

3 PROJECT DESCRIPTION

3.1 Introduction

3.1.1 Since the submission of the application for the north-western extension in April 2019, two factors that will affect the restoration scheme have become apparent which result in the need to amend the restoration scheme:

- The western landfill is currently not suitable for woodland planting as it is still settling, meaning that the advanced woodland planting proposed on this landfill to compensate for the loss of Windhill Plantation will not be able to be carried out in advance of the extraction of the north-western extension starting. Therefore, an alternative area of advanced woodland planting is proposed just to the south of the entrance to the eastern area of the existing quarry. This will be planted in the planting season following planning permission being granted. The settlement of the western landfill will continue to be monitored and the woodland planting will be carried out as soon as possible. This is likely to be within about 10 years.
- There is likely to be a short fall in the volume of material available to achieve the restoration landform. Continued importation of inert waste is therefore proposed into the southern section of the quarry and importation of materials will make up for the shortfall of restoration materials in the rest of the quarry.

3.1.2 Revision A of Figures 3.1, 3.2 and 3.3 show the proposed phasing of mineral extraction and progressive restoration along with the timescales for restoration of the different areas of the quarry. Revision A of Figure 3.4 shows the revised final restoration of the whole quarry, including the north-western extension. Revision A of Figure 3.5 updates the cross sections through the existing site, the working quarry and the restored quarry and new Figure 3.6 provides some additional cross sections as requested by the Principal Landscape Architect at North Yorkshire County Council. New Figure 3.7 illustrates the restoration materials volumes and movements required to restore the quarry.

3.2 Initial operations

Soil stripping and storage

Soil handling main principles

3.2.1 Soil stripping and handling will only be permitted when the soils are dry and friable

and during suitable weather conditions as agreed with the site management.

- 3.2.2 The main threats to soils during stripping and handling works are trafficking of vehicles/plant and incorrect soil handling, which can cause damage to soil structure through compaction and smearing (both effects are sometimes referred to as deformation). These effects compromise the ability of the soil to perform its functions, and its suitability for reuse within the site without costly and time-consuming remediation. The risk of compaction increases with soil wetness. Therefore, the works will be programmed for periods when good soil conditions are most likely (late spring, summer and early autumn).
- 3.2.3 Different soil types, soil horizons, and other materials, must be kept separately to preserve soil properties and maintain soil suitability for the intended land use post restoration and free of contamination.
- 3.2.4 The stripping method will follow Sheet 1 of MAFF's Good Practice Guide to Handling Soils¹ (MAFF, 2000) Good Practice Guide for Handling Soils: Soil Stripping with Excavators and Dump Trucks. In this method the soil is progressively stripped by the excavator and moved to the stockpile using a dump truck.
- 3.2.5 There is approximately 2.4 ha of ALC Grade 2 land within phase 1 and 2.8 ha in phase 2 (see EIAR Figure 8.1). Of which 1.5 ha and 2.1 ha needs to be stripped and stored in Phase 1 and Phase 2 respectively, the remainder of ALC Grade 2 land will be planted with the woodland screen planting.

Phase 1

- 3.2.6 The Phase 1 area (see EIAR Figure 3.1) will be worked east to west and south to north. Prior to rock extraction, 4,560 m³ of Grade 2 topsoil and 9,100 m³ of Grade 2 subsoil from the Phase 1 excavation area will be stripped and stockpiled. Topsoil will be stripped as a 300 mm layer and subsoil as a 600 mm layer.
- 3.2.7 The topsoil and subsoil from this area of ALC Grade 2 land will be stripped and stored separately in the edge protection bunds along the western and northern edge of the proposed extension area.

¹ Available at:

<http://webarchive.nationalarchives.gov.uk/20090306103114/http://www.defra.gov.uk/farm/environment/land-use/soilguid/index.htm>

Phase 2

- 3.2.8 The Phase 2 area (see EIAR Figure 3.2) will be worked south to north. Prior to rock extraction, 6,300 m³ of Grade 2 topsoil and 12,660 m³ of Grade 2 subsoil from the Phase 2 excavation area will be stripped and stockpiled. Topsoil will be stripped as a 300 mm layer and subsoil as a 600 mm layer.
- 3.2.9 The stockpiled Grade 2 soil from phase 1 and 2 will be used in the reinstatement of the agricultural land at restoration.
- 3.2.10 Topsoil and subsoils stripped from the areas of ALC Subgrade 3a and 3b land will either be stored in the perimeter bunds or used directly in the restoration of previous phases.

Soil storage

- 3.2.11 Soil will be stored where it will not be subject to water inundation or traffic, and away from stores of fuel and other construction materials that could contaminate it.
- 3.2.12 The method of forming stockpiles to be used has been described in the MAFF Guide, Sheet 2: Building Soil Storage Mounds with Excavators and Dump Trucks. Use of a front-loading machine to form the stockpile is possible if this is the contractor's preference. If this alternative is chosen, the tipped soil must not be travelled or pushed with a bulldozer blade; it is to be lifted by the front-loading machine and tipped into place to form a desired stockpile height.

Advanced planting

- 3.2.13 As stated above, the western landfill is currently not suitable for woodland planting as it is still settling, meaning that the advanced woodland planting proposed on this landfill to compensate for the loss of Windhill Plantation will not be able to be carried out in advance of the extraction of the north-western extension starting. Therefore, an alternative area of advanced woodland planting is proposed just to the south of the entrance to the eastern area of the existing quarry, as shown on revision A of Figures 3.1 to 3.4. This will be planted in the planting season following planning permission being granted, providing approximately 10 to 12 years of growth before Windhill Plantation is removed. It will be approximately 1.7a in size, 0.7ha larger than Windhill Plantation that it will replace.
- 3.2.14 The settlement of the western landfill will continue to be monitored and the woodland planting will be carried out as soon as possible, it is estimated that this

could be within approximately 10 years. Therefore, in the long term there will be no loss of woodland, there will in fact be 1.7ha more.

3.2.15 All woodland planting will be planted following the specification detailed in the Biodiversity Management Plan (BMP). A revised version of the BMP is shown at Appendix 7.5, superseding the previously submitted version. This takes account of comments received from statutory consultees. There are no changes proposed to other areas of advanced planting.

3.3 Mineral extraction

3.3.1 There are no changes proposed to the mineral extraction operations or any other aspect of working of the quarry.

3.4 Restoration

Introduction

3.4.1 A revised consolidated restoration plan for the wider quarry is illustrated on revision A of Figure 3.4. It remains proposed that this will be approved by way of an agreement made under Section 106 of the Town and Country Planning Act 1990.

3.4.2 Revision A of Figures 3.1 to 3.3, illustrate the progressive restoration of both the north-western extension area and the existing quarry, along with the timescales for this. The timescales are summarised in Table 3.1 below.

Materials audit and importation of inert waste

3.4.3 Revision A of Figure 2.2 and Figure 3.7 show the volumes of existing stockpiles of material available for restoration and the volumes of waste rock/fines, overburden and soils that will become available as extraction progresses. It has become apparent that there will be a short fall in material required to achieve the restoration levels illustrated on Figure 3.4. The landform illustrated on Figure 3.4 has been designed to the following health and safety parameters therefore it is not possible to use a reduced volume of material in an amended scheme:

- Rock face heights will be reduced to a maximum of 5m high;
- Slopes below these rock faces will have a gradient of 1:3; and
- Slopes below the rock faces adjacent to the A1 will have a gradient of 1:10.

3.4.4 As stated in the April 2019 EIAR, a waste recovery operation is underway in the southern section of the quarry which aims to buttress the quarry faces to ensure

stability given its proximity to the A1. It is therefore proposed to continue to import inert waste to achieve restoration levels in the south-eastern area of the existing quarry and the north-western extension, along with continuing importation in the south of the quarry, as detailed in Table 3.1 below.

Table 3.1: Progressive restoration timing and materials		
Area of quarry	Restored by	Restoration materials
New area of advanced woodland planting	2020/2021	Stockpiles 5 and 11
Operational northern extension	2022	Waste rock from current and future operations Topsoil in stockpile on northern boundary (stockpile 6)
Southern area (within Doncaster)	2024	Imported inert waste Stockpile 4
North-eastern area	2026	Stockpiles 7, 8 and 9
Eastern and south-eastern areas	2029	Waste rock from current and future operations Stockpiles 7, 10, 11 and 12 Imported inert waste
Phase 1 of north-western extension	2034/2035	Imported inert waste Overburden and waste rock from phases 1 and 2 Soil from phases 1 and 2 Stockpiles 1, 2 and 3
Phase 2 of north-western extension	2040	Overburden and waste rock from phases 2 and 3 Soil from phases 2 and 3 and edge protection bunds
Phase 3 of north-western extension	2042	Overburden and waste rock from phase 3 Soil from phase 3 and edge protection bunds

3.4.5 Inert waste will continue to be imported at the current rate of approximately 90,000 tonnes per year. At this rate, the shortfall of 412,000 cubic metres will be recovered within about ten years (assuming a conversion factor of 2 tonnes/ m³).

Soil restoration

3.4.6 There are no changes proposed to the restored soil profiles. Of the existing soil mounds shown on Figures 2.2 and 3.7, only stockpile 6 on the northern edge of the northern extension is known to be topsoil. This will be used in the restoration of the agricultural land of this northern extension. The ALC Grade 2 soils stripped and stored from the north-western extension will be used to reinstate agricultural land within the north-western extension. All other soils currently stored on site are thought to be mixed and will be tested and used where suitable in the restoration of

the other areas of the quarry.

Excavation of soil stockpiles

- 3.4.7 The excavation of soil stockpiles will follow the methodology described in MAFF Guide, Sheet 3: Excavation of Soil Storage Mounds with Excavators and Dump Trucks, or equivalent. In this method, the dump trucks enter the storage area travelling on the base layer (where topsoil and subsoil stripped) and on the subsoil (where only topsoil stripped). If a back-acting excavator is used it will stand on top of the stockpile to load the dump truck. The stockpile is dug to the base (the original subsoil) before moving progressively back along its axis.
- 3.4.8 Care will be taken not to mix topsoil in the stockpile with the subsoil. Front loading machines may be used, in which case they will not need to enter the top of the stockpile. Any exposed edges/surfaces should be shaped at the onset of rain and at the end of each day to shed rainwater.
- 3.4.9 Subsoil replacement will follow the methodology set out in MAFF Guide, Sheet 4: Soil Replacement with Excavators and Dump Trucks. In this method, the soil will be replaced in strips above the formation layer to the soil profile specifications provided in Table 8.7 of Chapter 8 (EIAR).
- 3.4.10 Subsoil decompaction will be carried out using bulldozer drawn tines or an excavator mounted single tine, where access with bulldozer is not possible. Areas overlying buried services and drainage will be avoided. The subsoil will be decompacted to a depth of at least 300 mm.
- 3.4.11 Decompaction will be carried out in dry weather conditions when the subsoil is friable and it readily breaks apart upon impact. Several passes of the bulldozer or tine may be required depending on the compaction and structure of the subsoil.
- 3.4.12 Topsoil replacement will follow the methodology set out in MAFF Guide, Sheet 4: Soil Replacement with Excavators and Dump Trucks. In this method, the soil will be replaced in strips above the subsoil to the soil profile specifications provided in Table 8.7 of Chapter 8 (EIAR). This will permit the reinstatement of soil profiles capable of supporting ALC Grade 2 agricultural land.
- 3.4.13 The replacement will be carried out in by loose tipping using the excavator bucket. First, the initial strip width and axis will be demarcated. The width will be determined by excavator boom length less the stand-off to operate; typically, 5 to 8 m. A wide bladed bucket will be used to spread the soil.

- 3.4.14 The dump truck will reverse to the edge of the current strip and tip the lowest layer, without the wheels riding onto the strip. The dump truck will not drive away until all the topsoil is deposited within the strip without spillage over the adjacent subsoil surface. To achieve this, assistance from the excavator to 'dig away' some of the tipped topsoil may be required. The tipped topsoil will be spread to full thickness by the excavator utilising the digging, pushing and pulling action of the bucket. Each load will be spread before another is tipped. The process is then repeated along the strip until it is completely covered with the required depth of the topsoil.
- 3.4.15 Topsoil decompaction will not be required. Should however the spread soil comprise of large blocks (>300 mm), they will be broken down by 'slicing' them with the excavator bucket, then by cultivation (but not pulverised) using a power-harrow or equivalent.

Restored landcover and landuses

- 3.4.16 The only other change proposed to the restoration landcover and landuses, other than the alternative area of advanced woodland planting described above and the changes to the timescale for the woodland planting on the western landfill, will be the removal of the buddleja (butterfly-bush) scrub in the north-eastern area of the existing quarry, as shown on Figures 3.1 to 3.4 and described in Appendix 7.5 which is revision A of the BMP. The scrub in the former quarry areas will be removed by excavators or bulldozers which will also scrape back the ground to the bare substrate, which will make it easier to control regrowth and will naturally succeed to an open mosaic habitat. The buddleja will be selectively removed manually followed by a herbicide treatment on the stumps from the scrub on the sides of the restored landfill in this part of the quarry so as not to disturb the landfill capping layers.
- 3.4.17 The Ecologist at North Yorkshire County Council in his consultation response requested that the applicant consider running of a number of trial plots to test the efficacy of different combinations of materials and seeding/establishment methods. The application is committed to doing this, commencing in 2020, using a number of different substrate combinations and, where possible, green hay sources. The results of these trial plots will be made available to the MPA and will help inform the ongoing creation of the calcareous grassland across the wider site. The location for these trial plots is shown on Figures 3.1 to 3.4, in the restored field to the north of the site offices. See Appendix 7.5, revision A of the BMP, for more details.

- 3.4.18 There are no changes proposed to public access. North Yorkshire County Council

asked the applicant to consider additional opportunities for public access. However given the health and safety implications of allowing public access to restored quarries; the current problems with fly-tipping in the area; the use of such sites by scrambler motorcycles; the remoteness from local villages; and the proximity of the site to the A1, it is currently considered that the restored quarry will not be appropriate for additional public access and recreational uses. The applicant is however willing to review this situation once the quarry is restored in 2042.

3.4.19 An update to the areas of different landuses that will be created within the restored quarry is presented in Table 3.1.

Landuse/ habitats	The whole quarry	Proposed extension area only
New woodland	12.5ha 14.2ha	2.6ha
Existing woodland and scrub	7.3ha 5.4ha	0
Calcareous grassland	40.5ha 38.8ha	14.2ha
Agricultural land	19.4ha	12.1ha
Open mosaic habitat with existing ponds and marsh	10.4ha 12.8ha	0
Existing semi-improved grassland	3.9ha	0
Existing energy crop	3.5ha	0
Hedgerows	1,600m 1,460m	1,250m

3.4.20 Table 3.3 summaries the areas of existing and proposed landuses and habitats during the life of the development.

Landuse/ habitats	Current situation	2025	2030	2035	2040	Restoration 2042
Operational/unrestored quarry (ha)	50	34.7	17	17	9.2	0
Existing agricultural land (ha)	27.1	14.3	7.5	7.5	1.8	1.8
Proposed agricultural land (ha)	0	5.1	5.1	5.1	5.1	17.6
Existing woodland and scrub (ha)	11.3	10.1	6.9	5.4	5.4	5.4
Proposed woodland (ha)	0	5.8	6.3	14	14	14.2
Existing semi-improved grassland (ha)	11.6	11.6	11.6	3.9	3.9	3.9
Proposed calcareous grassland (ha)	0	15.8	32.7	32.7	38.8	38.8
Open mosaic habitat with ponds and marsh (ha) (existing areas included as unrestored quarry above)	0	4.6	12.8	12.8	12.8	12.8
Existing energy crop (ha)	4.8	4.8	4.8	3.5	3.5	3.5
Existing hedgerows (m) (excluding boundary hedgerows which will be retained)	545	545	550	550	0	0
Proposed hedgerows (m)	0	0	170	460	460	1,460

3.4.21 The Ecologist at North Yorkshire Council has requested some amendments to restoration details which include revisions to the woodland and hedgerow planting mixes and clarifications on the methods of creating and managing the calcareous grassland. This is detailed in revision A of the BMP, which is provided as Appendix 7.5. This revision of the BMP supersedes the information provided in Chapter 3 of the April 2019 EIAR.

3.4.22 The BMP provides specifications for creating and managing the habitats across the site to achieve the following long term objectives:

- To create and maintain a structurally diverse native woodland.
- To create and maintain floristically diverse identifiable magnesium limestone grassland.
- To increase the extent and maintain a diverse area of Open Mosaic Habitat (OMH).
- To remove the extensive stands of butterfly-bush from the site and control any re-colonisation.
- To review the development of the onsite wetland habitats to maintain long term benefit to biodiversity.
- To enhance the value of the cliff faces for biodiversity.
- To promote and maintain structurally diverse hedgerows.

3.4.23 These biodiversity objectives will lead to achieving the overall landscape objective for the site which is to restore and enhance the landscape and visual amenity value of the site.

3.5 Aftercare

3.5.1 Revision A of the BMP in Appendix 7.5 details the proposed aftercare operations. The Principal Landscape Architect at North Yorkshire County Council requested further information on the mechanism of how these arrangements are to be secured and implemented so that they can be secured by legal agreement.

3.5.2 The applicant is committed to managing the habitats of the restored quarry in the long term to ensure they develop as anticipated and to achieve the long term objectives listed above. The restored habitats will be created, managed and monitored by their restoration team, local contractors and through agreements with the landowners. The precise details of which will be provided to the MPA as

restoration progresses at the annual aftercare meetings to ensure the MPA is confident that the long term objectives are being achieved.