

S.73 APPLICATION TO VARY CONDITIONS 3 AND 4

ENVIRONMENTAL STATEMENT ADDENDUM

CHAPTER 13: GEOTECHNICAL

**Ffos-y-Fran Land Reclamation Scheme, East of Merthyr Tydfil
CF48 4AE**

Merthyr (South Wales) Limited

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13.1.0 Introduction

S.73 Application Context

- 13.1.1 Planning permission for the operational surface coal mine at Ffos-y-Fran was originally granted under planning permission ref. A-PP 152-07-014 ('the original application'). The description of development was as follows:

"Application by Miller Argent (south Wales) Limited for the Ffos-y-Fran Land Reclamation Scheme, incorporating the extraction of coal by open cast methods, and being the final phase of the east Merthyr Reclamation Scheme."

- 13.1.2 The above permission was subsequently varied under a S.73 planning application (application ref. P/08/0316) which sought consent for:

"[The] Variation of condition 37 of planning permission A-PP 152-07-014 to permit the limited dispatch by road of up to 5% of the annual output of coal from the Ffos-y-Fran land reclamation scheme or a maximum of 50,000 tonnes of coal per annum (whichever is the lesser) via Cwmbargoed Disposal Point."

- 13.1.3 The application was refused by Merthyr Tydfil County Borough Council but the proposals were subsequently allowed at Appeal (Appeal ref. APP/U6925/A/10/2129921). The Appeal Decision was issued by an appointed Inspector on the 11th of March 2011 and contained a comprehensive list of updated conditions, thereby superseding the original planning permission for the site as detailed above (permission ref. A-PP 152-07-014).

- 13.1.4 The purpose of this S.73 application is to allow for an extension to the lifespan of the mine. As such, the application seeks to vary the following conditions as contained within Appeal ref. APP/U6925/A/10/2129921:

- **Condition 3** – "All coal extraction from the development hereby permitted shall cease no later than 06 September 2022"; and
- **Condition 4** – "Final restoration of the land shall be completed no later than 06 December 2024 and aftercare shall be undertaken for a period of not less than 5 years upon certification of completion of each phase of the progressive restoration scheme."

- 13.1.5 The S.73 application, as submitted, seeks to extend the lifespan of the minerals extraction by a further 9 months. As such, the timescales stipulated within the above conditions will be varied to match this extended life span for the mine. No alterations are proposed to the extraction area or working practices at the mine as previously consented.

Consideration of S.73 Application

- 13.1.6 In terms of geotechnical engineering, the material amendment is for the extension of time of operating the cut slopes for the End Wall Adjacent to A4060 Trunk Road from the proposed additional 9 months of operations.
- 13.1.7 The original ES identified and addressed the potential for slope geotechnical issues from the scheme to include the stability of the slopes cut under the A4060 Trunk Road.

13.1.8 The following information was submitted in support of the original application (ref. A-PP 152-07-014) for minerals consent at the site:

- Chapter 13 - Geotechnical Assessment of Cut Slope Design for the End Wall Adjacent to A4060 Trunk Road

13.1.9 The following information was submitted in support of the subsequent S.73 application (ref. P/08/0316 / Appeal ref. APP/U6925/A/10/2129921) pertaining to the geotechnical engineering of the cut slopes of the End Wall Adjacent to A4060 Trunk Road:

- Quarries Regulations 1999 (Rev. Dec 2013) Regulation 33 Geotechnical Assessment – August 2017, James Associates - This is the latest Geotechnical Assessment for the site; and
- Quarries Regulations 1999 (Rev. Dec 2013) Regulation 33 Geotechnical Assessment – November 2012, Miller Argent - This Geotechnical Assessment contains updated slope stability assessments for the End Wall Adjacent to A4060 Trunk Road

13.1.10 All of the above technical assessments and associated documents have been reviewed in the undertaking of this Environmental Statement Addendum and the findings contained herein.

Purpose and Structure of Chapter

13.1.11 This chapter of the Environmental Statement Addendum (ESA) considers the impact of the proposed material amendments on the planning policy and context of the area. The following is included within this Technical Chapter:

- Changes to legislation, policy and guidance relating to geotechnical engineering of cut slopes;
- Changes in geotechnical engineering understanding of the site, particularly relating to the End Wall Adjacent to A4060 Trunk Road;
- Changes in assessment of effects pertaining to geotechnical engineering of cut slopes, particularly relating to the End Wall Adjacent to A4060 Trunk Road; and
- Changes in proposed geotechnical engineering mitigation, particularly relating to the cut slopes of the End Wall Adjacent to A4060 Trunk Road.

13.2.0 Methodology

Changes in Legislation, Policy and Guidance

- 13.2.1 There have been no changes to legislation, policy and guidance in relation to geotechnical engineering of cut slopes since the original application (ref. A-PP 152-07-014).
- 13.2.2 The key legislative documents that apply under the current S.73 application include the Quarry Regulations 1999.

Assessment Methodology

- 13.2.3 There are no changes to the assessment methodology as contained within the original ES and subsequent Geotechnical Assessments.

13.3.0 Changes in Baseline Conditions

Original ES Baseline

- 13.3.1 The geotechnical engineering conditions at the time of the original application are set out within Section 13.1 of the original ES.

Original ES Future Baseline

- 13.3.2 The original ES did not establish a Future Baseline scenario for geotechnical engineering.

Current Baseline

- 13.3.3 The understanding of the geotechnical engineering conditions for the original ES is slightly improved via experience gained through mining. The bottom most seam being worked is the Lower Four Feet Seam and the most critical slope in terms of impact remains the western End Wall Adjacent to A4060 Trunk Road.
- 13.3.4 The height of the excavation on the western End Wall Adjacent to A4060 Trunk Road is currently 100m high. This is greater than the planned maximum height of 61m based upon historical rockhead surveys and interpretations of the geological model. However the slope is broken by a ramp and the current overall rock head angle of the West wall is 1:1.5 (34°), with interbed slopes of 1.5:1 (56°); both shallower than original ES design.
- 13.3.5 The original ES design made allowances for the potentially problematic Dowlais Fault (in terms of mining and stability). This has now been mined through, and is considered to act as a drain, improving pore pressure conditions (in terms of mining and stability). Mining to the north of the Dowlais Fault, it was anticipated that the western End Wall Adjacent to A4060 Trunk Road would be entirely superficial material; however, the excavated slopes are in both rock as well as superficial strata; again, improving conditions.
- 13.3.6 The original ES stated that there was no evidence for a continuous seatearth horizon beneath the Lower Four Feet seam, although there is evidence of a discontinuous seatearth horizon. This interpretation has not changed.
- 13.3.7 Experience gained through mining has confirmed the presence of the historic workings in the levels down to the Lower Four Feet seam. These are mined through routinely will no large scale stability issues encountered. They act as a drain and there is minimal groundwater inflow impacting day to day operations. Only minor flow seepage is observed from the pit faces.
- 13.3.8 The original ES highlighted a number of aquifers existing in the strata. The aquifers have been mined through and drained. The Spotted Ironstone is thought to drain the mining area. The majority of the inflows are from surface water.
- 13.3.9 No material testing has been undertaken during operations to update the inputs and assumptions made in 2003. However, the 2012 Geotechnical Assessment collated empirical data to produce updated material strength parameters.

Changes in Baseline

- 13.3.10 There are not considered to be any material changes to the geotechnical engineering conditions that would affect the assessment or conclusions from the original ES. The updated geotechnical understanding indicate slightly better conditions than those originally expected in the original ES.

13.4.0 Assessment of Effects

- 13.4.1 Given the remit of the Geotechnical Chapter within the original ES, this principally concentrates on the 'Slope Stability of Cut Slope Design for the End Wall Adjacent to A4060 Trunk Road'.

Additional Effects

- 13.4.2 There are no changes to the proposed operations that would result in adverse changes to the predicted slope stability of cut slope design for the End Wall Adjacent to A4060 Trunk Road as stated in the original ES. The 2012 GA slope stability assessments for the same sections analysed in the original ES indicated that the factor of safety remained above the target threshold of 1.3 for the end wall adjacent to A4060 Trunk Road.
- 13.4.3 It is considered that the slightly improved geotechnical conditions than those stated in the original ES reduces the likelihood of slope stability issues for the cut slope design for the End Wall adjacent to A4060 Trunk Road
- 13.4.4 Experience gained through operations has not forced any major slope design alterations for the End Wall Adjacent to A4060 Trunk Road; however, experience has allowed for practical testing the impact of the reduction and eventual elimination of the safety bench at the rock head. It was found that the 1:2 angle of the superficial material is sufficient to minimise instability, thus a safety berm is no longer considered required. This has allowed for a decrease in waste stripping.
- 13.4.5 As is typical in all mining operations, bench scale failures have been experienced, and are typically "operational" in nature, i.e. they do not impact upon the long term operations. Though not currently observed on the western End Wall Adjacent to A4060 Trunk Road, when instabilities are encountered at the mine, a stand-off is provided for to protect workings below. These unstable areas are either worked through/ or filled on each progressive cut.
- 13.4.6 Whilst not concerning the end wall adjacent to A4060 Trunk Road, expected pit (high)wall instabilities were experienced in 2015 when mining through and in the vicinity of the Dowlais Fault. An assessment of the stability recommended the placement of a temporary rock fall bench, which was gradually removed as mining progressed and is no longer planned/necessary for the pit (high)wall.

Additional Cumulative Effects

- 13.4.7 There are no identified changes in geotechnical engineering conditions or the assessment of effects that will result in cumulative effects for the cut slope design for the End Wall adjacent to A4060 Trunk Road.
- 13.4.8 As detailed above, it is considered that the slightly improved geotechnical conditions than those stated in the original ES reduces the likelihood of slope stability issues for the cut slope design for the End Wall adjacent to A4060 Trunk Road

Consideration of Original ES

- 13.4.9 There are no identified changes in geotechnical engineering conditions or the assessment of effects that will result in new or significant effects for the cut slope design for the End Wall adjacent to A4060 Trunk Road.

13.5.0 Requirement for Additional Mitigation or Monitoring

- 13.5.1 Appropriate mitigation and monitoring has been identified in the original ES. No further mitigation, beyond that laid out in the original ES Chapter, will be required as a result of a time extension to the mineral extraction at the site.

Original ES Mitigation

- 13.5.2 The original ES stated that the slope design had to be at certain maximum angles and that particular mining practices were to be followed during excavations, for all the cut slopes, including the End Wall adjacent to A4060 Trunk Road. Full details of the slope design angles and practices are in Section 13.3 of the original ES.

Subsequent Mitigation or Monitoring

- 13.5.3 The mine has implemented slope displacement and water level monitoring of the cut slopes during periods of mining, specifically when mining through the Dowlais Fault. This has provided for beneficial additional understanding of geotechnical slope performance.

Alternate or Additional Mitigation and Monitoring

- 13.5.4 The mitigation measures implemented are considered to remain appropriate.

13.6.0 Residual Effects

- 13.6.1 Following consideration of mitigation, residual effects relating to geotechnical engineering during the operations are identified within the original ES.

Consideration of Original ES

- 13.6.2 Given that the proposed extension in time will not alter the findings and plans of the original ES, the slopes cut of the End Wall adjacent to A4060 Trunk Road will be backfilled, residual impacts for the proposed operations are likely to be insignificant.

13.7.0 Other Environmental Issues

13.7.1 This Section seeks to detail any considerations and geotechnical engineering effects which have been identified with regard to the range of topics which have been introduced into EIA requirements through the EIA Regulations 2017. Where there are no such considerations or environmental effects, this is also specified below for clarity.

13.7.2 Please see Chapter 21 for a summary of the 'Other Environmental Issues' identified across all of the technical assessments undertaken and the Chapters prepared as part of the ES.

Other Environmental Issues of Relevance

Infrastructure

13.7.3 The assessment of infrastructure is not considered of relevance to the geotechnical engineering / slope stability Chapter.

Waste

13.7.4 Waste produced by the operation is planned to be used to backfill the pit and thus buttress/remediate the slopes cut of the End Wall adjacent to A4060 Trunk Road.

Population and Human Health

13.7.5 The assessment of population and human health is not considered of relevance to the geotechnical engineering Chapter.

Climate and Carbon Balance

13.7.6 The assessment of climate and carbon balance is not considered of relevance to the geotechnical engineering Chapter.

Risks of Major Accidents and/or Disasters

13.7.7 Major accidents, with respect to cut slopes (including the slopes cut of the End Wall adjacent to A4060 Trunk Road) is the primary driver for the geotechnical engineering section. The original ES geotechnical engineering chapter was focussed on mitigating this risk.

13.7.8 On this basis, there are no likely significant effects associated with the risks of major accidents and/or disasters.

Summary

13.7.9 With regards to the EIA regulations 2017, in terms of geotechnical engineering there are not considered to be any likely significant effects with regards to Other Environmental Issues.

13.8.0 Summary of Effects

- 13.8.1 Chapter 13 of the original ES has been reviewed in the context of the proposed material amendment, to determine whether the proposals, and subsequent changes in policy, guidance and geotechnical engineering conditions have the potential to lead to changes in the findings as described within the original ES.
- 13.8.2 Following this review, no changes have been identified that would alter the assessment of effects as described within the original ES.

13.9.0 Conclusions

- 13.9.1 This review has identified that the proposed S.73 Application, and changes in policy, guidance and baseline conditions that have occurred since the 2003 Application, will not alter the findings presented within the original ES. On this basis, it is not necessary to undertake further technical assessments in support of the proposed development.
- 13.9.2 It is therefore concluded that the findings detailed in Chapter 13: Geotechnical Assessment of Cut Slope Design for the End Wall Adjacent to A4060 Trunk Road, of the original ES remain valid.

REFERENCES

Quarries Regulations 1999 (Rev. Dec 2013) Regulation 33 Geotechnical Assessment X Technical Assessment – August 2017, James Associates

Quarries Regulations 1999 (Rev. Dec 2013) Regulation 33 Geotechnical Assessment – November 2012, Miller Argent

EUROPEAN OFFICES

United Kingdom

AYLESBURY

T: +44 (0)1844 337380

BELFAST

T: +44 (0)28 90732493

BRADFORD-ON-AVON

T: +44 (0)1225 309400

BRISTOL

T: +44 (0)117 9064280

CAMBRIDGE

T: + 44 (0)1223 813805

CARDIFF

T: +44 (0)2920 491010

CHELMSFORD

T: +44 (0)1245 392170

EDINBURGH

T: +44 (0)131 3356830

EXETER

T: + 44 (0)1392 490152

GLASGOW

T: +44 (0)141 3535037

GUILDFORD

T: +44 (0)1483 889800

LEEDS

T: +44 (0)113 2580650

LONDON

T: +44 (0)203 6915810

MAIDSTONE

T: +44 (0)1622 609242

MANCHESTER

T: +44 (0)161 8727564

NEWCASTLE UPON TYNE

T: +44 (0)191 2611966

NOTTINGHAM

T: +44 (0)115 9647280

SHEFFIELD

T: +44 (0)114 2455153

SHREWSBURY

T: +44 (0)1743 239250

STAFFORD

T: +44 (0)1785 241755

STIRLING

T: +44 (0)1786 239900

WORCESTER

T: +44 (0)1905 751310

Ireland

DUBLIN

T: + 353 (0)1 296 4667

France

GRENOBLE

T: +33 (0)4 76 70 93 41