls gently south eastwards towards the valley of Easington Beck. A screening embankment has been constructed along the north western edge of the site, to a maximum elevation of approximately 108m AOD. Within the surrounding landscape topography rises to 192m AOD at Rockcliff Hill in the north, falls gently south eastwards along the cliff tops north of the site near Red House Farm and falls steeply from the southern operational mine boundary to the floor of Easington Beck at around 30m AOD.

Springs at the foot of Rockcliff Hill feed minor watercourses which drain from north west to south east in culverts below the operational mine site. The northernmost outfall drains to Boulby Gill, the central outfall drains to an unnamed watercourse and the southern culvert directs the Twizzie Gill watercourse under the mine railway, just outside the southern tip of the operational mine area. All watercourses drain to Easington Beck, which lies to the south east of the operational mine and drains in a north easterly direction.

Road access to the mine is directly off the A174 to the north east. The bulk of mine buildings, including chimney stacks, winding towers, processing plant, storage areas, support accommodation and parking are set back from the road frontage and occupy the main body of the site. A railhead occupies the entire north western edge of the site, enclosed by the parallel screening embankment, which lies immediately outside the operational mine boundary. The operational mine site is enclosed by a chainlink and barbed wire security fence along its entire perimeter.

Within the operational area little scope exists for establishing permanent landscape works, due to the intensive use of the mine head area and the need to leave flexibility for accommodation of future development. The exception to this general rule includes areas of steeper ground falling away from the general development plateau down to Easington Beck along the central south eastern boundary and fields on the eastern edge of the site.

The remains of earlier development including the site of Boulby Hall, surface features associated with the Boulby Ironstone Mine and the former Saltburn and Whitby Branch railway have been removed within the footprint of the operational mine.

It is understood that original soils form the mine site have been stripped and placed in the large screening mound to the north west of the railhead. The quantity and condition of stored soils is not known at this stage.

Planning permission has recently been granted for amendments to the site access road and gatehouse area, these have been taken into account during preparation of restoration proposals.

The mine is embarking upon a development programme, which is expected to result in a combination of replacement and new structures within the footprint of the current operational mine area. The full details of these changes are not known at this time. Providing such features remain within the existing operational footprint, as is expected to be the case, they do not need to be taken into account in the proposed restoration scheme. Should future development extend beyond the current operational site, however, it may require amendment of the restoration proposals.

Non-operational Areas

Figures 2274.18, 19 and 20 show photographs of existing features and general character within non-operational areas of the site.

The extensive non-operational areas surrounding the mine head provide a landscape setting for the existing development. These areas show key characteristics of the distinctive local landscape character including a heavily incised landform and extensive large tracts of mature woodland growing within the shelter of valleys to the south and east of the mine. This is contrasted by tracts of open farmland with degraded field boundaries to the north and north west of the mine.

The wider site area is bounded by the A174 along the northern boundary from Ings Farm in the west to Red House Farm in the east. The southern boundary follows the edge of mature woodland on the southern side of Easington Beck valley before crossing the valley, through mature woodland, and returning north west to the A174 along the edge of mature woodland within Twissie Gill and Newton Gill. The southern boundary adjoins pastoral farmland, with small to medium size fields enclosed by hedgerows. The western boundary abuts arable farmland, with larger field sizes and relict hedgerow enclosure.

Separate to the main land ownership, on the north eastern side of the A174, the company also owns a tract of arable farmland located between the A174 and the cliff tops west of Redhouse Nab. This area is characterised by a lack of field boundaries and exposed cliff top setting.

To the north west of the mine topography falls from 155m AOD at the A174 to approximately 100m AOD along the northern toe of the screening mound before rising to 108m AOD along the crest of the mound. The southern face of the mound falls sharply to approximately 89m AOD along the railhead, before falling gradually across the minehead to 82m AOD. Beyond the minehead topography falls sharply again down the northern flank of Easington Beck valley before reaching the valley floor at approximately 30m AOD. Land to the north east of the A174 lies at an elevation between approximately 80-70m AOD, falling gently to the south east.

The site encompasses watercourses along Newton Gill and Twissie Gill in the west, Boulby Gill in the east and Easington Beck in the south, with a further, unnamed, watercourse lying on the northern flank of Easington Beck valley. Natural springs are a characteristic of the local area as noted on older maps, in particular, reference to 'Three Crosses Well' in fields to the north west of the mine. A drain is noted running from north east to south west along the northern toe of the screening embankment, before joining Newtown Gill. A reservoir, associated with the former Boulby Ironstone Mine, remains at the south western edge of the screening embankment.

The large tract of mature woodland running along the western and southern edges of the site includes Newton Gill Wood, Mines Wood, parts of Easington Woods and Low Ridge Lane Wood and Rabbit Hill Plantation. In general, the woodland comprises a mixture of broadleaved native species and planted coniferous woodland, with a variety of age structure, open areas, earth banks, shale cliffs and wet flushes. The woods contain a diverse and interesting ground flora including species-rich areas on former ironstone spoil heaps.[1] Ground flora indicates that parts of the woodland originate from ancient woodland. Dominant tree species include sycamore, ash and … (input from RHDHV phase 1 survey needed).

[1] Report on a Botanical Survey of Boulby Mine Wood (Including Newton Gill Wood), Kenneth Trewren, August 2004

Nature conservation initiatives have been undertaken in the woodlands and the area is used for educational and nature trail purposes. [2]

Land in the north west area of the site comprises farmland mainly in arable use with gappy and eroded hedgerow boundaries. A wide stream (assumed to be fed by springs at the foot of Rockliff Hill) separates arable fields from the screening mound, which is laid to pasture. An area of dense stunted woodland and scrub lies at the northern tip of the site, adjacent to the A174, in the location of the former Boulby Ironstone Mine surface operations. The Boulby Mine Clay Pigeon Shooting Club is located within this woodland.

Land at the north eastern edge of the site, between the mine and A174, is in pastoral use, interspersed with fields that have been planted previously for visual screening purposes. Screen planting to the north west of the site access road is reasonably well established but contains incongruous conifer species. Screen planting in fields to the south east of the site entrance (referred to as 'Red House Field') is poorly established and incongruous, with tracts of an unknown, orange-stemmed willow cultivar remaining but little or no evidence of native trees and shrub species which should be present. [3]

Public access is possible into southern and western areas of the site, outside the operational mine footprint, with public footpaths running along Easington Beck valley and up Twissie Gill/ Newtown Gill to the A174 opposite Ings Farm. Footpath 504 (Easington) is currently subject to a minor diversion order but will continue to form a link northwards from the Easington Beck footpath system to the A174 near the mine entrance. The Cleveland Way National Trail runs from west to east along the cliff tops through the separate area of site which lies north of the A174 near Redhouse Nab. A further footpath links the Cleveland Way to the A174 near Boulby Grange. Footpaths within the site are well connected to the wider public right of way network along the Easington Beck valley to the south, across Rockliff Hill/ Boulby Hill to the north and along the coast to the east.

Surface remains and earthworks of the former Grinkle Ironstone Mine and associated incline up to the Saltburn and Whitby railway can be found in the Easington Beck valley. A former reservoir, associated with the Boulby Ironstone Mine, remains at the western edge of the operational mine site. Site history is discussed further below.

3. Site Context and Local Conditions

Please refer to Figures 2274.2 – 2274.8.

Landscape Character (including topography, vegetation cover and land use)

The site is located at the northern edge of the North York Moors National Park, approximately 400m south of the North Sea coastline between Staithes and Easington. Local landscape character is identified as being 'Coast and Coastal Hinterland, 4a Boulby – Whitby'[4]. Key landscape characteristics for this area comprise:

- Undulating or rolling coast and coastal hinterland underlain by sandstones and mudstones. Deposits of boulder clay on lower lying land gives rise to intensively farmed areas;

- Elevated areas allow long distant views across the area and out to sea;

[2] INCA information needed
[3] 1:2500 scale plan labeled 'Boulby Potash Mine', Tilhill Economic Forestry, 20 October 1998
[4] NYMNP Landscape Character Assessment, December 2003

- Broad bays interspersed with rugged indented lines of high crumbling or slumping cliffs. The cliffs support features of considerable botanical interest and a variety of nesting seabirds. The cliffs are renowned for their geological and fossiliferous exposures. Quarries and mines within the cliffs add cultural interest. The coastal zone to the north of the A174 road is part of the North Yorkshire and Cleveland Heritage Coast and a Regionally Important Geological and Geomorphological Site (Core Policy C, NYMNPA, Local Development Framework);

- Inland areas include mainly arable farmland, interspersed with pasture and forestry plantations;

- Steeply incised and winding minor becks flow towards the coast. Becks frequently occur in pairs, following close and parallel courses;

- Beck valleys are often densely wooded and contrast sharply with the openness of the farmed landscape;

- Farmland is predominantly arable, interspersed with pasture and occasional plantations. Field patterns are regular, divided by a mixture of fences or closely trimmed hedgerows that are often thin, gappy and windblown with very occasional trees; creating a bleak and open appearance. Field boundaries have been removed entirely in certain areas. Around certain settlements a pattern of historic strip fields remain. There are small patches of scrub, bracken and upland heath;

- The busy A174 road traverses the landscape, often on ridgelines and very open locations where it has a significant effect on the area. A network of B roads link settlements; minor roads often include very steep gradients;

- The tall chimneys and structures of Boulby Potash Mine, the deepest mine in Britain, dominate the northern part of the character area.

The above characteristics are clearly represented in the local landscape surrounding and including the mine site.

Views

Estell Warren Ltd undertook a landscape appraisal[5] to determine key views of the site from surrounding local areas:

- Elevated, panoramic views overlooking the entire operational mine from sections of the A174 at Boulby Bank to the north west of site, with the mine being seen against the sweeping backdrop of the Cowbar Nab headland;

- Panoramic, open views from the section of the A174 between Cowbar Farm and Boulby Bank, with the operational mine being seen against the rising backdrop of Rockcliff Hill;

- Panoramic, open views from public rights of way (including the Cleveland Way National Trail) crossing the open cliff top areas between Cowbar and Boulby to the north and north east of site, with the mine being seen partially against rising ground and open skyline;

[5] Boulby Mine, Landscape Appraisal, Estell Warren Ltd, December 2012

- Occasional level views over intervening wooded valleys from Ridge Lane to the south west of site, with upper sections of mine buildings rising above woodland cover. Foreground hedgerows and mature tree cover filters most views and obscures views to lower level mine buildings and floorscape;

- Close range, open views of the mine, including ground level features and clutter, are possible from public footpaths running along Boulby Gill in the east and Newton Gill in the west. Local footpaths in Easington Beck valley are contained within mature woodland cover, with most views towards the site being heavily filtered or completely screened;

- Other rights of way in the local area near Red House Farm in the north east, Twizziegill Farm in the west and across the southern flank of Rockliff Hill in the north provide open views towards the site. Mine buildings are clearly visible in these views but ground level clutter tends to be obscured or too remote to have an adverse effect on view character.

Public Right of Way Network

The site lies within an extensive public rights of way network including south west to north east trending routes along both Easington Beck and Roxby Beck valleys in the south, connecting to routes across Rockliff Hill in the north and the Cleveland Way National Trail running along the cliff tops to the north and north east.

Microclimate

The site lies close to the North Sea on a stretch of coastline which is fully exposed to salt laden winds, including north easterly gales. All areas of the site should be considered subject to a harsh maritime climate, although this is likely to be further exaggerated across the open cliff top section of the site that lies north of the A174. Plant species choice should therefore reflect local microclimatic conditions and existing established vegetation in the area.

Areas of the site lying within the natural shelter of upper sections of Boulby Gill may present better opportunities for woodland growth.

4. Site History

The site lies within an area that is characterised by a rich history of mining and working of the local geology. Commentary below is mostly based on the following publications:

- Boulby Ironstone Mine, Chapman S., Industrial Archaeology of Cleveland, 1997;

- Grinkle Ironstone Mine, Part 1, Chapman S., Industrial Archaeology of Cleveland, 2012;

- Grinkle Ironstone Mine, Part 2, Chapman S., Industrial Archaeology of Cleveland, 2012.

Alum quarrying and processing at the Loftus Alum Works on Boulby Cliff, to the north of the site, began in the 1650's and finished in the 1860's. The remains of this industry are now managed by the National Trust.

Ironstone seams are exposed in cliffs and beaches from Saltburn to Scarborough, providing a source of ore through beach collection in the early days of the local ironstone industry. The

industry first expanded after a thick seam of ironstone was exposed during construction of the Whitby to Pickering railway. This was followed by a search for more accessible deposits resulting in commencement of mining at Skinningrove in 1848 on the Cleveland Main Seam, which outcrops locally in the cliffs at Boulby.

Pre-industrial Landscape

Please refer to Figures 2274.9 and 2274.10.

1846 – 1863 mapping shows the local landscape before large scale ironstone mining activity started. Boulby Hall and its associated access track are present (see further below). A strong woodland pattern, clearly following the shelter created by steep incised valleys, is evident together with a strong post- Enclosure field pattern, of small to medium size fields.

Grinkle Mine

The mine was established by Charles Mark Palmer, to feed the self-sufficient family iron and shipbuilding works at Jarrow. Initially the Palmers mined and shipped ironstone from Port Mulgrave, on the coast, some 3km east of the site, before opening the Grinkle Ironstone Mine in 1875. The Grinkle Mine entered the Cleveland Main Seam via a drift from the northern flank of Easington Beck valley, near the junction of Twizzie Gill and Easington Beck.

Workings within the Cleveland Main Seam extended south to the present day line of the potash mine mineral railway, north to the line of the A174 and north and westwards under the centre of Rockliff Hill, within the Easington Royalty. Easington Beck was diverted into a bypass tunnel and culvert (a structure which remains today) to create space at the mine entrance. Ore was transported to Dalehouse via a 3ft gauge tramway after which it passed underground through the Seaton Drift to Port Mulgrave before shipping to the Jarrow works.

In 1916, during World War One, shipping from Port Mulgrave was stopped and replaced by rail transport via the Saltburn to Whitby branch line. New sidings were constructed opposite the Boulby Ironstone Mine sidings and an electric powered double track incline installed to haul ore wagons up to the 30m higher sidings level. An aerial ropeway transported waste shale to the coast where it was dumped on the foreshore.

The mine closed in 1921 before reopening in 1929 and then closing again in 1930. The Grinkle Park Mining Company went into receivership in 1933 before final closure and dismantling in 1936.

Surface remains associated with the Grinkle Mine have since deteriorated gradually. A collapse of the Easington Beck culvert and subsequent flooding removed part of the former shale mound and repair works, undertaken as part of Boulby (Potash) Mine operations, resulted in the shale mound being spread more evenly across the site, removing earlier surface features. Further surface remains including the sites of the mine offices, engine shed and parts of the mine workshops were covered over during earthworks undertaken in the mid 1980's. Extant remains of the mine include the old Sirocco fanhouse (near Twizzie Gill), occasional retaining walls, exposed shale banks and the concrete hopper associated with the shale aerial runway. Part of Easington Beck remains in culvert, which has collapsed again and is being repaired. The mine drift opening remains but is securely gated for safety purposes.

The proposed restoration scheme would seek to preserve any remaining features of the Grinkle Mine but consideration should be given to removal of the culvert structure and formation of an open channel, to prevent potential long term problems which could arise from culvert blocking or collapse.

Boulby Ironstone Mine

After several false starts, during the mid nineteenth century, the Skinningrove Iron Company established Boulby Ironstone Mine in 1903. Two drifts were driven into the Cleveland Main Seam just below Boulby Banks. Minehead buildings and processing areas, including new sidings, were established on the north side of the Saltburn to Whitby branch line near Twizzie Gill. The mine worked the Cleveland Main Seam to the west of Boulby Grange, under Rockliff Hill, as far as the earlier Grinkle Mine workings, within land owned by the Baker-Baker family who owned and ran the earlier alum workings.

At the eastern extremity of the leased area a powder magazine was built close to the cliff edge. The drift mouths connected back to the minehead area via an inclined tramway running up the hillside to Boulby Bank.

In 1906 'Tin City' was established to the north of the present A174 and just north of the site boundary. 38 semi-detached bungalows were constructed from corrugated iron sheeting on timber frames and concrete foundations. The mine managers lived in the earlier, stone building of Boulby Grange, at the north west end of 'Tin City'.

Following a general fall in Britain's world trade after WW1, and along with the closure of other ironstone mines in the district, Boulby Ironstone Mine also closed in 1921. After reopening in 1923 the mine again closed in 1925 before reopening in 1927, only to close again, permanently, after a further 6 months. The mine was officially abandoned on 2 July 1934.

Following closure of the mine, tenants of 'Tin City' were eventually rehoused and the buildings demolished.

The majority of surface features associated with Boulby Ironstone Mine were removed during construction of the modern potash mine but a concrete lined reservoir remains at the western end of the screening embankment. Earthworks remains associated with the former drift mouth, below Boulby Bank, remain but are now partially obscured by tree cover. Preserved outlines of the bases of six 'Tin City' cottages are believed to remain at the north west end of the settlement, near Boulby Grange. Remains of the powder magazine are evident on the cliff tops but lie well outside the site boundary.

Boulby Hall

Boulby Hall is shown as being present on OS mapping up to at least 1863, with demolition assumed to have occurred when the Grinkle Mines were developed. The site of the hall has since been removed as part of the potash mine development.

Saltburn to Whitby Railway

Construction of the 16 mile Saltburn to Whitby Branch of the North Eastern Railway started in 1871 and was completed in 1883. The line was closed in 1958 and dismantled, before reinstatement of the section west of the site, to the Carlin How railhead, as part of the Boulby Potash Mine development.

Boulby Potash Mine

Post WW2 drilling identified beds of potash and salt lying at depth in the East Cleveland area. Following various proposals in the 1960's the Boulby site was selected and construction work began in 1969, with potash production commencing in 1973.

The potash beds lie between 1.2km to 1.5km below ground and are accessed via two 1100m deep shafts, with roadways and workings extending down to 1400m below ground level, making Boulby the deepest mine in the UK and second deepest in western Europe. The shafts are capped by a pair of unique cylindrical concrete headgear structures, one of which (the rock shaft, used for winding potash and salt to the surface) is currently being replaced on a like for like basis.

The mine is a significant producer of potash, delivering all the UK's domestic potash requirement and exporting around 50% of output. Rock salt is also produced in substantial quantities, as a by-product. Current annual production is in the order of 2.8 million tonnes of potash and 0.75 million tonnes of rock salt. Finished product is taken by train, along the former Saltburn to Whitby branch line, to Tees Dock for shipping to other UK ports and export markets abroad.

The mine workings extend below former ironstone workings and out under the North Sea, covering some 96 square kilometres at present.

The depth of the mine has made it suitable for use in researching dark matter, with the University of Sheffield operating a laboratory at the base of the shaft which houses WIMP (weakly interacting massive particles) detection equipment. DRIFT I and DRIFT II detection programmes have been running at Boulby since 2002. The project is aiming to achieve direct observation of WIMPs, which are currently considered to be the prime candidate for the majority of non-luminous matter, the so-called 'missing mass' throughout the Universe that has been proposed as an explanation of observed gravitational effects on the movement of galaxies. The depth and geology of the mine makes it suitable for the experiment by reducing interference from background and cosmic radiation sources.[6]

Review of Historical Mapping

Figures 2274.11 to 2274.14 show a sequence of broadly dated Ordnance Survey map extracts (taken from the NYCC historic mapping website) which demonstrate the historical development of the site and surrounding area.

1846 – 1863

Buildings are present, including a Manor House, at 'Boulby' (referred to in later maps as 'Old Boulby'), with an access track (Boulby Lane) connecting to the main highway at the foot of Boulby Bank. The map infers that an earlier Boulby Hall must have occupied the site before the present buildings were constructed. Woodland cover forms strong patterns within incised valleys and a small to medium size field pattern is evident. There is no evidence of ironstone mining in the area at this time. Contours are shown falling evenly from higher ground at Rockliff Hill/ Boulby Bank south eastwards to Easington Beck valley.

1889 – 1899

The Grinkle Mine is shown including mine head buildings, an air shaft near Twizzie Gill and tramway connection to the Seaton Drift tunnel to Port Mulgrave. Boulby Lane and some buildings remains at Old Boulby but buildings to the east have been removed and the area is now referred to as 'Boulby Hall (Site of)'. Seaview House has been built west of Boulby Lane. The Saltburn and Whitby Branch of the North Eastern Railway is shown completed.

[6] http://www.hep.shef.ac.uk/research/dm/intro.php

A footpath connects northwards from Grinkle Mine, via Old Boulby and Boulby Bank to the modern village of Boulby and the alum working areas further north. Three Crosses Well and multiple 'springs' are shown across the northern half of the site.

1907 – 1924

Boulby Ironstone Mine is now shown including mine buildings, rail head and tramway connection to the drifts in the north. An engine house is shown north of the main road at Boulby Bank (to the rear of the modern property 'Alandale'), with 'Tin City' and powder magazine structures further to the north. The Grinkle Mine incline connection to the railway is not shown at this stage, suggesting that the map was prepared prior to 1916 (when the incline was installed). Boulby Lane, buildings at Old Boulby and Seaview remain present. The branch railway is also present.

The footpath connection northwards to modern Boulby remains but has been diverted westwards under the Boulby Ironstone Mine tramway.

1930 – 1954

All earlier features remain but additional development is shown at Grinkle Mine including the incline and new railhead connection onto the branch line and new surface buildings south of earlier buildings. The Grinkle Mine air shaft near Twizzie Gill is now shown as a fan house. The aerial ropeway shale tipping route from Grinkle Mine to the coast at Long Sand is now shown, although it was present prior to this date.

Post 1954

Modern changes include the removal of most earlier features including mine surface features, the branch railway, Boulby Lane and buildings at Old Boulby, Seaview and 'Tin City'. The main highway has been realigned and upgraded at The Brows/ Boulby Bank to form the modern A174.

5. Environmental Stewardship Scheme

The two large tracts of farmland within the site boundary, to the north west of the railhead and to the east of the A174, are currently cared for under the Environmental Stewardship Scheme, managed by Natural England. The eastern part of the site, including Rabbit Hill Plantation, Boulby Gill, willow planting areas and farmland west of the A174 and farmland beyond the A174, also falls within the North York Moors Higher Level Stewardship Target Area.

Farmland north west of the railhead

This area is primarily arable farmland and is managed under Entry Level Stewardship (ELS) agreement number AG00365264 by F & LH Jackson. This agreement targets the following biodiversity management operations:

- Looking after historic features
- Looking after hedgerows
- Looking after permanent grassland
- Mixed stocking
- Wildlife friendly grass edges and strips (in arable fields)
- Sowing seed mixtures for insects and birds

Farmland north of the A174

This area is also mainly in arable use and is managed under ELS agreement number AG00328383 by F & LH Jackson. This agreement targets the following biodiversity management operations:

- Looking after ditches and dykes
- Looking after permanent grassland
- Looking after species rich hay meadows and pastures
- Mixed stocking

ELS agreements are for a five year period, at this stage it is not known how long the present agreements will continue to run for.

6. Design Approach and Objectives

For areas within the current active minehead the design approach is to remove the majority of minehead structures and restore the site back to a soft end use. For areas outside the minehead, including tracts of existing woodland and farmland, the design approach is one of retention and enhancement, building on the existing fabric to improve landscape and biodiversity value in the long term.

Based on the site setting, historical context and discussion with CPL and the National Park Authority the following key objectives have been developed to inform the overall design of the restoration scheme:

- Create an undulating landform which is sympathetic to local topographical character and enables culverted watercourses under the mine head to be returned to open channels;

- Create a strong, long-term landscape structure which reflects key local characteristics and contributes to the National Park setting;

- Provide early visual improvement and/ or screening of the site during the operational phase in local views;

- Provide increased site security through use of dense thorny planting to the operational mine perimeter;

- Retain and manage existing biodiversity habitats and enhance through provision of new habitats in restored area, supporting existing initiatives where possible;

- Interpret site history, in particular mining history, and reflect within the scheme design as patterns and earthworks;

- Retain existing heritage features and improve settings where possible through management;

- Retain existing agricultural land uses and consider provision of additional agricultural land within the framework established through historical, landscape and biodiversity influences;

- Explore opportunities for improving connections within the local public rights of way network.

In terms of response to landscape setting and visual context the landscape appraisal[5] identified that the following key landscape characteristics should be incorporated in the preparation of the proposed landscape restoration plan:

- Restore site topography close to pre-mining landforms, including removal or softening of the screening embankment, formation of minor gills along restored watercourses and general softening of the current development plateau;

- Extend woodland cover along the existing Boulby Gill and restored minor gills, to reflect the presence and key local characteristics of mature woodland within incised valleys (as noted along the valleys of Easington Beck and Roxby Beck to the south of site);

- Reinforce and/or restore degraded hedgerow field boundaries to the area north west of the minehead and within the parcel of open farmland north of the A174 near Red House Nab;

- Use tree and shrub species which are local to the area and able to withstand the exposed maritime climate.

In addition, the appraisal identified that interim landscape measures should be implemented ahead of the final restoration works to screen or filter views of the existing site as follows:

- A174 overlooking the site south eastwards from The Brows;

- A174 looking eastwards from the section of road near Red House Farm and the site entrance;

- General screening of low level minehead clutter and activity in views from the north and east.

7. Site Clearance

In general the mine would be closed and made safe in accordance with requirements of the Mines and Quarries Act.

All existing surface structures would be removed with the exception of the concrete winding towers, which could be retained as discussed below.

Foundations would either be removed or left in situ where regrading proposals would enable a minimum cover depth of 1m of new soils to be achieved.

Winding tower and shaft collar foundations would be retained in situ as historic features regardless of whether the winding towers themselves are retained or not.

Shafts would be filled and capped. Culverts running below the site would be uncovered and retained as open channels. Culvert headwalls and settling pond structures would be broken out and replaced with soft construction detailing.

Rails would be removed from the railhead but the stone ballast trackbed would be retained in situ as a historic feature.

All other hard surfaces would be broken out and removed to the full depth of construction except in areas where a minimum of 1m soils cover would be achieved. In these instances

existing surfaces would be punctured or broken up, to aid drainage, and left in situ below soil cover.

All utilities and services would be disconnected at the site boundary and removed from areas within the site.

Potential areas of contamination (eg fuel storage areas) would be checked and remedial work carried out to leave the site in a condition suitable for safe use of a public area.

Care would be taken during site clearance and restoration works to minimise impact on local watercourses, either through escape of contaminants or increased suspended solids. Temporary ponds or surface water holding areas would be constructed as necessary.

8. Proposed Restoration Scheme

Design Template

Historical mapping has been used to develop a basic design template which has then been combined with modern site features and context to help inform the restoration scheme for the site.

Figure 2274.15 shows a template for landscape structure, based on available pre-industrial mapping (1846 – 1863). Field boundaries and woodland pattern are shown, together with changes to the woodland pattern up to the present day. It can be seen that the pre-industrial woodland structure is relatively intact, with a number of modern plantations being added and some small areas of older woodland removed. The impact of site development and modern farming on field boundaries is more evident, with boundaries being removed within the main body of the site and in areas north of the A174.

Figure 2274.16 shows a template for historical site features, including the site of Boulby Hall, the Grinkle Ironstone Mines, Boulby Ironstone Mine and route of the Saltburn and Whitby Railway.

Figure 2274.17 shows key modern features associated with the Boulby Potash Mine including the railhead and shafts.

Restoration Masterplan

Please refer to Figure 2274.18

The end use of the site is proposed as a mosaic of semi-natural woodland and grassland habitats, permeated by pastoral fields with public access.

Existing engineered topography is remodelled to create softer profiles which reflect surrounding landscape character and to enable restoration of culverted watercourses to open channel.

Field and grassland patterns have been interpreted from a combination of 1846 – 1863 mapping and later boundaries associated with the Saltburn and Whitby railway, the ironstone mines and the modern potash mine railhead.

Woodland cover is extended from existing woods within the Easington Beck valley and linked to a strong network of hedgerows, including improved existing boundaries. In combination with existing retained woodland cover this would create a strong landscape structure across the restored site, significantly improving local landscape character.

Existing and new woodland habitats within the overall site boundary would be managed for wildlife and amenity value. Existing and new pasture would be managed as mixed grazing, with the aim of improving sward diversity and wildlife value.

The core of the site contains the locations of former historic features, which would be marked by new earthwork interpretations and overlaid with wildflower grassland. The railhead stone bed and shaft/ winding tower foundations would be retained as physical reminders of the modern potash mine. Interpretation panels would be provided to help visitors understand the rich industrial heritage of the site.

A new public car park would be formed off the existing A174 entrance and connections would be formed to the local public right of way network.

The following habitat extents are proposed within the restoration scheme:

- ...ha existing mixed woodland
- ...ha new native broadleaved woodland
- ...ha coastal scrub and woodland edge zone (including existing area at Boulby Bank)
- ...ha neutral wildflower grassland
- ...ha existing pasture
- ...ha new species rich pasture
- ...ha arable land
- ...km mixed native hedgerow (including incorporation and management of existing remnant hedgerows)

Aspects of the restoration scheme are discussed in more detail below.

Landform & Drainage

The existing potash minehead development plateau would be remodelled to create a series of undulating terraces falling from high ground across the screening mound in the north west to the shoulder of the Easington Beck valley in the south and south east.

The screening mound, immediately west of the modern railhead, would be cut back on its eastern face to create a more varied profile and gentler slopes. The modern railhead would be retained in its current form, at an elevation of approximately 89m AOD. To the south east of the modern railhead, former ironstone minehead development areas would fall gently westwards at regular gradients, allowing earthwork interpretations of earlier mining to be read more easily than would be possible in an undulating landform. The eastern edge of the site would be remodelled at the head of Boulby Gill, creating an indented and irregular interface between the site and Easington Beck valley.

The line of the former incline to Boulby Ironstone Mine would be picked up as a regularised slope cutting across the undulating landform of the remodelled potash minehead area, acting as a reference to earlier ironstone workings on the site. Other historic and industrial heritage features including Boulby Hall, Grinkle Mine incline and railhead, Boulby Ironstone Mine surface buildings and railhead and the line of the former Saltburn and Whitby Railway would be interpreted as a series of ditch and bank earthworks, as discussed further below.

Existing culverts running below the operational mine site would be opened up and reformed as surface channels, running across the new landform and connecting to existing watercourses on the north western flank of Easington Beck valley. The existing wide ditch running along the western edge of the screening mound would be retained in its present

form. New watercourses would be accompanied by a series of permanent ponds and flushes to maximise wildlife value and reduce the rate of surface water runoff from the site.

No landform changes would occur within the areas of existing farmland to the north west of the screening mound and north east of the A174.

Woodland, Coastal Scrub & Hedgerows

Existing semi-natural woodland and plantations running along Easington Beck valley would be extended northwards into the site, along the forks of Boulby Gill, up to and including Red House Field, and wrapping around the former site of Boulby Hall in the centre of the potash minehead site.

Broadleaved tree blocks, within the core of new woodland areas, would give way to dense coastal scrub at the edges, creating natural shelterbelts and increasing ecological diversity.

Coastal scrub would be extended along the A174 frontage to screen the proposed visitor car park.

New hedgerow boundaries would be formed around the Red House Field, around new fields within the restored mine head and along former historic boundaries in fields north of the A174 and north of the screening mound. After regrading of the screening mound, hedgerow boundaries would be extended down to and along the northern edge of the railhead.

Offsite blocks of coastal scrub would be established within highway land (subject to agreement with the highway authority) at Boulby Bank and near Red House, to provide improved screening of the mine during its operational life and improve habitat connectivity in general.

Existing woodlands within the site boundary would be managed for wildlife and amenity value, with non-native trees being managed out over time, in favour of creating glades or replanting with native species.

Native tree and shrub species would be used throughout in new planting areas, with species choice being based primarily on presence within existing nearby woodlands and hedgerows and suitability for the local maritime climate.

Field Pattern & Pasture

The proposed field pattern would create small to medium size fields (ranging between 1.4 – 4.5ha in size), closely based on post-Enclosure historic mapping and in keeping with local landscape character.

Mixed grazing use with minimal fertiliser application would be encouraged, to develop a species rich sward, within new pastoral fields and existing fields south of the A174.

Existing arable use within fields to the north west of the mine and north of the A174 would be retained although a review would be undertaken to explore the benefits of sowing these fields to permanent pasture subject to acceptable impact on tenant farmer businesses.

Heritage Features

The general design approach adopted is to retain existing physical remains and interpret the location of former (removed) boundaries and structures with new earthworks.

Settlement at Old Boulby, including the site of Boulby Hall, would be marked by ditch and bank earthworks, with the footprint of former building locations being built up, to 1.0m above ground level with 1 in 1 side slopes, and old boundaries being marked by 0.5m deep ditches with 1 in 1 sides. The line of the former Boulby Lane, leading to Boulby Hall, would also be marked with side ditches.

Existing remains of the Grinkle Ironstone Mine, including the Easington Beck culvert, concrete surface structures and the Sirocco fan house would be conserved. The route of the Grinkle incline up to the former Saltburn and Whitby Railway would be marked by a twin line of stone blocks and former sidings would be marked by 0.5m high raised earthworks.

The former route of the Saltburn and Whitby Railway would be marked by a combination of boundary ditches and 0.5m high raised earthworks along track lines across flatter areas in the west and an open ride between woodland blocks and hedgerows in the east. This route would also form an important new east-west footpath connection across the site.

Boulby Ironstone Mine and associated drift incline would be marked by boundary ditches, 1m high raised earthworks in areas of former buildings and 0.5m high raised earthworks to demarcate sidings and railhead tracks. The former reservoir would be retained, although public safety works may be required. Encroaching woodland and scrub would be cleared from the former drift entrance near Boulby Bank and a route opened up to the mine entrance along the line of the former incline. A single line of stone blocks would be placed along the incline to reinforce the visual connection between drift entrance and railhead.

Boulby Potash mine would be marked by retention of the modern railhead trackbed and shaft/ winding tower foundations. An option exists to completely or partially retain the unique cylindrical concrete winding towers, with their bold, rugged form being in keeping with the exposed character of this edge of the National Park. It is understood that the towers are removable, allowing a further option of moving them slightly away from the shafts, pushing them over or lowering them to the ground and leaving the remains in situ. All exposed metalwork would be removed and the remains made safe.

Interpretation panels would be provided at key locations to help explain the rich industrial heritage of the site.

Vehicle and Pedestrian Access

The existing mine access onto the A174 would be reused as the entrance to a new visitor car park. At this stage car park numbers have not been agreed but room for 20 - 30 cars is envisaged, laid out in an informal manner, with unmarked bays.

Access via public transport is also possible, with westbound bus services stopping next to the site entrance and eastbound services stopping at Cowbar Lane. Access from bus stops at the top of Boulby Bank would also be possible.

Access to fields and for general site maintenance would be via new tracks extending from the site entrance along the line of the former Boulby Lane and route of the Saltburn and Whitby Railway (both as noted on historic maps).

Existing public rights of way would remain unaltered, with the exception of Footpath 504 (Easington) which would be diverted to run along the line of the former Boulby Lane (taking advantage of the stone access track).

Although the whole of the site, outside fields and woodland blocks, would be open to public access, key routes would be marked through the site as follows:

- Connection to A174 footpath opposite Red House Farm, running west into the site along the route of the former Saltburn and Whitby Railway and exiting the site to meet existing rights of way running along the western edge of the site;

- Connections from the new car park south and west into the main body of the site along the route of the former Boulby Lane and the modern railhead trackbed;

- South-east to west and north-west connections from footpaths running through Easington Beck valley, across the main body of the restored site, linking to new paths described above and continuing to the A174 at Boulby Bank and footpath links northwards to the Cleveland Way.

Access from the Cleveland Way, running across the northern part of the site, would be via Cowbar Lane and the minor road leading to Boulby Lodge, with access into the site via the main site and Red House Farm entrances respectively.

9. Implementation Techniques

This section of the report provides an overview of the techniques and materials that would be used to implement the restoration scheme and relevant issues that need to be considered.

Detailed proposals for each section of works would be submitted at the appropriate time for approval by the planning authority before work commences.

Access & Fencing

3m wide access tracks, comprising 300mm compacted depth of Type 1 stone or equivalent (eg crushed concrete/ recycled aggregate) over an approved type geofabric, would be provided to allow general maintenance access and farm access to fields. A connection would be formed from the mine to the existing Easington Woods access track, to assist with long term management of the woods.

The proposed car park would be enclosed with 3 bar wooden post and rail fencing and a hedgerow with motorcycle proof accessible gates and timber farm access gate. Car park surfacing would comprise running ways of unedged bitumen macadam over a stone subbase, with compacted stone parking zones. Surface water drainage would be to open swales.

New pastoral fields would be enclosed with timber post and galvanised mesh stockproof fencing, to contain stock and protect new hedgerow planting during the establishment period. Timber field gates would be provided at field access points.

New or reinforced hedgerows in existing arable fields would only receive stockproof fence protection if land use is changed to a pastoral farming regime.

Timing of Works

Regrading and soil handling works would be undertaken during periods of dry weather, with the bulk of operations expected to be carried out in the summer months.

Plant handling and planting operations would be carried out in accordance with good horticultural practice during the November – March bare root planting season and during periods when the ground is not waterlogged or frozen.

Seeding would be undertaken during the recognised early spring and early autumn sowing periods.

Soil Handling

Restoration works would be undertaken in accordance with recognised principles of best practice, contained in documents including the MAFF Good Practice for Handling Soils (2000) guide and the Department of Environment Good Practice Guidance for the Reclamation of Mineral Workings to Agriculture (2006). Key principles include:

- Separate stripping and removal of topsoil and subsoil from existing screening mounds and grassed areas within the minehead site, including temporary storage where necessary;
- Location of temporary topsoil and subsoil heaps so as to avoid cross-contamination of materials and the trafficking of soil heaps by construction traffic;
- Careful timing of soil handling operations, avoiding freezing or waterlogged conditions;
- Choice of soil handling machinery and method for its use, in order to reduce potential for soil compaction and soil damage; and
- Careful supervision of soil handling operations on site.

Soil Type and Depth

Existing topsoils and subsoils would be retained in areas of the site which lie outside the screening mound and potash minehead footprints.

Following removal of development features, hard surface cover and footings and prior to commencement of bulk cut and fill operations, including regrading of the screening mound and minehead area, existing topsoils and subsoils would be stripped and stored for re-use.

Better quality subsoils would be directed first to proposed pastoral fields, to supplement existing subsoils as necessary to achieve a minimum cover of 500mm clean, free draining subsoil over subgrade.

Should poor quality bulk fill (eg rock, shales) be exposed during cut and fill operations this material would be placed in locations where a minimum subsoil cover of 500mm depth in hedgerow and woodland planting areas and 300mm in wildflower areas can be achieved . Where underlying substrates have potential to support unusual habitats, or to create general substrate variety, which may be of longer term biodiversity benefit, the scheme would be adapted at detailed design stage to take this into account.

Topsoil resources are finite at the site and would be used in the following order of priority:

- provide a minimum depth of 200mm topsoil over proposed pastoral fields;
- provide a minimum depth of 300mm x 2m width of topsoil along proposed hedgerows;
- use remainder of topsoil resource to provide 300mm cover in woodland planting areas, with the balance of woodland areas to receive an application of approved type soil improver (eg composted green waste of conditioned sewage cake, applied in accordance with standard environmental protection measures).

Wildflower areas would be established directly on spread subsoils.

Should compaction of soils occur in proposed woodland planting areas deep cultivation would be undertaken using a winged tine ripper with blades set at 1000mm centres and 700mm depth. Direction of ripping would be at 30° to contours on slopes steeper than 1 in 4 gradient.

Wildflower Grassland and New Pastoral Fields

Neutral grassland areas in new pastoral fields and proposed wildflower meadows would be established on previously spread topsoils and subsoils using a proprietary seed mixture that matches site conditions and the aim of achieving species rich swards and tall ruderal areas. If practicable, hay crops would be taken from nearby suitable donor sites and used as a substitute or supplement for the proprietary seed mix. The proposed mix includes Rhinanthus minor to help decrease the vigour of grass species.

Neutral Grassland & Wildflower Mix (application rate 3gms/m2 in wildflower areas, 15gms/m2 in fields)		
Grasses (82% by weight)		
Festuca rubra ssp rubra	strong creeping red fescue	22%
Cynosurus cristatus	crested dogtail	18%
Agrostis capillaris	common bent	14%
Dactylis glomerata	cocksfoot	14%
Festuca pratensis	meadow fescue	6%
Trisetum flavescens	golden oat grass	6%
Anthoxanthum odoratum	sweet vernal grass	2%
Wildflowers (18% by weight)		
Plantago lanceolata	ribworth plantain	2%
Achillea millefolium	yarrow	1%
Centaurea nigra	common knapweed	1.5%
Filipendula ulmaria	meadow sweet	1.5%
Galium verum	lady's bedstraw	1%
Leucanthemum vulgare	ox-eye daisy	1.5%
Knautia arvensis	field scabious	1%
Prunella vulgaris	selfheal	1.5%
Ranunculus acris	meadow buttercup	1.5%
Ranunculus bulbosus	bulbous buttercup	1%
Agrimona eupatorium	agrimony	1%
Leontodon autumnalis	autumn hawkbit	1%
Rhinanthus minor	yellow rattle	1%
Lotus corniculatus	bird’s-foot trefoil	0.5%
Daucus carota	wild carrot	1%

Cultivation operations would comprise harrowing and rolling, to create a fine tilth and firm seed bed.

For wildflower areas, on subsoils, a light application of low nitrogen pre-seeding fertiliser would be used to encourage initial sward development on the nutrient poor subsoil substrate.

In pastoral fields, on topsoils, no fertiliser would be used.

A first cut would be undertaken approximately 8-12 weeks after sowing in pastoral fields or when the sward reaches a height of 100mm on subsoils in wildflower areas, to encourage tillering. Arisings are to be removed.

Undersowing of New Woodland Planting

Woodland areas would be undersown with a low competition grass mix to bind the soil surface and reduce weed competition. Wild red clover and bird's-foot trefoil would be included in the mix to fix nitrogen and provide nectar sources. Seeding would be by broadcast methods using low ground pressure tractors to minimise soil compaction. No fertiliser would be applied.

Woodland Area Grass Mix (application rate 3gms/m2)		
Festuca arundinacea	tall fescue	10%
Festuca rubra	red fescue	35%
Festuca filiformis	fine-leaved sheep's fescue	25%
Poa pratensis	smooth stalked meadow grass	20%
Trifolium pratense	red clover	8%
Lotus corniculatus	bird's-foot trefoil	2%

Hedgerows

New hedgerows to field boundaries would comprise a mix of native shrub species, based on species recorded within the local area.

Hedgerow Planting Mix, double row 300mm apart, 6 plants per lin/m				
Botanical Name	**Common Name**	**%**	**Size**	**Type**
Prunus spinosa	blackthorn	40	20-40	BR
Crataegus monogyna	hawthorn	35	20-40	BR
Rosa canina	dog rose	10	45-60	BR
Salix caprea	goat willow	10	60-90	BR
Ilex aquifolium	holly	5	20-40	2L pot

All hedgerow species would be planted direct into previously spread soils (after clearance of existing weed and grass cover to 900mm wide along the line of the hedge if applicable), with rotovation to 200mm depth and incorporation of 50mm settled depth approved type planting compost. 75mm settled depth approved type bark mulch would be applied 900mm wide along the line of the hedge after planting. All species would be protected with an approved type biodegradable shelter (eg Acorn Shelterguard, with support stake and tie), to help initial establishment and prevent rabbit or vole damage.

Hedgerow planting would be in random groups of 5 – 11 of any single species. All species would be cut back to 200mm after planting to encourage strong bushy growth.

Woodland and Scrub

New broadleaved woodland would comprise a mix of native species found in the local area. Woodland areas would include a shrub component to provide initial shelter for trees and wildlife. Over time the planting mix would evolve into true woodland cover within more sheltered areas whilst remaining as coastal scrub/ woodland edge in more exposed

locations. Woodland edges would also be protected with a coastal scrub mix along the eastern edge of planting areas.

Woodland Mix (3000 plants/ ha, random spacing)				
Botanical Name	**Common Name**	**%**	**Size (cm)**	**Type**
Trees				
Acer pseudoplatanus	sycamore	20	45-60	BR
Quercus robur	oak	20	45-60	
Fraxinus excelsior	ash	10	60-90	BR
Prunus avium	wild cherry	5	60-90	
Ulmus glabra	Wych elm	5	45-60	BR
Shrubs				
Crataegus monogyna	hawthorn	15	45-60	BR
Prunus spinosa	blackthorn	10	45-60	BR
Salix caprea	goat willow	10	60-90	BR
Ilex aquifolium	holly	5	20-40	2L pot

Coastal Scrub Mix (5000 plants/ ha, random spacing)				
Botanical Name	**Common Name**	**%**	**Size**	**Type**
Prunus spinosa	blackthorn	45	45-60	BR
Crataegus monogyna	hawthorn	20	45-60	BR
Rosa canina	dog rose	10	45-60	BR
Salix caprea	goat willow	10	60-90	BR
Ulex europaeus	gorse	10	20-40 3 breaks	2L pot
Ilex aquifolium	holly	5	20-40 3 breaks	2L pot

The use of Fraxinus would be reviewed prior to planting depending on the progress of Chalara fraxinea (ash dieback disease) with substitution by an alternative species agreed with the planning authority if necessary.

In damper areas Salix caprea would be substituted with Salix cinerea (Grey Sallow).

All woodland and scrub species would be planted direct into existing or previously spread soils (after clearance of existing weed and grass cover to 900mm diameter at each planting station), 75mm settled depth approved type bark mulch would be applied to 900mm diameter at each panting station. All species would be protected with an approved type biodegradable shelter (eg Acorn Shelterguard, with support stake and tie), to help initial establishment and prevent rabbit or vole damage.

Subject to analysis of topsoil or improved subsoil planting media additional planting compost and slow release compound fertiliser may also be applied at each planting station.

Planting would be in random groups of 5 – 11 of any single species. All shrub species would be cut back to 200mm after planting to encourage strong bushy growth.

Red House Field

Earlier planting in Red House Field has only achieved partial success. Willow cultivar nurse crop planting is well established but little evidence remains of the proposed native tree and shrub species which should be growing between the nurse crop areas. The cause of failure is not known but is likely to be a combination of competition pressure from strong weed and grass growth in the area, browsing by rabbits and the severe maritime climate. Soils within

the field appear to be original agricultural soils, with 300mm depth of good quality topsoil noted in trial pits. A central wet flush/ natural spring zone is less suitable for planting and should be developed as wetland habitat for biodiversity benefit. Part of the field appears to be in use for rearing/ feeding game birds. Post and mesh fencing with attached rabbit proof netting which surrounds the field has been breached.

The following measures are proposed to assist establishment of new long term planting within this area:

- Retain existing willow planting as shelter for new planting;
- Clear existing grass and weed growth in areas between willow planting and re-sow with a low competition sward (see woodland area sward above);
- Plant new native tree and shrub species (mixes as above) within cleared areas including provision of shelters, mulch and weed control during the establishment period;
- Remove willow planting after new native planting is established (eg between years 5-10 after planting) and leave cleared willow areas as permanent openings, to be allowed to colonise naturally;
- Perimeter fencing would be renewed to retain stockproof performance but rabbit mesh would not be provided (with browsing protection being provided by shelters).

Off-site Planting by Agreement

To achieve improved initial screening of the site several areas of off-site planting, within the highway boundary of the A174, are proposed at Boulby Bank and Red House.

Proposals in these areas are therefore subject to receiving agreement from the Borough of Redcar and Cleveland. It is envisaged that planting and maintenance works would be carried out under licence to the highway authority.

A separate mix is proposed for initial off-site screening areas, comprising a more limited palette of the most robust tree and shrub species to improve initial screening success.

Off-site Tree & Scrub Mix (5000 plants/ ha, random spacing)				
Botanical Name	**Common Name**	**%**	**Size**	**Type**
Prunus spinosa	blackthorn	30	45-60	BR
Acer pseudoplatanus	sycamore	30	45-60	BR
Crataegus monogyna	hawthorn	20	45-60	BR
Salix caprea	goat willow	10	60-90	BR
Ulex europaeus	gorse	10	20-40 3 breaks	2L pot

All species would be planted direct into existing soils (after clearance of existing weed and grass cover to 900mm diameter at each planting station), 75mm settled depth approved type bark mulch would be applied to 900mm diameter at each panting station. All species would be protected with an approved type biodegradable shelter (eg Acorn Shelterguard, with support stake and tie), to help initial establishment and prevent rabbit or vole damage.

Subject to existing soil depth and quality additional planting compost and slow release compound fertiliser would be added at each planting station prior to planting.

Habitat Enhancement Measures

Additional habitat management measures would include:

- Excavation of the sides of the existing wetland area in Red House Field to form a larger flush/ marsh habitat. The expanded areas would be left to recolonise naturally;

- Profiling of the restored landform along open water channels to create pools and wetland flushes;

- Provision of bird and bat boxes on retained mature trees around the perimeter of the site;

- Sowing of pockets of wild bird seed mixtures to provide winter food and cover.

Public Access

It is envisaged that the site would be opened for public access 12 months after completion of restoration works. This would be subject to agreement with the planning authority and would also be dependent on the success of initial scheme establishment.

Proposed public footpaths would be unsurfaced, except where coincident with historic feature markers or farm/woodland access tracks. Footpath routes and connections to the wider public rights of way network would be marked with agreed type finger signs at agreed locations.

The existing stone access track through Easington Woods would be retained for both public access and woodland management purposes.

Interpretation

Existing industrial heritage remains, new earthwork interpretations of lost features and selected remnants of Boulby Potash Mine would be interpreted through a series of interpretation panels located across the site. These would provide information about:

- The pre-industrial landscape including Boulby Hall and Old Boulby
- Grinkle Ironstone Mine and associated features
- Saltburn to Whitby branch railway
- Boulby Ironstone Mine and associated features
- Tin City (although note that the remains of this feature lie just outside the site boundary)
- Boulby Potash Mine

In addition, some interpretation of flora and fauna at the site may also be beneficial.

The format and content of interpretation panels would be agreed with the planning authority at the time of implementation.

10. Aftercare Operations and Long Term Management

Aftercare Period

Following completion of implementation works restored areas would enter a 5 year aftercare period.

The key elements of the aftercare requirements for each of the identified end uses within the site are described below:

- Beating up of woodland, scrub and hedgerow planting to ensure a 100% establishment rate and fully complete hedgelines without gaps;
- Maintenance of a 900mm width strip along hedgelines and 900mm diameter circle around other plants in a weed and grass free condition for 36 months after planting or until the end of the aftercare period if establishment is slower than expected;
- Checking and firming of shelters, stakes and ties, with removal at the first horticultural sound opportunity or at the end of the aftercare period;
- Checking and repair of stone access tracks and stockproof fencing;
- Annual mid-late July cutting back of wildflower grassland areas and new pastoral fields, after seed has set and fallen, with arisings to be removed. In low nutrient wildflower grassland areas on subsoils it is anticipated that the first cut would be required in year 2 or 3 after sowing;
- After initial sward establishment (using annual late summer cutting and removal of arisings for a 2 year period after sowing) pastoral fields would be managed using mixed grazing techniques;
- Eradication of notifiable or pernicious weeds in planting areas, wildflower grassland and pasture areas;
- Slow release compound fertiliser may be applied to tree, scrub and hedgerow planting in years 2 and 3 if considered beneficial to growth. No fertilisers or other nutrients would be applied to any grassland areas after sowing;
- Hedges would be allowed to reach a design height of 2m before commencing cutting, after which they would be developed in shape to match existing local hedgerows.

A report summarising the overall progress in aftercare would be submitted to the MPS annually. This report and the proposed programme for the following year would be discussed and amended as necessary annually at a meeting with representatives from the MPA.

Long Term Management

A long term integrated landscape and ecological management plan for the site would be produced and agreed with the planning authority. This will guide the establishment of new restoration habitats and put forward measures for good management of existing habitats, including during the period whilst the mine remains operational.

All existing and new habitats would be managed for nature conservation purposes. Management would be flexible and targeted towards supporting key habitat types and

species, based on the findings of the 2012 Phase 1 habitat survey and earlier ecological studies.

Existing and new pasture would be managed as permanent grassland using mixed stocking techniques to encourage sward diversity (eg see English Nature Technical Information Note TIN088 'Illustrated guide to managing neutral pasture for wildlife').

Remaining archaeology and industrial heritage features within the site boundary would be subject to separate management, in line with current good practice and to conserve the historic resource until such time as the site is restored and opened up to public access, after which time it would be cared for as part of the overall long term management of the site.

11. Phasing

Landscape restoration and management works would be implemented in a phased manner as follows:

November 2012 – March 2013

- Off-site screen planting works by agreement in highway verges at Boulby Bank and Red House;
- Hedgerow planting and reinforcement to existing fields north west of the screen embankment and north of the A174 (subject to tenancy agreement timing, if delays occur these works would move back to winter 3013/ 2014).

April 2013 – September 2013

- Clearance of existing weed and grass growth in areas to be replanted within Red House Field;
- Pond/ wetland works within Red House Field;
- Management/ weed control of newly planted areas.

November 2013 – March 2014

- Scrub and woodland replanting works within Red House Field

March 2014 – mine closure

- Management/ weed control of newly planted areas;
- Ongoing management of existing woodland, hedgerows and pastoral habitats outside the operational mine area;

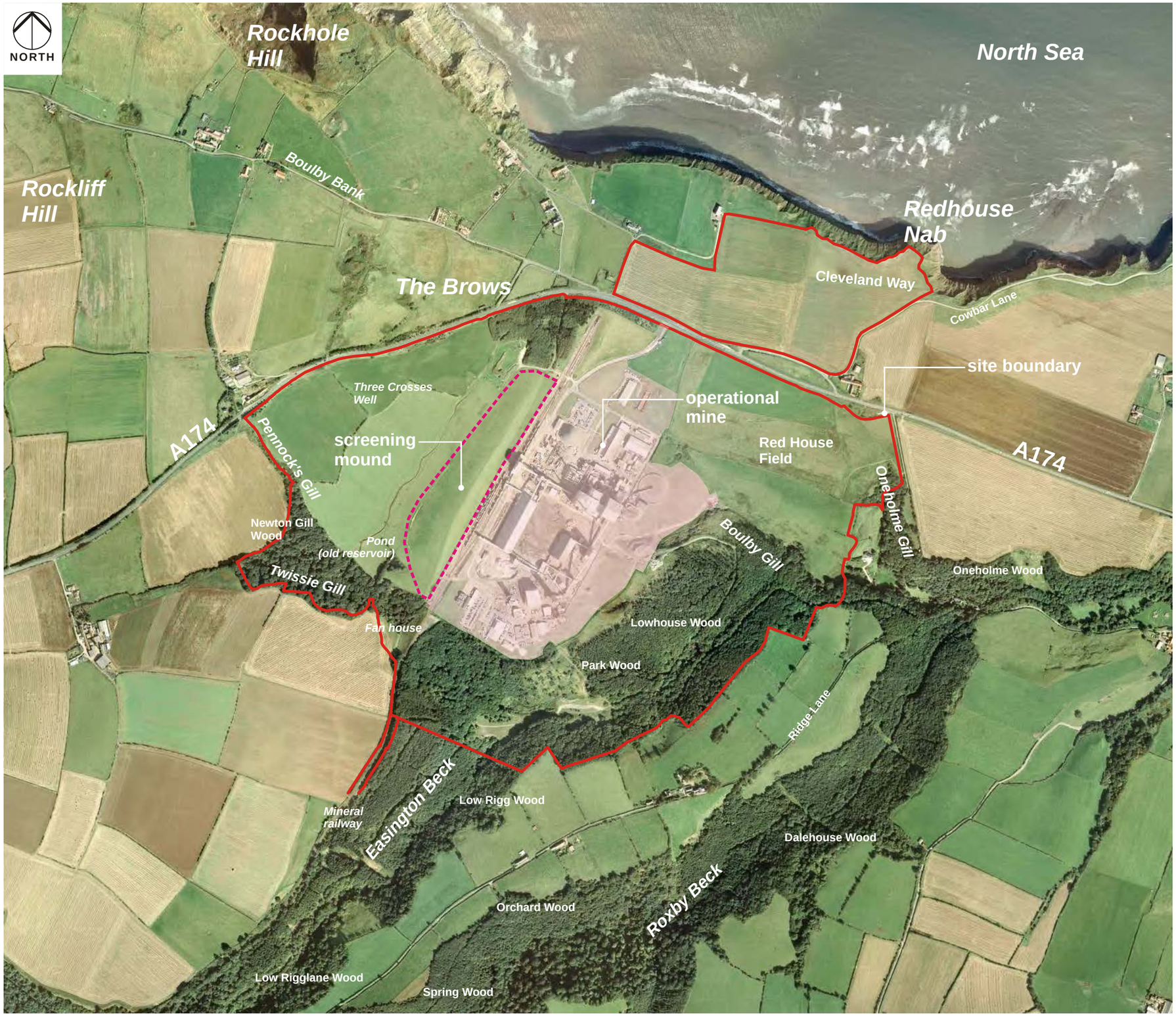
Final restoration following mine closure

- Implementation of regrading and restoration works across the operational mine site and footprint of the screening embankment;
- Five year aftercare period to ensure scheme is properly established.

End of aftercare period

- Site enters long term management plan.

FIGURES



CLEVELAND POTASH

Royal HaskoningDHV
Enhancing Society Together

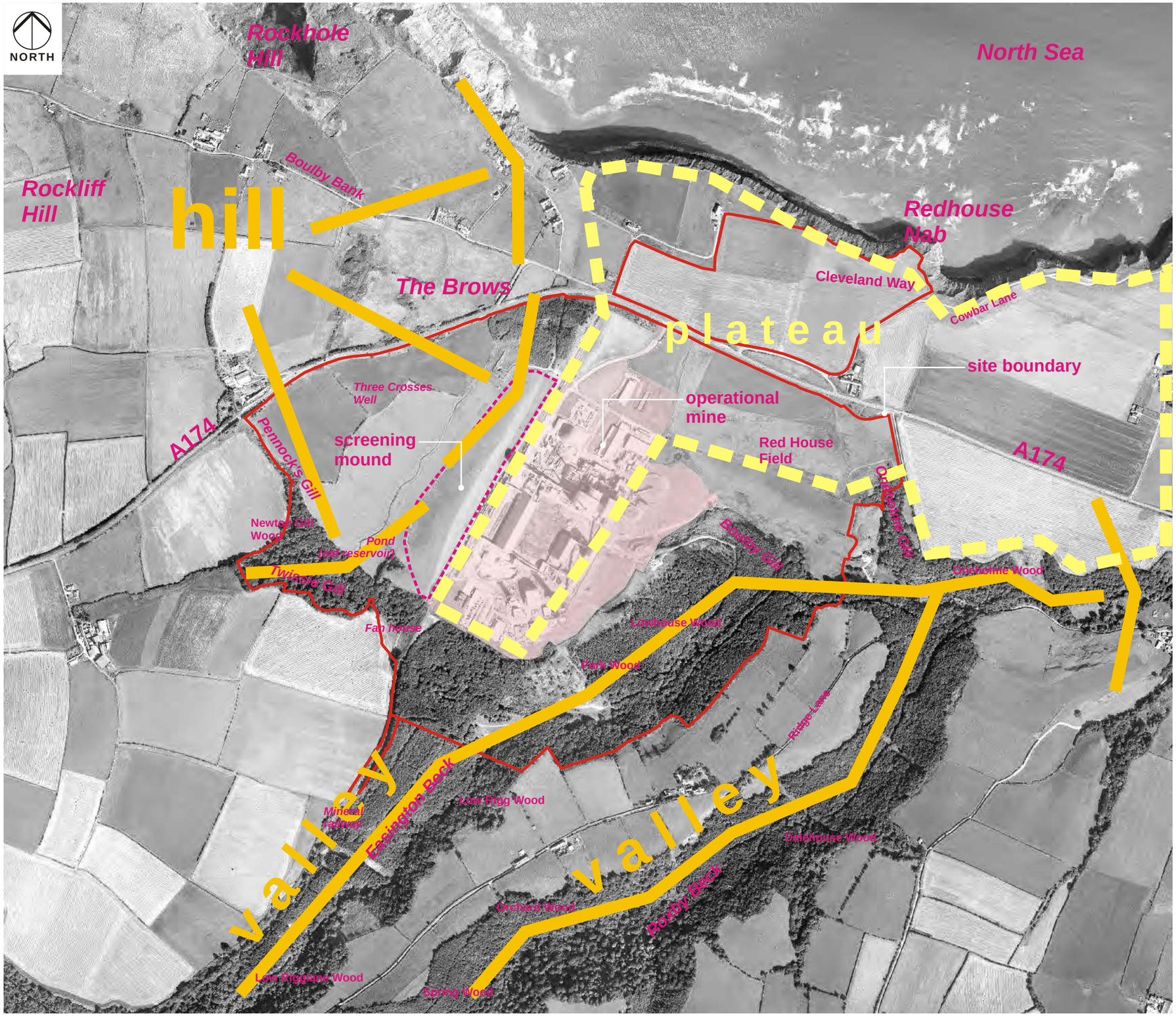
Estell Warren
Landscape Architecture
5B Chevin Mill Leeds Road Otley LS21 1BT
Tel: 01943 464384
mail@estellwarren.co.uk
www.estellwarren.co.uk

Cleveland Potash Ltd, Boulby Mine

Restoration Proposals

Figure 2274.01

Existing Site



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Landscape Architecture
5B Chevin Mill Leeds Road Otley LS21 1BT
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mail@estellwarren.co.uk
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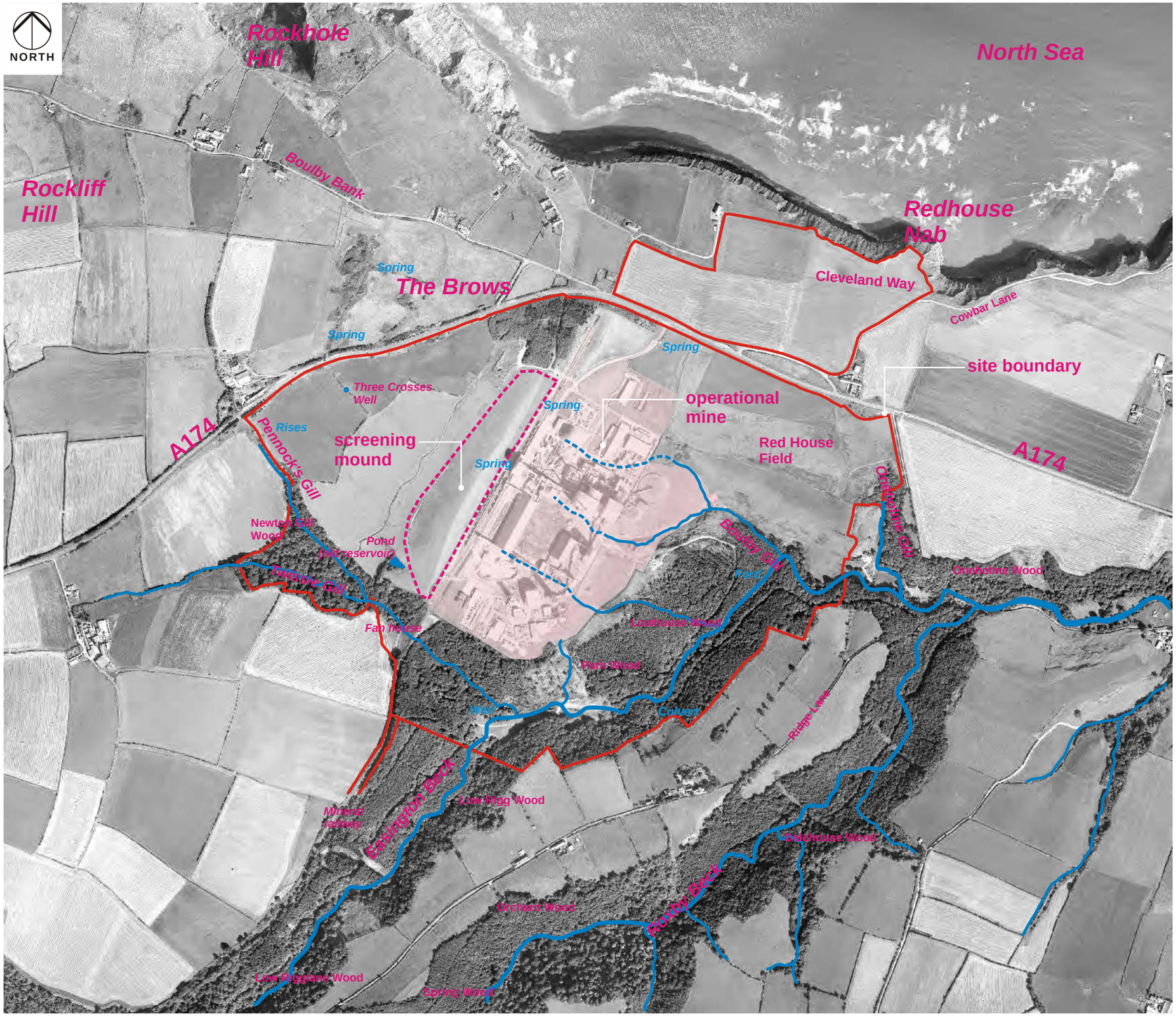
Cleveland Potash Ltd, Boulby Mine

Restoration Proposals

Figure 2274.02

Topography



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Enhancing Society Together

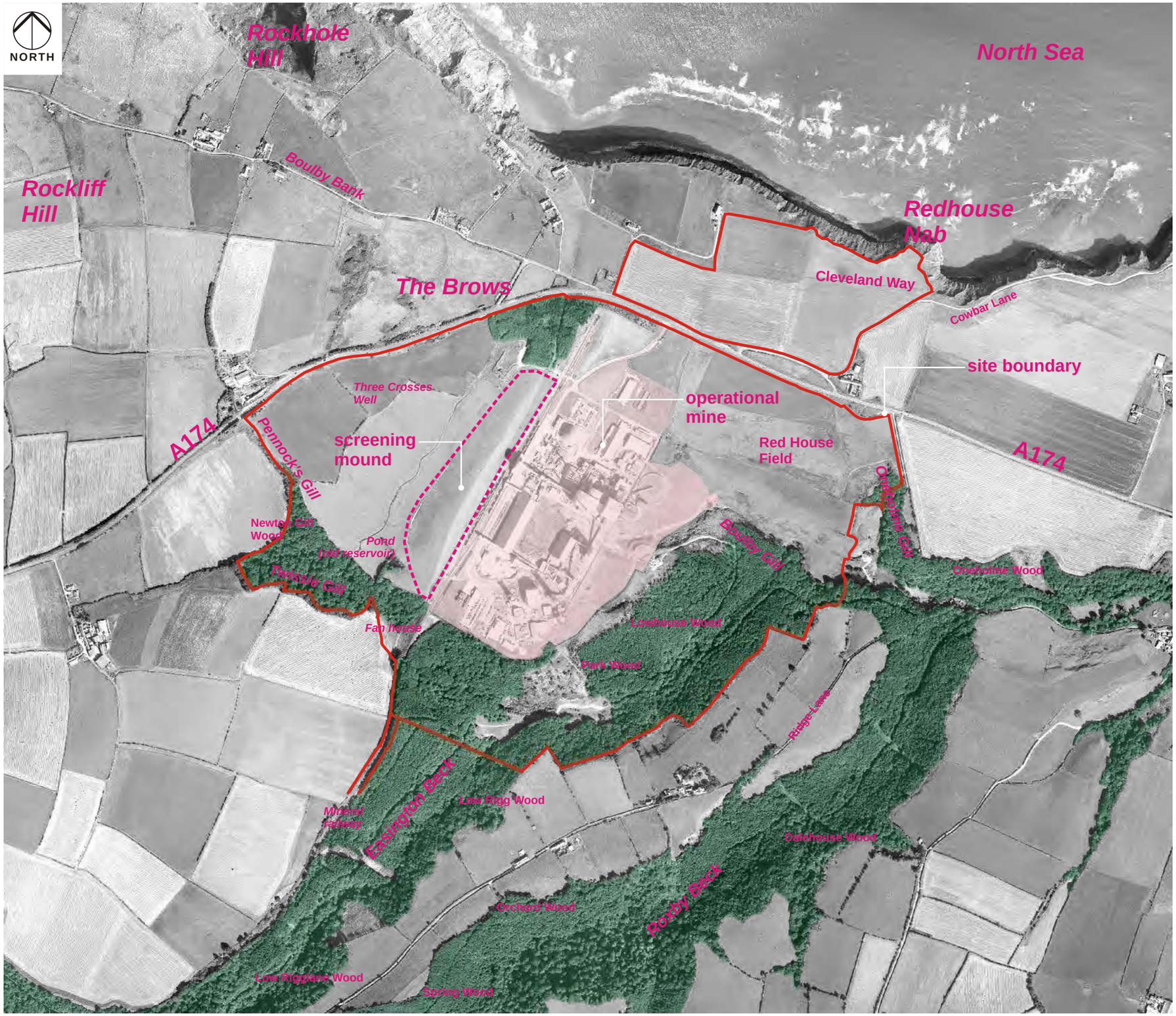
Estell Warren
Landscape Architecture
5B Chevin Mill Leeds Road Otley LS21 1BT
Tel: 01943 464384
mail@estellwarren.co.uk
www.estellwarren.co.uk

Cleveland Potash Ltd, Boulby Mine

Restoration Proposals

Figure 2274.03

Watercourses



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mail@estellwarren.co.uk
www.estellwarren.co.uk

Cleveland Potash Ltd, Boulby Mine

Restoration Proposals

Figure 2274.04

Woodland Cover

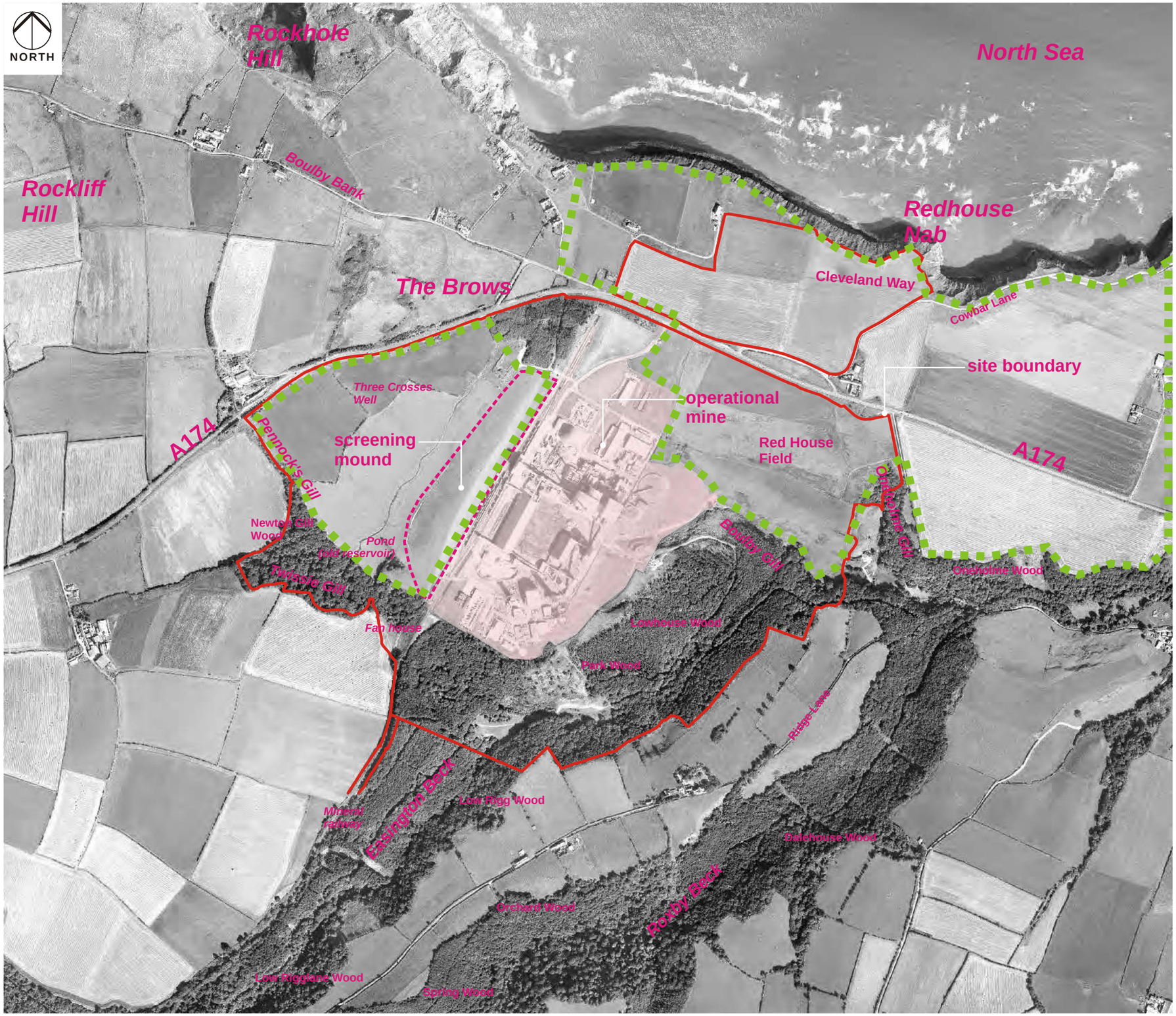

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Figure 2274.05

Eroded Field Boundaries

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Figure 2274.06

Panoramic Views

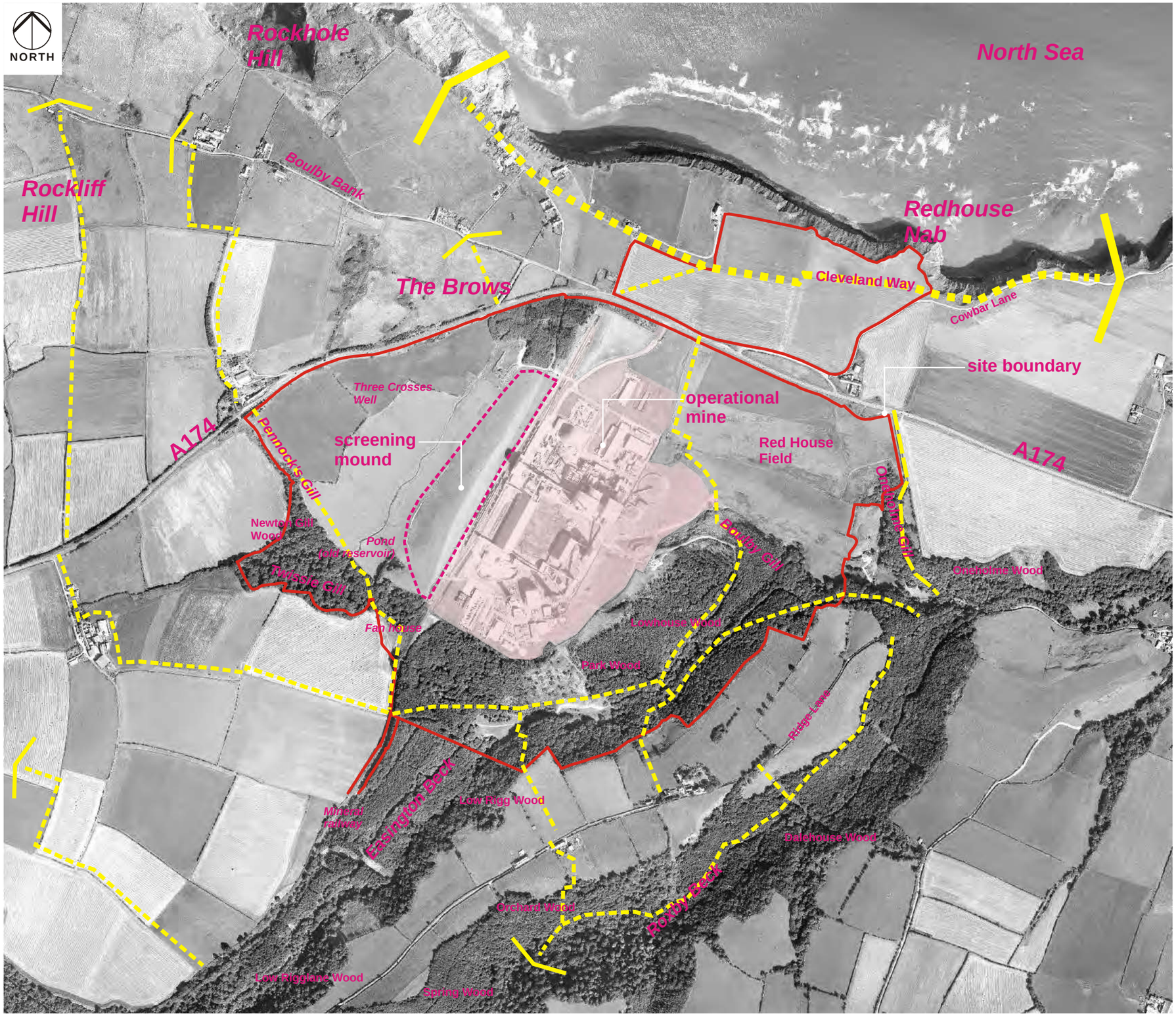

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Figure 2274.07

Public Rights of Way

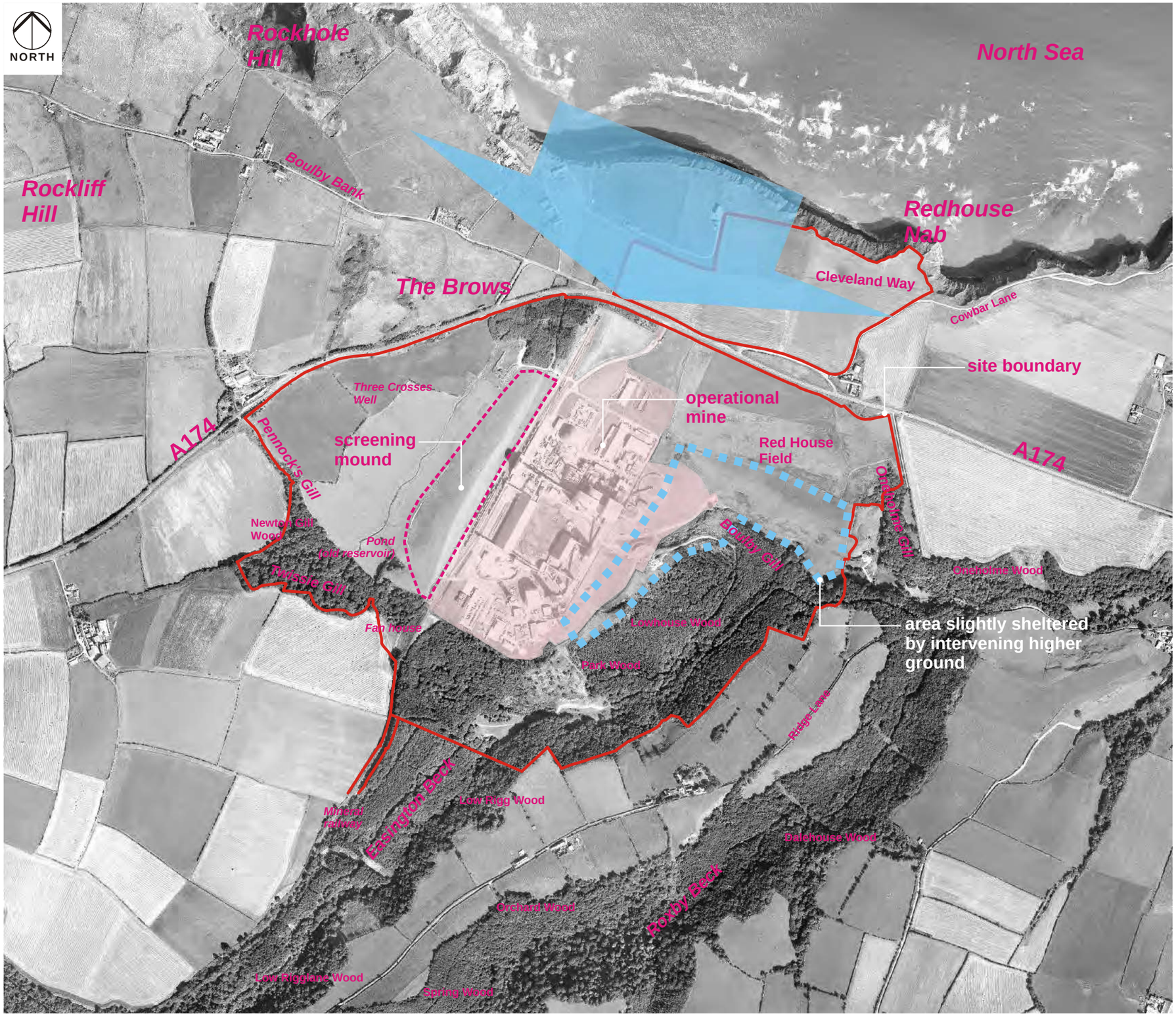

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Figure 2274.08

Maritime Climate

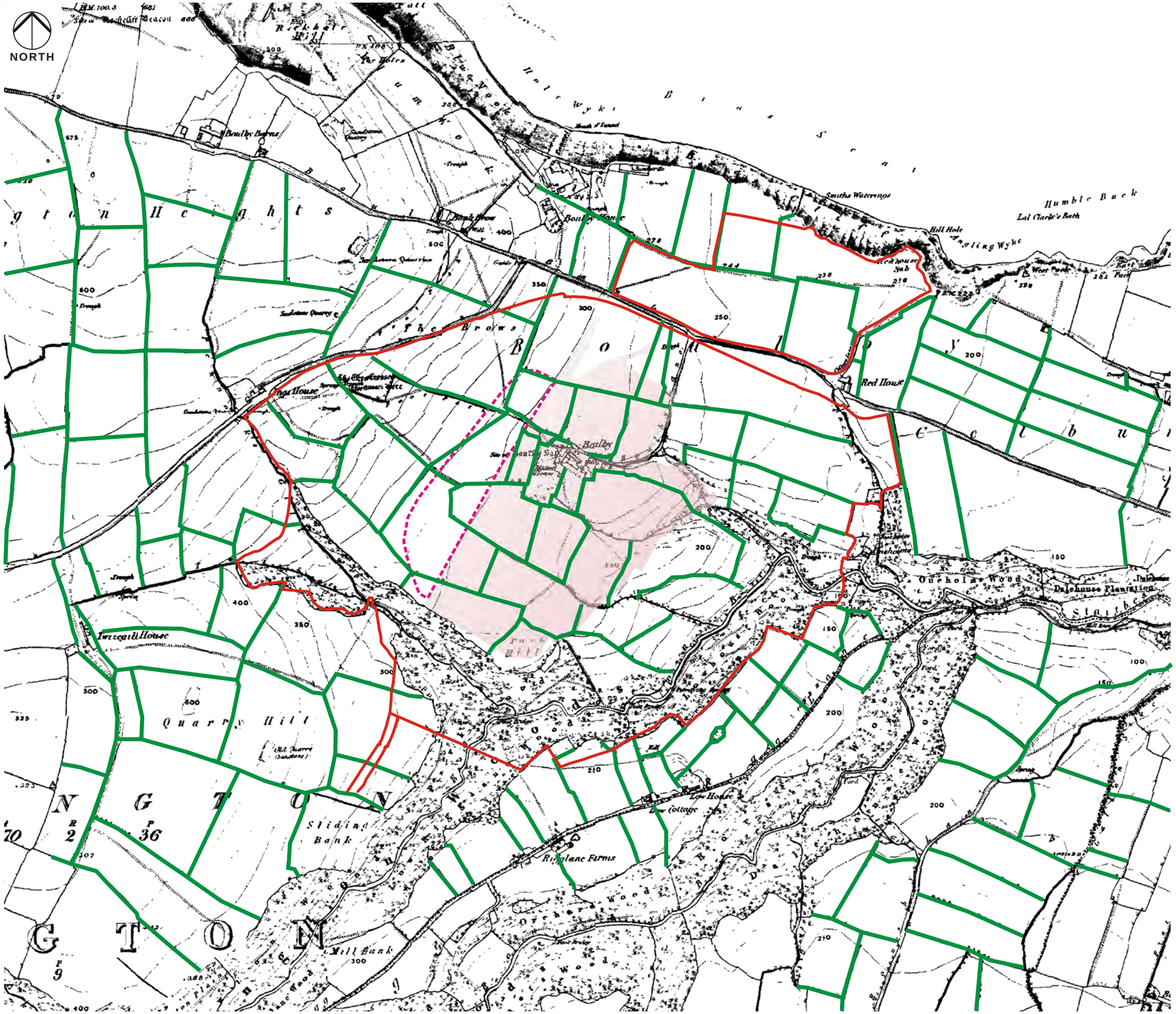

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Figure 2274.09

Historic Mapping
Field Boundaries 1846 - 1863

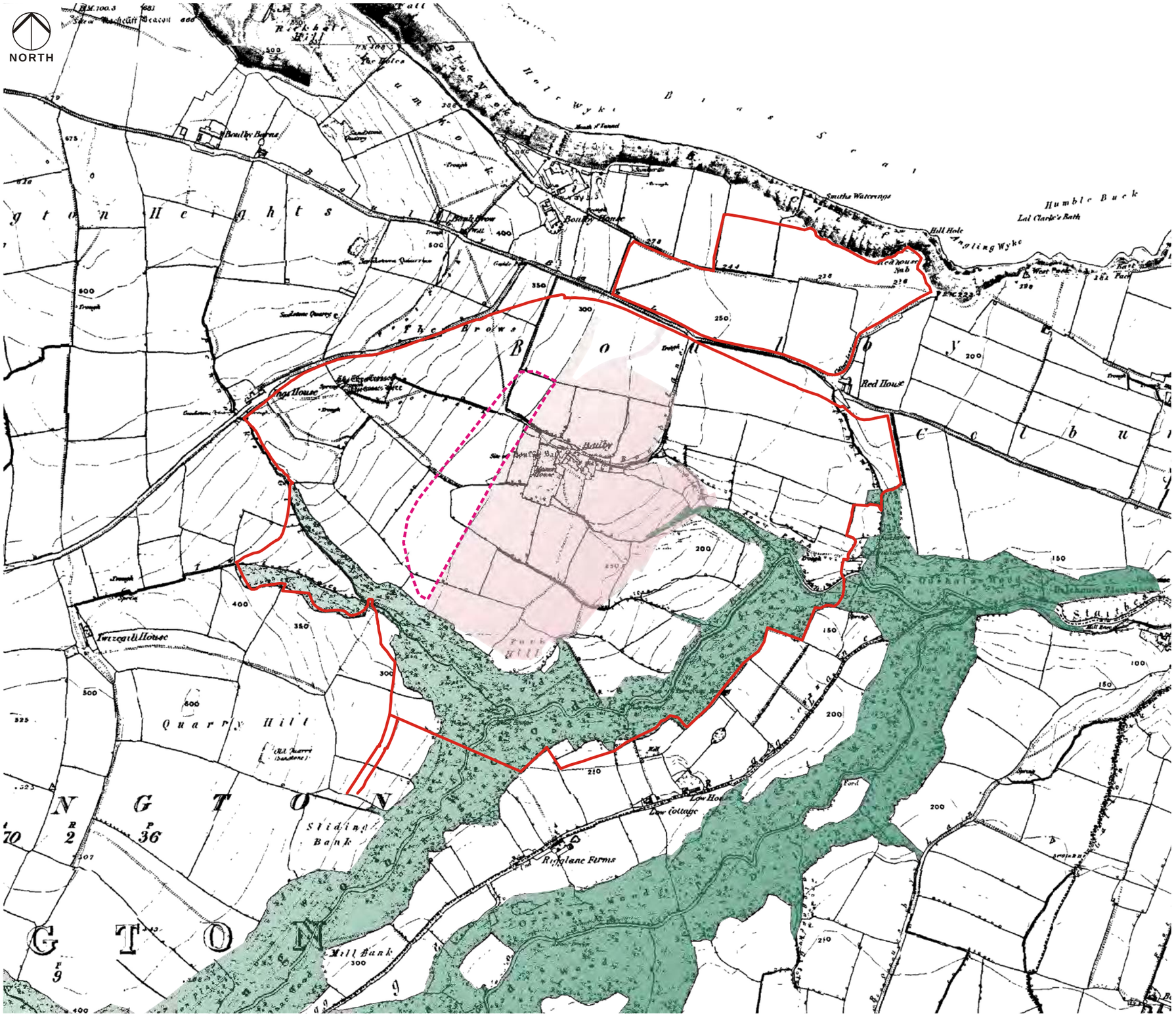

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Figure 2274.10

Historic Mapping
Woodland 1846 - 1863

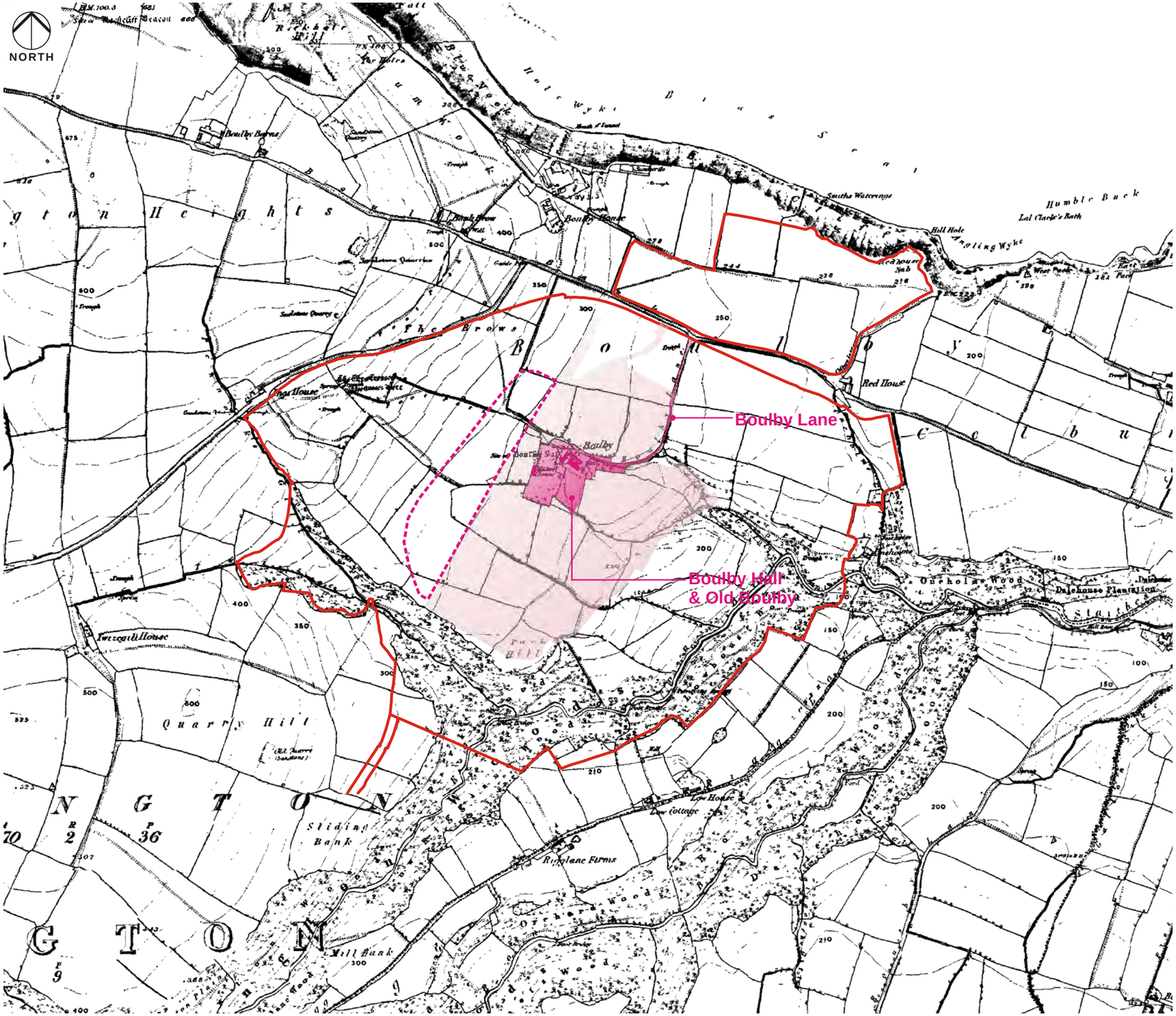

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Figure 2274.11

Historic Mapping
Development 1846 - 1863

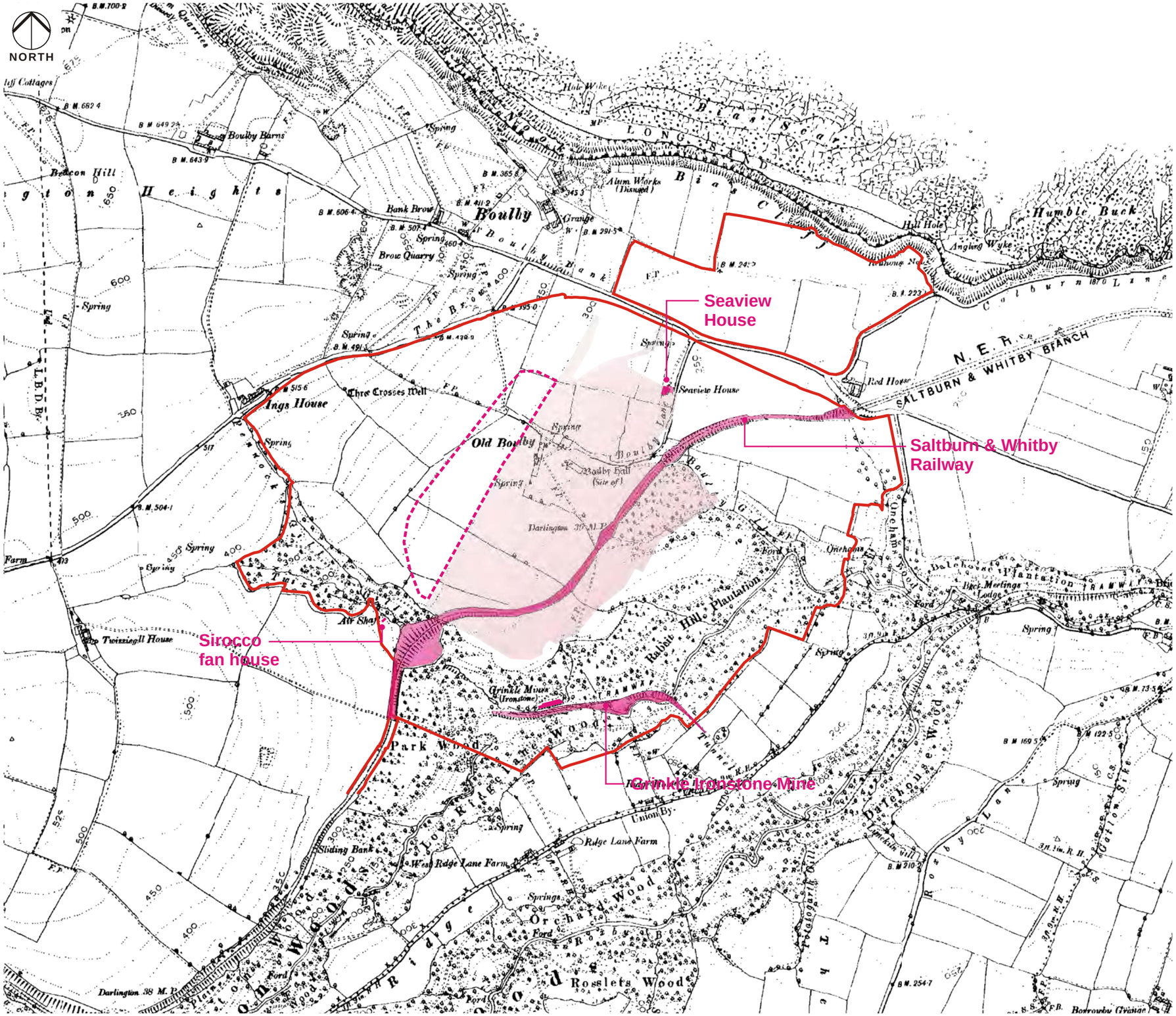

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Figure 2274.12

Historic Mapping Development 1889 - 1899

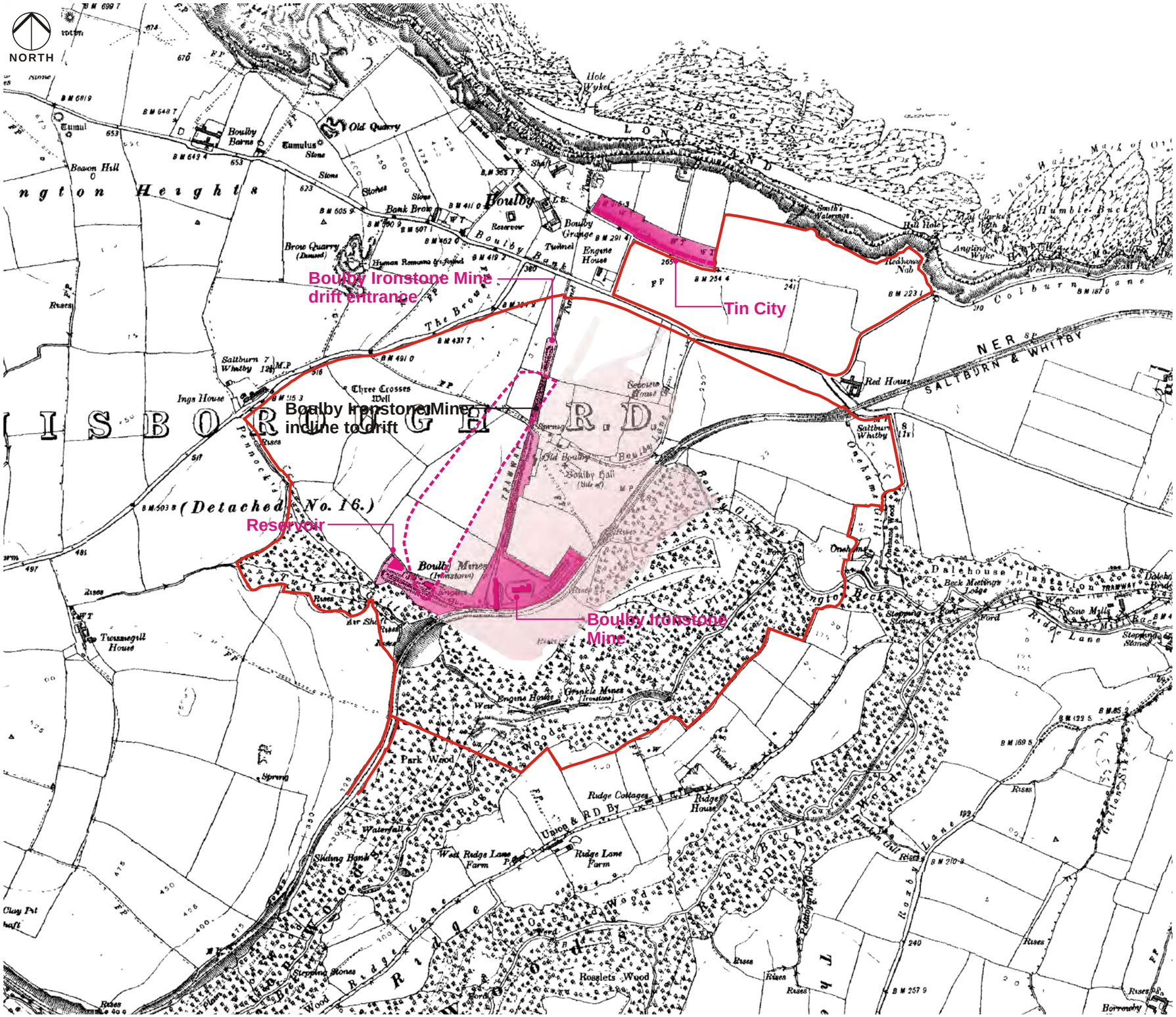

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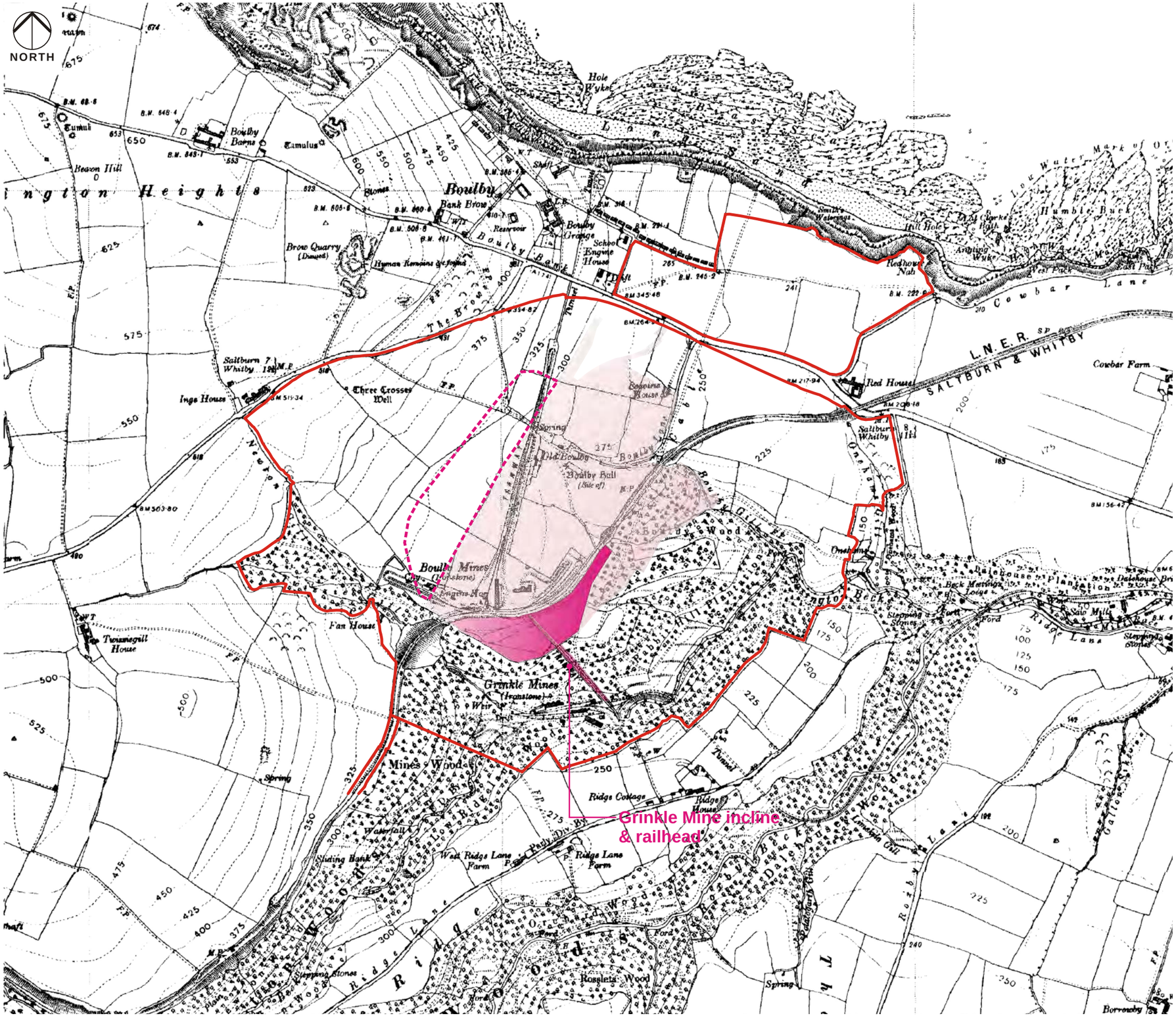
Figure 2274.13

Historic Mapping
Development 1907 - 1924



Note:

Incline and railhead were installed in 1916 but do not appear on available mapping until 1930-1954 sequence.

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Figure 2274.14

Historic Mapping Development 1930 - 1954

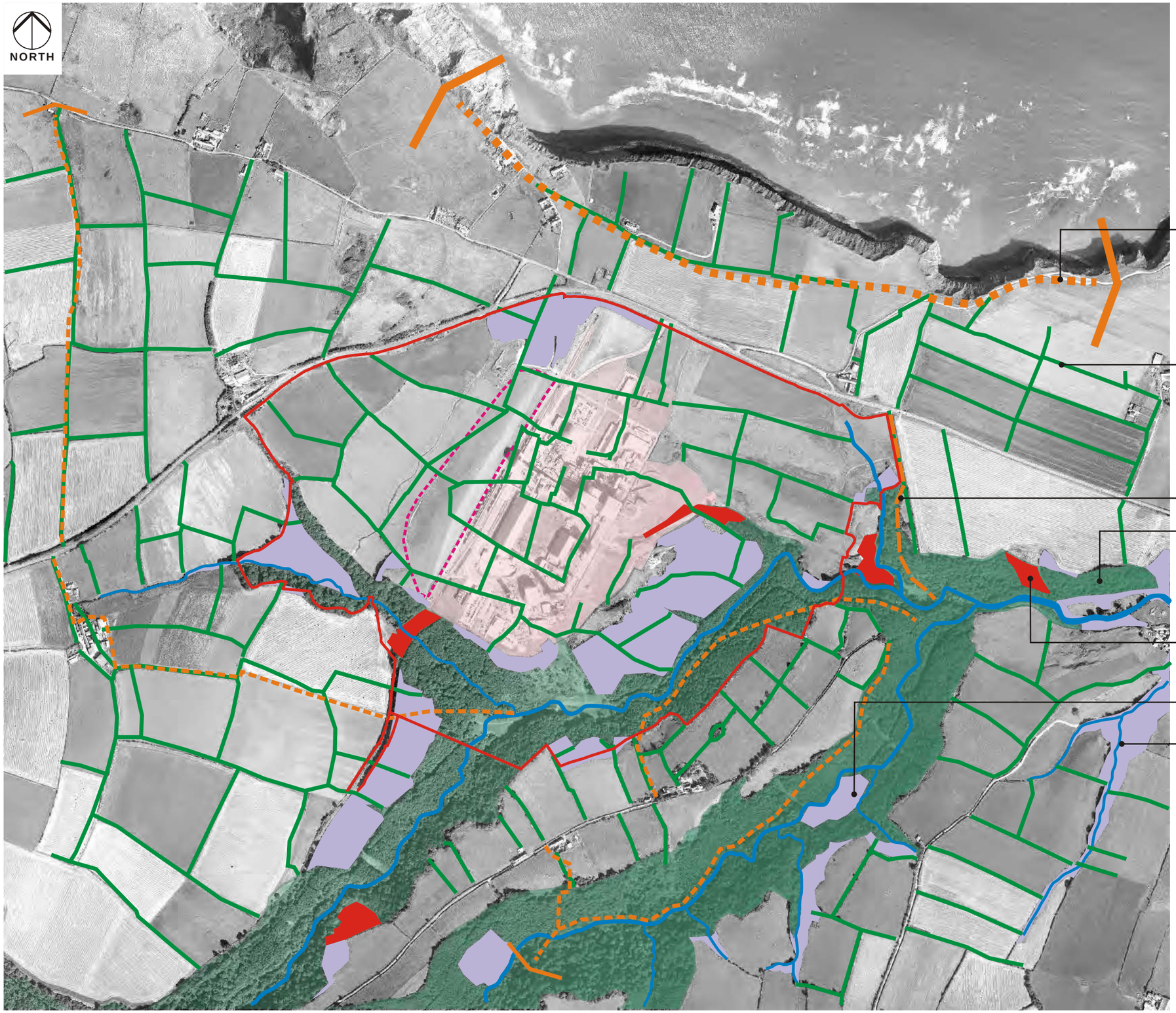

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Figure 2274.15

Landscape Structure Template

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Figure 2274.16

Historic Features Template

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Figure 2274.17

Modern Features Template

Boulby Gill - landform to be retained, gill to be replanted as woodland with clearing along beck, surface water drainage to be returned to beck on closure of mine.

Existing woodland access track to be retained for long term management purposes.

An attractive ground flora has developed within existing woodlands. Future woodland management operations would encourage further species diversity.

Woodland understorey - to be managed for increased structural and habitat diversity.

Scrub (gorse, broom, bramble) encroachment at Grinkle Mine to be managed to create a balance between nature conservation and industrial heritage objectives.

Coniferous plantings to be managed out of woodland in the long term, in favour of native broadleaved species.

Wet flushes and wet woodland to be encouraged within existing woodlands and in new plantings on flatter land.

Existing public right of way network to be retained and enhanced, providing good links between the restored site and wider public access network.

Easington Beck, retained as existing

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EXISTING SITE PHOTOGRAPHS
2274.18

Site of former Grinkle Mine, looking west. Open character to be maintained as orientation point within woodland cover and to mark mine location.

Looking east to site of Grinkle Mine, access track to be retained as public right of way and for long term management purposes.

Encroaching bracken at Grinkle Mine clearing, to be controlled under long term management. Winding towers form an orientation point in woodland views.

Route of former Grinkle Mine incline, to be retained and used as new footpath route between Grinkle Mine and Potash Mine after restoration.

Remnant stone block foundations at Grinkle Mine, scrub encroachment to be managed and interpretation panel provided.

Grinkle Mine, remnant foundations.

Grinkle Mine, remains of concrete hopper.

Grinkle Mine - remains of substantial masonry retaining wall.

Remains of Sirocco fanhouse, west of Newton Gill

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2274.19

Junction of Twizzie Gill and Newton Gill watercourses.

Existing ditch north of screening mound, to be retained and reinforced with new hedgerow boundary along northern/ western edge. Eroded arable field boundaries to be replanted with new native hedgerow species.

Existing ditch spillway into Newton Gill to be retained.

Existing ditch north of screening mound, to be managed for nature conservation purposes, including sections to be fenced off from grazing access.

Existing ditch to be managed for wetland diversity, including excavation of deeper pond areas and adjoining marshy habitat.

Boulby Ironstone Mine reservoir, to be retained as existing with stockproof fence surround and warning signs or remodelled with shallow edges as wetland habitat if long term public safety is a concern.

Twizzie Gill, to be retained as existing, including culvert under railway line.

Existing steep slopes and culvert under Grinkle Mine to be retained.

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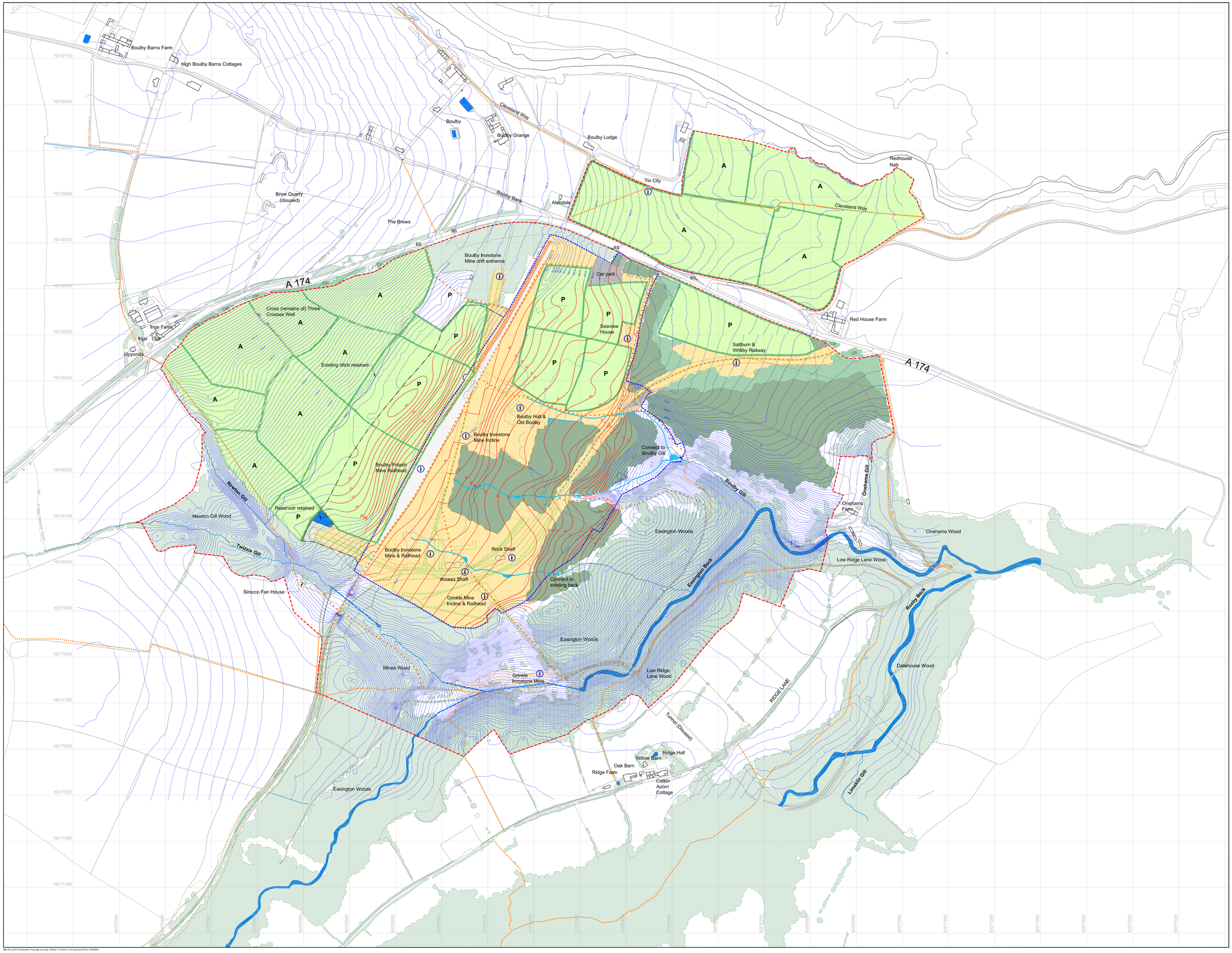
2274.20



KEY

- Site boundary
- Minehead area boundary
- Northern screening mound footprint
- 65.0 — Existing contours (1m interval within site 5m interval outside of site)
- 10 — Proposed contours (at 1m intervals)
- Existing mixed woodland to be retained and managed
- Proposed native broadleaved woodland
- Proposed coastal scrub
- Proposed native hedgerows (incorporating existing remnant hedgerows)
- P — Species rich pasture (to be managed by mixed grazing or cutting)
- A — Arable (existing fields retained)
- Proposed wildflower meadow (to be managed by cutting and/or grazing)
- OP — Offsite planting by agreement (within highway boundary)
- Proposed timber post and wire mesh stockproof fencing
- Existing watercourses
- Existing culverts to be retained
- Proposed watercourses
- Proposed wetland flush
- Proposed earthwork mound to mark historic feature
- Proposed earthwork ditch to mark historic feature
- Existing winding house and shaft concrete foundations retained (note option to retain complete or partial winding towers)
- Existing railhead track bed retained
- Proposed car park (with access via existing highway connection to A174)
- B — Existing public right of way (footpaths except where denoted 'B' for bridleway)
- Proposed public footpaths
- Site maintenance and farm access track (open to public access)
- Proposed interpretation signs
- BS — Existing bus stop

Rev.

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Client / Project:

Cleveland Potash Ltd
Boulby Mine

Drawing Title:

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Drawing Number:	Revision:
2274.21	.
Scale:	Date:
1:2500 @ A0	December 2012
Drawn:	Checked:
ME	SW