

**Draft and incomplete pending final
information**

**NORMANBY ENTERPRISE PARK SLAG
BANKS RECLAMATION CONTRACT**

**RECLAMATION VALIDATION REPORT
AND LAND QUALITY STATEMENT**

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NORMANBY ENTERPRISE PARK SLAG BANKS RECLAMATION CONTRACT**RECLAMATION VALIDATION REPORT
AND LAND QUALITY STATEMENT****1 INTRODUCTION**

The Stage 1 Slag Banks reclamation contract was issued by North Lincolnshire Council (NLC; site owner, engineer and client) in February 2011 to Hall Construction Services Ltd (HCSL; the contractor).

Stage 1 (Area A) of the Slag Banks scheme was reclaimed between 28 February and 23 May 2011. A further reclamation contract and a number of variation orders were subsequently issued for Stage 2 (Areas A1 and E) in October 2011 for the reclamation of these areas between October 2011 and April 2012.

Figure 1 indicates the site location, boundaries of Stages 1 and 2 and the relative location of the receiving Conesby Quarry landfill.

FWS Consultants Ltd (FWSC) was appointed by NLC as third party independent environmental engineers to provide relevant environmental supervision of the Normanby Park Slag Banks reclamation contract, and to provide a Validation Report and Land Quality Statement (LQS) upon completion. FWSC were provided with the validation targets and procedures, as per the contract documents agreed between NLC and HCSL, against which the success of the remediation could be judged. We understand that these targets and procedures are based on those approved for, and used in, previous phases of the Normanby Park Iron and Steelworks reclamation programme.

2 BRIEF HISTORY OF THE SLAG BANKS

John Lysaghts Iron Company Limited commenced construction of the iron and steelworks in 1910, which was later sold to GKN in 1920 and then passed to British Steel in 1969. The Slag Banks have been used for the tipping of slag, flue dusts, rubble, scrap refractories and other bulky wastes, more or less, since Normanby Park Iron and Steelworks commenced operations. Very large amounts of slag used to be processed directly while the works were operational and sold as aggregates, fertiliser or bulk fill, but presumably in periods of low demand, or when subgrade slags were produced, they accumulated and were then stockpiled on the Slag Banks site (along with other wastes such as construction and demolition debris, flue dusts etc). Following an initial re-working of useable deposits of blast furnace slag by Scunthorpe Slag Limited, Eppleton Quarry Products Ltd (EQP), a secondary aggregates contractor, has occupied the Slag Banks since 2002. They have recovered a large proportion of the remaining material (Ref. 1).

The Slag Banks area of the former steelworks has been investigated several times (Refs. 1 to 7). Earlier studies identified very large volumes of made ground, situated in 20 to 30 m high slag tips, and a site-wide veneer of steelworks waste.

FWSC undertook an investigation of the entire Slag Banks site (Ref. 1) in late summer 2008 to re-assess the condition of the site, the volume and nature of the residual wastes, reconfirm the validity of the remediation strategy, and characterise the wastes for

landfill disposal (Level 1 basic characterisation). The remediation strategy remained unchanged; removal of non-hazardous waste materials to Conesby Quarry Landfill site so that no residual liabilities remained on the Slag Banks site. The materials on the Slag Banks were not particularly heavily contaminated, but they do contain variable amounts of volumetrically unstable steel slag (prone to expansion, resulting in ground heave), randomly distributed throughout. It was essential that this material was removed prior to redevelopment of the area.

3 RECLAMATION AREA

The Slag Banks site consists of:-

3.1 Stage 1

Drawing 1 shows the boundaries of Stage 1 (Area A), the July 2008 topographical survey of the entire site and the proposed excavation profiles.

3.1.1 Area A – Main Reclamation Area

At the beginning of the Area A contract, the majority of Area A had already been extensively ‘worked-over’ by EQP to remove any remaining slag deposits, leaving only small deposits and various stockpiles of materials that were deemed unsuitable for recovery (often clay/sand mixed with slag and other unworkable fines).

A low earth bund, comprising reworked subsoils, was constructed along the from the Moat Road entrance northeastern boundary of the Area A

3.2 Stage 2

Drawing 2 shows the boundaries of Stage 2 (Area A1 and E), the July 2008 topographical survey of the entire site and the proposed excavation profiles.

3.2.1 Area A1 – Subsoil and Topsoil Stockpile Area

An area of stockpiled subsoil and topsoil (from earlier reclamation schemes on adjacent plots) that were subsequently utilised for soiling of the Area A, A1 and E. Redistribution of these soils allowed EQP to recover any remaining slag deposits beneath, for re-processing purposes, and to prepare the formation level for subsequent soiling.

3.2.2 Area E – EQP Operational Area

The area occupied by EQP, including access haul road to Moat Road. As the final phase of the reclamation programme, slag deposits were recovered, for re-processing into useable aggregates, from this area and to prepare the formation level for subsequent soiling.

4 RECLAMATION WORKS

4.1 Reclamation Works Undertaken

The unsuitable materials, and any other non-hazardous materials that were encountered and deemed as unsuitable to remain on the Slag Banks site (i.e. containing potentially unstable slag materials and/or exceeding the site target levels), were removed to Conesby Quarry Phase III South landfill cell. Any materials identified as potentially hazardous were stockpiled, and where necessary further testing undertaken to confirm the classification, for subsequent removal from site by HCSL for disposal at either Conesby Quarry (confirmed non-hazardous wastes) or to another suitably licensed landfill facility (hazardous wastes).

For each phase of the reclamation contracts, the exposed and prepared formation level was inspected ([Drawing 3](#)) to ensure the absence of any visible or olfactory signs of contamination (i.e. to confirm the removal of all significant deposits of slag wastes), prior to sampling on a 50 m x 50 m grid (as set out by the HCSL surveyor and indicated in Drawings 4 and 5).

The analytical results were then compared against the Site Target Levels (STVs; Appendix 1). In the event that a sample failed against these levels, and in the absence of any visible contamination at the location, an area of 'natural ground' was scraped, and the arisings removed and stockpiled prior to disposal at either Conesby Quarry (non-hazardous) or off-site (if potentially hazardous). The sample point was then re-sampled (suffix 'A'), tested and, reassessed using the STVs.

A 0.5 m thick layer of subsoil (from the Area A1 stockpiles) was placed, and subsequently spread, across the validated areas. The completed subsoil level ([Drawing 6](#)) was then inspected to ensure the absence of any unexpected/unauthorised materials. Soil samples were collected from Area A on a 50 m x 50 m grid (same as formation level) for analysis. No subsoil level soil samples were collected from Areas A1 and E. The Area A1 stockpiled soils had already been tested in detail at the time of stockpiling, and so it was expected that all would prove to be acceptable (historical analytical results reproduced in Appendix 2).

During the initial contract works (site clearance and subsoiling operations) a water sample was collected on a weekly basis from the agreed sampling point; an existing 300 mm outlet pipe in the small pond immediately beyond the southeastern boundary (sample point SW1). This pipe drains into Foxhills Beck and was deemed an appropriate indicator of water quality draining from the reclamation site.

Drawing 7 shows the proposed earthworks movement summary.

4.2 Summary of Works

HCSL draft programme of works is reproduced in [Appendix 3](#).

Based on the pre- and post- excavation survey levels (Drawings 1 and 2) the volume of material excavated and removed from site was:-

Area A – 25,000 m³

Area A1 – 25,000 m³

Area E – 25,000 m³

TOTAL – 25,000 m³

The daily load counts (movements of non-hazardous wastes to Conesby Quarry), and the transport tickets for any materials disposed of at other facilities, are enclosed in **Appendix 4**.

4.3 Monitoring Undertaken

All soil samples were checked for volatile organic compounds (VOCs) using a photo-ionisation detector (PID),

4.4 Laboratory Testing

4.4.1 Chemical analysis

Chemical analysis of soil and selected water samples was undertaken by Derwentside Environmental Testing Services (DETS), a UKAS/MCERTS accredited laboratory and the summary tables are presented in Tables 1 to 5 and the laboratory certificates reproduced in Appendix 5.

The general soil suite comprised chemical determinands including pH, total sulphate, total cyanide, monohydric phenols, extractable petroleum hydrocarbons (EPH), ammoniacal nitrogen, total arsenic, cadmium, chromium (VI), copper, lead, mercury, nickel and zinc.

The general water suite comprised chemical determinands including pH, turbidity, suspended solids, dissolved oxygen and total chemical oxygen demand.

Stage 1 – Area A

Sixty-nine formation level soil samples were collected from sixty-four positions across Area A, which were analysed for the general soil suite. Four of these were further analysed for split/banded aliphatic and aromatic carbon banding (TPH CWG).

Sixty-four subsoil level soil samples were collected from sixty-four positions across Area A and analysed for the general soil suite.

An additional four soil samples were collected in the vicinity of the former concrete base (near Moat Road entrance) and were analysed for the general suite, TPH CWG and speciated polycyclic aromatic hydrocarbons (PAHs). A single water sample, from the excavation, was analysed for pH, conductivity, TPH CWG and speciated PAHs.

Stage 1 – Water Samples

Seven water samples were collected and analysed for the general water suite.

Stage 2 – Area A1

Twenty-four formation level soil samples were collected from across Area A1, which were analysed for the general soil suite. Two of these were further analysed for TPH CWG.

No subsoil level soil samples were collected from Area A1 for analysis.

Stage 2 – Area E

Thirteen formation level soil samples were collected from eleven positions across Area E, which were analysed for the general soil suite.

No subsoil level soil samples were collected from Area A1 for analysis.

5 RESULTS

5.1 Stage 1 - Area A

5.1.1 Formation Level

The formation level soil analytical results are summarised in Table 1, and the analytical certificates are reproduced in Appendix 5.

Of the samples taken, only five were found to exceed the relevant STV. These were:-

- sample point 16 – ammoniacal nitrogen (170 mg/kg);
- sample point 36 – ammoniacal nitrogen (71 mg/kg);
- sample point 52 – ammoniacal nitrogen (78 mg/kg);
- sample point 53 – pH (10.2), and;
- sample point 55 – TPH (1,100 mg/kg).

The original materials from sample points 16, 36, 52 and 53 were dug out, stockpiled and later deposited within Conesby Quarry as non-hazardous wastes.

Materials from sample point 55 were stockpiled, pending further analysis, as based on the elevated TPH result they were deemed potentially hazardous and were, therefore, potentially unsuitable to be deposited within the non-hazardous cell at Conesby Quarry. Further analysis of this sample for TPH CWG confirmed that this material was non-hazardous, and could therefore be deposited within Conesby Quarry.

Further excavations were undertaken at each of these sample points followed by re-sampling, testing and comparison with the STVs.

Re-tested sample point 16A returned an ammoniacal nitrogen result of 110 mg/kg. This minor exceedance of the STVs was a spatially isolated occurrence, was located within natural material (predominantly clay), with no visible signs of any contamination (such as slag or ash). Therefore, it was considered not to represent a significant risk to either controlled waters or groundwater (or human health) and no further action was necessary.

All other re-sampled positions were compliant.

The formation level results have also been compared to the relevant FWSC Generic Assessment Values derived using CLEA v1.06, including current published UK Soil Guideline Values (SGVs) and other Generic Assessment Values (GAVs) derived by LQM/CIEH (Ref. 8), for a residential development with plant uptake (these being the most conservative assessment values).

Summary statistics are provided in Tables 6 and 7.

All formation level sample results were compliant with the assessment values for residential with plant uptake with the exception of:-

- a single arsenic value (45 mg/kg; sample point 1), although both the mean and 95th percentile were well below the assessment value, and;
- all the initial test results for “total” chromium exceeded the FWSC residential with plant uptake GAV of 4.3 mg/kg, which assumes all of the chromium is present as hexavalent chromium (chromium VI/Cr VI). All these samples were further analysed for Cr VI, and no positive concentrations were recorded (all <1 mg/kg), thus all chromium present can be assumed to be in the chromium III form. All subsequent samples were tested for Cr VI only, and all were compliant.

5.1.2 Subsoil level

The formation level soil analytical results are summarised in Table 2, and the analytical certificates are reproduced in Appendix 5.

All the subsoil used in the Area A contract was sourced from Area A1. Historical data are included in Appendix 2, but as it was not possible to match results to stockpiles (which had been added to, and drawn down, over the years) it was necessary to take further samples on a grid system.

There were no STVs for the subsoil, so the subsoil level results have been compared to the relevant FWSC Generic Assessment Values derived using CLEA v1.06, including current published UK Soil Guideline Values (SGVs) and other Generic Assessment Values (GAVs) derived by LQM/CIEH (Ref. 8), for a residential development with plant uptake (these being the most conservative assessment values).

Summary statistics are provided in **Table 8**.

With the exception of elevated arsenic values in the majority of samples (which is entirely consistent with natural background levels in the Scunthorpe area; **Ref. 9**), all subsoil level sample results were compliant with the assessment “values for residential with plant uptake”.

5.1.3 Concrete Base

All validation samples (included in **Table 1**) from the concrete base excavation were compliant with the assessment values for residential with plant uptake.

5.2 Stage 2 - Area A1

5.2.1 Formation Level

The formation level soil analytical results are summarised in Table 3, and the analytical certificates are reproduced in Appendix 5.

Of the samples taken, only two were found to slightly exceed the pH STV. These were:-

- sample point 84 – pH (11.1);
- sample point 91 – pH (11.3).

These minor exceedances of the pH STV was a spatially isolated occurrence, was located within natural material (predominantly clay), with no visible signs of any contamination (such as slag or ash). Therefore, it was considered not to represent a significant risk to either controlled waters or groundwater (or human health) and no further action was necessary.

The formation level results have also been compared to the relevant FWSC Generic Assessment Values derived using CLEA v1.06, including current published UK Soil Guideline Values (SGVs) and other Generic Assessment Values (GAVs) derived by LQM/CIEH (Ref. 8), for a residential development with plant uptake (these being the most conservative assessment values).

Summary statistics are provided in Tables 9 and 10.

All formation level sample results were compliant with the assessment values for residential with plant uptake:-

- Based on chromium data for Area A, all chromium present can be assumed to be in the chromium III form. All samples were tested for Cr VI only, and all were compliant.

5.2.2 Subsoil Level

No subsoil level soil samples were collected from Area A1 for analysis

5.3 Stage 2 - Area E

5.3.1 Formation Level

The formation level soil analytical results are summarised in Table 4, and the analytical certificates are reproduced in Appendix 5.

Of the samples taken, only one was found to exceed the STV, this was:-

- sample point 65 – ammoniacal nitrogen (280 mg/kg).

Re-tested sample point 65A returned an ammoniacal nitrogen result of 180 mg/kg. This minor exceedance of the STVs was a spatially isolated occurrence, was located within natural material (predominantly clay), with no visible signs of any contamination (such as slag or ash). Therefore, it was considered not to represent a significant risk to either controlled waters or groundwater (or human health) and no further action was necessary.

The formation level results have also been compared to the relevant FWSC Generic Assessment Values derived using CLEA v1.06, including current published UK Soil Guideline Values (SGVs) and other Generic Assessment Values (GAVs) derived by LQM/CIEH (Ref. 8), for a residential development with plant uptake (these being the most conservative assessment values).

Summary statistics are provided in Table 11.

All formation level sample results were compliant with the assessment values for residential with plant uptake:-

- a single arsenic value (41 mg/kg; sample point 70), although both the mean and 95th percentile were well below the assessment value, and;
- Based on chromium data for Area A, all chromium present can be assumed to be in the chromium III form. All samples were tested for Cr VI only, and all were compliant.

5.3.2 Subsoil Level

No subsoil level soil samples were collected from Area E for analysis

5.4 Water Quality

The water quality analytical results are summarised in Table 5, and the analytical certificates are reproduced in Appendix 5.

With the exception of a minor exceedance of suspended solids, the water quality analytical results show the surface water discharge was uncontaminated and remained relatively consistent. There were no visible signs of oil or grease.

Following the completion of the main earth works, sampling of the surface water discharge ceased.

6 OUTSTANDING WORK FOLLOWING ON FROM THE RECLAMATION CONTRACTS

The outstanding works include:-

- Final sub-soiling of the remaining areas of Area E, and;
- Validation sampling of the completed sub-soiled Areas A1 and E on grid system, as per the formation level sampling points.

7 SUMMARY AND CONCLUSIONS

7.1 All deposits of made ground steel works wastes have been removed from the designated areas in Areas A, A1 and E of the Normanby Park Slag Banks.

7.2 Samples have been taken from the exposed natural soil (“formation level samples”) of Areas A, A1 and E, with stockpiled subsoil materials used subsequently as site cover.

7.3 Within Area A:-

- The original samples collected from sample points 16, 36, 52, 53 and 55 were non-compliant with the STVs. These materials were further excavated and stockpiled for later disposal within Conesby Quarry as non-hazardous wastes.
- Materials from sample point 55 were stockpiled, pending further analysis, as based on the elevated TPH result they were potentially unsuitable to be deposited within the non-hazardous cell at Conesby Quarry. Further analysis of this sample for TPH CWG confirmed that this material was non-hazardous, and could, therefore, be deposited within Conesby Quarry.
- Further excavations were undertaken at sample points 16, 36, 52, 53 and 55 followed by re-sampling, testing and comparison with the STVs. With the exception of sample point 16A, they were all compliant with the STVs.
- The minor exceedance of the ammoniacal nitrogen STV at re-tested sample point 16A was a spatially isolated occurrence, and located within natural material (predominantly clay), with no visible signs of any contamination (such as slag or ash). Therefore, it was considered not to represent a significant risk to either controlled waters or groundwater (or human health) and no further action was necessary.
- All other sampled positions were compliant with the STVs.

7.4 Within Area A1:-

- The minor exceedances of the pH STV in sample points 84 and 91 were spatially isolated, and located within natural material (predominantly clay), with no visible signs of any contamination (such as slag or ash). Therefore, it was considered not to represent a significant risk to either controlled waters or groundwater (or human health) and no further action was necessary.
- All other sampled positions were compliant with the STVs.

7.5 Within Area E:-

- The minor exceedance of the ammoniacal nitrogen STV at re-tested sample point 65A was a spatially isolated occurrence, was located within natural material (predominantly clay), with no visible signs of any contamination (such as slag or ash). Therefore, it was considered not to represent a significant risk to either controlled waters or groundwater (or human health) and no further action was necessary.
- All other sampled positions were compliant with the STVs.

7.6 With the exception of arsenic (in only two samples), all formation level sample collected across Areas A, A1 and E were compliant with the FWSC Generic Assessment Values, derived using CLEA v1.06, for “residential development with plant uptake”.

7.7 The sub-soiled Area A complied with the FWSC Generic Assessment Values, derived using CLEA v1.06, except for arsenic – which is consistent with natural background levels typical of the Scunthorpe area.

7.8 With the exception of a minor exceedance of suspended solids, the water quality analytical results show the surface water discharge was uncontaminated and remained relatively consistent throughout the period of reclamation works. There were no visible signs of oil or grease.

7.9 Outstanding reclamation works include the final sub-soiling of the remaining areas of Area E, and subsequent validation sampling of the completed sub-soiled Areas A1 and E.

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8 REFERENCES

- 1 FWS Consultants Ltd, September 2008. Report on Site Investigation and Waste Classification at the Slag Banks, Normanby Park Enterprise Park, Scunthorpe.
- 2 Building design Partnership, March 1985. Normanby Park Steelworks Reclamation. Feasibility Study and Site Survey. 3 vols.
- 3 Thomas Research Services, 1991. Report on Sample Material Taken from the Normanby Park Works.
- 4 AEA Technology, October 1993. Results of Site Investigation at Normanby Park Works Tip. 2 Vols.
- 5 AEA Technology, February 1995. Site Investigation of Slag Banks 93 Volumes including a Second TRS Report on Slag Stability).
- 6 FWS Consultants Ltd, May 2002. Normanby Park Iron and Steelworks Reclamation Scheme. Slag Banks Drum Pond Tip: Landfill Tax Report.
- 7 FWS Consultants Ltd, June 2004. Report on Remediation Works carried out on the Works Tip, Normanby Park Enterprise Park Phase 3, and the Resultant Land Quality.
- 8 LQM/CIEH, 2009. The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment. 2nd Edition. LQM Press, Nottingham.
- 9 British Geological Survey, 2010. Arsenic (As) in Surface Soils: Central and Eastern England. G-BASE Geochemical Map.