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WASTE RESOURCE MANAGEMENT



NAYLOR INDUSTRIES

BANKSWOOD LANDFILL SITE

REVISED RESTORATION PLAN

FEBRUARY 2020

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NAYLOR INDUSTRIES

BANKSWOOD LANDFILL SITE

REVISED RESTORATION PLAN

FEBRUARY 2020

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DRAWINGS	**TITLE**	**SCALE**
NT14203/001A	Revised Restoration Plan February 2020	1:1,000@A3

1 RESTORATION PROPOSALS

1.1 Terms of Reference

1.1.1 Wardell Armstrong were commissioned by Naylor industries Ltd to prepare a revised restoration scheme which incorporates necessary works using existing soil resources on the site and aims to retain and further enhance broad landscape typologies such as woodland, meadow grassland and wetlands to create a mosaic of habitats.

1.2 Background Information

1.2.1 A restoration plan (WA,2019) was submitted to Barnsley Metropolitan Borough Council in April 2019 following an application for the Variation of Planning condition 19 (planning reference number B/99/1274/PR) to amend the restoration scheme."

1.3 Consultations

1.3.1 Following consultation with Barnsley Metropolitan Brough Council (email dated 19th July 2019), the report has been revised and updated to address comments left by the Trevor Mayne (Biodiversity Officer) on the proposed restoration plan. Additional detail was required on:

- how any remaining spoil not used for regarding was going to be used on site, and whether there was going to be any impact on existing grassland.
- the type of seed to be used for sowing on the re-profiled embankments; with recommendations for obtain seed/green hay from local landowner from adjacent SSSI; and
- detail of pond management to include appropriate timings.

1.3.2 The revised restoration scheme is shown on Drawing NT14203-001A and key aspects of the restoration proposals are listed and illustrated below.

2 DETAILS OF RESTORATION PROPOSALS

2.1 Retain Site Access

2.1.1 The existing quarry access will be retained as shown on the revised drawing and an informal link to the public right of way which follows the western application boundary is proposed.



Photo: Existing access route

2.2 Retain Restored Meadow Grassland



Photos: Existing Meadow grassland



Photos: Existing Meadow grassland

2.2.1 The central area of the site comprises restored meadow grassland habitat. The restored meadow will be retained in its entirety. Given the heavy clay content of the stockpiled spoil, any leftover spoil arising from buttressing works will be removed from site in its entirety to ensure established grassland is not impacted.

2.2.2 This area of restored meadow grassland habitat will increase following then removal of the soil mound. Upon removal of the mound the exposed area and the buttressed zones will be re-seeded with a diverse seed mix suitable for neutral grasslands. This is discussed further in paragraph 2.6.1.

2.3 Selective Replacement of Dead Trees

2.3.1 Selective replacement of recently planted dead trees is required to ensure the success of woodland planting. The area of young woodland to the east of the site, shown on the plan has suffered losses due to a hot summer followed by a very cold winter. Tree replacement is therefore proposed.



Photo: Tree Planting Areas

2.4 Buttressing Works

2.4.1 Two areas of the steep slopes require buttressing. The first is found next to existing pond 2 and the other is located near the southern boundary of the site (Shown in drawing NT14203-001A). The buttressing will be completed using the granular fill from heap 1.

2.5 Revegetation of Existing Slopes

2.5.1 To the south of the existing access road, in the central area of the site, there are large steep north and north-west facing slopes which on inspection are retained by natural vegetation and therefore, there is no longer a requirement to stabilise the slopes, which will remain as existing.



Photo: Vegetated Slope to be Retained



Photo: Existing Soil Heaps to Assist with buttressing.

2.5.2 Existing topsoil stockpiled on site (labelled as Heap 2 on drawing NT14203-001A) will be used on regraded areas. Initially the restoration plan included the spreading of the remainder of the spoil not used for regrading to expand the species rich meadow. However, due to the clay composition of the soil there is a significant risk that the spoil could be damaging to the existing established grassland.

2.5.3 Therefore, the unused spoil will be removed offsite and taken to Bromley Farm, another site owned by Naylor Industries ltd.

2.6 Reseeding of Reprofiled Embankments

2.6.1 Re-profiled embankments will be reseeded to provide a diverse grassland sward extending the area of already established meadow grassland habitat. The reseeding of embankments is planned to incorporate local green hay from a nearby SSSI. It is considered prudent to provide an alternative commercial seed mix if this source is not available in any given year. The suggested commercially available alternative is EM4 – Meadow Mixture for Clay Soils (or similar), this roughly translates to MG5 on the National Vegetation Classification (NVC).

2.6.2 Meadow mixtures for clay soils such as EM4 (or similar) is composed of species that are adapted to growing on soils with a high clay content. Clay soils are generally mildly acid to neutral, prone to waterlogging, sticky and heavy when wet. A species list for EM4 is provided in Appendix 1.

Management - Ground preparation

2.6.3 Preparing a seed bed on clay can be difficult, particularly on raw clay sub-soils low in organic matter. Clay soils are also prone to compaction and poor drainage. Well timed preparation and sowings are therefore important to successful establishment

2.6.4 To prepare a seed bed weeds will be removed using repeated cultivation or an herbicide. The area will then be harrowed or raked to produce a medium tilth and rolled to produce a firm surface.

2.6.5 As clay is unworkable when very wet or very dry, autumn sowings may not be possible. It is sometimes better to dig or plough the soil in the autumn, allow winter frosts to break down the clods, and prepare the seedbed in the spring.

Management - Sowing

2.6.6 Seed will be sown in the autumn or spring with other times of year being considered according to weather conditions and only if there is enough soil warmth and moisture. The seed will be surface sown and applied either by machine or broadcast by hand. The seed will be divided into two or more parts and sow in overlapping sections. Once sown the seeded area will be rolled to ensure good soil/seed contact.

First Year Management

2.6.7 Most sown meadow wildflower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed growth will be controlled by topping or mowing prior to the development of seed heads in the annual weeds i.e. in mid-summer.

2.6.8 The newly sown meadows will be mown regularly throughout the first year of establishment to a height of 40-60mm, with the cuttings removed to an external compost heap. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wildflowers.

Management once established

2.6.9 In the second and subsequent years EM4 sowings will be managed by undertaking a traditional late summer 'hay' cut.

2.6.10 After flowering in July or August cut the entire area to c 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site. Mow or graze the re-growth through to late autumn/winter to c 50mm and again in spring if needed.

2.6.11 The cutting will be undertaken beginning at the centre of the seeded area, working outwards and following a check for the presence of nesting birds. If active nests are suspected, an uncut buffer of >5m will be retained around the nest location.

2.7 Pond Management

2.7.1 Two ponds are present on site. Pond 1 is located to the north-west of the existing access road adjacent to existing woodland.



Photo: Pond 1

2.7.2 Pond 2 lies the east of the existing quarry access road as shown on the restoration plan.



Photo: Pond 2

2.7.3 Both ponds 1 and 2 are managed to maintain a mosaic of aquatic and riparian habitats and reduce shade. The aim is to have all the stages of succession from young through to older vegetation stands. This requires regular management of the vegetation by cutting reeds in rotation (Barnsley Biodiversity Trust, 2016).

2.7.4 The management of the vegetation would include the partial removal of bulrush, *Typha latifolia* and removal of willow. Recommendations are given below:

- Biennially, one third of the bulrush within the pond 1 and 2 will be removed. Any aquatic or emergent vegetation will be left on the embankment for a period of 24 hours to allow invertebrates to crawl back into the pond.
- Willow growing from the centre of the pond will be removed. The cut willow will be then placed in a secured stack and retained on the embankments or surrounding land as a terrestrial refuge (habitat pile) for invertebrates, amphibians and reptiles.
- Trees and scrub around the margins will be scalloped to ensure the pond is not completely shaded. Again, removed trees will be used on site
- Scrub encroachment will be discouraged if invasive, a small amount creates a greater diversity of habitats.
- Pond clearance works will be undertaken in late autumn to avoid the amphibian breeding season (taken to be March to July).

3 REFERENCES

Barnsley Biodiversity Trust (2016). Barnsley Biodiversity Action Plan. Available at: http://www.barnsleybiodiversity.org.uk/reedbed.html

Emorsgate Seeds (no date) EM5 – Meadow Mixture for Loamy Soils. Available at: https://wildseed.co.uk/mixtures/view/6

Natural England (2010) Sward enhancement: diversifying grassland by spreading species-rich green hay. Available at: http://adlib.everysite.co.uk/resources/000/102/926/TIN063.pdf

APPENDICES

Appendix 1

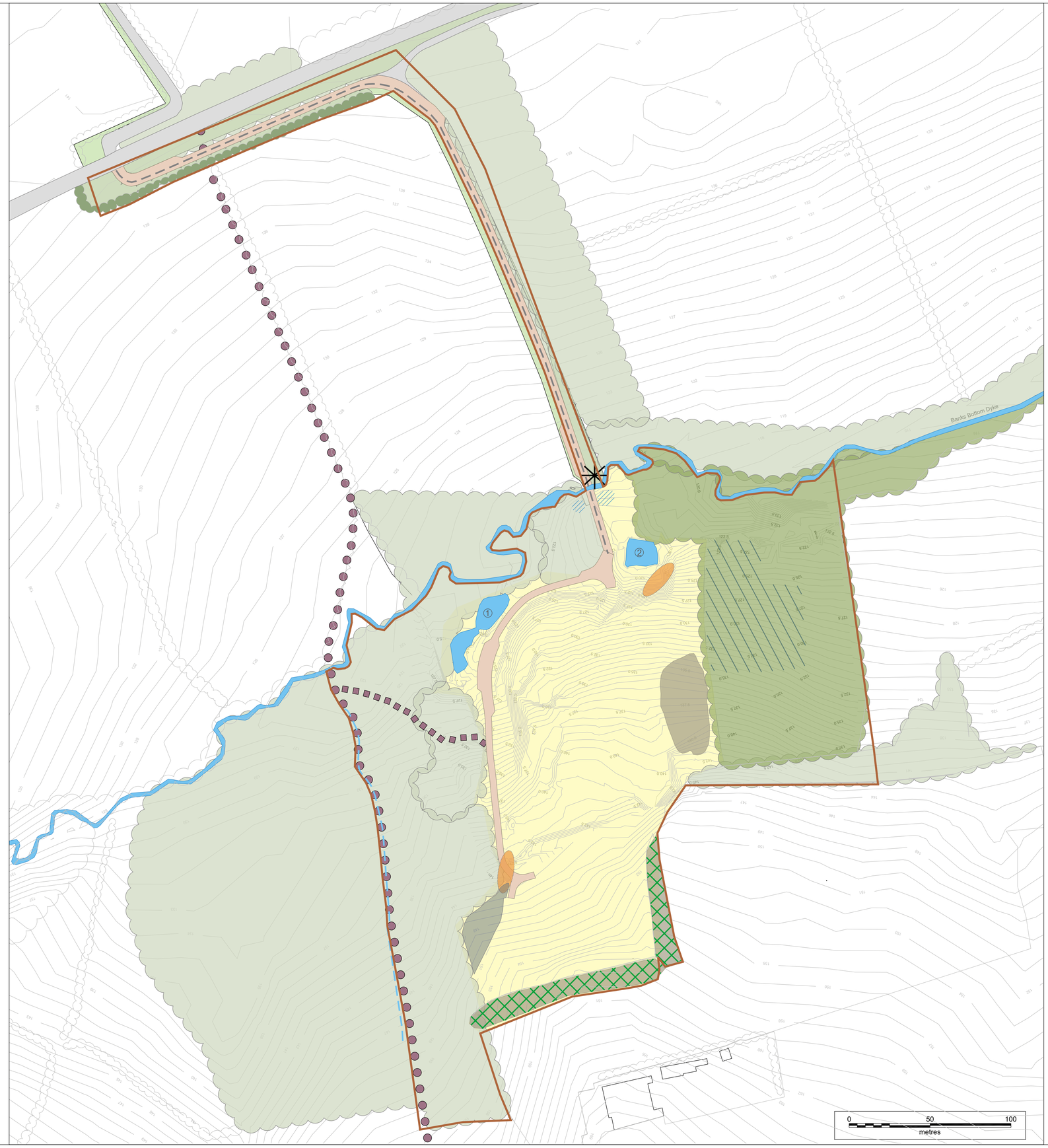
EM4 - Emorsgate Species List

Appendix 1 – EM4 Emorsgate Species List

Latin name	Common name
Achillea millefolium	Yarrow
Betonica officinalis - (Stachys officinalis)	Betony
Centaurea nigra	Common Knapweed
Filipendula ulmaria	Meadowsweet
Galium album - (Galium mollugo)	Hedge Bedstraw
Galium verum	Lady's Bedstraw
Leontodon hispidus	Rough Hawkbit
Leucanthemum vulgare	Oxeye Daisy
Plantago lanceolata	Ribwort Plantain
Primula veris	Cowslip
Prunella vulgaris	Selfheal
Ranunculus acris	Meadow Buttercup
Rhinanthus minor	Yellow Rattle
Rumex acetosa	Common Sorrel
Silaum silaus	Pepper Saxifrage
Silene flos-cuculi - (Lychnis flos-cuculi)	Ragged Robin
Taraxacum officinale	Dandelion
Vicia cracca	Tufted Vetch
Agrostis capillaris	Common Bent
Alopecurus pratensis	Meadow Foxtail (w)
Anthoxanthum odoratum	Sweet Vernal grass (w)
Briza media	Quaking Grass (w)
Cynosurus cristatus	Crested Dog’s-tail
Festuca rubra	Slender-creeping Red-fescue
Hordeum secalinum	Meadow Barley (w)
Phleum bertolonii	Smaller Cat's-tail
Poa pratensis	Smooth-stalked Meadow-grass

DRAWINGS

DO NOT SCALE FROM THIS DRAWING



KEY

Existing

- Planning boundary
- Existing woodland areas
- Existing hedgerows
- Existing ponds
- Seasonal local flooding
- Access route
- Retained access through site
- Restored Meadow Grassland
- Existing Public Right of Way.
- Recent woodland planting (Oak/Hazel mix)
- Topsoil heaps with established vegetation cover
- Drainage ditch

Proposed

- Areas of steep slope to be buttressed with granular fill from Heap 1.
- Heap 1, spoil to be used for buttressing, then the whole to be spread with soil and seeded.
- Heap 2, soil to be used on regraded areas.
- Area of recent tree planting requiring beating up with some replacement planting.
- Proposed extension of footpath into quarry
- Bridge abutment walls to be improved

Management of ponds

Pond 1 - To be managed to maintain capacity and peripheral vegetation habitats.

Pond 2 - To be managed to establish wetland habitat. Reeds to be controlled to retain open areas of water.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

Naylor Industries Ltd

PROJECT

Banks Wood Open Pit

DRAWING TITLE

Revised Restoration Plan

DRG No.		REV
NT14203-001		A
DRG SIZE	SCALE	DATE
A1	1:1250 @ A1	Feb 2020
DRAWN BY	CHECKED BY	APPROVED BY
LK	DG	HK

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