

**Title: D. TI.1.1.3 Teesside Past Metallurgical Site
Deposit Administrative Procedures for On-Site
Activities**

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M A Capstick

Materials Processing Institute

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The Materials Processing Institute together with its project partners has the objective of achieving a systematic, long-term beneficial outcome from recovery and regeneration of Past Metallurgical Sites and Deposits (PMSD) in the INTERREG region of Europe under an EU funded REGENERATIS project. Its aims are the innovative circularity to recover raw materials while regenerating the polluted sites.

This report is submitted in fulfilment of the requirements of work package TI and deliverable D. TI.1.1.3 for the specification of administrative procedures to undertake on-site activities.

Limitations on the scope and extent of on-site activities exist due to the ongoing process of the Compulsory Purchase Order (CPO) of the land to the South Tees Development Corporation. Until this process has been completed, no rights of access are available to any of the land previously owned by Sahaviriya Steel Industries PLC (SSI).

Access to the previously owned SSI land is currently managed by the South Tees Site Company Limited.

Access to the land owned by South Tees Developments Limited (STDL) is managed by the parent company South Tees Development Corporation (STDC).

South Tees Development Corporation are an Associated Partner of the Regeneratis project and have committed to allow access to the STDL land subject to the granting of an excavation licence and providing UK health and safety standards and procedures are followed. On completion of the CPO process, the extent of land available to access may be broadened to include the land previously owned by SSI. The details of any extended site access would be subject to agreement with the South Tees Site Company Limited and STDC.

The administrative procedures have been produced in collaboration with the respective organisations and relate to the undertaking of site activities comprising surveying, core and pit excavations, sampling and pre-processing of sampled materials.

The administrative procedures are provisional pending further discussion with South Tees Development Corporation and the outcome of the CPO process.

The impact of COVID-19 has limited the accessibility and timing of information

1 INTRODUCTION

The report provides details of the administrative procedures for the Past Metallurgical Site Deposit (PMSD) site access and work-related activities including land surveying, ground investigation, bore hole and pit excavations, sampling and material pre-processing.

The Teesside PMSD is located on land owned by the South Tees Developments Limited (STDL) and managed by the South Tees Development Corporation (STDC). The land comprises several sites with a 160-year history of iron and steelmaking including areas of Redcar, Lackenby, Grangetown and South Bank to the South of the River Tees.

At present, access to the land previously owned by Sahaviriya Steel Industries PLC (SSI) is restricted due to the ongoing Compulsory Purchase Order still being in the hands of the Official Receiver. This includes a significant area of waste deposits at the South Bank Landfill and Waste Management Facilities area (a site containing iron and steelmaking slag). It also includes the Redcar Works complex (Blast Furnace) and the Lackenby Steelmaking complex (Basic Oxygen Steelmaking and Continuous Casting) sites.

The site have been used, at varying periods of time, for the storage of feedstock, products, by-products and waste streams. Over the years, due to changes in ownership, regulatory controls and economic conditions, the materials have co-mingled with poor associated recording of the inventories of quantity and quality of materials. The materials have also co-mingled with natural ground materials. This includes dispersal in soil, rock, clay, silt and other materials arising from its tidal estuary location. The stratigraphy is, therefore, varied and complex.

There are large areas of contaminated land arising from coke oven plant operation, oil refining and hydrocarbon processing. Dispersal of the hazardous materials has taken place due to a combination of natural and man-made material movements

Access to the site locations will be administered either by the South Tees Developments Limited (STDL) or by the South Tees Site Company Limited (STSCL) STDL is wholly owned by the South Tees Development Corporation. STSCL were appointed by the UK government in December 2016 to ensure the safety, security and cost-effective management of the former SSI steelworks sites. The SSI steelworks sites are COMAH registered.

The owners of the sites have a duty of care to ensure that staff and visitors to the site follow safe systems of working.

2 ADMINISTRATION AND PROCEDURES

The locations and scope of the site activities will be agreed between the project partners and the Associated Partner (STDC). The scope comprises site/location, access, safe systems of work, details

of the ground investigation, bore hole and trial pit excavation, sampling, pre-processing of materials and the impact and remediation strategy

STDC will provide access to agreed areas and ground investigation to be undertaken in compliance of agreed standards.

The following conditions [3] have been stated by STDC in granting the undertaking of pilot tests on STDL owned land covered by Land Registry Title Numbers CE212145, CE175032, CE175031, CE175030, CE175028, CE174027, CE130906, CE48932, CE39540, CE26409 and CE6045:

- Prior to the pilot tests being undertaken, an inception meeting will be organised and held in order to agree and make arrangements on the issues of access, available site areas and test locations, safety, impact and restoration, confidentiality and information exchange.
- The investigation programme on regeneration of past metallurgical sites and deposits being executed in compliance with all necessary procedures as governed by relevant UK standards and regulations.
- The parties engaged in the pilot tests executing a Licence in favour of STDL and STDC, permitting access to the STDL site for the purposes of the pilot tests, such Licence to be provided by STDC.

As site owner, STDC will be a beneficiary of the REGENERATIS results. STDC will have the opportunity to comment and advise on the economic development model, the research findings and the dissemination of publicity material.

STDC will be invited to attend meetings of the Advisory Board.

The on-site safe working procedures for on-site activities will be managed either by the South Tees Developments Limited (STDL) and/or by the South Tees Company Limited (STSCCL).

2.1 GROUND INVESTIGATION SCOPE

The detailed plan of the site works will be discussed and agreed with the relevant project partners, the Associated Partner and the site owner (the "stakeholders"). This will include the locations, excavation, sampling and pre-processing procedures and the safe systems of work.

With a very large choice of site locations and ground areas for investigation, it is necessary to ensure economy of effort while maximising the beneficial outcome on behalf of the project partners, Associated Partner and site owner.

The stakeholders will ensure that the right balance has been met in undertaking site activities between economy of effort and beneficial outcomes.

Obtaining the stakeholder buy-in to the REGENERATIS process of circularity of waste material recovery and site remediation has been an important first step in ensuring engagement protocols proceed smoothly.

To optimise the balance between cost and benefit, it will be necessary to use the available site-specific data to prioritise and target the areas for ground investigation. This will be a combination of previous historical data⁽²⁾ and data currently held by the site owners but not yet released to the project partners due to the ongoing CPO process.

In some site locations, it may well be the case that the stakeholders take the view that invasive investigation is not recommended. This may be because the data records are extensive and in sufficient detail that further excavations are unnecessary. Alternatively, the ground may be so contaminated that risks from the hazards to health are deemed too great.

The key drivers for circularity of waste materials are quantity, quality and the recovery/recycling process. Quantity refers to the total mass or volume of material in-situ. Quality refers to the composition and morphology of material.

The key drivers for the remediation strategy are potential land value and reclamation cost.

The REGENERATIS process captures these drivers within the framework of a model.

Each site will have different characteristics dependent on the relative importance of these drivers.

The Associated Partner will have the opportunity to comment and advise on the characterisation of the site.

The economic model for site regeneration will be disseminated between all the stakeholders.

2.2 SAFE SYSTEMS OF WORK

The safe systems of work will be specified at each specific site but as a minimum the following would be expected:

- Safety Passport.
- A General Site Induction.
- Site Specific Inductions e.g. COMAH.
- Compliance with Management Procedures (Site Specific Requirements).
- Risk Analysis and Method Statement (RAMS).

- Completion of a Work Permit.
- PPE Standards for Each Task.

For sites managed by the South Tees Site Company (STSC), there would be the additional requirements of:

- A hazard identification exercise by STSC to inform the project partner's RAMS.
- The appointment of a Task Owner/Project Co-ordinator within STSC.
- The project partners would be subject to a contractor approval process.

The management control of a project must of necessity ensure a safe system of work. No deviations from the work permit scope will be allowed.

Because of this level of control, it is essential that the RAMS be stated as clearly as possible.

3 THE PAST METALLURGICAL SITES AND DEPOSITS

SOUTH TEES SITE

The Past Metallurgical Sites and Deposits (PMSD) site area is shown in Fig. 1⁽¹⁾. The significant areas of previous industrial activity are those of the Redcar works complex (comprising the blast furnace, coke ovens, sinter plant and materials handling areas), the Lackenby steelmaking complex (comprising the basic oxygen steel and continuous casting plants), the Grangetown Prairie (site of the Cleveland Iron Works), the zone designated as Landfill and Waste Management Facilities (comprising the SLEMS waste management facility, the High Tip Landfill and a metals recovery area) and the South Bank zone (site of the Clay Lane furnaces and the South Bank Coke Ovens). In addition, there are other smaller areas within the STDC area which are likely to contain significant quantities of waste products. In the area designated as the Teardrop site, the Redcar slag wool works was contemporaneous with the Redcar Iron and Steel works operating in the 1960s.

In terms of the Regeneratis project, the UK Teesside site is labelled PMSD-1.

The area covered by PMSD-1 has a long history of industrial activity dating from the mid-19th century. On the South of the river Tees there were 91 blast furnaces at its peak.

There are large areas with significant ground contamination.

Land remediation in the vicinity of the coke ovens and by-products facilities must be cognizant of the hazardous materials present in the ground as well as buried assets. Some of these materials are pyrophoric (e.g. iron sulphide).

The contaminants are contaminated coal, heavy fuel oil, benzole (benzene, toluene, xylene), creosote, absorbing oil, wash oil, coal tar (black viscous liquid denser than water comprising a complex mixture of condensed ring aromatic hydrocarbons, phenolic compounds, aromatic nitrogen bases, alkyl derivatives, paraffinic hydrocarbons, olefinic hydrocarbons), coal tar pitch (black solid residue from the distillation of coal tar).

There is also asbestos contamination of the soil.

No excavations in this area are currently allowed due to the contaminants.

Further details of the Teesside PMSD are available in the REGENERATIS report on historical data⁽²⁾.

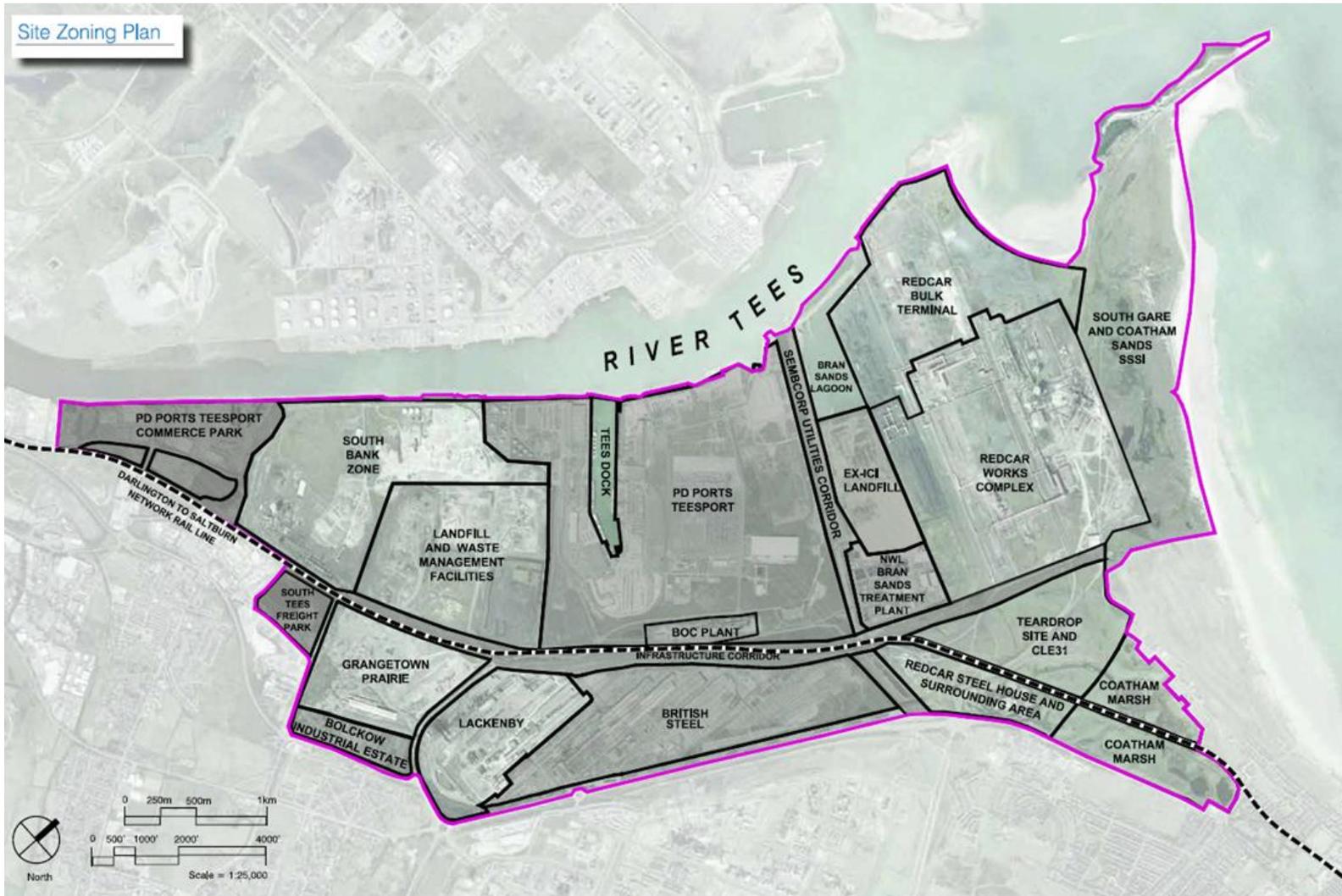


FIG. 1: PMSD-1 SITE ZONING PLAN

The ownership of assets in 2019 is given in Fig. 2^[1]. This has changed most significantly, with the transfer of ownership of SSI owned assets to South Tees Development Corporation in 2020

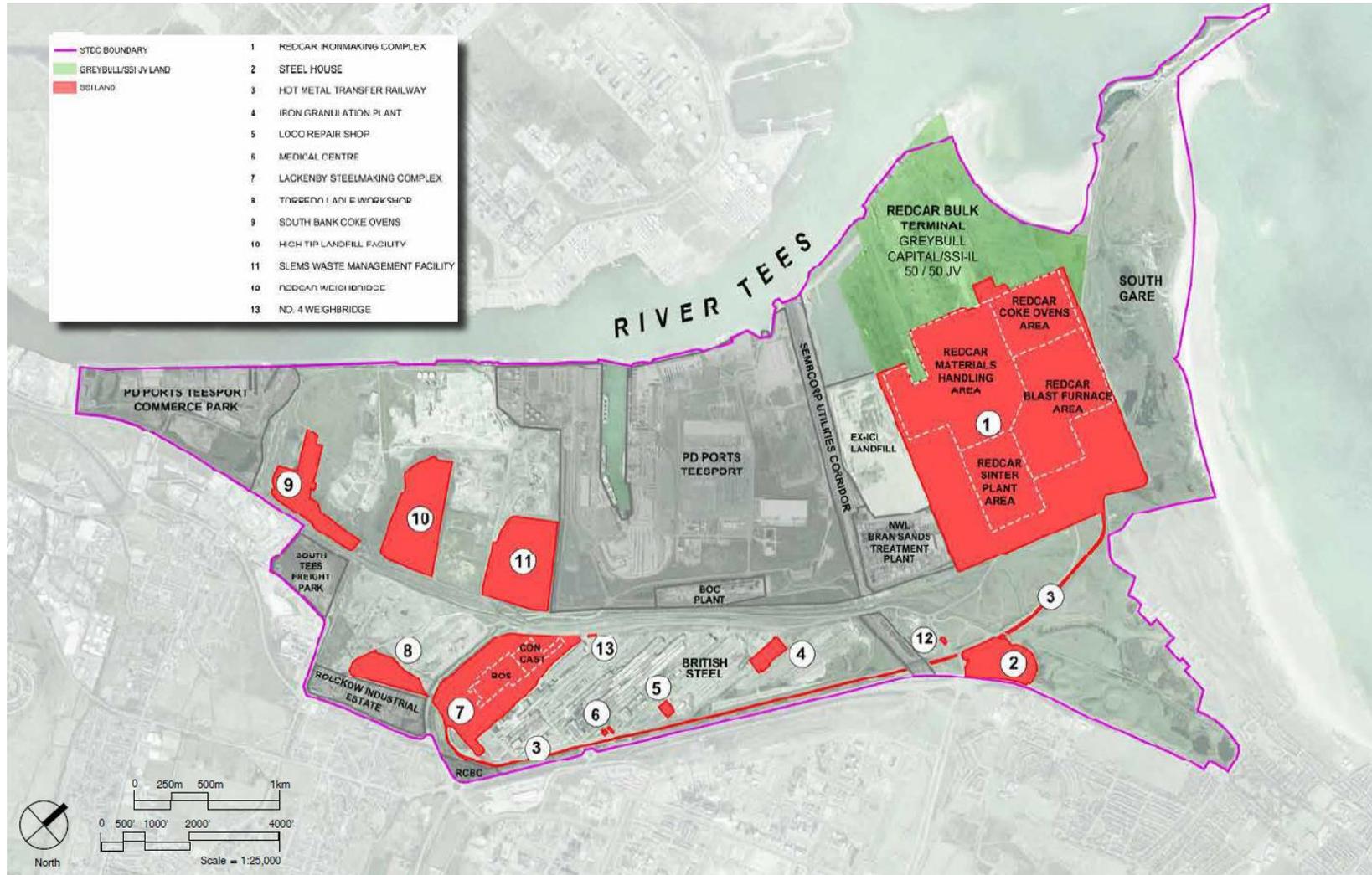


FIG. 2: OWNERSHIP OF ASSETS

The extent of the Teesside iron and steelmaking assets in 1966 is shown in Fig. 3.

3.1 THE LANDFILL AND WASTE MANAGEMENT ZONE

The principal areas of landfill and waste management within the PMSD-1 area are shown in Fig. 4⁽¹⁾.

The landfill and waste management area located at South Bank between the South Bank coke ovens and PD Ports Teesport comprises from West to East, the High Tip, the Impetus Tip and the SLEMS. This is shown in Fig. 5 in aerial image taken from North of the River Tees.

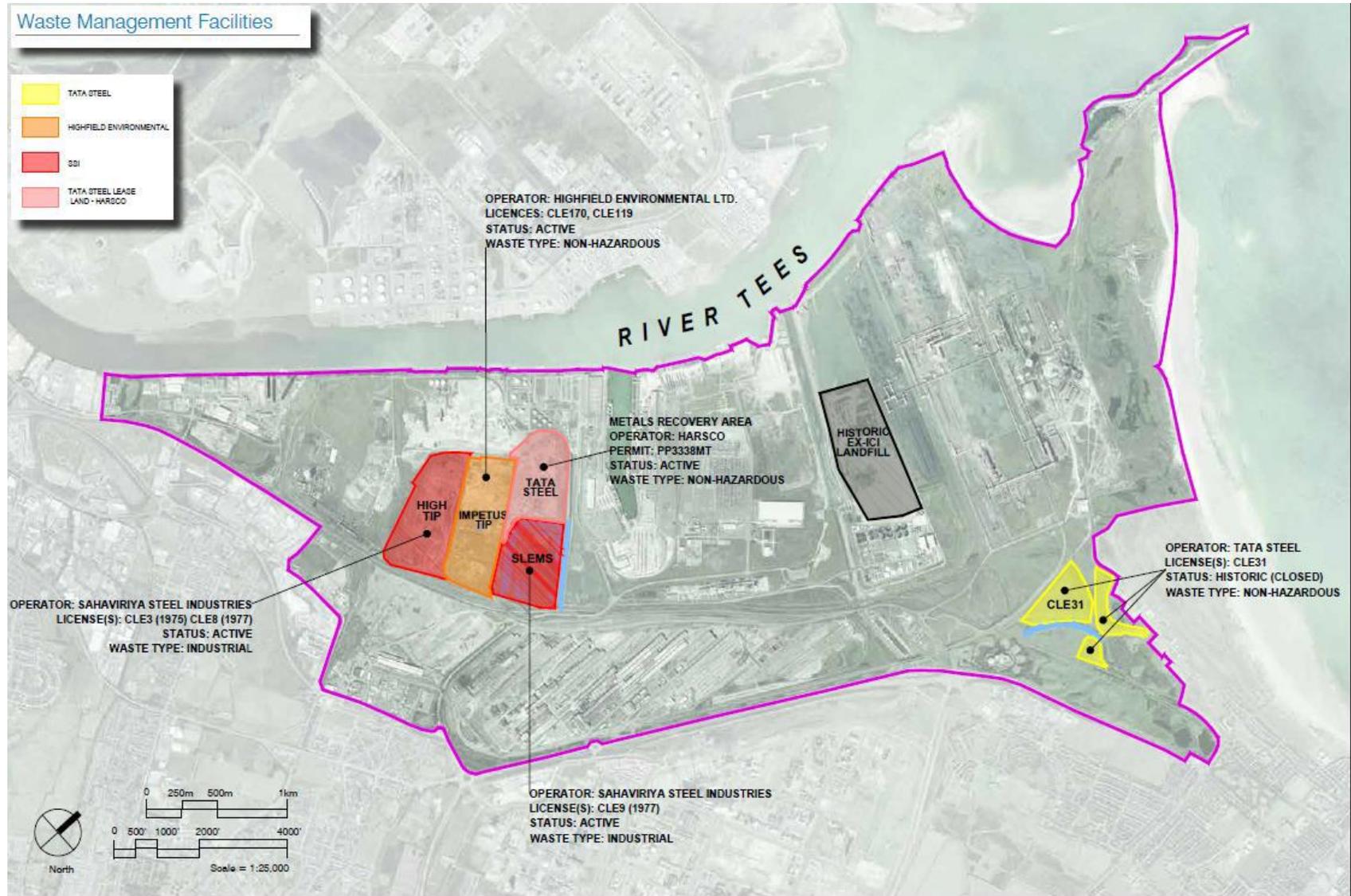


FIG. 4: WASTE MANAGEMENT FACILITIES WITHIN PMSD-1



FIG. 5 PRINCIPAL AREA OF LANDFILL AND WASTE MANAGEMENT AREAS

4 REFERENCES

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2. Capstick, M.A., Regeneratis Report: TI.1.1.1 Teesside Metallurgical Site Deposit Historical Activity Data, INST/LCE/R/28042/1/20/C, 29 June 2020
3. McNicholas, J., A Statement of Commitment to the Regeneratis Project, South Tees Development Corporation 24 May 2019