

Watlington Quarry — Closure and Aftercare Plan

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PRESENTED TO

Mick George Limited

6 Lancaster Way,
Ermine Business Park,
Huntingdon,
PE29 6XU

PRESENTED BY

Tetra Tech

Geneva Building,
Lake View Drive,
Sherwood Business Park,
Annesley,
Nottingham,
NG15 0ED

Prepared by:

Isabelle Mills Minerals and Waste Consultant	November 2021
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Reviewed by:

Alice Shaw Senior Consultant	November 2021
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Authorised by:

Michael Jones Associate	November 2021
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W8/1/19/04 – Restoration Proposals

1.0 INTRODUCTION

1.1 REPORT CONTEXT

- 1.1.1 This section of the Environmental Permit Application corresponds to Appendix 2 Question 7 of Part B4 of the Environmental Permit Application forms, specifically detailing the Closure and Aftercare Plan following the importation of suitable inert waste at the Watlington Quarry.
- 1.1.2 The Environmental Permit application has been prepared by Tetra Tech on behalf of the Operator, Mick George Limited (Mick George).
- 1.1.3 The aim of this report is to ensure that the site can be maintained to avoid any pollution risk up to the point of permit surrender, when the site no longer poses a pollution risk.
- 1.1.4 This plan will be updated on a regular basis to take account of revisions to working practices and results of any monitoring undertaken.

2.0 CLOSURE AND AFTERCARE PLAN

- 2.0.1 The purpose of the closure and aftercare plan is to ensure that the regulated facility can be maintained to avoid any pollution risk up to the point of the Environment Agency (EA) accepting the surrender of the Permit, when the site is no longer likely to cause a hazard to the environment. This will include the monitoring requirements of the aftercare phase and the necessary measures required to fulfil landfill completion.
- 2.0.2 The aftercare period extends from the time of final restoration to when pollution control measures are no longer required. With regard to Watlington Quarry, this will include groundwater and landfill gas monitoring installations. The aftercare stage will include sampling and monitoring of groundwater and landfill gas in accordance with a reviewed Environmental Monitoring Plan.

2.1 RESTORATION

- 2.1.1 The restoration of the site will be completed in accordance with Drawing Number W8/1/19/04 Restoration Proposals. It is the intention of the application to restore the site to levels similar to the pre-quarrying topography, and the majority of which will be reinstated to agricultural land. The remaining areas will be restored to a mixture of hedgerows and hedge trees, shrubs and species rich grassland.
- 2.1.2 The overall restoration scheme will use imported inert material to fill the quarry void to create a landform similar to pre-quarrying levels. Once these levels have been achieved the soils stripped from the land prior to quarrying and conserved on the site will be used in the restoration of the site to reinstate the soil horizon to an acceptable profile.

Agricultural Land

- 2.1.3 Reinstated soils will be ripped to 400mm depth at 600mm centres to promote free drainage between the placed topsoil and subsoil and subsequently harrowed to a depth of 200mm to create a homogenous well-broken, non-compacted tilth. All cultivations will only be undertaken during suitable ground and weather conditions.
- 2.1.4 Conservation headlands will be created around the margins of the reinstated agricultural fields and these areas will be sprayed selectively to allow small populations of broad-leaved weeds and their associated insects to develop. The headlands will typically be 6m wide and will provide an area of a field where farm machinery turns when it reaches the field boundary. They will be lower yielding than the centre of the field because of soil compaction and they will also be the most frequently used by wildlife. The conservation headlands will provide a space for the growth of rare and declining plants.

Hedgerows and Hedge Trees

- 2.1.5 Over 0.9km of varied species native species hedgerows and hedge trees will be planted. The hedgerows will be a mixture of Hawthorn, Blackthorn, Hazel, Dog Rose, Dogwood and Guelder Rose. It is proposed to plant hedgerow trees with a predominance of Oak and Field Maple at typically 25m intervals in all new hedgerows within the application site. When planted, these trees will be tagged to ensure they are not inadvertently cut back during any future on-going maintenance programme.

Shrub Planting

- 2.1.6 It is proposed to establish an area of shrub planting around the east and southern margins of Phase 5 and this will comprise of an equal mix of hawthorn, blackthorn and hazel planted at 2m centres, with the plants situated on a low mound typically 2m in height.

Species Rich Grassland

- 2.1.7 The proposed restoration scheme seeks to provide an area of grassland which is typical of neutral soils. The area of species rich grassland will be established as a cohesive block of land in the south of the site to create a botanically diverse sward which is not dominated by ryegrass that will have value for wildlife. The area will be designed to support flower rich grasslands with an appropriate management regime.

Reedbeds

- 2.1.8 The establishment of common reed *Phragmites australis* is proposed using natural regeneration as the primary establishment methodology. The former silt lagoon area will be restored with a shallow profile to ensure that it can quickly be established with common reed which currently grows in a number of locations on the site, particularly in areas of the existing restored silt lagoons to the northwest of the site. These reedbeds have established naturally and will continue to spread across the existing silt lagoon complex once the water is reduced in depth, thus extending the continued restoration of the former silt lagoons.
- 2.1.9 In order to supplement the rate of expansion of the reeds, it is planned that clumps of reeds, including rhizomes (turf transplants) are excavated from the existing restored silt lagoon complex. Material will be sourced from the site itself. Works will take place between August and March of the first available planting season to avoid the bird nesting period.

2.2 AFTERCARE

- 2.2.1 Annual review meetings will be held with the Mineral Planning Authority, which will discuss the previous year's operations and plans for the coming year which require approval. The operator will maintain records combined into an "aftercare terrier" for the re-instated land and will include details (recorded annually) of: soil replacement depths and areas restored to topsoil level in the previous twelve months; proposed species/variety/mixture used and the seeding rate; the amounts/types of herbicides used with the dates of

application; cultural operations undertaken; and results of the grassland monitoring for species establishment.

- 2.2.2 Once aftercare has been commenced, annual aftercare updates will be produced and submitted to the Mineral Planning Authority prior to an annual meeting with interested parties to review operations undertaken in the previous year. The restored land will progressively undergo the statutory 5 year aftercare programme and then will be returned to conventional farming.

Agricultural Land

- 2.2.3 Soils will be sampled and analysed periodically throughout the aftercare period with the results being used to determine the amounts and types of any nutrients that are deemed necessary to fulfil the long term aims of the soils rehabilitation. Care will be taken to ensure that no work, other than previously approved authorised cultivations, is allowed to take place during periods deemed to be outside the normal accepted cultivation window. Following replacement of soils, herb-rich grass will be established on the reinstated agricultural fields for the first two years of the five year aftercare period. Annual aftercare meetings will be arranged to review progress.

Hedgerow

- 2.2.4 During the first year of the aftercare period, hand weeding of the hedgerows will be undertaken for the control of volunteer vegetation. Spiral guards and canes will be inspected and maintained in an upright habit and replaced as necessary. Fencing will be inspected and repaired/replaced as necessary. Beating-up requirements will be assessed in the September period of each year: replacement planting will be undertaken where there is a failure over lengths of planted hedge greater than 1m and involve planting with either Hawthorn or Blackthorn.
- 2.2.5 In the second and fifth year of the aftercare programme in January – February, granular herbicide will be applied. Inspection of fencing and planted stock will be undertaken and fencing repaired/replaced as necessary and spiral guards/canes maintained in an upright habit and replaced as required. Beating up requirements will be assessed in September with replacement planting being undertaken as detailed above. The frequency of cutting will be reduced, and hedges will be sided-up only, rather than topped, in order to ensure production of berries and nuts for birds, and to provide denser cover for nesting.

Species Rich Grassland

- 2.2.6 In the first year of aftercare management of the seeded areas, aftercare will involve:-
- Mowing of the developing sward: the first cut will be undertaken when the sward reaches 100 - 150mm height with the sward being cut back to 50 - 75mm. The arisings will be taken off-site or dispersed across the mown area;

- Repeated mowing as required during the rest of the year following the above prescription;
- No hay cropping will be undertaken during year 1; and,
- Patches of invasive species developing within the sward (creeping thistle, spear thistle, ragwort) will be treated via “weed-wipe” or similar applicator with an appropriate herbicide.

2.2.7 In the second to fifth year following establishment, aftercare management will adopt a traditional agricultural regime which will involve:-

- Hay crop taken in late July - early August following seed set: the precise timing of the cut will depend on seasonal weather;
- Patches of invasive species developing will be treated with “weed-wipe” or similar applicator with an appropriate herbicide.

2.2.8 Monitoring will be undertaken in the second and fourth years of the aftercare programme to determine the establishment of the species.

Reedbed Aftercare

2.2.9 A majority of the proposed reed-bed area was also included within the scope of the existing Watlington Restoration Management and Maintenance document, in which proposals for the plan were previously agreed with in English Nature and the Norfolk Wildlife Trust.

3.0 CONCLUSION

- 3.0.1 The Closure and Aftercare Plan demonstrates that the proposed activity at the Watlington Quarry can be managed and maintained to avoid any pollution risk up to the point of surrender, when the site will no longer pose a pollution risk.

DRAWINGS

W8/1/19/04 – Restoration Proposals