



# **Mining Waste Management Plan for Overburden Bunds**

E&JW Glendinning Ltd.

December 2024

LINHAY-ATK-S1-GEN-E-RP-010

# **LINHAY HILL QUARRY, ASHBURTON, DEVON - PLANNED EXTENSION**

# Notice

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This document has 32 pages including the cover.

## Document history

Document title: Mining Waste Management Plan for Overburden Bunds

Document reference: LINHAY-ATK-S1-GEN-E-RP-010

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Draft	EC	TSM	PC	ATF	31/07/24
1.1	Issue for variation application	TSM	PC	ATF	ATF	5/12/24

## Client signoff

Client	E&JW Glendinning Ltd.
Project	LINHAY HILL QUARRY, ASHBURTON, DEVON - PLANNED EXTENSION
Job number	5214504
Client signature/date	



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# 1. Non Technical Summary

**Name of Operator:** E & JW Glendinning Ltd.

**Name and Address of Site:** Linhay Quarry, Ashburton, Devon, TQ13 7ES.

- 1.1. The intention is to extend Linhay Hill Quarry into the Alston Farm fields to the north east of the existing quarry over a period of 60+ years with six stages planned. The overburden will be placed during Stage 1 (3-14 years) and Stage 2 (15-32 years) of the extension into bunds around the south east and north east of the quarry extension. The Mining Waste Permit Proposed Site Plan provided in Appendix A.1 shows the site location and those areas of mining waste placement. Surface water runoff from the existing farm fields (until removed by the quarry extension) and from the overburden bunds, will be conveyed around the bunds to the existing outfall from the farm fields, where that water will join the route of existing unnamed ordinary watercourse, referred to in the studies as the Alston stream. That stream is intermittent and flows across the farm fields from the north to south and flows via a pipe into a wide vegetated ditch parallel to the A38, at a location north east and approximately 215m upstream of the existing surface water runoff outfall from the farm fields.
- 1.2. E & JW Glendinning Ltd. operates the well-established Linhay Hill Quarry which is a major limestone quarry located to the north-east of Ashburton. Linhay Hill Quarry is immediately adjacent to the A38, which runs along the quarry's south-eastern boundary, and at this point is the boundary of the Dartmoor National Park. The proposed quarry extension area and placement of overburden waste is into Alston Farm owned by E&JW Glendinning to the north east of the existing quarry and north of the A38.
- 1.3. As of the end of 2020, the reserves remaining in the quarry were sufficient for a further five years viable production at the rate of extraction pertaining. The extension is planned so that the life of Linhay Hill Quarry, its products and the economic benefits and jobs it creates will be secure for the future, and planning permission 0322/16 and DCC/3994/2017 for the quarry extension and associated infrastructure works was granted by the Dartmoor National Park Authority (DPNA) on 15 March 2021.
- 1.4. Progress of the quarry extension will depend on the prevailing economic outlook but has been planned based on continuing at the quarry's rate of extraction in 2015 / 2016. The current arrangements for processing extracted materials in the existing Linhay Hill Quarry will continue concurrently during Stages 1 to 4 of the extension, and for the majority of Stage 5. In Stage 5 the quarry extension is progressively deepened until it is worked out to its full extent, with no increase in the quarrying footprint; with Stage 6 being completion and restoration of the quarry. Pre-commencement infrastructure works and monitoring have been carried out in a Stage 0 (for circa 3 years) since the planning application was granted.
- 1.5. Overburden subsoils need to be removed from the Alston Farm fields prior to the target mineral extraction and during Stage 1 and Stage 2 of the extension it is planned for that overburden to be deposited along the south east boundary of the farm and north east of the planned quarry extension's easternmost extent which is at Stage 4 on farm fields towards the hamlet of Caton along Caton Lane. The overburden bunds will raise the existing ground levels in the farm fields and consequently increase the general slope angles of the land in those areas, though the potential increase in surface water runoff to the farm fields' existing surface water runoff outfall will be offset by the quarry extension reducing the area of the farm fields draining to that outfall. The quarry extension will drain south west to the existing quarry void.
- 1.6. The flood risk and drainage implications were evaluated within the planning application Flood Risk Assessment, May 2016, and the drainage for the overburden bunds for Stage 1 and Stage 2 subsequently planned as detailed in the Soil Management Plan for Stage 1, June 2024. In that document the drainage is detailed for completion of the overburden bunds and the quarry extension to Stage 4 because it was necessary to take account of the planned future changes at the outset of Stage 1. Those documents were prepared for the planning application or to discharge conditions of the



planning permission and provided separately as listed in Appendix B. Following completion of the overburden placement the land will be restored for landscape and environmental benefit as per the Landscape Ecological Mitigation and Enhancement Scheme approved by the planning authority for each extension stage.

- 1.7. The Mining Waste Directive (MWD) requires preparation of a waste management plan to prevent or reduce waste production and its harmfulness, encourage its recovery by recycling, reusing or reclaiming, and to ensure that short and long term disposal of extractive waste is safe. The MWD Article 5.3 specifies the minimum elements a Waste Management Plan (WMP) shall cover and this WMP adheres to those requirements.
- 1.8. The overburden placement will not be a Category A Waste Facility but will be for unpolluted soil inert waste comprising overburden of gravelly clay, with the gravel angular to subangular to mudstone and limestone, or recovered as slightly sandy clayey gravel, mixed with/or varying to slightly sandy gravelly clay with cobbles of limestone. The overburden net capacity estimate is 289,839 m<sup>3</sup> for Stage 1 and 270,752 m<sup>3</sup> for Stage 2. During filling of the overburden bunds the rainfall dependent surface water runoff will drain via temporary settlement areas and silt fences to the existing outfall from the Alston Farm fields. Once the bunds are complete and restored with vegetation such that the surface water runoff is natural, the temporary settlement areas and silt fences will no longer be required.
- 1.9. The design of the overburden placement adheres to the requirements of the Mining Waste Directive and earlier legislation, in particular the Quarry Regulations 1999, the Mines and Quarries (Tips) Act 1969, the Mines and Quarries (Tips) Regulations 1971 and the Health and Safety at Work Act 1974. The proposed works will have no adverse long term environmental effects, the extension and placement of overburden being comprehensively appraised in an Environmental Statement, June 2016, to support the planning permission 0322/16 & DCC/3994/2017 granted by the Dartmoor National Park Authority.
- 1.10. In the short term the planned works will entail a manageable risk relating to the potential for fugitive dust arising during works creating the bunds if there are dry and windy conditions, and also rainfall run-off containing suspended solids. There is also risk to habitat in localised areas and there will be noise during construction and placement of the overburden. However the design, construction and management plans have been prepared to mitigate and manage those risks, as detailed in the planning application Environmental Statement and supporting information and subsequent submissions to the planning authority to discharge the planning permission conditions.



## 2. Facility Classification

### Assessment Whether a Category A Waste Facility

- 2.1. An overarching human health and environmental risk assessment has been carried for the placement of extractive waste comprising overburden into bunds at Alston Farm for the planned Linhay Hill Quarry extension is provided in Appendix C. That risk assessment is based on information regarding the overburden placement presented in the planning application Environmental Statement dated June 2016 and supporting information and subsequent submissions to the planning authority to discharge planning permission conditions. Relevant reports are provided separately as listed in Appendix B.
- 2.2. There will be one mining waste facility for the placement of overburden in bunds which will be permanent. The mining waste facility permit site boundary is shown on the Mining Waste Permit Proposed Site Plan in Appendix A.1 and comprises the following adjoining areas:
- Stage 1A West Bund
  - Stage 1A East bund
  - Stage 1B Bund
  - Stage 2 Bund – which is effectively a continuation north of the Stage 1B bund.
- 2.3. The placement of overburden at each waste facility has been determined to not be a Category A Waste Facility because:
- Failure or incorrect operation at the overburden placement locations will not give rise to a major accident or environmental impact. That is because the overburden placement is in a rural area and though near a major A-class trunk road the land raise formed by the overburden placement has been designed to be constructed, operated and restored such that it will not be a risk to the health of nearby residents or give rise to an environmental impact.
  - The overburden to be placed will not contain waste classified as hazardous under Directive 91/689/EEC above a certain threshold or contain substances or preparations classified as dangerous under Directives 67/548/EEC or 1999/45/EC above a certain threshold. That is because the wastes will be derived from land which has had no prior use other than farming, primarily as pasture land, and will comprise natural ground of the similar composition and mineralogy as the soil overlying the buried karst limestone outside the quarry extension area and the bedrock to the north from which the overburden is derived.
  - The predicted consequences in the short or long term of a failure due to loss of structural integrity or due to incorrect operation of the waste facility has negligible potential for loss of life, or serious danger to human health or a danger to the environment. That is because a failure would not cause a contaminant release, or permanent or long lasting damage to the environment or an effect on the environment which could not be restored through minor reparation and restoration effort.
  - The above conclusions apply over the entire life cycle of the overburden placement including once the land raise formed is reinstated to agricultural use. That is because E & JW Glendinning Ltd. will be responsible for the safe construction, operation and restoration of the overburden placement under a planning permission granted by Dartmoor National Park Authority which includes specific conditions for the construction and operation of the overburden placement and for the restoration of the overburden bunds.



### 3. Waste Characterisation

- 3.1. The waste to be placed will be from continued operation of Linhay Hill Quarry by E & JW Glendinning Ltd. for the extraction of limestone which is the target mineral from the Chercombe Bridge Limestone Formation, but will be overburden which exists over the target mineral at the quarry extension into fields at Alston Farm. The bedrock is buried karst and karst features can be observed in the Linhay Hill Quarry working faces. The quarry is to be extended and worked by removal of the overburden, followed by blasting of the bedrock prior to excavation of the bedrock.
- 3.2. The 1:50,000 scale geological mapping indicates no recorded superficial deposits present, though the overburden overlying the Chercombe Bridge Limestone Formation is likely to be weathered bedrock derived from the Tavy Formation (slate) and the St Mellion Formation (sandstone, siltstone and mudstone) and Crackington Formation (mudstone and sandstone interbedded) bedrocks north of the planned overburden areas.
- 3.3. Several studies and ground investigations have been carried out in the area of the quarry extension and overburden bund formation to determine the overburden thickness, and understand the karstic character of the limestone and for infrastructure works and monitoring for the quarry extension, including the following:
- A Site Investigation and Design Report, January 2016, for the quarry extension which formed Appendix 3A of the planning application Environmental Statement. The report includes borehole data on the overburden and its thickness i.e. depth to bedrock in the quarry extension area.
  - A Tip Stability Report, September 2015, for the overburden bunds and which formed Appendix 3E of the planning application environmental statement. The report includes ground investigation data on the soils which will underlie the overburden bunds and those soils will have the similar character to the overburden to be extracted from quarry extension within the farm fields to the north and west.
  - The Revised ES Appendix 17.2 Land Stability Risk Assessment 2020, August 2020 includes as its Appendix A an Engineering Geology Desk Study which summarises the geology and previous ground investigations.
  - Ground investigations in September 2021 and March 2022 for the new Alston Farm access route north of the planned quarry extension. Those factual reports include data on the soils close to the north and east of the quarry extension and those soils will have the similar character to the overburden to be extracted from the quarry extension.
- 3.4. Those reports are provided separately as listed in Appendix B. Monitoring well installations around the quarry extension area also provide some additional data on the likely character of the overburden materials and groundwater levels within the limestone. From those reports the unpolluted soil inert waste overburden to be excavated and placed in the overburden bunds will comprise:
- “Firm to stiff orangish brown mottled light grey gravelly clay, with the gravel angular to subangular to coarse limestone and mudstone, or recovered as slightly sandy clayey gravel, mixed with/or varying to stiff to very stiff brown slightly sandy gravelly clay with cobbles of limestone.”
- 3.5. Boulders of limestone if encountered will be removed from the overburden when usable as the quarry's target mineral.
- 3.6. The Environment Agency's guidance EPR 6.14 'How to comply with your environmental permit. Additional guidance for: mining waste operations', states that:
- “Extractive waste may be considered as inert waste without specific testing if information about the site and the operations makes it reasonable to consider that the extractive waste does not contain





dangerous substances and is free of contamination from human activity or mineralisation, and is included in the list of inert extractive waste in Appendix 3 of this guidance”.

- 3.7. It is clear that extractive waste material comprising overburden from extension of Linhay Hill Quarry into farm fields to the north east at Alston Farm will be unpolluted inert soil because it will be excavated from previously undeveloped land (other than along Alston Lane which has to be closed and removed), derived from bedrock to the north of the limestone and hence will have a similar composition and mineralogy to that local bedrock. The extractive waste material will not self combust or burn, and once placed will not undergo significant disintegration or dissolution or other significant change likely to cause an adverse environmental effect or harm to human health, being similar to soils over the remaining buried karst.
- 3.8. The following table presents a summary of the characterisation the inert waste in accordance with the requirements of the MWD 2006/21/EC Annex II.

**Table 3-1 – Characterisation of Unpolluted Soil / Inert Waste Comprising Overburden at Linhay Hill Quarry**

Waste Description	Waste Classification	Chemical substances to be used during treatment	Method of Deposition	Waste Transport System to be employed
<p>Overburden: firm to stiff orangish brown mottled light grey gravelly clay, with the gravel angular to subangular to coarse limestone and mudstone, or recovered as slightly sandy clayey gravel, mixed and/or varying stiff to very stiff brown slightly sandy gravelly clay with cobbles of limestone.</p> <p>Will be produced as the quarry is extended in stages, the material not being a valuable mineral but will be placed in the overburden bunds.</p> <p>The waste will also include sediment derived from the placed overburden as suspended solids in surface water runoff. The suspended solids will be trapped in drainage channels and silt fences and at temporary settlement areas. By necessity the occurrence of this sediment is planned in order to prevent pollution of the Alston stream. The sediment will normally be removed after standing water is allowed to drain from the sediment.</p>	01 01 02 wastes from mineral non-metalliferous excavation	None.	The waste will be loaded by mechanical excavator to articulated dump truck for transportation to the area where the waste will be end tipped and then spread and compacted using a dozer.	The waste will be transported from its source location to its placement area using articulated dump trucks travelling on internal haul roads within the quarry to the overburden bund construction areas.

## 4. Quarry Operations Generating the Waste and its Prevention

### Quarry Operation

4.1. The operations carried out at Linhay Hill Quarry are summarised as follows:

- Topsoil and subsoil is progressively stripped in bands from the extraction area and placed in temporary storage areas separately, pending use in restoration of the overburden bunds progressively, or for restoration of the quarry's existing spoil tip, with excess sold. For Stage 1 topsoil / subsoil will be managed as per the Soil Management Plan for Stage 1 which forms Appendix B.5 of the Construction Environmental Management Plan for Stage 1. Those reports are provided separately as listed in Appendix B. Subsequent stages will be implemented as per the drawings and management plans for those stages as approved by the planning authority.
- Overburden is progressively removed from areas to be quarried and transported along haul roads to be placed in the overburden bunds. Once the capacity of the overburden bunds is reached the overburden will be placed within the quarry.
- The bedrock is open hole drilled and blasted to fragment the bedrock rock, which is then selectively excavated by mechanical excavator to acquire the target mineral i.e. the limestone. Blasting occurs on an infrequent but regular basis (e.g. once or twice a month) depending on excavation rates and requirements.
- The target mineral may be passed directly by mechanical excavator to a crusher and screener or loaded into articulated dump trucks and transported to a crusher and screener.
- The crushing and screening process forms stockpiles of the target mineral product which is stored on site within the quarry prior to sale and delivery to customers, or its use in a manufacturing process.
- Oversize target mineral may be reprocessed through a crusher and screener.

### Waste Generation and Prevention

- 4.2. The extractive waste from the Linhay Hill Quarry operations is a function of the naturally occurring proportion of overburden overlying the Chercombe Bridge Limestone Formation and poor quality weathered bedrock within the Chercombe Bridge Limestone Formation, and the value of those non target minerals when excavated.
- 4.3. Continued operation of the quarry entails ongoing extraction at the existing quarry and its extension to the north-east into fields at Alston Farm as detailed in the planning application supporting documents to the Dartmoor National Park Authority planning permission 0322/16 and DCC/3994/2017 and subsequent details submitted to discharge the planning conditions.
- 4.4. During the quarry extension design process in liaison with the planning authority prior to the planning application submission, the quarry extension proposed extraction depth was lowered by two bench levels, circa 30m to a base level of 0 mAOD in order that a proportion of the overburden volume could be placed into the quarry at the two lowest levels. That design change was to reduce the volume of extractive waste that could create a landscape impact due to placement on land outside the quarry extension. With that design change the proportions of the overburden extractive waste to be generated during the quarry extension Stages 1 to 4 are estimated as circa 52% backfill to the quarry void, and



circa 48% placed in the overburden bunds which are the subject of this mining waste management plan. The actual proportions will depend on the actual volume of overburden encountered.

- 4.5. The next control on waste prevention is the removal and proper storage of topsoil (which does not comprise waste) in separate stockpiles to other extractive wastes until use for site restoration, as detailed in the Soil Management Plan for Stage 1, June 2024, which is provided separately as listed in Appendix B.
- 4.6. Extractive waste comprising the overburden is minimised by selective excavation to not excavate the target mineral, namely the limestone bedrock. Should the target material be encountered it will be separated and processed within the quarry. Tarmac and subbase will be encountered along Alston Lane and the previous access lane to Alston Cottage and Alston Farm and will be gradually removed for the quarry extension, with those road construction materials recycled within the quarry.
- 4.7. Extractive waste comprising sediment formed from settlement of suspended solids in surface water run-off will be minimised by earthworks control measures to avoid excavation and movement of the overburden soils when rain is causing surface water run-off off, and by compaction post placement to ensure no areas of unconsolidated fine material.

## Waste Volumes

- 4.8. The extractive waste capacity for overburden placement is estimated as follows:
- Stage 1A west bund: 93,012 m<sup>3</sup>
  - Stage 1A east bund: 17,362 m<sup>3</sup>
  - Stage 1B bund: 179,465 m<sup>3</sup>
  - Stage 2 bund: 270,752 m<sup>3</sup>.
- 4.9. The above volumes are based on existing ground level to final contours. Should there be less overburden the proposed contours will not be achieved, however that is considered unlikely. Once the capacity of the overburden bunds has been reached, subsequent overburden waste will be managed within the quarry void.
- 4.10. The Mining Waste Permit Proposed Site Plan provided in Appendix A.1 shows the final contours for the overburden bunds, with an Existing Site Plan provided in Appendix A.2. The drawings submitted for the planning application for Stage 0, Stage 1 and Stage 2 are provided in Appendix A.3, with the cross sections submitted with the planning application which show the overburden bunds provided in Appendix A.4.

## Waste Treatment

- 4.11. Treatment of the extracted overburden waste will be by mechanical compaction by dozer and vehicle trafficking once the waste is placed above the existing ground level in the identified overburden bunds.
- 4.12. That treatment is to ensure waste placed will be stable in the short and long term and trafficable for the placement of further waste layers, with negligible construction and long term settlement. It is also to minimise the potential for dust and surface erosion by storm event surface water run-off i.e. during the overburden placement prior to reinstatement of its final surface which will commence once filling of an area is complete.



## Waste Transportation

- 4.13. Articulated dump trucks will be used to transport the extracted overburden waste from its location of occurrence via designated haul routes to the overburden bunds.
- 4.14. The planned haulage routes are shown on the drawings within the Soil Management Plan for Stage 1, June 2024 (provided separately as listed in Appendix B) and will be unpaved.

## Final Destination

- 4.15. Only the designated areas within the Alston Farm fields will be used during each stage (Stage 1A, Stage 1B and Stage 2) for the formation of the overburden bunds, which will be permanent and raise the ground levels in the existing farm fields to the contour elevations approved by the planning authority and as shown by the Mining Waste Permit Proposed Site Plan in Appendix A.1.
- 4.16. Overall the overburden placement operation will not be a continuous daily operation. Overburden is proposed to be placed in the bunds as per the Construction Programme in Section 5 of the Soil Management Plan for Stage 1, June 2024 (provided separately as listed in Appendix B). The overburden placement will be on a campaign basis for four months per year expected to be between April and October.



## 5. Environmental Risk Assessment and Risk Mitigation

- 5.1. An overarching human health and environmental risk assessment has been carried for the placement of extractive overburden waste and is provided in Appendix C. That risk assessment is based on information available regarding the proposed overburden placement as presented in the planning application and associated Environmental Statement dated June 2016 which detailed the environmental impact assessment and measures for the prevention of environmental pollution, and also subsequent management plans.
- 5.2. The supporting information includes appraisal and risk assessments within the following studies and management documents, which are provided separately as listed in Appendix B:
- a. Environmental Statement Appendix 3A Site Investigation & Design Report, January 2016.
  - b. Environmental Statement Appendix 3E Tip Stability Report, September 2015.
  - c. Proposed Extension of Linhay Hill Quarry Flood Risk Assessment, May 2016.
  - d. Proposed Extension of Linhay Hill Quarry Land Contamination Assessment, June 2016.
  - e. Revised ES Appendix 17.2 Land Stability Risk Assessment 2020, August 2020.
  - f. Construction Environmental Management Plan for Stage 1, May 2024. This includes environmental risk assessments for the Stage 1A west and east bunds and Stage 1B bund within it Appendix A.
  - g. CEMP for Stage 1 Appendix B.3 Karst Management Plan for Stage 1, November 2024.
  - h. CEMP for Stage 1 Appendix B.4 Construction Dust Management Plan for Stage 1, April 2024.
  - i. CEMP for Stage 1 Appendix B.5 Soil Management Plan for Stage 1, June 2024, which provides design details for soil handling and drainage for Stage 1.
- 5.3. The Environmental Statement also included as its Appendix 13 a Noise Impact Assessment, with further consideration given to noise impact by the Linhay Hill Quarry Extension – Stage 1, Noise & Vibration Impact Review, February 2024 prepared by AtkinsRéalis.
- 5.4. The aim is for overburden placement to be carried out adhering to the quarry operator's environmental management system and with prevention of environmental pollution by implementation of the measures detailed in the Construction Environmental Management Plan (CEMP) for Stage 1 and subsequent updates provided for the later stages.
- 5.5. The CEMP covers the works required for the planned quarry extension overburden bund formation and provides details of the project team and programme, biodiversity protection zones, the planned environmental actions and commitments, the consents and permission required, environmental asset data, details of maintenance and monitoring activities and of the induction, training and briefing procedures for staff. The CEMP includes environmental risk assessments for the Stage 1A west and east bunds and Stage 1B bund within its Appendices A.4 and A5 respectively, and within Appendix B lists the Management Plans which will be implemented. Those are a Landscape and Ecological Management Plan, an Operation Land Management Plan, a Karst Management Plan, the Construction Dust Management Plan for Stage 1, and the Soil Management Plan for Stage 1. Construction method statements will be prepared by the quarry operator if task specific risk assessments identify a requirement.



## 6. Control and Monitoring

- 6.1. The overarching summary human health and environmental risk assessment for this mining waste management plan is provided in Appendix C, combined with the planning application and subsequent supporting information and risk assessments demonstrate that for the overburden derived waste as unpolluted soil of inert character combined with the proposed management and mitigation measures, there will be no significant risk from particulate matter, mud, odour, noise, vibration or accidents at the site.
- 6.2. Therefore extensive quantitative monitoring of those parameters is not envisaged. Control and monitoring for environmental and geotechnical matters, fugitive dust emissions and surface water management is detailed in the documents listed in the previous Section 5 which are provided separately as listed in Appendix B.



## 7. Plan for Closure

- 7.1. The planning Extension Permission granted by the DNPA on 15 March 2021 under Planning Application (Reference 0322/16 and DCC/3994/201) included an Environmental Statement, June 2016, which has proposals for restoration of the quarry and the overburden bund areas.
- 7.2. Restoration and landscaping of the existing and extended quarry site will take place for the quarry extension stages and overburden bund formation to ensure that landscape and ecological mitigation measures are implemented as part of progressive restoration. In summary, the topsoil and overburden from the quarry extension area will be removed with the overburden placed in the planned bunds around the extension or within the quarry void once the bunds reach capacity. The bunds will be restored as per the Landscape and Ecological Mitigation and Enhancement Scheme approved by the planning authority for each stage, which includes translocation of existing hedgerows and seeding and planting of the overburden bunds. For Stage 1 those details are provided in the Linhay Hill Quarry Extension Stage 1 Landscape and Ecological Mitigation and Enhancement Scheme, April 2024, for which the main drawings that show restoration of the overburden bunds for Stage 1 are provided in Appendix A.5.
- 7.3. It is expected that similar restoration design details will be applied to the overburden bund formation in Stage 2 i.e. broadly consistent with the details submitted for the planning permission and Stage 1 and will be approved by the planning authority at Stage 2.
- 7.4. The final restoration and aftercare scheme is also subject to planning approval by Dartmoor National Park Authority, for which the planning permission condition 40 states:
- “A final restoration and aftercare scheme for the site shall be submitted to, and approved in writing by, the Mineral Planning Authority within 56 years of the date of this permission. The restoration scheme shall be in general accordance with the proposals shown on drawing numbered LINHAY-ATK-R-Z-PL-6000 P3 Stage 6 (Restoration), incorporate the provisions of the Outline Restoration Strategy, include details of the water discharge measures from the proposed lake and should specify the aftercare steps to be taken and the time periods during which they are to be taken. The restoration and aftercare of the site shall be carried out in accordance with the approved scheme.”
- 7.5. For the overburden bunds it is envisaged that the details submitted for the planning permission condition 40 would confirm the restoration implemented for the overburden bunds.



## 8. Measures for the Prevention of Environmental Pollution

- 8.1. The human health and environmental risk assessment provided in Appendix C summarises the potential hazards and pollution linkages at the overburden placement areas, the risks they pose, and the risk management measures which the quarry operator will implement in order to mitigate those risks.
- 8.2. The proposed risk mitigation measures are considered to meet the requirements of the Mining Waste Directive, including the need to prevent water pollution which will be by adherence to the documents outlined in the previous Section 5, and in particular the Construction Environmental Management Plan for Stage 1, May 2024 (provided separately as listed in Appendix B) which will be updated for the Stage 2 overburden bund formation prior to commencement of filling in that area.





# APPENDICES



## Appendix A. Drawings

### A.1. Mining Waste Permit Proposed Site Plan



## A.2. Existing Site Plan



## **A.3. Planning Application Drawings for Stage 0, Stage 1 and Stage 2**



## **A.4. Planning Application Cross Sections showing the Overburden Bunds**



## **A.5. Stage 1 Landscape Planting and Hedgebank Translocation Plans (showing overburden bunds)**



## **Appendix B. Supporting Reports – provided separately**

**B.1. Environmental Statement Appendix 3A Site Investigation & Design Report, January 2016**

**B.2. Environmental Statement Appendix 3E Tip Stability Report, September 2015**

**B.3. September 2021 GI New Access to Alston Farm Ashburton, Factual Report, February 2022**

**B.4. Ground Investigation March 2022 New Access Road to Alston Farm Factual Report, May 2022**

**B.5. Proposed Extension of Linhay Hill Quarry Flood Risk Assessment, May 2016**

**B.6. Proposed Extension of Linhay Hill Quarry Land Contamination Assessment, June 2016**

**B.7. Revised ES Appendix 17.2 Land Stability Risk Assessment 2020, August 2020**

**B.8. Construction Environmental Management Plan for Stage 1, May 2024**

**B.9. CEMP for Stage 1 Appendix B.3 Karst Management Plan for Stage 1, November 2024**

**B.10. CEMP for Stage 1 Appendix B.4 Construction Dust Management Plan for Stage 1**



## **B.11. CEMP for Stage 1 Appendix B.5 Soil Management Plan for Stage 1**





# Appendix C. Environmental Risk Assessment



### Human Health and Environmental Risk Assessment for Linhay Hill Quarry Placement of Overburden

Potential Hazard or Concern	Potential Receptor	Potential Pathway(s) from Hazard to Receptor	Risk Management and Mitigation (RMM)	Probability of Exposure after RMM	Consequence of Exposure after RMM	Residual Risk after RMM
Hazardous or dangerous substances in the overburden.	Quarry workers.	Skin contact, inhalation, ingestion or absorption.	The waste will comprise clayey overburden derived from slate, mudstone and sandstone bedrocks to the north and sub size fragments of weathered limestone from the underlying Chercombe Bridge Limestone Formation which is buried karst.	Improbable	Transient to Negligible	Tolerable Risk
Hazardous or dangerous substances leaching from the overburden.	Alston stream and groundwater.	Via surface water run-off flowing to Alston Stream, or downward infiltration to groundwater.	<p>That overburden material is considered to be unpolluted and inert because the only prior use of the land is for farming, and the character of the overburden is that of an inert material. The available information including from working the quarry to the present day, borehole and chemical data obtained during previous ground investigations and monitoring indicates that hazardous or dangerous substances are unlikely to be present at concentrations which may be a concern.</p> <p>Risk mitigation for quarry workers will be by appropriate PPE and the protection afforded when operating within mechanical plant, and also controls and monitoring applied for fugitive emission to air or suspended solids to surface water.</p> <p>Placement of the overburden with compaction by dozer and vehicle trafficking will also form a low permeability surface to minimise the potential for dust and erosion, and will also limit infiltration and hence leaching, though the</p>	Improbable	Transient	Tolerable Risk



Potential Hazard or Concern	Potential Receptor	Potential Pathway(s) from Hazard to Receptor	Risk Management and Mitigation (RMM)	Probability of Exposure after RMM	Consequence of Exposure after RMM	Residual Risk after RMM
			nature of the overburden materials is that they are likely to also afford some natural attenuation by adsorption and absorption. The surface water runoff will be intercepted by temporary settlement areas and silt fences, prior to discharge at the existing outfall from the Alston Farm fields, to join the route of the Alston stream as outlined by the drainage details in the Soil Management Plan for Stage 1, June 2024.			
Basal instability	Construction workers.	Sinkhole formation causing a change in ground levels.	Due to the presence of buried karst there is a risk of sinkhole formation. That risk was assessed by the planning application Revised ES Appendix 17.2 Land Stability Risk Assessment 2020, and is currently managed via the Karst Management Plan 2021 and that approach will be continued via the subsequent Karst Management Plan for Stage 1.	Unlikely to Possible	Moderate	Moderate Risk
Short term slope instability.	Construction workers.	Slope failure causing unintended movement of spoil materials.	The overburden placement is located with an easement from the site boundary for perimeter drainage, and the overburden bunds are in Flood Zone 1. If slope failures occurred within the overburden bund area they would only cause operational disruption and not an environmental impact.  Risk mitigation has been implemented by carrying out ground investigation and obtaining geotechnical advice regarding the design and construction of the overburden bunds to ensure their structural integrity. That advice will be adhered to with geotechnical monitoring and	Improbable to Unlikely	Moderate to Transient	Tolerable Risk



Potential Hazard or Concern	Potential Receptor	Potential Pathway(s) from Hazard to Receptor	Risk Management and Mitigation (RMM)	Probability of Exposure after RMM	Consequence of Exposure after RMM	Residual Risk after RMM
			inspection during placement in line with statutory requirements.			
Long term slope instability.	Post restoration: farm workers or animals.	Slope failure causing unintended movement of spoil materials.	As above.	Improbable	Transient to Negligible	Tolerable Risk
Disturbance to existing surface water run-off flow paths causing unintended consequences.	Construction works, Alston stream, adjacent land.	Run-off downslope.	Surface water management controls and drainage strategy are to be implemented as initially outlined in the Flood Risk Assessment, May 2006 and subsequently detailed in the Soil Management Plan for Stage 1, June 2024. Surface water run-off will be managed via temporary settlement areas and silt fences prior to discharge at the existing outfall from the Alston Farm fields to the route of the Alston stream under a water discharge activity permit as part of the mining waste permit.	Improbable	Transient to Negligible	Tolerable Risk
Suspended solids in surface water run-off.	Alston stream.	Run-off.		Unlikely	Moderate to Transient	Tolerable Risk
Fugitive dust emissions.	Construction workers, and nearby properties at Alston Farm and Alston Cottage, Lower Waye & Momalda, the A38 and south of the A38 south of Alston Cross and Caton	Atmosphere – inhalation.	A dust management plan is implemented for the quarry as detailed in: Glendinning Dust Management Plan (Linhay Hill Quarry) SHE-PLA-007, and the Construction Dust Management Plan for Stage 1 (which will be updated for Stage 2 and subsequent stages).	Unlikely to Possible	Transient	Tolerable Risk



Potential Hazard or Concern	Potential Receptor	Potential Pathway(s) from Hazard to Receptor	Risk Management and Mitigation (RMM)	Probability of Exposure after RMM	Consequence of Exposure after RMM	Residual Risk after RMM
	Cross and along Gale Road.					
Damage to wildlife habitats.	Flora and fauna including badgers, bats, birds, dormice, great crested mites, reptiles and invertebrates.	Vehicle trafficking.	An Extended Phase 1 Habitat Survey was carried out as part of the Environmental Statement (refer to Appendix 10.1a of the ES) for the quarry extension planning application in 2016, and update surveys for protected species were commenced in 2020 with further updates in 2021, 2022, 2023 and 2024. Those are summarised in the Construction Environmental Management Plan for Stage 1 which outlines the ecological mitigation measures to be implemented during construction. That CEMP will be updated for subsequent stages.	Improbable	Transient	Tolerable Risk
Excess noise and vibration due to mechanical plant movements, and earthwork operations.	Inhabitants at nearby dwellings, principally at Alston Farm Hiye and Alston Cottage, Lower Waye & Momalda, though A38 nearby, and south of the A38 at Three Gates south of Caton Cross.	Atmosphere – airborne sound waves or ground-borne vibration.	A full noise impacted assessment was carried out for the planning application Environmental Statement (refer to Appendix 13.A of the ES) and was considered in Chapter 13 of the ES. Subsequently a Noise & Vibration Impact Review (including Mitigation & Monitoring Scheme), February 2024, has been carried out and noise and vibration mitigation measures area also outlined in the Construction Environmental Management Plan for Stage 1, May 2024. That CEMP will be updated for Stage 2 and subsequent stages.  Noise and vibration mitigation will adhere to the measures outlined in those documents.	Improbable to Unlikely	Transient to Moderate	Tolerable to Moderate Risk



The classifications used for the risk assessment are the relative terms described in the following tables.

**Probability of Exposure to a Hazard following Risk Mitigation and Management**

Class
Certain
Almost Certain
Likely or probable
As likely as not
Possible
Unlikely
Improbable
Nil Chance

**Potential Consequence of Exposure to a Hazard following Risk Mitigation and Management**

Class	Description
Severe	Serious potential for permanent harm to human health. Special personal protective equipment required to work on site. Serious damage to buildings, structures or the environment. Substantial pollution of sensitive water resources. Example: major life threatening injury, major pollution of a drinking water supply.
Significant	Long term non-permanent health effects to humans. Special personal protective equipment required to work on site. Pollution of non-sensitive water resources or small scale pollution of sensitive water. Damage to sensitive buildings, structures or the environment. Examples: major injury non-life threatening, regular exposure to highly hazardous substances in soil, pollution of a Principal Aquifer.
Moderate	Short term health effects to humans. Normal personal protective equipment required. Slight pollution to non-sensitive water resources. Easily repairable effects of damage to buildings or structures. Examples: minor injury, regular exposure to moderate level of potentially hazardous substances in soil, pollution of a Secondary Aquifer.



Class	Description
Transient	Transient non-measurable health effects to humans e.g. one-off brief inhalation of odour or dust. Temporary slight pollution to non-sensitive water body. Very slight non-structural damage or cosmetic harm to buildings or structures. Example: minor irritation, dust, suspended solids in run-off.
Negligible	No noticeable effect on humans. Insubstantial pollution to non-sensitive water resources. No noticeable effect on buildings. Examples - odours.
Nil	No effect.

#### Potential Risk of Hazard to Receptor Linkage

Class	Description
Intolerable Risk	A risk with severe or significant consequences has been identified as likely or more than likely. Further potentially urgent action is required to investigate and understand the risk, and further risk mitigation or management action likely to be required.
Substantial Risk	A risk has been identified which either has a high likelihood of moderate consequences or a lower likelihood of severe consequences. The issue should be investigated further in order to understand the risk better and further risk mitigation or management action may be required.
Moderate Risk	A risk has been identified but there are unlikely to be more than moderate consequences. The issue should be monitored or investigated further but further extensive risk mitigation or management action is unlikely to be required.
Tolerable Risk	A risk has been identified but the likelihood of more than transient consequences is very low. No further investigation is required, though monitoring will be prudent, additional management action if necessary would be minor.
Nil Risk	No risk has been identified. No management action required.



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