

Nottinghamshire County Council

Newstead Old Coal Stocking Yard, Freckland Wood and the Linby Trail

HABITAT MANAGEMENT PLAN

June 2023



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1.0 INTRODUCTION

- 1.1 The following Habitat Management Plan (HMP) has been prepared by FPCR Environment & Design Ltd on behalf of Nottinghamshire County Council. It details the proposed objectives and prescriptions for habitat management within an area of land proposed for designation as a Local Nature Reserve (herein referred to as the Site). The Site is illustrated in Figure 1.
- 1.2 The Site comprises parts of three separate but adjacent Local Wildlife Sites (LWS), Newstead Old Coal Stocking Yard LWS, Freckland Wood (part of Annesley Pit LWS) and the Linby Trail LWS.
- 1.3 This Management Plan includes the following details in accordance with current guidance for LNR designation¹:
- Ownership of the land.
 - Agreements and/or partnerships.
 - Why the LNR site was chosen.
 - Aims and objectives.
 - Biodiversity management and environmental education.
 - Community participation, access and visitor management.
 - Costs and funding arrangements.
- 1.4 The Management Plan provides information on current and future management of habitats within the Site, in order to safeguard their long-term biodiversity value.

2.0 PLAN CONTENT

- 2.1 The Management Plan identifies the features which require maintenance; this includes:
- Initial management of habitats (within the first 5 years) to modify current habitats for biodiversity objectives, and
 - Ongoing sympathetic management over the length of the Plan period.
- 2.2 Every management plan should have an over-arching vision, and, for this site, this is to:
- Enhance retained habitats for nature conservation and the benefit of wildlife.
 - Maintain, enhance and promote public access along designated footpaths.
- 2.3 The Management Plan has been presented in tabular format for conciseness and ease of use. Management prescriptions have been provided (Table 1) which are considered necessary to achieve the objective for each feature. Figure 1 provides the location of the management features which are the subject of this plan. The Plan covers a period of thirty years, with the programme of works required over this period summarised in Table 2.
- 2.4 Monitoring is an essential part of any management plan, to:
- Ensure that the proposed management is being implemented.
 - Respond to unexpected outcomes from management.

- Detail remedial/contingency measures where applicable.
- Determine if objectives are being achieved.

- 2.5 Monitoring requirements are identified in Table 3. Ongoing management should be reviewed every 5 years in perpetuity.

3.0 RESPONSIBILITY FOR IMPLEMENTATION

- 3.1 Nottinghamshire County Council's Green Spaces service will be responsible for implementation of the Management Plan. There will be appropriate legal and funding mechanisms in place as part of this to secure the long-term maintenance of greenspaces, including the requirements set out in this plan.
- 3.2 There is no dedicated budget for the management of the sites covered by this Management Plan, with management paid for from Nottinghamshire County Council's overall Green Spaces budget.

4.0 SITE INFORMATION

- 4.1 All land described below and detailed within this Management Plan is under the ownership of Nottinghamshire County Council.
- 4.2 Part of the Newstead Old Coal Stocking Yard site is allotments leased to and run by an allotment association. The allotments area is omitted from inclusion in this Management Plan and will not form part of the LNR. No formal partnerships are in place at the sites, but all sites are within the Greenwood Community Forest area, with woodland areas contributing to the objectives of that initiative. Recent work has also seen joint work parties run at Newstead Old Coal Stocking Yard with Butterfly Conservation East Midlands.
- 4.3 Whilst no community groups are specifically associated with any of the sites, community participation is enabled through regular volunteer work parties across all three sites run by Nottinghamshire County Council. Contact is maintained with the Parish Council and CAST (community angling project), and opportunities exist to increase community participation through these organisations. Access to all three sites is available at all times by a mix of formal and informal paths, and the Linby Trail forms part of the National Cycle Network Route 6, which runs from Derby, through Nottingham, to Ravenshead.

Site Descriptions

- 4.4 The below site descriptions are taken from the LWS Site Information documents for 5/392 Annesley Pit, 1/107 Linby – Newstead Disused Railway and 5/47 Newstead Dismantled Railway Sidings produced by Nottinghamshire Biological and Geological Records Centre and provided by Nottinghamshire County Council.

Linby Trail LWS

- 4.5 'A section of disused railway track in a shallow cutting with exposures of magnesian limestone. The tops of the banks are characterised by base rich soils dominated by upright brome *Bromus erectus* with a diverse selection of herbs including greater knapweed *Centaurea scabiosa* and harebell *Campanula rotundifolia*. The track bed has a species-rich assemblage of plants including common restharrow *Ononis repens*, field scabious *Knautia arvensis* and common bird's-foot-trefoil *Lotus corniculatus*. A ditch running along the

¹ <https://www.gov.uk/guidance/create-and-manage-local-nature-reserves>

western side of the site adds to the diversity, containing a community of moisture loving plant species such as great willowherb *Epilobium hirsutum* and greater burnet-saxifrage *Pimpinella major*.²

Newstead Old Coal Stocking Yard LWS

4.6 'These dismantled railway sidings have developed over time into a varied mosaic of habitats with dry calcareous and wet grassland, tall ruderal and scrub communities, augmented by planted ornamental species. A wide variety of plants have been recorded on the site reflecting the variations in habitat. Species characteristic of dry calcareous grassland include tor-grass *Brachypodium pinnatum*, greater knapweed *Centaurea scabiosa*, field scabious *Knautia arvensis* and burnet saxifrage *Pimpinella saxifraga*, while wetter areas support species such as square-stalked St John's-wort *Hypericum tetrapterum* and bristle club-rush *Isolepis setacea*.

4.7 Scrub includes hawthorn *Crataegus monogyna*, silver birch *Betula pendula* and willow *Salix sp.* with some wild privet *Ligustrum vulgare*, apple *Malus pumila* and broom *Cytisus scoparius*. The calcareous grassland is good butterfly habitat and the scrub supports many breeding warblers.'

Freckland Wood (southern part of Annesley Pit LWS)

4.8 'Annesley Pit LWS is a site situated on the spoil of Annesley coal mine and is botanically diverse and of importance for birds. Habitats within Annesley Pit LWS include natural and planted woodland, scattered scrub, lagoons with associated marshy areas and grassland habitats.

4.9 Freckland Wood at the southern end of the site is situated on an old spoil heap which has been landscaped and planted with deciduous woodland interspersed with grassland.'

The Local Nature Reserve

4.10 This collection of sites has been selected by Nottinghamshire County Council for designation as a Local Nature Reserve as they are:

- Currently well-used by the public for informal recreation, including walking, dog-walking, horse-riding and cycling.
- Under current positive management which is carried out by Nottinghamshire County Council, along with contractors and a team of volunteers.
- Accessible via well-maintained footpaths from Newstead to the north and Linby to the south.
- Well served by multiple formal and informal footpaths throughout, which create a network of trails through the on-site habitats.
- Of nature conservation value, with all sections designated as Local Wildlife Sites and supporting a range of notable species.
- Of geological value owing to the areas of exposed magnesium limestone which are visible along Linby Trail.
- Of cultural value owing to its industrial heritage, which is represented through the 'Work Tools' sculptures located within Freckland Wood.

5.0 HABITAT BASELINE

Data Collection

5.1 Desk study data was provided by Nottinghamshire County Council, and this has been reviewed and included within this Management Plan where considered relevant.

5.2 A Phase I Habitat survey² was also carried out by FPCR in March 2023. As the survey was undertaken during the sub-optimal period for vegetation surveys, a full detailed botanical assessment of the site was not carried out. However, it is considered that the data collected during the survey, in addition to the desk study data and information provided by site managers for the LWS are sufficient to inform this Management Plan.

5.3 A summary of habitats present are detailed below, as well as faunal species which require consideration during ongoing management.

Habitats

5.4 Habitats are illustrated in Figure 1 and further descriptions with references are provided below.

Broadleaved Semi-Natural Woodland

Newstead Old Coal Stocking Yard

5.5 Woodland within Newstead Old Coal Stocking Yard was largely self-set, semi-natural broadleaved woodland characterised by silver birch. Variations in this habitat were noted and are described below:

- Woodland W1 (western boundary of Newstead Old Coal Stocking Yard) was dominated by self-set young, semi-mature and mature silver birch, with scattered semi-mature willow and young oak *Quercus sp.*, and a shrub layer dominated by bramble *Rubus fruticosus* agg., in addition to hawthorn, gorse *Ulex europaeus* and rose *Rosa sp.* Ground flora was limited in the south owing to the dense nature of the young silver birch and prevalence of bramble, with locally abundant common nettle *Urtica dioica* and occasional cleavers *Galium aparine* recorded. Some sections in the centre were more open with only occasional bramble and bare ground/leaf litter dominating. Adjacent to the off-site railway line, mature silver birch were present.
- Woodland W2 (north of Newstead Old Coal Stocking Yard) was dominated by very dense, self-set, young silver birch in the north, which thinned to the south and east and comprised mature, semi-mature and young silver birch, in addition to willow. In the north, the shrub layer was largely absent as a consequence of the very dense young silver birch. In the south and east, the shrub layer comprised bramble, rose and hawthorn. In the east, previously coppiced hazel *Corylus avellana* was present. In the north, ground flora comprised remnant grassland and mosses *Bryophyta sp.*, and in the south and east locally abundant common nettle, and occasional wood avens *Geum urbanum* and dog's mercury *Mercurialis perennis* were present.
- Woodland W3 (eastern boundary of Newstead Old Coal Stocking Yard) comprised mature silver birch and ash *Fraxinus excelsior* in the north, and mature oak in the south. The shrub layer was sparse, and the woodland was light and open. Ground flora included scattered wild garlic *Apium nodiflorum*, wood avens and hogweed *Heracleum sphondylium*.

² JNCC. (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. Peterborough: Joint Nature Conservation Committee

Linby Trail

5.6 Woodland W4 along Linby Trail was located on the embankments which sloped steeply upwards from the path. These were characterised by mature ash, with scattered and dense bramble, and ground flora consisting of common ivy *Hedera helix* and moss.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
W1 and W2	To increase the biodiversity value of the wood by improving the age-structure and increasing the deadwood resource. <i>Woodland is immature in places and has poor structure.</i>
W3 and W2 (where appropriate)	To increase the biodiversity value of the wood by creating a woodland ground flora. <i>Woodland has species-poor ground flora.</i>
W4	To maintain the extent of woodland W4 with trees adjacent to Linby Trail managed for health and safety. <i>Woodland is present on narrow steep embankment above footpath.</i>

Plantation Woodland

Freckland Wood

5.7 Several woodland compartments were present within Freckland Wood, forming the largest area of woodland within the Site. Historic aerial imagery (c. 1999) shows these as distinct woodland blocks in the early years following planting. Some of these have now merged through the natural establishment of self-set specimens although mown grassland rides (G3) are managed and maintained for recreation. Woodland canopies comprised field maple *Acer campestre*, silver birch, oak and ash with locally occurring hazel, aspen *Populus tremula*, alder *Alnus glutinosa*, red oak *Quercus rubra* and larch *Larix decidua*. Variations in this habitat were noted and are described below:

- Woodland W5 in the north of Freckland Wood was a small compartment which had a canopy dominated by densely planted larch with occasional young silver birch. Owing to the dense nature of the plantation, the canopy was closed and light levels were limited across the majority of the woodland floor and the shrub layer and ground flora were limited to bramble and moss.
- Woodland W6, located throughout the centre and eastern edge of Freckland Wood, was largely of plantation origin with some self-set trees, and comprised dense field maple, silver birch, oak, red oak, larch and alder. In the north-east, old coppiced hazel were present and in the north, dense larch were present adjacent to W5. The shrub layer was varied and absent in places where the canopy was dense, however where present this comprised hawthorn, hazel and bramble. Ground flora was largely absent, and similar to W5. In the south-west, young aspen were dominant over a grassland ground flora, with shallow ephemeral pools present.
- Woodland W7 was located along the western edge of Freckland Wood and located on sloping ground from the central grassland ride down to the path separating Freckland Wood from Newstead Old Coal Stocking Yard. Larch formed a proportion of the canopy in the north of W7, with hazel coppice and alder present to the south. Generally throughout, the canopy comprised field maple, ash, oak and hazel. A number of dead ash were noted through the western edges of the woodland, and the edges of the plantation were, in places, buffered by young, self-set trees. The shrub layer was largely absent or underdeveloped owing to the dense nature of the majority of the plantation, however some areas, particularly along the edges supported hawthorn, hazel and young alder. As with W5 and W6, ground

flora was largely absent and limited, although in some areas where trees were young and light levels increased, grassland comprised of Yorkshire fog *Holcus lanatus* was present.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
W5, W6 and W7	To increase the biodiversity value of the wood by improving the age-structure, creating a woodland ground flora, and increasing the deadwood resource. <i>Woodland has poor structure and species-poor ground flora with tall ruderal herbs and non-native species.</i>

Dense Scrub

5.8 N.B. Scattered scrub within grassland habitat is detailed within the Grassland section below and Grassland section of Management Tables.

Newstead Old Coal Stocking Yard

5.9 Three areas of young woodland and woodland edge mapped as dense scrub included:

- Scrub S1 in the south of Newstead Old Coal Stocking Yard, comprised frequent young silver birch, hawthorn and bramble. Ground flora comprised remnant grassland including tufted hair-grass *Deschampsia cespitosa*, common knapweed *Centaurea nigra* and oxeye daisy *Leucanthemum vulgare*.
- Scrub S2 was a young woodland habitat present in the west of Newstead Old Coal Stocking Yard, which comprised very dense, self-set, young silver birch along with scattered oak and willow. Within the west of S2, small clearings and shallow pools of standing water supporting hard rush *Juncus effusus*, tufted hair-grass and early successional species and moss were present.
- Scrub S3 was a section of woodland W2 edge habitat, comprising young silver birch and hawthorn over remnant grassland.

5.10 In addition to the above, typical scrub habitat included:

- Dense scrub S4 which formed the boundary habitat to Station Avenue to the north, dominated by mature hawthorn, with elder *Sambucus nigra*, bramble, honeysuckle *Lonicera periclymenum* and mature silver birch, with alder present in the east.
- Dense scrub S5 to the south of the allotments comprised even-aged mature hawthorn and elder with bramble and no/limited ground flora.

5.11 Scrub with varied distribution/density and as a mosaic with other habitats included:

- Dense scrub S6 was present along the eastern edge of Newstead Old Coal Stocking Yard over undulating and rocky ground. This area comprised patches of dense bramble scrub, scattered and dense hawthorn and elder interspersed with tall herb including common nettle and willowherb *Epilobium sp.*, along with locally abundant moss and dog's mercury.

Freckland Wood

- Small areas of dense scrub S7 were present between woodland compartments comprising predominantly bramble.
- Scrub S8, present in the east of Freckland Wood, was an area of grassland heavily encroached by scrub and young trees including young silver birch, oak, alder trees and hawthorn.

Linby Trail

- Dense even-aged scrub S9 surrounded ponds P1 and P2 and was also present adjacent to the footpath at the southern end of Linby Trail. Hawthorn, blackthorn *Prunus spinosa* and willow were present with limited ground flora including scattered wood avens and lords-and-ladies *Arum maculatum* and moss, throughout an area dominated by leaf litter.
- Scrub S10 habitat along the west of Linby Trail, included dense sections on the embankment above the path to the south which thinned to the north to become scattered scrub over grassland and tall ruderal herbs. Species comprised hawthorn, willow, a rose, blackthorn, hazel and elder. Some scrub management had previously taken place to remove it from the stream (WC3).
- Scrub S11 along the east of Linby Trail had been subject to recent management to prevent encroachment into the calcareous grassland habitat. Some small sections along the tops of the embankment comprised dense bramble and blackthorn, along with scattered dog-rose, hawthorn and field maple.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
S1, S2, S3, S7 and S8	To remove a percentage of scrub within S1, S2, S3, S7 and S8 to re-establish grassland habitat and maintain as a habitat mosaic. <i>Scrub has encroached onto former grassland habitats presents opportunity to create habitat mosaics.</i>
S4 and S5	To create a graded structural edge to S4 and S5 that will provide shelter and foraging habitat for wildlife. <i>Scrub is mature and even aged.</i>
S6	To allow S6 to develop naturally, through limited intervention. <i>Scrub is present over undulating and rocky ground in association with tall ruderal herbs.</i>
S9	To create structure and reduce scrub from the banks of ponds P1 and P2 through coppicing/cutting back of scrub S9. <i>Scrub is even aged and presents an opportunity to create a varied structure whilst opening up some of the pond banks.</i>
S10 and S11	To control scrub S10 and S11 within calcareous grassland habitat along Linby Trail. <i>Scrub has encroached throughout at the loss of calcareous grassland habitat.</i>

Hedgerows

- Hedgerow H1: Outgrown, scrubby hedgerow at the southern end of Linby Trail. Mature cherry *Prunus sp.* and alder, with hawthorn, elder, wild privet *Ligustrum vulgare*, yew *Taxus baccata* and some dense bramble. Adjacent to stream and mown amenity grassland.
- Hedgerow H2 and H3: Recently laid hedgerows to the west and east of Linby Trail.
- Hedgerow H4: Unlaid section/continuation of H2.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
H1, H2, H3 and H4	To sympathetically manage native species hedgerows <i>Hedgerows across the site are varied in structure due to differing management strategies providing a variety of opportunities for wildlife.</i>

Scattered Trees

- Mature silver birch and oak ST1 were present in the east of Newstead Old Coal Stocking Yard over the adjacent grassland habitat (G2). Mature silver birch (ST2) were also present along the western edge of Freckland Wood.
- Scattered individual trees were also present along Linby Trail, including willow, oak and silver birch (mapped as individual trees).

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
ST1, ST2 and individual trees along Linby Trail	To maintain current tree cover and health of individual trees adjacent to footpaths for health and safety. <i>Scattered trees provide additional opportunities for wildlife however trees adjacent to areas of public use should be appropriately monitored and managed for health and safety.</i>

Grassland

Newstead Old Coal Stocking Yard

- Grassland G1 within the north of Newstead Old Coal Stocking Yard was an early successional habitat present over thin soils with exposed areas of bare ground/coal spoil. Species recorded throughout included common bird's-foot-trefoil *Lotus corniculatus*, oxeye daisy, common knapweed, mouse-ear hawkweed *Pilosella officinarum*, common whitlow grass *Erophila verna* agg., creeping cinquefoil *Potentilla reptans*, lady's mantle *Alchemilla vulgaris* agg., wild strawberry *Fragaria vesca*, moss, lichens and field woodrush *Luzula campestris*. Ephemeral pools supported hard rush and tufted hair-grass. Scrub encroachment, including hawthorn, blackthorn, willow and a rose, was present throughout G1 although this had been subject to recent clearance.
- In G2a, the soils were thin as in G1 and some damp ground and standing water was present. Some scrub encroachment was noted. Grassland G2b within the centre of Newstead Old Coal Stocking Yard comprised tufted hair-grass, common knapweed, a vetch *Vicia sp.*, germander speedwell *Veronica chamaedrys*, ribwort plantain *Plantago lanceolata* and a ragwort *Senecio sp.*

Freckland Wood

- Neutral grassland G3 was found in association with woodland and scrub habitats within Freckland Wood forming footpaths through blocks of plantation woodland and open glades. Grasslands largely comprised Yorkshire-fog, cock's-foot *Dactylis glomerata*, a fescue *Festuca sp.*, common knapweed, common mouse-ear *Cerastium fontanum* and ribwort plantain, with wild angelica *Angelica sylvestris* and marsh thistle *Cirsium palustre* noted in wetter areas.
- An open area of grassland G4, was present in the north of Freckland Wood on a north-facing slope. Species composition was generally similar throughout with broadleaved grasses dominating including Yorkshire-fog, false oat-grass *Arrhenatherum elatius* and tufted hair-grass, along with herb species including frequent common knapweed, meadow buttercup *Ranunculus acris* and common sorrel *Rumex acetosa*. Scattered scrub was present including wild privet, hawthorn and young silver birch.

Linby Trail

- Calcareous grassland, G5, as mentioned within the LWS citation, was present along Linby Trail. Approximately 1m wide to the west and between 5 and 8m to the east, the grasslands comprised upright brome, cowslip *Primula veris*, hedge bedstraw *Galium mollugo*, creeping cinquefoil, hairy St. John's-wort

Hypericum hirsutum, great burnet *Sanguisorba officinalis*, salad burnet *Sanguisorba minor*, greater knapweed *Centaurea scabiosa* and common knapweed. Scrub clearance had taken place recently within this habitat.

- In the south of Linby Trail, narrow strips of mown grassland G6 were present on either side of the footpath.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
G1, G2a, G2b and G5	To progress and implement restorative management followed by long-term maintenance management to deal with scrub. <i>Scrub is invading the important grassland areas.</i>
G3, G4 and G6	To sympathetically manage areas of open grassland. <i>Open areas of grassland provide an important habitat resource within the site.</i>

Ponds and Wetland

- Pond P1 in the south of Linby Trail LWS supported dense growth of bulrush *Typha latifolia* which has become dominant leaving only small open areas of water which appeared shallow and turbid. In these shallow areas, willowherb and hard rush were present. The waterbody was almost entirely surrounded by dense scrub including hawthorn, blackthorn and willow, with limited ground flora present.
- Pond P2, also in the south of Linby Trail and approximately 30m to the north of pond P1 was overshadowed by surrounding dense hawthorn scrub and in contrast was formed by 90/95% open water. Aquatic and marginal species recorded included a *callitriche sp.* and bulrush. Other than the dense hawthorn and some bramble, limited vegetation (scattered lords-and-ladies) was present on the banks of the pond where the ground was open, with leaf litter and bare ground dominating.
- An area of wetland P3 in the south of the Linby Trail was present within an area of wide, low ground located between stream WC3 and the footpath. This supported shallow standing water and soft mud with scattered hazel and willow scrub, in addition to wild angelica, brooklime *Veronica beccabunga*, yellow iris *Iris pseudacorus*, and fool's-water-cress *Apium nodiflorum*.
- A small (8m x 6m) ephemeral pond P4 was located in the north of Newstead Old Coal Stocking Yard, which supported hard rush and willow.
- Scattered areas of shallow standing water forming temporary pools were present in association with dense scrub along the western and northern extents of Newstead Old Coal Stocking Yard and the south-west of woodland W6. These appeared to have formed where ground was heavily compacted and supported grassland vegetation and moss.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
P1, P2, P3, P4 and shallow standing water across the site.	To maintain and enhance the biodiversity value of on-site ponds and wetland. <i>Ponds and wetland across the site are varied in characteristics, providing a variety of opportunities for wildlife.</i>

Watercourses

- 5.12 Four separate sections of watercourse were recorded within the Site.
- WC1 was present along the northern boundary of the off-site allotments and comprised shallow fast-flowing water over a pebble base, flowing in a south easterly direction. No aquatic vegetation was

recorded however wild garlic, pendulous sedge *Carex pendula*, dog's mercury, lesser celandine and variegated yellow archangel *Lamiastrum galeobdolon argentatum* were recorded on the banks.

- To the east of the path dividing Newstead Old Coal Stocking Yard and Freckland Wood, shallow stream WC2 was present along the edge of woodland W7. Intermittent flowing water (flowing southwards) and dry sections were noted. The stream was partially shaded by the adjacent woodland, although more open sections were also present with grassland banks.
- Along the western edge of the footpath forming Linby Trail, a narrow and shallow stream WC3 with shallow earth banks flowed southwards. The majority of the stream supported very shallow fast-flowing water over a pebble base although some dry section of ditch were also recorded supporting some scattered scrub and tall herb vegetation. Some recent scrub clearance was noted. The stream and banks supported brooklime, fool's-water-cress, willowherb, meadowsweet *Filipendula ulmaria*, wild angelica and figwort *Scrophularia sp.*.
- WC4 was present to the south of pond P1 and overshadowed by dense scrub S9 and hedgerow H1. The stream had earth banks vegetated with meadowsweet, a willowherb, broadleaved dock, a *Hypericum sp.*, moss and lords-and-ladies.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
WC1, WC2, WC3 and WC4	To maintain and enhance the biodiversity value of on-site watercourses. <i>Watercourses across the site are varied in characteristics, providing a variety of opportunities for wildlife.</i>

Rock Face

- 5.13 Along the mid and north sections of Linby Trail, exposed rock faces of magnesium limestone were present forming shallow cliff faces. In areas, these were vegetated with hart's-tongue *Asplenium scolopendrium*, moss and lichens, liverworts *Marchantiophyta* and figwort species, with some sections lightly covered by common ivy. Limestone fern *Gymnocarpium robertianum* also occurs here, at what is one of just four sites for this species in the county.

FEATURE	MANAGEMENT OBJECTIVE & RATIONALE
Rock faces	To maintain the value of exposed rock faces. <i>Exposed rock provides important habitat for flora and opportunities for wildlife.</i>

Faunal Considerations

- 5.14 Amphibians, reptiles nesting birds, badger *Meles meles* and roosting bats will be considered as part of future management to ensure these species are not harmed by management practices but instead benefit from the enhancement of the habitats.

Amphibians and Reptiles

- 5.15 Common toad *Bufo bufo* have been recorded along Linby Trail, and there are records of common frog *Rana temporaria*, smooth newt *Lissotriton vulgaris* and great crested newt *Triturus cristatus* from within the local area. The ponds provided suitable breeding and foraging opportunities for amphibians, and therefore works should be undertaken at a time of year which is the least detrimental. This is typically accepted to be the winter months.
- 5.16 Common lizard *Zootoca vivipara* and grass snake *Natrix helvetica* have been recorded across the site. The grassland habitats are to be cut on a rotational basis to ensure that areas of longer grassland are present

for foraging and commuting reptiles with works to any areas offering potential for hibernation undertaken outside of the winter period.

Bats

- 5.17 A number of trees with bat potential are located within the woodlands across the Site. These should be identified and protected during management works on the site. If any additional trees require removal or Arboricultural works in the future, then an ecologist should check the tree for bat potential before works are conducted.

Birds

- 5.18 The Site provides habitat for tree and shrub nesting species. Removal of trees or coppicing activities should be done outside the nesting season (works to be undertaken between September/October and January/February).

Badger

- 5.19 Badgers are known to utilise the Site, therefore an ecologist should be contacted should badger setts be identified within any working areas where machinery, trees/scrub removal or ground breaking are proposed. The ecologist can provide appropriate working methods, if necessary.

Invertebrates

- 5.20 The site provides varied habitat for invertebrates generally, with notable butterfly species recorded including dingy skipper *Erynnis tages*, grizzled skipper *Pyrgus malvae*, green hairstreak *Callophrys rubi*, marbled

white *Melanargia galathea*, brown argus *Aricia agestis*, silver washed fritillary *Argynnis paphia* and white-letter hairstreak *Satyrion w-album*. Grassland rides are to be maintained and widened to provide commuting habitat for butterflies throughout the north of the site, and coppicing of woodland and sympathetic grassland management are to be undertaken to provide varied climatic conditions and ensure foodplants are available.

Access Considerations

Footpaths

- 5.21 Sections of the footpath network within the Site were noted to be waterlogged and muddy. These sections of path would benefit from surfacing with an appropriate material where feasible.

Way Markers

- 5.22 The Site as a whole contains a network of footpaths with Freckland Wood in the east having a number of interlinking routes. Installation of way makers would benefit users of the Site and help to guide recreation along these formal routes.
- 5.23 The addition of an information board, perhaps at the northern entrance, to provide details of the network of paths and the Site's biodiversity and cultural value would be a further benefit.

Table 1: Management Plan

FEATURE	OBJECTIVES	PRIORITY	MANAGEMENT ACTION TO ACHIEVE OBJECTIVE – INITIAL MANAGEMENT	MANAGEMENT ACTION TO ACHIEVE OBJECTIVE – ONGOING HABITAT MANAGEMENT	INDICATOR THAT OBJECTIVE HAS BEEN ACHIEVED AND REMEDIAL ACTION IF REQUIRED
<p>1. Broadleaved Semi-natural Woodland</p> <p>W1, W2, W3 and W4</p>	<p>To increase the biodiversity value of woodlands W1, W2 and W3 by improving the age-structure, creating a woodland ground flora (W3 only), and increasing the deadwood resource.</p> <p>To maintain the extent of woodland W4.</p> <p>Trees within W1, W2, W3 and W4 appropriately managed for health and safety.</p>	<p>LOW</p> <p>LOW</p> <p>HIGH</p>	<p>1.1 Progressive thinning of W1, W2 and W3 (where necessary)</p> <p>To establish a canopy of high quality silver birch and oak as well as creating a more open woodland to help development of shrub layer and ground flora.</p> <ul style="list-style-type: none"> A progressive thin of the woodland focusing on retaining higher quality specimens and the removal of approximately 20% - 40% of silver birch within areas where this is overly dense during each management session, with the ultimate aim of achieving a woodland where structure is varied and trees are spaced randomly averaging 1 – 3m apart. Thinning operations should also aim to create woodland edge habitat of grassland, native scrub and young trees along the footpaths through Newstead Old Coal Stocking Yard by removal of silver birch to widen the woodland rides to 6-8m. <p>This should be carried out using chainsaws and the removed brash material could be chipped on site using a tracked chipper to reduce any compaction to the soil. The woodchip could be piled on site, if appropriate. Alternately, cut material could be stacked to create brash piles. Any wood created from the thinning operation will be stacked in log pyramids no greater than 5 logs high within the woodland forming habitat log piles. Alternately, material could be removed from site using appropriate machinery or horse-logging.</p> <p>1.2 Coppicing of hazel in W2</p> <p>A small number of suitable trees will be coppiced on an ad hoc basis to start a new cycle of coppice management and to open up canopy and provide additional scrub layer. To coppice:</p> <ul style="list-style-type: none"> Clear out all leaves and other debris around the base of the stool. Cut and clear away any dead or dying stems. Progressively cut each stem starting with the most accessible sections and working in to the centre of the stool. Cut should be made about 1-2 inches above where the branch grows out of the stool at 15 to 20 degrees from horizontal with the lowest point facing outwards from the centre of the stool. Cut branches and twigs should be used to create log piles. <p>1.3 Planting ground flora within W3 and W2 (where appropriate)</p> <ul style="list-style-type: none"> Introduce woodland wildflowers. Plant woodland wildflower plugs or bulbs at a planting density of 5 plants/m2 using the following planting mixes. Suitable central areas: wood anemone, bluebell, yellow archangel, wood forget-me-not, common dog-violet, wild strawberry, primrose, woodruff. Suitable woodland edges: red campion, greater stitchwort. <p>Or,</p> <ul style="list-style-type: none"> Surface sow Emorsgate EW1F Woodland Mixture (or similar) during spring (April/early May) or preferably the optimal period for lowland sites of autumn (late August to September), selecting a time when the soil is moist and can be worked. See can be applied by machine or broadcast by hand. <p>1.4 Create deadwood W1, W2, and W3</p> <ul style="list-style-type: none"> Retain all deadwood in-situ unless plant health reasons require removal and destruction off-site. Maximise opportunities to create standing deadwood during any tree works required for health and safety issues. 	<p>1.5 Coppicing of hazel in W2</p> <ul style="list-style-type: none"> Coppicing on rotation annually choosing a small number of trees to coppice each year with repeat coppicing of trees occurring every 7 years for hazel. Cut branches and twigs should be used to replenish log piles. Cutting will take place September-February to avoid the breeding bird season, and ideally undertaken in late January or February, avoiding any periods of heavy frost. <p>1.6 Progressive thinning W1, W2 and W3 (where necessary)</p> <ul style="list-style-type: none"> As per 1.1. <p>1.7 Monitoring ground flora W3 and W2 (where appropriate)</p> <ul style="list-style-type: none"> Control nettle and bramble in areas of ground flora planting. Replant as required if initial planting unsuccessful. <p>1.8 Arboricultural works for health and safety W1, W2, W3 and W4</p> <ul style="list-style-type: none"> Any felling works required outside of nesting bird season and after checks on semi-mature and mature trees for bats. Deadwood to be left standing where appropriate and logs and branches used in log piles. <p>1.9 Invasive species management W1, W2, W3 and W4</p> <ul style="list-style-type: none"> Removal of any invasive or undesirable non-native species Arisings to be removed from site to appropriate disposal facility. 	<p><u>Indicators W1, W2 and W3</u></p> <ul style="list-style-type: none"> Diverse woodland present with a canopy layer, understorey of scrub and young trees and ground flora evident. Invasive and undesirable non-native species are absent. Standing deadwood is present throughout the woodlands as dead branches, stems or stumps (e.g., in 50% of all survey/monitoring plots). Vegetation and ground flora: – recognisable NVC community. Tree health: Tree mortality less than 10%, no pests or diseases and no crown dieback. Number of native tree species: Five or more native tree or shrub species found across woodland parcel. Woodland regeneration: All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth. <p><u>Remedial actions W1, W2 and W3</u></p> <p>If woodland layers not present, appropriate areas should be managed as prescribed in management actions.</p> <p><u>Indicators W1, W2, W3 and W4</u></p> <p>Trees adjacent to footpath have been monitored and managed with no health and safety risks identified.</p> <p><u>Remedial actions W1, W2, W3 and W4</u></p> <p>Carry out arboricultural works where required.</p>

<p>2. Plantation Woodland</p> <p>W5, W6 and W7</p>	<p>To increase the biodiversity value of the woodlands by improving the age-structure, creating a woodland ground flora (W6 and W7 only), and increasing the deadwood resource.</p>	<p>MEDIUM</p>	<p>2.1 <u>Thinning and larch removal W5, W6 and W7</u></p> <p>To create a more open woodland to help development of shrub layer and ground flora. A progressive thin of the woodland focusing on retaining higher quality specimens and the removal of 20% trees during each management session. Thinning operations should also aim to create woodland edge habitat of native scrub and young trees along the outer edges of woodland compartments and adjacent to grassland rides. This should be carried out using chainsaws and the removed brush material should be chipped on site ideally using a tracked chipper to reduce any compaction to the soil. The woodchip could be piled on site to be used to cover the footpaths where these are muddy, if appropriate. Alternately, cut material could be stacked to create brush piles.</p> <p>Any wood created from the thinning operation will be stacked in log pyramids no greater than 5 logs high within the woodland forming habitat log piles. Alternately, material could be removed from site using appropriate machinery or horse-logging.</p> <p>2.2 <u>Coppicing W6 and W7</u></p> <p>A small number of suitable hazel trees will be coppiced on an ad hoc basis to start a new cycle of coppice management.</p> <p>Coppice established young trees to open up canopy and provide additional scrub layer. To coppice:</p> <ul style="list-style-type: none"> • Clear out all leaves and other debris around the base of the stool. • Cut and clear away any dead or dying stems. • Progressively cut each stem starting with the most accessible sections and working in to the centre of the stool. • Cut should be made about 1-2 inches above where the branch grows out of the stool at 15 to 20 degrees from horizontal with the lowest point facing outwards from the centre of the stool. • Cut branches and twigs should be used to create log piles. <p>2.3 <u>Planting ground flora W6 and W7</u></p> <p>Introduce woodland wildflowers. Plant woodland wildflower plugs or bulbs at a planting density of 5 plants/m2 using the following planting mixes.</p> <ul style="list-style-type: none"> • Suitable central areas: wood anemone, bluebell, yellow archangel, wood forget-me-not, common dog-violet, wild strawberry, primrose, woodruff. • Suitable woodland edges: wood avens, red campion, greater stitchwort. <p>Or,</p> <ul style="list-style-type: none"> • Surface sow Emorsgate EW1F Woodland Mixture (or similar) during spring (April/early May) or preferably the optimal period for lowland sites of autumn (late August to September), selecting a time when the soil is moist and can be worked. See can be applied by machine or broadcast by hand. <p>2.4 <u>Create deadwood W5, W6 and W7</u></p> <ul style="list-style-type: none"> • Retain all deadwood in-situ unless plant health reasons require removal and destruction off-site. • Maximise opportunities to create standing deadwood during any tree works required for health and safety issues. 	<p>2.5 <u>Coppicing W6 and W7</u></p> <ul style="list-style-type: none"> • Coppicing on rotation annually choosing a small number of trees to coppice each year with repeat coppicing of trees occurring every 7 years for hazel. • Cut branches and twigs should be used to replenish log piles. • Cutting will take place September-February to avoid the breeding bird season, and ideally undertaken in late January or February, avoiding any periods of heavy frost. <p>2.6 <u>Thinning</u></p> <ul style="list-style-type: none"> • As per 2.1. <p>2.7 <u>Monitoring ground flora W6 and W7</u></p> <ul style="list-style-type: none"> • Control nettle and bramble in areas of ground flora planting. • Replant as required if initial planting unsuccessful. <p>2.8 <u>Arboricultural works W5, W6 and W7 (including those for health and safety)</u></p> <ul style="list-style-type: none"> • Any felling works required outside of nesting bird season and after checks on semi-mature and mature trees for bats • Deadwood to be left standing and logs and branches used in log piles <p>2.9 <u>Invasive species management W5, W6 and W7</u></p> <ul style="list-style-type: none"> • Removal of any invasive or undesirable non-native species • Arisings to be removed from site to appropriate disposal facility 	<p>Indicators</p> <ul style="list-style-type: none"> • Diverse woodland present with a canopy layer, understorey of scrub and young trees and ground flora evident. • Invasive and undesirable non-native species are absent. • Standing deadwood is present throughout the woodlands as dead branches, stems or stumps (e.g., in 50% of all survey/monitoring plots). • Vegetation and ground flora: – recognisable NVC community. • Tree health: Tree mortality less than 10%, no pests or diseases and no crown dieback. • Number of native tree species: Five or more native tree or shrub species found across woodland parcel. • Woodland regeneration: All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth. <p>Remedial actions</p> <p>If woodland layers not present, appropriate areas should be managed as prescribed in management actions.</p>
<p>3 Scrub</p> <p>S1, S2, S3, S4, S5, S6, S7, S8, S9, S10 and S11</p>	<p>To remove a percentage of scrub within S1, S2, S3, S7 and S8 to re-establish grassland habitat and maintain as a habitat mosaic.</p>	<p>HIGH</p>	<p>3.1 <u>Re-establish grassland previously encroached by scrub S1, S2, S3, S7 and S8</u></p> <p>Remnant grassland habitat was present as the ground flora within areas of young woodland/woodland edge S1, S2, S3, S7 and in S8 a former area of open grassland was becoming heavily encroached by hawthorn and young trees.</p> <ul style="list-style-type: none"> • S1, S2, S3: Target 50% - 75% overall removal of scrub and young trees. Create one small clearing within each area, and thin out the remaining scrub and young trees around the clearing with the aim of creating a grassland habitat with scattered scrub and trees. • S7 and S8: Remove 80%- 90% of scrub and young trees to open up former grassland habitat. Retain a mixture of scrub and young trees of varied species and age. Cut back scrub by 50% in each year of management. 	<p>3.4 <u>Control and removal of bramble scrub along the Linby Trail both on the grassland adjacent to the footpath and on the embankment above the cutting walls.</u></p> <ul style="list-style-type: none"> • Control bramble above cutting wall along Linby Trail using a side arm flail. • Monitor scrub growth within areas of grassland adjacent to the footpath and cut back on a regular basis to maintain open grassland habitat. 	<p>Indicator</p> <ul style="list-style-type: none"> • There is a good age range: seedlings, young shrubs and mature shrubs present within managed areas. • There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species make up less than 5% of ground cover. • The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs

	<p>To create a graded structural edge to S4 and S5 that will provide shelter and foraging habitat for wildlife.</p> <p>To allow S6 to develop naturally, through limited intervention.</p> <p>To create structure and reduce scrub from the banks of ponds P1 and P2 through coppicing/cutting back of scrub S9.</p> <p>To control scrub S10 and S11 within calcareous grassland habitat along Linby Trail.</p>	<p>LOW</p> <p>LOW</p> <p>LOW</p> <p>HIGH</p>	<p><u>3.2 Creation of a graded edge to mature even aged scrub S4 and S5, and removal of some of the scrub S9 habitat from the edges of ponds P1 and P2</u></p> <ul style="list-style-type: none"> S4, S5: Cut/coppice scrub within a strip measuring 1-2m along the edge where S4 meets the grassland habitat and S5 meets the footpath. Cut 20% within this 1-2m strip on a fifteen-year rotation and allow cut specimens to regenerate to create a mixed age edge habitat. S9: Remove 50% of the scrub forming the immediate edge to pond P2 and consider a lower proportion (20%) of scrub removal from the bank of pond P1. Scrub could be cut on a rotational basis as per S4 and S5. <p><u>3.3 Control and removal of bramble scrub along the Linby Trail both on the grassland adjacent to the footpath and on the embankment above the cutting walls.</u></p> <ul style="list-style-type: none"> Control bramble above cutting wall along Linby Trail using a side arm flail. 	<p><u>3.5 Monitor scrub growth within grassland habitats at S1, S2, S3, S7, S8, S10 and S11</u></p> <ul style="list-style-type: none"> Monitor scrub growth within areas of grassland adjacent to the footpath and cut back on a regular basis to maintain open grassland habitat. <p><u>3.6 Maintain a graded edge to mature even aged scrub S4 and S5, and pond edges at S9.</u></p> <ul style="list-style-type: none"> As 3.2. <p><u>3.7 Invasive species management (all)</u></p> <ul style="list-style-type: none"> Removal of any invasive or undesirable non-native species Arisings to be removed from site to appropriate disposal facility 	<p>present between the scrub and adjacent habitat(s).</p> <ul style="list-style-type: none"> There are clearings present within scrub S1, S2 and S3, providing sheltered edges. <p><u>Remedial actions</u> Appropriate areas should be managed as prescribed in management actions.</p>
<p>4 Hedgerows</p> <p>H1, H2, H3 and H4</p>	<p>To sympathetically manage native species hedgerows</p>	<p>LOW</p>	<p>N/A</p>	<p><u>4.1 Maintain H1 as a tall outgrown hedgerow through limited intervention.</u></p> <p><u>4.2 H2 and H3: Manage laid hedgerows.</u></p> <ul style="list-style-type: none"> Lightly trim for approx.. 3 years after laying. Then manage as per H4. <p><u>4.3 H4: Cut 50% every other year.</u></p> <ul style="list-style-type: none"> Cut 50% of hedgerow H4 (and H2 and H3 once established) every other year. 	<p><u>Indicator</u></p> <ul style="list-style-type: none"> Hedgerows have good structure and produce flowers and fruit. <p><u>Remedial Action</u> Appropriate management as prescribed in management actions.</p>
<p>5 Scattered Trees</p> <p>ST1 and ST2</p>	<p>To maintain current tree cover and health of individual trees adjacent to footpaths for health and safety.</p>	<p>HIGH</p>	<p><u>5.1 Arboricultural works for health and safety</u></p> <ul style="list-style-type: none"> Any felling works required outside of nesting bird season and after checks on semi-mature and mature trees for bats. Deadwood to be left standing where appropriate and logs and branches used in log piles. 	<p><u>5.2 Arboricultural works for health and safety</u></p> <ul style="list-style-type: none"> Any felling works required outside of nesting bird season and after checks on semi-mature and mature trees for bats. Deadwood to be left standing where appropriate and logs and branches used in log piles. 	<p><u>Indicators</u> Trees adjacent to footpath have been monitored and managed with no health and safety risks identified.</p> <p><u>Remedial actions</u> Carry out arboricultural works where required.</p>

<p>6 Grassland</p> <p>G1, G2a, G2b, G3, G4, G5 and G6</p>	<p>G1, G2a, G2b and G5: To progress and implement restorative management followed by long-term maintenance management to deal with scrub. This will also apply to grassland habitats within S1, S2, S3, S7 and S8 once initial scrub removal has taken place.</p> <p>G3, G4 and G6: To sympathetically manage areas of open grassland.</p>	<p>HIGH</p> <p>HIGH</p>	<p>6.1 <u>Scrub removal from rides between woodland compartments W5, W6 and W7</u></p> <ul style="list-style-type: none"> • Aim for 6 – 8m rides of grassland. Remove scrub and young trees as required to have less than 5% cover. • Cut branches and twigs should be used to create log piles. <p>6.2 <u>Strimming and removal of young scrub within early successional grasslands G1 and G2a.</u></p> <ul style="list-style-type: none"> • Remove scrub as required to have less than 5% cover. • Arisings to be placed on log/brush piles or chipped in an appropriate area. 	<p>6.3 <u>Conservation cut of grasslands within G2b, G3 and G4</u></p> <ul style="list-style-type: none"> • G2b and G4: Cut one third of the grassland on rotation each September using a flail and collect machine. • G3: Cut one half of the grassland on rotation each September using a flail and collect machine. <p>6.4 <u>Twice yearly cut of grasslands G6</u></p> <ul style="list-style-type: none"> • Two cuts per year, on in May and one in September. • Rake-off arisings and pile within designated area. <p>6.5 <u>One yearly cut of grassland G5</u></p> <ul style="list-style-type: none"> • One cut per year in September. • Rake-off arisings and pile within designated area. <p>6.6 <u>Manage scrub cover – all grasslands.</u></p> <ul style="list-style-type: none"> • Remove scrub as required to have less than 5% cover. • Arisings to be placed on log piles. <p>6.7 <u>Mow former scrub areas S1, S2, S3, S7 and S8 to maintain as grassland habitat.</u></p> <ul style="list-style-type: none"> • Cut one half of the grassland S8 on rotation each September using a flail and collect machine. • Cut grassland S1, S2, S3 and S7 each September using a flail and collect machine. 	<p>Indicators</p> <ul style="list-style-type: none"> • Significant areas of flowering grassland present with evidence of low-intensity management • Cover of bare ground between 1% and 5% • Cover scrub (including bramble) less than 5%. • There is an absence of invasive non-native species and undesirable species and physical damage less than 5% of total area. <p>Note: Species considered undesirable for this habitat type include: Creeping thistle <i>Cirsium arvense</i>, spear thistle <i>Cirsium vulgare</i>, curled dock <i>Rumex crispus</i>, broad-leaved dock <i>Rumex obtusifolius</i>, common nettle <i>Urtica dioica</i>, creeping buttercup <i>Ranunculus repens</i>, greater plantain <i>Plantago major</i>, white clover <i>Trifolium repens</i>, cow parsley <i>Anthriscus sylvestris</i>.</p> <p>Remedial actions</p> <p>If grassland shows evidence of mismanagement (not fulfilling criteria) management actions will be followed.</p>
<p>7 Ponds and Wetland</p> <p>P1, P2, P3 and P4</p>	<p>To maintain and enhance the biodiversity value of on-site ponds and wetland.</p>	<p>LOW</p>	<p>7.1 <u>Consider the removal of a proportion of great reedmace from pond 1.</u></p> <ul style="list-style-type: none"> • Cut back and remove great reedmace to maintain 25% – 50% open water. If undertaken, this should be carried out in the winter on a little-and-often basis, to reduce disturbance to wildlife. <p>7.2 <u>Maintain the extent of wetland habitat P3 and ephemeral pools P4 (and those within S2 and W6) through the removal of scrub.</u></p> <ul style="list-style-type: none"> • Cut back willow and other scrub species. • This should be carried out in the winter on a little-and-often basis, to reduce disturbance to wildlife. 	<p>7.3 <u>Manage to remove any scrub encroachment.</u></p> <ul style="list-style-type: none"> • Cut back or remove any regenerating willow scrub encroachment within waterbody. <p>7.4 <u>Invasive/undesirable Species Management.</u></p> <ul style="list-style-type: none"> • Ensure ponds and wetland remain free of non-native plant species. <p>7.5 <u>Monitor conditions and vegetation growth within ponds P1 and P2 following scrub coppicing/clearance from banks (see Management Action 3.2), if undertaken.</u></p> <ul style="list-style-type: none"> • Discontinue scrub coppicing/clearance in the event that negative impacts recorded such as algal bloom. 	<p>Indicator</p> <ul style="list-style-type: none"> • If removal undertaken, pond P1 should have 25% - 50% open water free of great reedmace. • No scrub growth within ponds and wetland areas. • Ponds and wetland areas are free from invasive or undesirable species. <p>Remedial actions</p> <ul style="list-style-type: none"> • Clear great reedmace, scrub and non-native flora.

<p>8 Watercourses WC1, WC2, WC3 and WC4</p>	<p>WC1: Promote native woodland ground flora on banks.</p> <p>WC2 and WC4: Maintain current habitat features.</p> <p>WC3: Maintain open characteristics of watercourse.</p>	<p>LOW</p> <p>LOW</p> <p>LOW</p>	<p><u>8.1 Maintain the extent of native woodland ground flora on the banks of WC1.</u></p> <ul style="list-style-type: none"> Remove variegated yellow archangel by hand on an annual basis, taking care to remove the stems and roots fully to ensure eradication. 	<p><u>8.2 Maintain the extent of native woodland ground flora on the banks of WC1.</u></p> <ul style="list-style-type: none"> Remove variegated yellow archangel by hand on an annual basis, taking care to remove the stems and roots fully to ensure eradication. Monitor any encroachment by bramble, common nettle or other undesirable/non-native species and remove appropriately. <p><u>8.3 Maintain the mosaic of open and overshaded banks along WC2.</u></p> <ul style="list-style-type: none"> Remove scrub, debris and overhanging branches should these start to become dominant. <p><u>8.4 Maintain open characteristics of WC3 .</u></p> <ul style="list-style-type: none"> Monitor any encroachment by bramble and other scrub species within flowing section of WC3 and remove appropriately. <p><u>8.5 Ensure WC1, WC2, WC3 and WC4 are free of litter.</u></p> <ul style="list-style-type: none"> Clear litter, large accumulations of debris. 	<p><u>Indicator WC1</u></p> <ul style="list-style-type: none"> No variegated yellow archangel present along banks of WC1, native woodland ground flora present. Undesirable species (e.g. bramble and common nettle do not dominate ground cover, i.e. <25%) Other non-native species absent. <p><u>Remedial Action WC1</u></p> <ul style="list-style-type: none"> Clear non-native flora, and undesirable species. <p><u>Indicator WC2</u></p> <ul style="list-style-type: none"> WC2 has a varied amount of overshading by adjacent tree and shrub layer of woodland W7. <p><u>Remedial action WC2</u></p> <ul style="list-style-type: none"> Remove scrub and overhanging branches so at least 25% of the watercourse has open conditions. <p><u>Indicator WC3</u></p> <ul style="list-style-type: none"> Scrub absent from watercourse, overshading is minimal along channel. <p><u>Remedial action WC3</u></p> <ul style="list-style-type: none"> Remove scrub.
<p>9 Rock Faces</p>	<p>Maintain the current extent of rock faces, ensuring exposed rock and vegetated sections present.</p>	<p>HIGH</p>	<p>Non-required</p>	<p><u>9.1 Monitor and remove common ivy and bramble scrub should these begin to cover more than 10% of the rock faces.</u></p> <ul style="list-style-type: none"> Remove common ivy and bramble by cutting above rock faces, where safe to do so. 	<p><u>Indicator</u></p> <ul style="list-style-type: none"> Bramble and common ivy cover <10% rock faces <p><u>Remedial action</u></p> <ul style="list-style-type: none"> Clear bramble and common ivy.
<p>10 Access</p>	<p>Provide way markers within appropriate locations.</p> <p>To create a footpath network which is largely free from heavy mud.</p>	<p>HIGH</p> <p>LOW</p>	<p><u>10.1 Install way markers in strategic locations to guide recreation along designated footpaths.</u></p> <p><u>10.2 Remediate footpaths through improving drainage and/or surfacing with an appropriate material (e.g., bark chippings from forestry, gravel or aggregate).</u></p>	<p><u>10.3 Maintain way markers and replace any damaged or missing ones.</u></p> <p><u>10.4 Maintain footpaths section appropriately.</u></p>	<p><u>Indicators</u></p> <ul style="list-style-type: none"> Way markers provide walking routes around the site. Footpath network is largely free from heavy mud. <p><u>Remedial action</u></p> <ul style="list-style-type: none"> Replace damaged / missing way markers. Carry out footpath maintenance.

Table 2: Thirty-Year Work Programme

FEATURE	PRIORITY AND MANAGEMENT/ MONITORING WORKS	YEAR AND TIMING																							
		1x = undertake management action once only within 5-year period, 5x = undertake management action once a year within 5 year period, x As req. = undertake management action as required within 5 year period.																							
		YEARS 1 – 5				YEARS 6 - 10				YEARS 11 - 15				YEARS 16 - 20				YEARS 21 - 25				YEARS 26 - 30			
Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi		
1. Broadleaved Semi-natural Woodland W1, W2, W3 and W4	LOW 1.1 and 1.6 Progressive thinning of W1, W2 and W3.				1x				1x				1x								1x				
	LOW 1.2 and 1.5 Rotational coppicing of hazel, approx. every 7 years W2.				1x				1x				1x								1x				
	LOW 1.3 Planting ground flora W3 and north of W2 (where appropriate), spring or autumn. Replant as necessary in years 16 – 20 if initial planting unsuccessful.	1x		1x										1x		1x									
	LOW 1.4 Create deadwood W1, W2 and W3.	Continuous, where appropriate, outside of nesting bird period if woody vegetation removed.																							
	LOW 1.7 Monitoring ground flora, controlling bramble and common nettle.		5x				5x				5x				5x				5x				5x		
	HIGH 1.8 Additional arboricultural works W1, W2, W3 and W4				x As req.				x As req.				x As req.				x As req.				x As req.				x As req.
	LOW 1.9 Invasive species removal	Continuous, where appropriate, outside of nesting bird period if woody vegetation removed.																							
2. Plantation Woodland W5, W6 and W7	MEDIUM 2.1 and 2.6 Thinning and larch removal				1x				1x				1x								1x				
	MEDIUM 2.2 and 2.5 Rotational coppicing of hazel, approx. every 7 years W6 and W7.				1x				1x				1x								1x				
	LOW 2.3 Planting ground flora W6 and W7, spring or autumn. Replant as necessary in years 16 – 20 if initial planting unsuccessful.	1x		1x										1x		1x									
	MEDIUM 2.4 Create deadwood	Continuous, where appropriate, outside of nesting bird period if woody vegetation removed.																							
	LOW 2.7 Monitoring ground flora, controlling bramble and common nettle.		5x				5x				5x				5x				5x				5x		
	HIGH 2.8 Additional arboricultural works				x As req.				x As req.				x As req.				x As req.				x As req.				x As req.
MEDIUM 2.9 Invasive species removal	Continuous, where appropriate, outside of nesting bird period if woody vegetation removed.																								

FEATURE	PRIORITY AND MANAGEMENT/ MONITORING WORKS	YEAR AND TIMING																							
		1x = undertake management action once only within 5-year period, 5x = undertake management action once a year within 5 year period, x As req. = undertake management action as required within 5 year period.																							
		YEARS 1 – 5				YEARS 6 - 10				YEARS 11 - 15				YEARS 16 - 20				YEARS 21 - 25				YEARS 26 - 30			
Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi		
3. Scrub S1, S2, S3, S4, S5, S6, S7, S8, S9, S10 and S11	HIGH 3.1 Remove scrub from grassland habitat, S1, S2, S3, S7 and S8. 50% - 75% removal at S1, S2 and S3, and 80%-90% removal at S7 and S8.				5x																				
	LOW 3.2 and 3.6 Cutting/coppicing of scrub from edges of S4 and S5, and S9 surrounding ponds. 20% removal at S4, S5 and surrounding pond P1, and 50% removal surrounding P2. Cut 20% on a fifteen-year rotation.				2x				1x				2x				1x				2x				2x
	HIGH 3.3 and 3.4 Flail bramble scrub above cutting wall			2x				2x				2x				2x				2x				2x	
	HIGH 3.5 Monitor scrub growth, cut back on a regular basis to maintain open grassland habitat.			2x				2x				2x				2x				2x				2x	
	LOW 3.7 Invasive/undesirable species management	Continuous, where appropriate, outside of nesting bird period if woody vegetation removed.																							
4. Hedgerows H1, H2, H3 and H4	LOW 4.2 Light trim of hedgerows H2 and H3				3x																				
	LOW 4.3 Cut 50% of hedgerows H4 (and H2 and H3 once established) every other year				2 or 3x				2 or 3x				2 or 3x				2 or 3x				2 or 3x				2 or 3x
5. Scattered Trees ST1, ST2	HIGH 5.1 and 5.2 Arboricultural works for health and safety, when required.				5x				5x				5x				5x				5x				5x
6. Grassland G1, G2, G3, G4, G5 and G6	HIGH 6.1 Scrub removal from rides between woodland compartments W5, W6 and W7				1x				1x				1x				1x				1x				1x
	HIGH 6.3 and 6.7 Use flail and collect machine. Cut 1/3 of grassland G2b and G4 on rotation. Cut 1/2 of grassland G3 and S8 on rotation.			5x				5x				5x				5x				5x				5x	
	Cut all grassland at S1, S2, S3 and S7.			5x				5x				5x				5x				5x				5x	
	HIGH 6.4 Twice yearly cut of grassland G6	5x		5x		5x		5x		5x		5x		5x		5x		5x		5x		5x		5x	
HIGH 6.5 Cut grassland G5, rake-off arisings and place within designated area.			5x				5x				5x				5x				5x				5x		

FEATURE	PRIORITY AND MANAGEMENT/ MONITORING WORKS	YEAR AND TIMING																							
		1x = undertake management action once only within 5-year period, 5x = undertake management action once a year within 5 year period, x As req. = undertake management action as required within 5 year period.																							
		YEARS 1 – 5				YEARS 6 - 10				YEARS 11 - 15				YEARS 16 - 20				YEARS 21 - 25				YEARS 26 - 30			
Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi	Sp	Su	Au	Wi		
	HIGH 6.2 and 6.6 Manage scrub cover to less than 5% - all grasslands.				5x				5x				5x				5x				5x				5x
7. Ponds and Wetland P1, P2, P3 and P4	LOW 7.1 Remove great reedmace from pond P1 to maintain 25%-50% open water.				1x				1x				1x				1x				1x				1x
	LOW 7.2 and 7.3 Remove scrub from wetland habitats P3, P4 and those within S2 and W6				2x				2x				2x				2x				2x				2x
	LOW 7.4 Remove any non-native and undesirable species from ponds and wetland.	Continuous, where appropriate, during winter months.																							
	LOW 7.5 Monitor ponds P1 and P2 following scrub clearance.	Continuous.																							
8. Watercourses WC1, WC2, WC3 and WC4	LOW 8.1 Remove variegated yellow archangel from banks.	5x	5x			x As req.	x As req.			x As req.	x As req.			x As req.	x As req.			x As req.	x As req.			x As req.	x As req.		
	LOW 8.2, 8.3 and 8.4 Monitor encroachment by bramble, common nettle and other undesirable and non-native species and remove.	Continuous, where appropriate, outside of nesting bird period if woody vegetation removed.																							
	LOW 8.5 Clear litter and large accumulations of debris.	Continuous, where appropriate, outside of nesting bird period if woody vegetation needs to be removed.																							
9. Rock faces	HIGH 9.1 Monitor and remove common ivy and bramble, outside of nesting bird season.	2x			2x	2x			2x	2x			2x	2x			2x	2x			2x	2x			2x
10. Access	HIGH 10.1 Install and maintain way markers				x As req.				x As req.				x As req.				x As req.				x As req.				x As req.
	HIGH 10.2 Carry out maintenance works to footpaths.				x As req.				x As req.				x As req.				x As req.				x As req.				x As req.
11. All Habitats	HIGH Remove litter, repair infrastructure, monitor signs of antisocial behaviour.	Continuous, where appropriate, outside of nesting bird period if woody vegetation needs to be removed.																							

Table 3: Annual monitoring requirements

Location	Monitoring Frequency	Monitoring Items
1. Broadleaved Semi-natural Woodland	Monitoring visit every 5 th year to record management that has been implemented and monitor condition of the woodland. Refer to Indicators in Table 1.	Do the woodlands have a varied structure, with a canopy layer, understorey and ground flora evident? Has coppicing and thinning taken place? Is deadwood present?
2. Plantation Woodland	Monitoring visit every 5 th year to record management that has been implemented and monitor condition of the woodland. Refer to Indicators in Table 1.	Do the woodlands have a varied structure, with a canopy layer, understorey and ground flora evident? Has coppicing and thinning taken place? Is deadwood present?

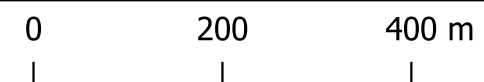
Location	Monitoring Frequency	Monitoring Items
3. Scrub	Monitoring visit every 5 th year to record management that has been implemented and monitor condition of the scrub. Refer to Indicators in Table 1.	Does managed scrub have a good age range and structure? Has scrub been removed from grassland habitats, where required? Do stands of scrub have a graded edge? Has bramble been flailed above Linby Trail cutting wall?
4. Hedgerows	Monitoring every 2 nd year to record management that has been implemented and monitor condition of the hedgerows. Refer to Indicators in Table 1.	Has cutting been undertaken? Do hedgerows have good structure?
5. Scattered Trees	Monitoring visit every year to record management that has been implemented and monitor condition of the trees. Refer to Indicators in Table 1.	Are trees in good health where adjacent to public footpaths?
6. Grassland	Annual monitoring to record management that has been implemented and monitor condition of the ponds and wetland. Refer to Indicators in Table 1.	Has annual grassland cutting taken place? Is there <5% scrub within grassland habitats?
7. Ponds and Wetland	Annual monitoring to record management that has been implemented and monitor condition of the ponds and wetland. Refer to Indicators in Table 1.	Does pond P1 have 25% - 50% open water? Has scrub been removed from wetland areas?
8. Watercourses	Annual monitoring to record management that has been implemented and monitor condition of the watercourses. Refer to Indicators in Table 1.	Are watercourses free on non-native, invasive and undesirable species? Is WC3 free of scrub encroachment? Does WC2 have varied vegetation along its banks, e.g. open grassland banks and those overshadowed by scrub and trees? Are watercourses free of litter and large accumulations of debris?
9. Rock faces	Monitoring every 2 nd year to record management that has been implemented and monitor condition of the rock faces. Refer to Indicators in Table 1.	Are at least 90% of rock faces clear of bramble and common ivy?
10. Access	Continuous monitoring of way markers and footpath surfaces.	Are all way markers present? Are footpaths generally free of heavy muddy sections?
11. All Habitats	Continuous monitoring for accumulations of litter, damage to infrastructure and signs of antisocial behaviour.	Is the Site free of litter? Is there any damage to infrastructure (gates, way markers, benches etc.)? Are there any signs of antisocial behaviour?
12. Management Plan	Every 5 th year.	Has Management Plan been reviewed?

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Key

- Site Boundary**
- Habitats (with reference)**
- Broadleaved Semi-Natural Woodland**
- Grassland**
- Offsite Allotments**
- Plantation Broadleaved Woodland**
- Scattered Trees**
- Scrub**
- Surfaced Footpaths**
- Wetland**
- Hedgerow (with reference)**
- Running Water (with reference)**
- Dry Ditch**
- Unsurfaced / Muddy Footpaths**
- Broadleaved Tree**
- Clearings and Ephemeral Pools**



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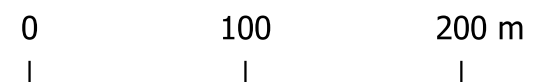
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masterplanning | environmental assessment | landscape design | urban design | ecology | architecture | arboriculture



client
Nottinghamshire County Council

project
Newstead Old Coal Stocking Yard,
Freckland Wood and The Linby Trail

drawing title
MANAGEMENT PLAN - NORTH

scale @ A3
1:3500

drawn
LG / ERD

issue date
9/6/2023

drawing / figure number
Figure 1a

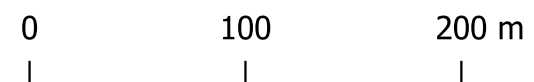
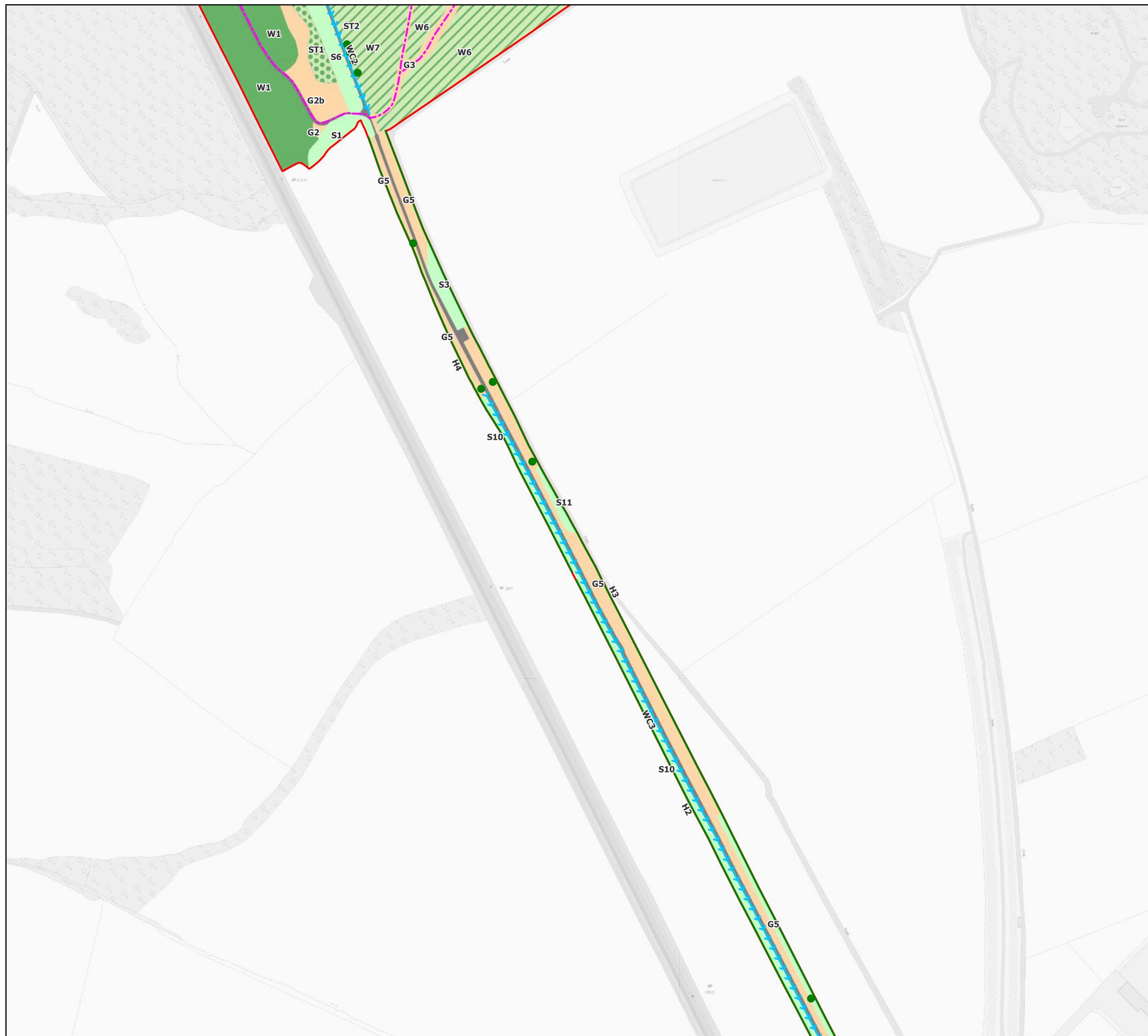
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client
Nottinghamshire County Council

project
Newstead Old Coal Stocking Yard,
Freckland Wood and The Linby Trail

drawing title
MANAGEMENT PLAN - CENTRAL


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Figure 1b

drawn
LG / ERD

issue date
9/6/2023

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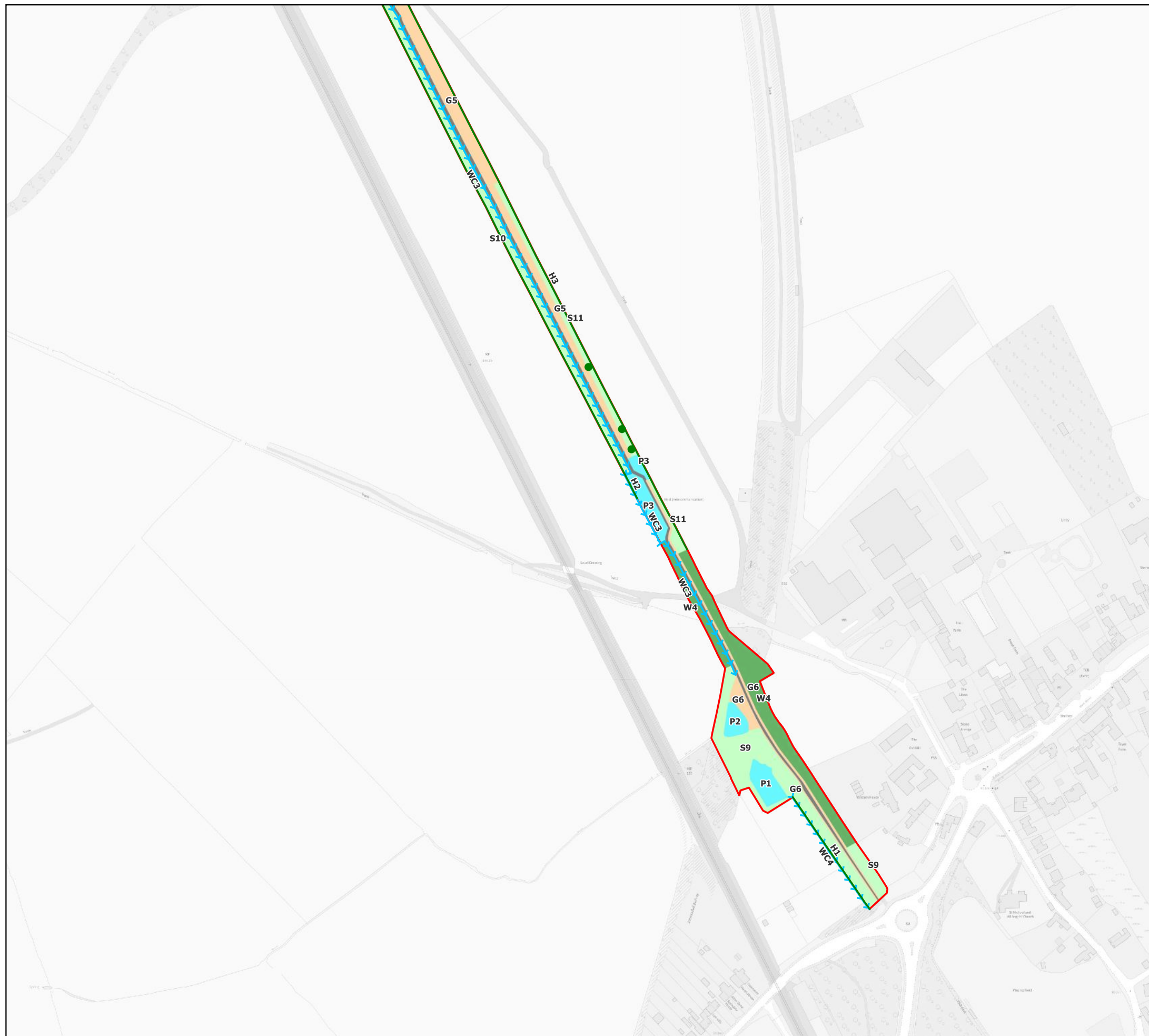


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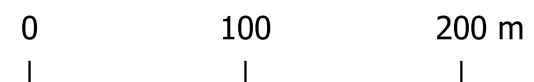
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client
Nottinghamshire County Council

project
Newstead Old Coal Stocking Yard,
Freckland Wood and The Linby Trail

drawing title
MANAGEMENT PLAN - SOUTH

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Figure 1c

drawn
LG / ERD

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