Chellaston Brickworks Local Nature Reserve

MANAGEMENT PLAN

2015 - 2024

Derby City Council

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Stage 1: Description

1.1 General Information

1.1.1 Location

The area covered by this management plan consists of former quarry and brickworks at Chellaston on the south-eastern outskirts of Derby, grid ref SK 384 302. The main access point and car park lies off Bensley Close. **Map 1** shows the site boundary, all access points and compartment numbers.

1.1.2 Summary Description

The approximately 10 hectare site lies at a height of around 61 metres above sea level. It is bounded by housing on three sides with the eastern side bordering open farmland. The site consists of two distinct areas. The north-western part has more mature habitats, mostly grassland and scrub that has developed naturally on the uneven ground of former workings. The south-eastern part is a larger area comprising the more recently reclaimed land of the former in-filled quarry. This area was mostly covered in topsoil from other parts of the site but with some brought in from an unknown location and planted with small groups of trees around which are open areas of grassland. The underlying geology is of the Mercia Mudstone Group (previously named Keuper Marl) of the Upper Triassic, overlain with glacial drift of Wolstonian till from the Permian. The Mercia Mudstone includes gypsum deposits in the form of alabaster, although this will be now mostly worked out. None of the former quarry faces remain, having been covered by landfill and tipping in the 1980s. The whole tip area was then covered in soils from the site. These soils appear to have a higher marl content, which would account for the surface waterlogging and seasonal areas of standing water.

1.1.3 Land Tenure

The whole site is owned by Derby City Council, The Council House, Corporation St., Derby, DE1 2FS. There are no tenancy agreements and no common rights currently associated with the site. The site is managed by Derby City Council and the Friends of Chellaston Brickworks, with the City Council's Parks Department managing the Pit Close Recreation Ground portion and Waste Management responsible for the brickworks area.

1.1.4 Map Coverage

The site is covered by Ordnance Survey Maps:
1:50,000 Landranger map sheet 128
1:25,000 Pathfinder map sheet 832
1:25,000 Explorer map sheet 259
1:10,000 sheet SK33NE
Historic maps: 1881-1889 hand-drawn Ordnance Survey map, scale 1:10,560 historic map of Chellaston (available from the Francis Frith archive)

1.2 Environmental Information

1.2.1 Biological

1.2.1.1. Habitat Descriptions

The main habitat types are: woodland, tall ruderal vegetation and grassland, also scrub, hedges and ponds. These are shown on **Map 2**. To avoid repetition, the more detailed descriptions of each habitat can be found in the prescriptions section in Stage 3 under the relevant compartment.

1.2.1.2 Fauna

Butterflies have been systematically recorded on site since 1996; 22 species having been noted on the site, including the white letter hairstreak (old record immediately adjacent to site).
Derby City Pond Wardens' Association (DCPWA) regularly undertake amphibian surveys. Recent surveys showed that good numbers of adult newts and tadpoles had colonised four of the ponds. Great crested newts have been noted in Ponds 1 and 3.
Bird records include locally and nationally important species including skylark, song thrush, linnet, starling, turtle dove, fieldfare, yellowhammer, kestrel, swallow, green woodpecker, willow warbler and great spotted woodpecker.

1.2.2 Cultural

1.2.2.1 Land Use

Chellaston was the centre of the English alabaster industry in the Middle Ages. The clay dug up in the excavation process was used in the late 19th century, when it began to be utilised for making bricks. The brickworks on the site finally closed in 1978 and the land was used for landfill until 1986, when it was capped and planted with trees. Chellaston Brickworks now has permissive public access. The site is very popular and many people walk their dogs there every day.

1.2.2.2 Public Interest

The public have permissive access to much of the site at all times. There are well-used surfaced paths with short sections of steps and boardwalk as well as more informal paths throughout the site. Public activities include organised events such as group walks and guided history or nature education events, run throughout the year. The Friends of Chellaston Brickworks LNR group was formed in 2006. This group of volunteers have regular work parties to carry out a variety of conservation and maintenance tasks and welcome everyone along to join in and help.

Stage 2: Evaluation and Objectives

2.1 Conservation status of the site

Chellaston Brickworks was declared a Local Nature Reserve (LNR) in 2004, one of 10 within Derby and 46 within Derbyshire. It is managed by the Friends of Chellaston Brickworks in partnership with Derby City Council. The Friends group is a group of volunteers who carry out regular work parties to help maintain and enhance the site. Some 6 hectares of the 10 hectare site is managed by the Friends group with Parks Dept. looking after the recreation ground.

2.2 Evaluation of the features

The site covers an area of some 10 hectares, with habitats on site falling into several UK BAP Priority Habitats:

- Lowland Meadow
- Lowland Calcareous Grassland
- Ponds
- Hedgerows
- Lowland Mixed Deciduous Woodland

Significant plant species (see Appendix 2) include:

- Bluebell, a UK Biodiversity Action Plan Species of Conservation Concern;
- Hoary plantain, a native perennial of neutral to basic grasslands, lost from many sites in the lowlands due to the agricultural improvement of pastures and hay meadows;
- Common restharrow, rare outside the White Peak;
- Common spotted-orchid, described as 'occasional' in the county, now lost to many sites due to agricultural improvement.
- Burnet-saxifrage, rare outside the White Peak and Magnesian Limestone areas.
- Bee orchid, described as 'occasional' in the county.
- Southern marsh orchid is described as 'occasional' in Derbyshire and can be found in the context of industrial waste ground.
- *Schizophyllum amplum* Poplar bells, a cup fungus with 'near threatened' conservation status.

Great crested newts have been noted in Ponds 1 and 3 (see Appendix 1). This species is protected under the Wildlife and Countryside Act 1981 and is classified as a Priority Species in the UK Biodiversity Action Plan.

The site is important for birds (see Appendix 3), with a considerable number of locally and nationally important species having been recorded. Song thrush, linnet, starling, fieldfare and yellowhammer are on the Birds of Conservation Concern (BoCC) red list due to recent decline in numbers. Species on the BoCC amber list found on the site include: kestrel, swallow, green woodpecker and willow warbler. There are also old records of turtle dove and skylark, but these species have not been recorded in Derby for some years.

The site is also important for butterflies, 22 species having been noted on the site, (see Appendix 4). These include the white letter hairstreak, a Derbyshire Red Data Book species and also a priority UK BAP species. Other butterflies of interest on the site include small heath and dingy skipper. There are also previous RDB species now increasing in number, including speckled wood, ringlet and gatekeeper.

2.3 Management Objectives and Management Options

2.3.1 Objective: To maintain and enhance the existing habitats in favourable conservation status

Grassland
The grassland habitats are the most important habitats on site, being threatened in lowland Derbyshire, small scale and supporting most of the important butterfly and plant species here. Three distinct grassland types currently occur on the site and this variation should be maintained. These are: the species-rich downy oat-grass grassland (known as 'Butterfly Bank') on the recreation ground slope; herb-rich short grassland on the former tip; and the remainder which are either dominated or becoming dominated by tall, coarse grasses and are mainly important as a butterfly habitat.

Downy oat-grass grassland
This should be kept as an area of open grassland free of scrub and bramble and with management that allows areas to flower and set seed each year. This could be considered as a artificial hay meadow management, as the crop will not be used, but it allows maintenance of the bank with no degradation or loss of species. This regime will also give cover for as long as possible for any small mammals and in addition control competitive species such as nettles and also scrub seedlings and saplings that would otherwise begin to colonise.

Tall Rank Grassland/Tall herb (Compartment 1b) is coarser and taller than the downy oat-grass grassland with more scrub and more bramble. It should be maintained as a diverse tussocky mixture of tall grasses and tall flowering plants including nettle and kept free of scrub. The margins can grade into bramble and scrub.

Herb-rich short grassland in glades on tip (See **Map 2** for location of glades)
This grassland occurs in discrete glades and alongside the methane burner access track. This type of grassland is just a small proportion of its previous area and is only still in existence due to having been maintained by mowing and by scrub and bramble control. The glades are scattered throughout the tip area with some interconnecting mown or informal paths and one broader mown 'flight path'. This whole area is in a stage of succession with scrub and bramble taking over, some of the area is kept open by mowing whereas other open areas are still scrubbing up. The objective is to maintain at least the current area of open grassland as glades scattered throughout the tip area

with some interconnecting broader mown flight paths and alongside the main access path.

Tall Ruderal
The area near the car park in Compartment 1a has developed from grassland into tall ruderal vegetation with a component of bramble. This vegetation provides valuable food source for dozens of species of insects and nest sites for birds. The objective is to maintain the current vegetation structure and thereby the insect and bird populations. It is unlikely that this habitat will change within 10 years as it looks to be relatively stable.

Woodland
This refers to:

- The main block of mature woodland (Compartment 2)
- The small stand of secondary ash woodland alongside Aston Lane (Compartment 3)
- Immature alder woodland in the south-east of Compartment 4.

Compartment 2 is the oldest and most varied woodland on the site with a good range of tree and shrub species and plenty of natural regeneration. The aim of management should largely be to allow the woodland to develop naturally. In some areas, particularly in the north, the amount of sycamore in the canopy has suppressed the natural balance and here some opening of the canopy would help restore the natural woodland processes. The current woodland structure includes some small clearings, these are beneficial features particularly for invertebrates, but are slowly disappearing as the scrub develops. These areas should be maintained for the added benefits they bring to the woodland habitat.

Compartment 3, the small stand of secondary ash woodland should also be left to develop along natural processes as it is already doing. This should lead to a woodland canopy consisting mostly of ash and elm.

Alder/willow woodland is developing over wet ground conditions in the south-east of Compartment 4. This woodland should be managed to promote native species only, but otherwise allowed to continue to develop naturally. Along the eastern hedgerow elm suckers are spreading onto the site, which should be encouraged to form additional habitat suitable for the white letter hairstreak butterfly.

Scrub
Scrub refers to:

- The naturally-occurring, mostly hawthorn scrub around the grassland and tall ruderal stands in compartment 1.
- The planted and naturally developing trees and shrubs on the former tip area of compartment 4.

Scrub, particularly as a mosaic in conjunction with tussocky grassland, is an important habitat for a range of wildlife interest including bird and invertebrate species. In both these areas the aim should be to keep a varied structure with different ages of scrub and open area of tussocky grassland, tall ruderals and

bramble. Scrub should not be allowed to spread over adjacent areas that are being managed for their grassland interest.

Individual mature trees across the site and the ivy on them should be kept, leaving all fallen timber and standing dead wood *in situ* as this is a valuable habitat for fungi and invertebrates.

Open water/wetland
All the ponds on site have been created relatively recently. They are all small and shallow and dry out every summer and are now tending to become shaded as the surrounding scrub develops, although some are kept clear around the margins. The presence of ponds on the site is important as they have supported a population of great crested newts, though their value as a breeding site is probably declining. The objective is to maintain the ponds as seasonal water bodies sufficiently open to allow the development of aquatic vegetation. Ideally, one pond should be developed to the state where it holds water through the whole summer, so there is a minimum of one pond where newts can breed every year.

Hedgerows
The three short sections of hedgerow should be managed to provide shelter and nest sites, flowers and fruit, with a variety of heights, ages and a good mixture of native species. This will be through a combination of appropriate machine trimming, traditional hedgelaying and replacement planting. The large mature trees are valuable and should be retained.

2.3.2 Objective: Habitat creation and expansion

As the site has been well-managed in the past, most of the structure is close to optimal. There are however, some opportunities to enhance the structure for wildlife and increase the connectivity of semi-natural habitats to create larger habitat complexes. Habitat creation will be key in achieving this.

Grassland
There are opportunities to create new grassy glades on the tip, where the existing grassland is currently scrubbing up and/or becoming more limited in its conservation interest. (See **Map 3** for suitable locations of new glades). These could then provide a variety of herbs including nectar-rich species such as bird's-foot trefoil, the food plant of dingy skipper and common blue butterflies. Existing glades could also be extended in area where suitable.

Open Water/Wetland
For the benefit of the great crested newt population, it would be advantageous to create one larger, deeper pond that would more reliably hold water to the end of the amphibian breeding season, i.e. the end of august, which would allow the newt larvae time to mature. This could either be achieved by working at one of the existing pond sites, or starting at a new location.

Tree Planting
There are currently 12 young disease-resistant elms planted by the Bensley Lane car park within the area of tall ruderal vegetation. There is an

opportunity to plant some more of these trees ('Autumn Gold' - Ulmus pumila x Ulmus davidiana var. japonica) in the same area to replace recent elm tree losses and most importantly to act as a vital food source for the white-letter hairstreak butterfly.

2.3.3 Objective: To encourage responsible use of the site.

The site is very well used by the public and it would be valuable to promote an understanding of its wildlife value. The more involved the public is in the active management and use of the site, the better the conservation message can be delivered. A programme of informal events and learning activities should be maintained. The site infrastructure should be maintained to allow public access without damaging the site. Where necessary, passive mechanisms should be used to encourage or discourage activity in certain parts of the site.

2.3.4 Objective: To carry out further survey, monitor key species and assess habitat condition

There is a shortfall in our knowledge of the recent status of key species of fauna on the site, namely: bats, some invertebrate groups including moths and dragonflies, breeding birds, mammals and reptiles. Further surveys need to be organised to address this. It is also important to carry out regular monitoring of species and habitat condition to inform future management.

2.3.5 Objective: To develop the use of the site as an educational and research facility

The large size of the site, its varied range of habitats and close proximity to schools and the University of Derby make it an ideal location for the involvement of schoolchildren and students in educational and research work. It's urban location also makes it ideal for local children to be in the natural environment in a safe setting. The benefits of the site being available and promoted as a research facility is that additional expertise can be drawn in to provide added information to add to the existing knowledge. It may be possible for university students to access the University of Derby Research for Learning and Teaching Fund to support any research projects done on the site.

The Spirit of Chellaston is an annual multi-group village event involving local groups and activities where the Friends Group have a chance to showcase the LNR and encourage families to get involved in its management and care.

2.4 Description of Optimal State for the site

The ideal condition of Chellaston Brickworks is a long term continuation of the valuable mosaic of habitats already present, with each habitat restored to, and/or maintained in, the best condition for wildlife:

The most interesting grassland on site, representing a rare calcicolous category, the downy oat-grass grassland on the former tip bank at compartment 1c (the Butterfly Bank) would be maintained as species-rich, free of scrub and coarse grasses and with a good population of species such as common restharrow, rough hawkbit, downy oat-grass, burnet-saxifrage, bird's-foot trefoil and hoary plantain.

The valuable species-rich grassland glades amongst the scrub on the former tip would be more frequent, larger in area, interconnected, and having a variety of herbs including nectar-rich species such as bird's-foot trefoil, and supporting a population of dingy skipper butterflies.
The main woodland compartment would continue to have good regeneration of native species, particularly ash and re-growth of wych elm forming a closed canopy cover. By allowing natural processes to proceed, the whole woodland, including the outgrown hawthorn scrub areas and central portion of young trees would be on the way to forming a stand of mature ash woodland. It should have a greater cover of bluebells, especially under gaps created in the canopy by small-scale clearance of small sycamores. The shrub layer should be of native species and include a good proportion of wych elm as replacement saplings. There should be maintained woodland clearings along the bank east of the recreation ground with a good population of speckled wood butterflies, amongst others. The scrub on the former tip and around the car park would be of varied species, heights and ages with bramble and in a mosaic with grassland.
The hedgerows would contain a variety of native species providing good berry production and protection for nesting birds and all year round habitat with flowers from February through to July with fruit all winter.
Ivy on mature trees would be allowed to increase as an outstanding habitat for birds and bats, an early source of berries when other food is scarce and nectar rich in autumn.
The existing tall ruderal area should continue to be relatively stable and a valuable part of the variety of habitats on the site. There would be a group of disease-resistant elm trees in Compartment 1a supporting a population of white letter hairstreak butterflies.
The ponds would all be open and unshaded, free of debris or pollution, with at least one holding water all summer to support a good population of great crested newts. Aquatic marginal, floating and submerged vegetation would be between 25% and 75%.

Stage 3: Prescription

3.1 Project register and prescription

3.1.1. Habitat Management

Compartment 1
Description: This compartment is composed of three vegetation types: tall ruderal vegetation near the car park (compartment 1a), tall grassland on the bank (compartment 1b), and the species-rich downy oat grassland bank (compartment 1c). The tall ruderal vegetation at compartment 1a comprises nettles, creeping thistle, false oat-grass, bramble and cow parsley with scattered hawthorn, ash and elder scrub. The value is in its cover and food source for invertebrates. Twelve specimen disease-resistant elm trees have been planted in this area.
Compartment 1b comprises tall rank grassland with tall herb, derived from grassland after a period of neglect. The grasses are mostly false oat-grass, cocksfoot, red fescue and common bent. Herbs include red clover, ladies bedstraw, yarrow, ragwort, common bird's-foot-trefoil and creeping thistle with anthills throughout.
The grassland at compartment 1c is an example of an unimproved grassland on calcareous soils, a rarity in Derbyshire away from the White Peak. It lies on a south-facing bank with the football field at its base. The area of interest extends beyond the break of slope at the top to the north of the footpath in an area surrounded by scrub at the edges. Scrub surrounds much of the area, with a knee-high fence and an irregular line of shrubs along the base of the slope and a well-used path at the top of the slope. Grasses include downy oat-grass, cocksfoot, false oat grass, red fescue and yellow oat-grass. Herbs are frequent and include species of interest such as restharrow, common knapweed, hoary ragwort, common bird's-foot-trefoil, ladies bedstraw, rough hawkbit, hoary plantain, fairy flax and burnet-saxifrage. There are a large number of anthills throughout.

Compartment Objectives:

- To maintain compartment 1a as an area of tall ruderal vegetation with bramble.
- To establish a small group of disease-resistant elm trees in compartment 1a.
- To maintain the valuable tall grassland area in compartment 1b with no increase in scrub cover, maintaining scattered scrub at no more than 20% cover.
- To maintain and enhance the species-richness of the calcareous downy-oat grass grassland 1c with no loss of area or scrub invasion.
- Compartment 1c should then be maintained with a scrub cover of no more than 5%.

Prescriptions:
Compartments 1a, 1b and 1d are within the HC16 'Restoration of successional areas and scrub' category of management in Higher Level

Scheme (HLS). The general management required in this category is to sustain habitat mosaics and requires management to maintain it.

Compartment 1a is likely to be relatively stable for the next 10 years, so no management apart from clearing round the base of the young elm trees should be needed. There is a possibility however that scrub and bramble will become more widespread. The aim should be to keep these to a maximum of 25% of the area. Scrub and bramble invasion should be monitored and controlled if necessary by hand cutting during the winter months, treating the cut stumps of the scrub with herbicide. This may need to take place every 3 years or so. The sides of the main path can continue to be close-mown regularly in summer as is the current practice by Grounds Maintenance. The ideal width for the mowing would be 1 metre from the edge of the path at each side.

Compartment 1b should be treated as the downy oat-grass grassland as the interest extends onto the top of the mound: Mow once in late August or early September every year and leave cuttings to dry for 48 hours, then remove them, to enable the areas to flower and set seed each year and for the seeds to be shed. This should be done by hand strimming and raking off, leaving all the anthills. This cutting will also remove small saplings and scrub re-growth. Additional work to be done one year in three should be to remove all scrub up to 2.5 to 3 metres in height. Scrub should be cut back annually to maintain a low scattered cover of no more than 20% overall, leaving the crab apple tree. Bramble and ivy should be mown annually at the edges of the area to prevent encroachment. Leave all anthills untouched.

Compartment 1c will need fairly intensive management to maintain it, as it is in category HK6: 'Maintenance of species-rich semi-natural grassland' in the Higher Level Scheme (HLS) Agreement. It should be left un-mown through the summer but then mown annually and the cuttings removed to mimic traditional haymeadow management. Ideally, the grassland should be mown once in late August or early September every year and the cuttings removed to enable the areas to flower and set seed each year and for the seeds to be shed. This could be considered as a artificial hay meadow management, as the crop will not be used, but the management allows maintenance of the bank with no degradation or loss of species. However, if the amount of manual labour is unavailable in summer, it would also be acceptable to mow half the grassland in August/September and the other half in October one year in two, and reverse the timing for each half the following year. It falls far short of ideal to do all the mowing in October every year, as the vegetation falls flat before it is mown and forms a thatch that actually diminishes the wildflower interest. The late summer cutting regime would also give cover for as long as possible for any small mammals and in addition control competitive species such as nettles and also scrub seedlings and saplings that would otherwise begin to colonise. The anthills present mean the work will need to be done by strimmer and hand raking in order to be able to clear the tops of the anthills but cut low enough between them. All young scrub within the grassland area will also need to be cut annually. Once every 3 years the more mature scrub around the edges of the area should be cut back to

prevent encroachment resulting in shading and reduction of the grassland area.
The management required for compartment 1d is to maintain a varied scrub structure. This will entail coppicing areas scrub at the edge of an existing open area in order to maintain the habitat mosaic and maintain some structural variation of the scrub. Stumps should not be killed, but allowed to re-grow as young scrub. One area within 1d should be cleared every three years.

Compartment 2
Description: This is a wooded compartment consisting of two distinct portions:
Compartment 2a is a small area attached to the north west of the main woodland block and comprises mature hawthorns to 8 metres tall on uneven hummocky ground with a lot of bare ground and many informal trampled paths. Ground flora includes ivy, cow parsley, wood avens, hedge woundwort, broadleaved plantain and locally frequent bramble. Where not trampled, there is seedling and sapling regeneration of elm, ash, hawthorn, holly and sycamore.
The main area of mature woodland (Compartment 2b) consists of wych elm, ash and sycamore in the canopy, in varying proportions. The older trees and oaks are restricted to the southern 'arm', with a central portion of younger trees (under approx. 50 years old) and a greater proportion of outgrown scrub in the north. The understorey has younger ash, elm and hawthorn with overwhelmingly successful natural regeneration of ash and elm. Sycamore is a minor component in the southern area. Ground flora throughout is mostly ivy with some celandine and bluebell on banks where there is no trampling. Alongside the recreation ground in the west of the woodland block there is some beech in the canopy, some saplings of Norway maple and oak, a clump of berberis and a path with open sunny clearings at the side. Vegetation in the clearings includes cocksfoot, creeping cinquefoil, rosebay willowherb, wood dock, red fescue and false brome. The open areas are likely to be excellent for invertebrates, including butterflies.

Compartment Objectives:
- To maintain the wood with no reduction in area of woodland habitat.
- Clearings are maintained with no loss of habitat area.
- Dead trees and fallen timber are retained.
- Natural regeneration is sufficient to maintain a diversity of native trees in the canopy.
- The structure is varied to allow understorey to develop.
- Elm is maintained as the foodplant of the white letter hairstreak butterfly.
- Monitor the cover of non-natives such as snowberry and berberis.

Prescriptions:
Coppicing small areas of selected sycamores in the northern part of the woodland in Compartment 2b should diversify the structure of an otherwise even-aged wood and thus help create more opportunities for shrub layer and ground flora regeneration: Select and fell a few small groups of young

sycamores on the banks adjacent to Tumbling Close Lane. Choose those with no ivy and specimens that are small enough to be tackled with hand tools. Do not treat the stumps, stack brashing in piles on level ground.

Monitor the cover of non-natives including snowberry and berberis for possible control in future if there is a significant increase.

Otherwise manage all trees by non-intervention including leaving all ivy on them, all fallen timber and all standing dead wood, unless there is a safety issue or fallen branches block rights of way.

Create/maintain clearings in the wood alongside the path by the football field (see **Map 2**). Annually in winter cut and remove the young scrub, saplings, brambles and briar from the woodland clearings and treat the cut stumps with a glyphosate herbicide to prevent re-growth. Brashing can be stacked to rot down outside the clearing areas.

Compartment 3

Description

This is a small stand of secondary ash/elm woodland with hawthorn, partly growing on a bank of shale soils alongside Aston Lane in the east of the site. The canopy trees consist of ash with occasional wych elm, willow, pedunculate oak, aspen and a very few young sycamore. The shrub layer is of hawthorn and ash saplings. The field layer is sparse and is mostly ivy and bramble as well as seedlings of ash and hawthorn, with tall grasses and hogweed in more open areas. Wetter areas have hard rush, soft rush and willows. The area is gradually encroaching on Compartment 4 to the west with growth of bramble and saplings of ash and hawthorn.

This area contains Pond 5, a small pond created in a woodland glade in 2011. A hurdle fence/dead hedge separates it from the path. It is surrounded by nettle, great willowherb, bramble and ash saplings. Although lined with Bentonite it regularly dries out and remains dry for much of the year.

Compartment Objectives:

- To maintain the wood with no reduction in area of woodland habitat.
- To retain dead trees and fallen timber.
- To manage the wood so that natural regeneration is sufficient to maintain a diversity of native trees in the canopy.
- To carry out limited clearance of saplings in the wood to allow growth of more mature trees.
- To enhance and manage the pond to hold water all year round so it can act as an amphibian breeding site.

Prescriptions:

This compartment is mostly a non-intervention area with limited management needed, as the current rate of natural regeneration is enough to develop into an ash/elm canopy. The sycamore, currently a minor component not prejudicing the conservation interest, should be monitored and may need

control in future if it increases to a level where it would become a more prominent component of the canopy. If sycamore is cut, stack all timber to rot down in 'habitat stack' heaps in the wood.

Carry out limited clearance of ash and hawthorns from under the canopy and around a mature aspen (see **map 2** for location). Treat cut stumps with 'Roundup' or other glyphosate herbicide and repeat clearance every few years as necessary. Stack the brashing in piles in the wood. The same could be done for any chosen mature specimen tree that is becoming surrounded by rapidly growing saplings of ash.

Pond: Budget Option
Using hand tools deepen and enlarge the pond as much as possible and re-puddle the existing bentonite clay liner for a small area (2 metres x 3 metres) to ensure that at least a small part of the pond holds water for longer.

Pond: Higher Cost Option
By machine, enlarge the pond to at least 6 metres x 8 metres. Line the pond with a butyl liner and underlay.

Whichever option is undertaken, maintain the pond by clearing out debris and fallen leaves every year in winter and stack this near the pond to rot down.

Compartment 4
Description:
This is the largest compartment on the site covering the area of the reclaimed former tip, and contains some important grassland, scrub and pond habitats. It was planted with small groups of a mixture of native tree and shrub species in or shortly after 1986. The area has also developed open grassland areas amongst the young trees. In addition to the tree planting there has been extensive colonisation of alder in the south of the compartment. Four small ponds (numbered 1, 2, 3, and 4) were created in this compartment.
The grassland in more open areas is that which developed naturally on the bare soils. Grasses include false oat grass and tall fescue in taller slightly shaded areas. In the unproductive more open areas the grasses include red fescue, creeping bent, Yorkshire fog and rough meadow-grass. Forbs include a high proportion of legumes such as red clover, melilot, common bird's-foot trefoil and black medick. In addition there is hoary ragwort, fairy flax, red bartsia, and several species of orchids. Teasel, creeping buttercup and hard rush indicate locally wetter conditions. The open glades are currently managed annually so they do not become colonised by bramble and shrub species, a process which looks to be rapid in areas where it is left unchecked.

Ponds 1, 2, 3 and 4 lie in this compartment and are all small, seasonal ponds, becoming shaded out by rapid tree growth.
Ponds 1 and 2 are small, shallow, seasonal and very close together. They are protected to some extent from disturbance by dead hedging on the path side. They are becoming shaded out by hawthorn, ash and alder. Records up to 2008 show the presence of great crested newts in pond 1.

Pond 3 is known to have had great crested newts in 2013. The other ponds are also known to have supported a population of great crested newts in the past, but it is unlikely that they still successfully breed there, due to the ponds drying out, being shaded, being lacking in aquatic vegetation and their small size.

Pond 4 ('Boardwalk Pond') is about 2 metres by 5 metres with a depth of around 20 cms and lies in a clearing of 8 metres x 8 metres. The vegetation in the clearing consists of hard rush, great willowherb, saplings of ash, common sedge, cock's-foot and ragwort. Around that is dense ash and alder up to 2 metres high.
The scrub consists of trees and shrubs planted in the 1990s along with natural colonisation by woody species. The planted species include aspen, lime, silver birch, alder, cherry, ash and oak. Hawthorn and goat willow are abundant, probably having self-seeded.
An alder woodland has formed over the southern part of the site on wet ground conditions. Alder dominates and there is also a high proportion of goat willow.
The whole area of Compartment 4 is in category HC16 in HLS, to be managed as 'Restoration of Successional Areas and Scrub'. Ponds 1 and 2 are to be managed within the HLS agreement as ponds of high wildlife value. (category HQ1)

Compartment Objectives:

- Maintain the mosaic of habitats of woodland, scrub, open grassy glades and ponds.
- Prevent the development of woodland on valuable grassland areas.
- Maintain/enhance the existing open glades as species-rich areas supporting butterflies and other invertebrates.
- Create new glades or enlarge existing glades in suitable locations.
- Maintain/enhance the ponds.
- Achieve the Indicators of Success for HLS categories HC16 and HQ1, including the target species great crested newts.
- Maintain the scrub by non-intervention except where it encroaches on glades.
- The alder woodland should be allowed to develop naturally.

Prescriptions:
Existing Glades:
All the glades are dependant on regular management to keep them open. One or more of four recommended treatments should be applied to each of the existing glades as shown on map 2. The treatment regimes are:
i) Annual September herbaceous vegetation mowing and removing the cuttings,
ii) Once in two or three years September vegetation mowing and removing cuttings,
iii) Cutting scrub and brambles at edges of glade in autumn to maintain the size of the glade,
iv) An additional woody stem cutting within the glade area in July.

There are two obviously different heights to the scrub across the compartment, - the scrub cutting here refers to everything under 3 metres tall. Brashing should be collected to make habitat piles in the dense scrub/woodland. Leave taller scrub (that over 3 metres in height) and individual trees. Leave all anthills and do not damage wet areas. HLS requires that the edges of the glades (within 2 metres of scrub) are over 30 cms, so glades should be scrub cut, but not mown to the very edges to allow for this.

'Orchid Glade' lies alongside the access track to the methane burner and needs treatment ii) grass mowing every year and iii) scrub cutting to maintain the area every year.
'Burner Glade' lies across the access track from Orchid Glade, and should be given treatment ii) grass cutting and removal every 2 or 3 years, not a priority every year as there is very low productivity and iii) annual scrub cutting to maintain area.
'Aston Lane Strip' - As a trial, part of this was taken back to bare soil in February 2014 to provide potential dingy skipper habitat. The current practice is cutting 'scallops' and removing saplings by hand. This treatment (iii) should continue, as well as i) annual mowing and cuttings removal within the scallops. This wet strip is an excellent dragonfly habitat and dingy skippers have been seen here.
'Birch Glade' - This was sown with hay rattle in autumn 2013 to help keep the grasses down. This was a simple 30 minute task at a cost of around £6 for the seed. To maintain Birch Glade use treatments i) annually mowing grass, including the access path, but leaving specimen trees in the area around the 4 birch trees; and iii) keep edges scrub and bramble free to maintain the size.
'Large Glade' - This needs i) annual September mowing for the grassland, iii) annual scrub clearance at edges and iv) additional scrub treatment within the glade as well as the normal maintenance at the edges to tackle the re-growth in alder - this needs to be cut in July and again in winter in the worst areas. The cuttings could be added to the existing habitat stack at the glade's edge. A mown 'flight path' links Large Glade to Teasel Glade. This should continue to be mown at least once annually to maintain it.
'Teasel Glade' is a fairly large open glade alongside the access track to the methane burner. It should be given treatment ii) mow once in 2 or 3 years, there is no need to mow here every year as the productivity is low and the glade has teasel whose dry stems and conical seed heads should be left through the autumn and winter, and iii) scrub cutting. It sometimes has a path mown through it by Waste Management for site inspections.
'Small Glade' is a currently well-managed area of open grassland including tall fescue and forbs including with red clover, orchid species, melilot and ragwort. It is surrounded by alder, aspen, ash, birch and crack willow. It needs i) annual grass mowing and iii) scrub cutting at edges. iv) extra July mowing to control the area of alder within the glade.
'Oak Glade' has a central area of alder should be given treatments i) and ii) annually, but leaving the young oaks and other specimen saplings within the mown area, and iv) extra July mowing to control the area of alder within the glade.
Brashing can be stacked outside the mown area.

The main burner access track should also be cleared of scrub every 2 or 3 years. This can be done at the same time as the glade scrub control.

Table 1: Glade Management

Existing Glades	**Annual vegetation mowing (i)**	**Once in 2 or 3-yearly vegetation mowing (ii)**	**Annual scrub control (iii)**	**2 annual scrub cuts (iv)**
Orchid Glade		✓	✓	
Burner Glade		✓	✓	
Aston Lane Strip	✓		✓	
Birch Glade	✓		✓	
Large Glade	✓		✓	✓
Teasel Glade		✓	✓	
Small Glade	✓		✓	
Oak Glade	✓		✓	✓
New/Extended Glades				
Small Glade Extension	✓		✓	
Elm Glade	✓		✓	
Bramble Glade	✓		✓	

Ponds:
Ponds 1 and 2 in this compartment are very small (1 metre x 3 metres), seasonal ponds that were made close together and are becoming shaded out by hawthorn, ash and alder. They should be cleaned out and the clearing around them enlarged as far as practicable, especially to the south, to reduce shading.
Pond 3 is the most reliable of the ponds for supporting great crested newts. It needs to be kept open and should have its clearing enlarged to the south (away from the boardwalk) and the material stacked under the canopy of the trees. The floating sweet-grass should be kept in check and a larger area than current of open water maintained. The fences should be maintained as a screen and to help keep dogs out. For this reason, the area between the hurdle/dead hedge and the pond should not be cleared, but left as a screen. The cut saplings can be used to renew the dead hedging.
Pond 4 is a small seasonal pond, currently 5 metres long and 2 metres wide and lies in a clearing of 8 metres x 8 metres. The clearing needs to be enlarged, mostly to the south, i.e. away from the boardwalk, so it at least doubles its current area.
For all four ponds, clear 10 metres to the south by removing all ash saplings, do the same for 5 metres on the other sides of ponds 1, 2 and 4 where possible. Stack cut material in habitat piles under the canopy of trees.
Clear pond area itself of debris, leaves, etc in autumn and pile material at the sides.

Extend the current length of boardwalk to create a longer walkway in the wettest area adjacent to this pond. An alternative method of creating a dryer path is to provide geotextile and cover in stone.
It is not thought to be practicable to enable these ponds to hold water all year round, but cleaning them out and creating more open surrounds will enhance the aquatic and terrestrial habitat.

Scrub
This lies within the HC16 'Restoration of Successional Areas and Scrub' category of management in HLS. The general requirement in this category is to sustain habitat mosaics and requires management to maintain this. The management required for the compartment 4 scrub is to maintain a varied structure. This will entail coppicing areas of scrub at the edge of an existing open area in order to maintain the habitat mosaic and maintain some structural and height variation of the scrub. Stumps should not be killed, but allowed to re-grow as young scrub. One area should be cleared every three years. Suitable areas could be at the edges of some of the existing glades, where one third to one quarter of the glade edge should be cut back by up to 5 metres.

Alder woodland
This area is developing naturally and can be managed with minimal intervention. It should be monitored once every 2 or 3 years to assess the amount of regeneration of non-native species including berberis and snowberry.

Hedgerows
Description:
H1 is adjacent to the footpath from the car park at Bensley Close, and is mostly hawthorn with no standard trees and is very tightly flailed and trimmed. This is currently done every year in September or October by tractor-mounted flail. There is a mown strip alongside it and the ground flora consists of false oat-grass, cleavers, common nettle and field bindweed. White bryony is a climber in the hedge.

H2 This is the remnant of an old hedge running from near hedge 1 at its northern end and alongside the eastern edge of the recreation ground. It is not managed and has become very gappy. It is of note only for the two veteran ash that occur at its northern end.

H3 This is an indistinct feature which borders the woodland edge along Aston Lane, forming the site's eastern boundary. It is un-managed, and is mostly composed of tall hawthorn and blackthorn and occasional wych elm. It is now grown out and gappy and is not an effective barrier for most of its length, although the woodland behind it is fairly impenetrable in places.

Hedgerow Objectives:
To maintain the hedgerows in favourable conservation status where:

Hedgerows consist of a minimum of 3 site-native species with no non-natives. Hedgerows should ideally be free of gaps and managed on an appropriate cycle of laying with veteran trees safeguarded.
H1 The trimming work can continue, but the work should be done in late winter/early spring but before the bird breeding season begins in March so as to leave as many berries all winter as a source of food for birds. For the same reason, if the frequency of trimming could be every other year rather than annually, this would be beneficial. It is understood that the annual flailing may be done for safety/visibility reasons and may not be under the control of this management plan.
H2 is probably not worth managing as a viable hedge, but the remaining veteran trees should be protected from further vandalism.
H3 Any attempt to reinstate this Aston Lane hedge should be by traditional laying. Considerable re-planting would also be needed. Recovery is likely to be slow as it is on the north side of a parcel of woodland and is quite shaded. It may be best to experiment with a small sections first to see if it is a viable option.

Prescriptions:
Any trimming work on H1 to be done in winter, preferably February or later when the berries have been available to birds all winter and before the nesting season starts.
Any hedgelaying should be done by traditional methods using hand tools, work to be done in winter, preferably February or later when the berries have been available to birds all winter and before the nesting season starts.
The following mix of native shrubs should be used for any gapping work:

Hawthorn (*Crataegus monogyna*) 60%
Blackthorn (*Prunus spinosa*) 15%
and the remaining 25% a mixture of:
Crab apple (*Malus sylvestris*)
Hazel (*Corylus avellana*)
Field Maple (*Acer campestre*)
Wild rose (*Rosa canina*)
Guelder rose (*Viburnum opulus*)
Holly (*Ilex aquifolium*)
Plants to be 60 to 90 cm (45 cm and pot grown for the holly), pit planted in a staggered double row of 6 to 9 plants to the metre, with 30 cm between rows. (Rabbit guards are not considered necessary.)
Keep plants weed free for 3 years until established by weeding at least 3 times during each summer. Replace losses in the first winter following planting. A thick layer of mulch can be useful in suppressing weed growth.

3.1.2 Habitat Creation and Expansion

This objective can now be considered as lower priority as much has already been achieved by work such as the recent creation of several glades and small ponds. The priority should be to enhance existing habitats. Some opportunities for further habitat creation, however, are:

Grassland: New and extended glades:

Prescriptions As with the existing glades, newly-created and extended glades may need one or more of four treatments:

i) Annual September grass and herbaceous vegetation mowing and removing the cuttings,

ii) Once in two or three years September vegetation mowing and removing cuttings,

iii) Cutting scrub and brambles at edges of glade in autumn to maintain the size of the glade,

iv) an additional woody stem cutting within the glade area in July.

There are two obviously different heights to the scrub - cut everything under 3 metres tall, collecting to make habitat piles in the dense scrub/woodland. Leave taller scrub and individual trees.

Once glades are established, they should be maintained by annual late summer mowing and removal of cuttings, as for the existing glades. Cuttings could be stacked in the scrubby woodland outside the glades and left to rot down.

Glade 'corridors', the interconnecting paths linking the glades should also be mown annually in autumn.

Possible new/extended glade areas (see map 3) include:

Small Glade Extension - Treatments i) and iii) should be applied to the area immediately opposite Small Glade to create a new glade here.

Elm Glade There is an opportunity to create a new glade west of the track, named for the elm tree nearby. Treatments i) and iii) should be applied to create and maintain this glade. Leave a bank of brambles 3 to 4 metres against the wood and clear on the other side of the path.

Bramble Glade Immediately north of Orchid Glade is a small area edged by bramble which is a potentially good area to create a new glade, adjacent as it is to the excellent seed source of Orchid Glade. Again, treatments i) and iii) will maintain this.

Tree planting

Prescriptions There is an opportunity to plant some more disease-resistant elm trees ('Autumn Gold' - Ulmus pumila x Ulmus davidiana var. japonica) in the same area as the existing tree planting in Compartment 1a to replace recent elm tree losses and most importantly to act as a vital food source for the white-letter hairstreak butterfly. Pit plant between October and April when the ground is not frozen, unless the trees are container-grown in which case they can be planted at any time of year. Tease out the roots to get an idea of their spread. Dig a planting hole that is no deeper than the roots, but up to three times the diameter of the root system in width. If the sides or base of the planting hole are compacted, break the soil up with a fork before planting. Small trees may not need staking but top-heavy or larger specimens should be provided with a stake. Refill the planting hole carefully, placing soil

between and around all the roots to get rid of any air pockets. Do **not** add fertiliser or organic matter to the planting hole, this can hinder plant establishment, as the organic matter decomposes and may cause the plant to sink and there is less incentive for the roots to grow out into the surrounding soil. Firm the soil gently, avoiding compacting the soil into a hard mass. Depending on the size of the trees planted, provide with appropriate support - a double stake is used for root-ball and container-grown standard trees. Annual maintenance should be as with the existing young elm trees, to clear an area of 1 metre diameter around each trunk to reduce competition for water from vegetation and allow them to establish. Laying mulch over the cleared circle is helpful, but take care to leave a 'collar' of 10 cm around the woody stems that is free of mulch, to prevent rotting the bark. All losses should be replaced in the first winter following planting.

Wetland

To safeguard the breeding population of great crested newts one larger and deeper pond should be excavated to reliably hold water through the summer. It is not possible to excavate a deep pond on the area that was formerly landfill as the clay cap is thin and must not be breached. The new pond will have to be outside this area and the best option might be to enlarge existing pond 5, which lies outside the landfill area but is sufficiently close to the other ponds for them collectively to act as a great crested newt breeding unit. Ideally the new pond would be excavated by machine to fill as much of the available space between the fence and the foot of the site boundary bank as possible. As it lies on shale, it would need a liner and underlay to ensure that it is water holding all year round. It should require minimal maintenance but should be kept open at least on the southern aspect for a minimum of 10 metres.

3.1.3 Encourage responsible site use

The site is well used by the public and there is an opportunity to promote an understanding of its wildlife value. The site is ideal for the location of on-site interpretive material but this should be carefully planned to give interesting information without drawing undue attention to areas best kept undisturbed such as the glades. Interpretive boards could be located at key entrance points.

In encouraging public access onto the site the following should be addressed:

- All paths, handrails and boardwalks need to be maintained.
- Regular rubbish collection and appropriate positioning of bins, including dog-waste bins*****, is important to maintain the area as a clean and healthy site for public use and so littering does not become acceptable through familiarity.
- Regular safety checks***** will be needed of trees, access infrastructure and paths, with appropriate management if necessary.
- Damage, whether deliberate or accidental should be mended or replaced as soon as possible to demonstrate the caring attitude of the site managers and the majority of users of the site.
- Display boards at access points would be useful to explain the value of the site.

* DCC's responsibility

3.1.4 Survey, monitoring and assessment

Surveys of mammals including bats, reptiles, invertebrates especially butterflies, dragonflies and moths should be carried out to update the existing records. All records should be passed to the relevant County Recorder.
It is also important to carry out regular monitoring of species, particularly great crested newts, and of habitat condition to inform future management and assess whether the HLS Indicators of Success are being met.

3.1.5 Developing as an Educational and Research Facility

Promoting the site for use by different groups within the community would be helpful, possibly through a guided walks programme. Further activities which will promote understanding and involvement in the site include enlisting local volunteers, teenagers, scouts, brownies, guides and school groups to help with management and surveys. Opening the site for specialist courses from different disciplines would also be very valuable. It may be possible for university students to access the University of Derby Research for Learning and Teaching Fund to support any research projects done on the site.

3.2 Natural and Human-induced trends

Natural trends: Natural processes would have the following effects in the absence of management:
Wildflowers will decline as grasses take over in all currently species-rich areas of grassland. The grassland itself will decline in area as scrub including rapid-colonising species such as hawthorn and goat willow take over and become locally dominant, shading out the more interesting grassland species. All hedgerows will grow out to full natural height of trees and shrubs and become a tall line of trees with gaps beneath and any species that 'sucker' such as blackthorn will form thickets alongside the hedge line. Non-native shrubs including snowberry may increase, forming dense stands locally. The small ponds would fill up with silt and leaf litter with the loss of open water areas.

Human-induced trends: Due to climate change, the following changes may occur in Derby: increased summer temperatures, milder winters, reduced summer rainfall and increased winter rainfall. Harmful impacts of climate change can include extreme weather events like the heat wave in Derby in 2003, the severe snow experienced in 2010, or the exceptionally cold spring in 2013. Benefits may include a longer, warmer growing season, but the weather extremes caused by climate change cannot yet be fully predicted. It is likely though, that the current waterlogging problems over some of the site will get worse.
The current use of the site including heavy trampling through the woods, dogs off leads causing disturbance, littering, vandalism such as fires, etc. though unsightly, looks to have little impact on the ecology of the site.
The most important issue is probably the site's connection with a network of habitats in the countryside bordering the south and east and north-east of the site. Development threatening this remaining link will have a long-term impact on the site.

3.3 Management Constraints

3.3.1 Legal obligations:

The Wildlife and Countryside Act 1981 and subsequent amendments has relevant sections and must be consulted, for example there is an obligation not to disturb or damage protected species including birds in the nesting season (March to August inclusive), badgers, bats and newts. This would be important particularly when planning any work on ponds and hedges. Obligations arising from the designation of the site as a Local Nature Reserve are also covered by this legislation.

Disability Discrimination Act 1998. Provisions under this Act will need to be considered as regards signs, information media, access and volunteer and other opportunities: It should be ensured that any facilities provided are inclusive and accessible and are relevant to the site conditions. This should include additional facilities for visitors with restricted mobility, eg easy going trails, accessible seats and picnic benches, signs and relevant site information in a range of accessible formats.

Planning Permission This may be needed for operations considered as engineering works such as constructing or enlarging ponds.

Health and Safety Most of the legislation regarding health and safety is aimed at the workplace and volunteers are not covered. It is, however, good practice to comply and consider safety in training, using equipment, tools and first aid equipment. The Management of Health and Safety at Work Regulations 1992 introduced the need for a risk assessment. Groups should therefore always undertake a risk assessment, be given appropriate training and clear safety instructions and have a first-aid certificate holder present.

3.3.2 Consultations:

The Environment Agency should be consulted on all works affecting a watercourse or within 50m of one.

As good practice, Natural England would like to be able to comment on work done under the Management Plan. All work within the HLS is covered by the option-specific management prescriptions, some of which require consultation with Natural England. For example, the designated Natural England adviser should be consulted before starting work that may affect protected species including great crested newts, or if installing new drainage or modifying the existing drainage system.

Natural England should also be consulted if any change or derogation is required on any of the HLS options.

3.3.3 Cost

Without the HLS funding, some of the work would prove prohibitively expensive. The payments however can be used to fund TCV days for labour-intensive projects such as the grassland management, and put towards the cost of pond enlarging and maintenance.

3.3.4 Knowledge. There is a lack of up to date information about several groups of species, e.g. breeding birds; some groups of invertebrates and mammals in general including bats and water voles. This makes fully comprehensive planning for wildlife difficult and also means that some key species may have been missed.

3.3.5 Disturbance. Continuous disturbance by the general public with dogs off leads is a constraint in considering several management issues, particularly the usefulness of ponds and surrounding terrestrial habitat as an amphibian refuge. The lighting of fires and other acts of vandalism occur occasionally and these can destroy habitats.

3.3.6 Practical constraints:
Work such as raking up of grass cuttings and scrub clearance is very labour intensive and time specific. It may prove difficult to get the labour just when needed. Work such as scrub clearance and tree planting however, may be suitable for community groups, scouts and guides and other volunteers.

Any work carried out on the former tip (Compartment 4) must ensure that there is no damage to the clay layer capping the landfill, or to the network of underground pipes that collect the methane and pass it to the burner.

3.4 Management and Funding Opportunities. The HLS agreement is a welcome source of funding for 10 years from 2014. This will enable so much of the vital work to be done including the grassland management, pond maintenance etc as described in the individual compartment prescriptions.

It is hoped that the Management Plan and HLS (or similar future scheme) can be reviewed and continued beyond their expiry in 2023.

4. Chellaston Brickworks 10-YEAR WORK PROGRAMME, Years 1 to 5

Compartment	Management Prescription	Priority		Year 1	Year 2	Year 3	Year 4	Year 5
		Essential	Desirable					
Compartment 1a	Monitor invasive bramble and scrub	●		✓	✓	✓	✓	✓
	Control invasive bramble and scrub	●				✓		
	Mow sides of main path throughout summer		●	✓	✓	✓	✓	✓
	Plant disease-resistant elm trees		●	✓				
	Maintain new trees by clearing round base until established	●		✓	✓	✓		
Compartment 1b	Leave grassland un-mown all summer	●		✓	✓	✓	✓	✓
	Mow area of grass once every year in autumn and remove cuttings.	●		✓	✓	✓	✓	✓
	Mow bramble and ivy at edges of area	●		✓	✓	✓	✓	✓
	Cut scrub back annually to maintain low scattered cover maximum 20%	●		✓	✓	✓	✓	✓
Compartment 1c	Leave grassland un-mown all summer	●		✓	✓	✓	✓	✓
	Using hand tools, mow species-rich grassland in late August or September, leave cuttings 24 hours then remove.	●		✓	✓	✓	✓	✓
	Cut young scrub within grassland area to max. 5% of area. Do at same time as mowing work.	●		✓	✓	✓	✓	✓
	Cut back mature scrub round edges of area	●			✓			✓
Compartment 1d	Coppice scrub at edges of open areas. Do not treat stumps.	●		✓		✓		✓

Compartment	Management Prescription	Priority		Year 1	Year 2	Year 3	Year 4	Year 5
		Essential	Desirable					
Compartment 2a	Monitor non-native species, controlling any significant increase.		●	✓	✓	✓	✓	✓
Compartment 2b	Monitor non-native species, controlling any significant increase.		●	✓	✓	✓	✓	✓
	Coppice small groups of selected sycamores, stack brashing in piles.		●	✓		✓		✓
	Annually, in winter, cut all woody growth - bramble, saplings, scrub, etc from woodland glades. Treat stumps, stack brashing outside glade area.	●		✓	✓	✓	✓	✓
Compartment 3	Clear saplings from around base of mature aspen and other specimen trees. Treat stumps. Repeat every few years.		●	✓		✓		✓
	Monitor sycamore	●		✓	✓	✓	✓	✓
	Carry out Pond 5 enlargement work		●	✓				
	Maintain Pond 5 by annual clearance of leaves and debris in winter.	●		✓	✓	✓	✓	✓
Compartment 4	Annual scrub control in all new and existing glades	●		✓	✓	✓	✓	✓
	Cut scrub from main access track	●		✓		✓		✓
	Annual late summer vegetation mowing in: Aston Lane Strip, Birch Glade, Large Glade, Teasel Glade, Small Glade, Oak Glade, Small Glade Extension, Elm Glade, Bramble Glade	●		✓	✓	✓	✓	✓

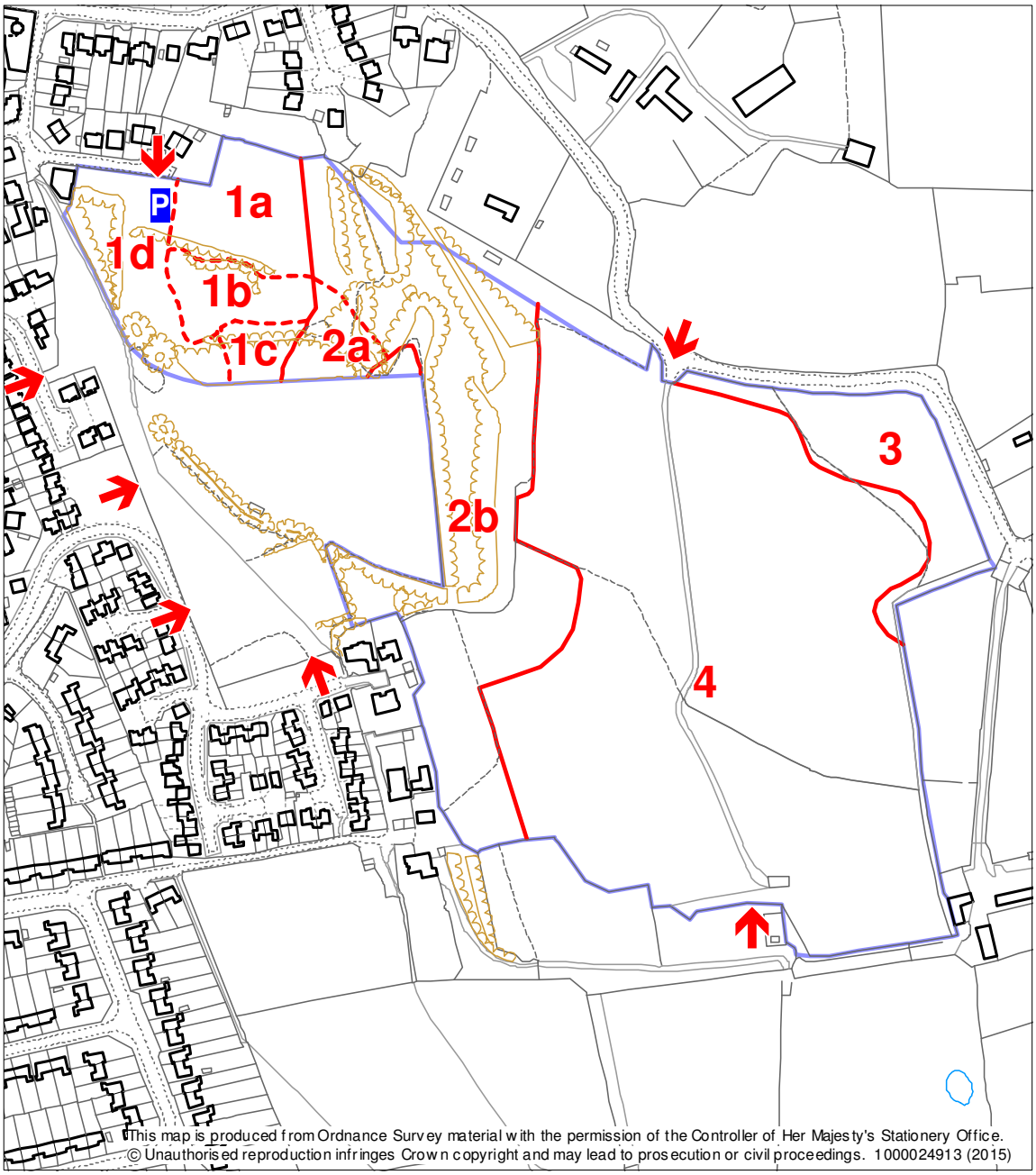
Compartment	Management Prescription	Priority		Year 1	Year 2	Year 3	Year 4	Year 5
		Essential	Desirable					
Compartment 4 (continued)	Vegetation mowing in Orchard Glade, Burner Glade and Teasel Glade	●		✓	✓	✓	✓	✓
	An extra summer scrub control cut in Large Glade and Oak Glade	●		✓	✓	✓	✓	✓
	Stack woody brashing at edges of glades to form a 'habitat stack'		●	✓	✓	✓	✓	✓
	Clean out all 3 ponds of debris in autumn, enlarging areas of ponds if possible. Stack material at sides.	●		✓	✓	✓	✓	✓
	Enlarge pond clearings by cutting all saplings etc. Stack brashing under canopy of trees away from ponds.	●		✓	✓	✓	✓	✓
	Extend current length of boardwalk		●	✓				
Hedgerows	Trim hedge 1 in March		●	✓		✓		✓
	Lay and gap up 50 metre length of hedge 3		●	✓		✓		✓
Whole Site	Collect litter, empty dog waste bins, maintain paths, mend any damage		●	✓	✓	✓	✓	✓
	Monitor species and habitat condition	●		✓	✓	✓	✓	✓
	Survey for mammals, invertebrates, amphibians and reptiles	●		✓	✓	✓	✓	✓

Chellaston Brickworks 10-YEAR WORK PROGRAMME, Years 6 to 10

Compartment	Management Prescription	Priority		Year 6	Year 7	Year 8	Year 9	Year 10
		Essential	Desirable					
Compartment 1a	Monitor invasive bramble and scrub	●		✓	✓	✓	✓	✓
	Control invasive bramble and scrub	●		✓			✓	
	Mow sides of main path throughout summer		●	✓	✓	✓	✓	✓
Compartment 1b	Leave grassland un-mown all summer	●		✓	✓	✓	✓	✓
	Mow area of grass once every year in autumn and remove cuttings	●		✓	✓	✓	✓	✓
	Mow bramble and ivy at edges of area	●		✓	✓	✓	✓	✓
	Cut scrub back annually to maintain low scattered cover maximum 20%	●		✓	✓	✓	✓	✓
Compartment 1c	Leave grassland un-mown all summer	●		✓	✓	✓	✓	✓
	Using hand tools, mow species-rich grassland in late August or September, leave cuttings 24 hours then remove.	●		✓	✓	✓	✓	✓
	Cut young scrub within grassland area to max. 5% of area. Do at same time as mowing work.	●		✓	✓	✓	✓	✓
	Cut back mature scrub round edges of area	●				✓		
Compartment 1d	Coppice scrub at edges of open areas. Do not treat stumps.	●			✓		✓	

Compartment	Management Prescription	Priority		Year 6	Year 7	Year 8	Year 9	Year 10
		Essential	Desirable					
Compartment 2a	Monitor non-native species, controlling any significant increase.		●	✓	✓	✓	✓	✓
Compartment 2b	Monitor non-native species, controlling any significant increase.		●	✓	✓	✓	✓	✓
	Coppice small groups of selected sycamores, stack brashing in piles.		●		✓		✓	
	Annually, in winter, cut all woody growth - bramble, saplings, scrub, etc from woodland glades. Treat stumps, stack brashing outside glade area.	●		✓	✓	✓	✓	✓
Compartment 3	Clear saplings from around base of mature aspen and other specimen trees. Treat stumps. Repeat every few years		●		✓		✓	
	Monitor sycamore	●		✓	✓	✓	✓	✓
	Maintain Pond 5 by annual clearance of leaves and debris in winter.	●		✓	✓	✓	✓	✓
Compartment 4	Annual scrub control in all new and existing glades	●		✓	✓	✓	✓	✓
	Cut scrub from main access track	●			✓		✓	
	Annual late summer vegetation mowing in: Aston Lane Strip, Birch Glade, Large Glade, Teasel Glade, Small Glade, Oak Glade, Small Glade Extension, Elm Glade, Bramble Glade	●		✓	✓	✓	✓	✓
	Vegetation mowing in Orchard Glade, Burner Glade and Teasel Glade	●		✓	✓	✓	✓	✓

Compartment	Management Prescription	Priority		Year 6	Year 7	Year 8	Year 9	Year 10
		Essential	Desirable					
Compartment 4 (continued)	An extra summer scrub control cut in Large Glade and Oak Glade	●		✓	✓	✓	✓	✓
	Stack woody brashing at edges of glades to form a 'habitat stack'		●	✓	✓	✓	✓	✓
	Clean out all 3 ponds of debris in autumn, enlarging areas of ponds if possible. Stack material at sides.	●		✓	✓	✓	✓	✓
	Enlarge pond clearings by cutting all saplings etc. Stack brashing under canopy of trees away from ponds.	●		✓	✓	✓	✓	✓
Hedgerows	Trim hedge 1 in March.		●		✓		✓	
	Lay and gap up 50 metre length of hedge 3 .		●		✓		✓	
Whole Site	Collect litter, empty dog waste bins, maintain paths, mend any damage		●	✓	✓	✓	✓	✓
	Monitor species and habitat condition	●		✓	✓	✓	✓	✓
	Survey for mammals, invertebrates, amphibians and reptiles	●		✓	✓	✓	✓	✓

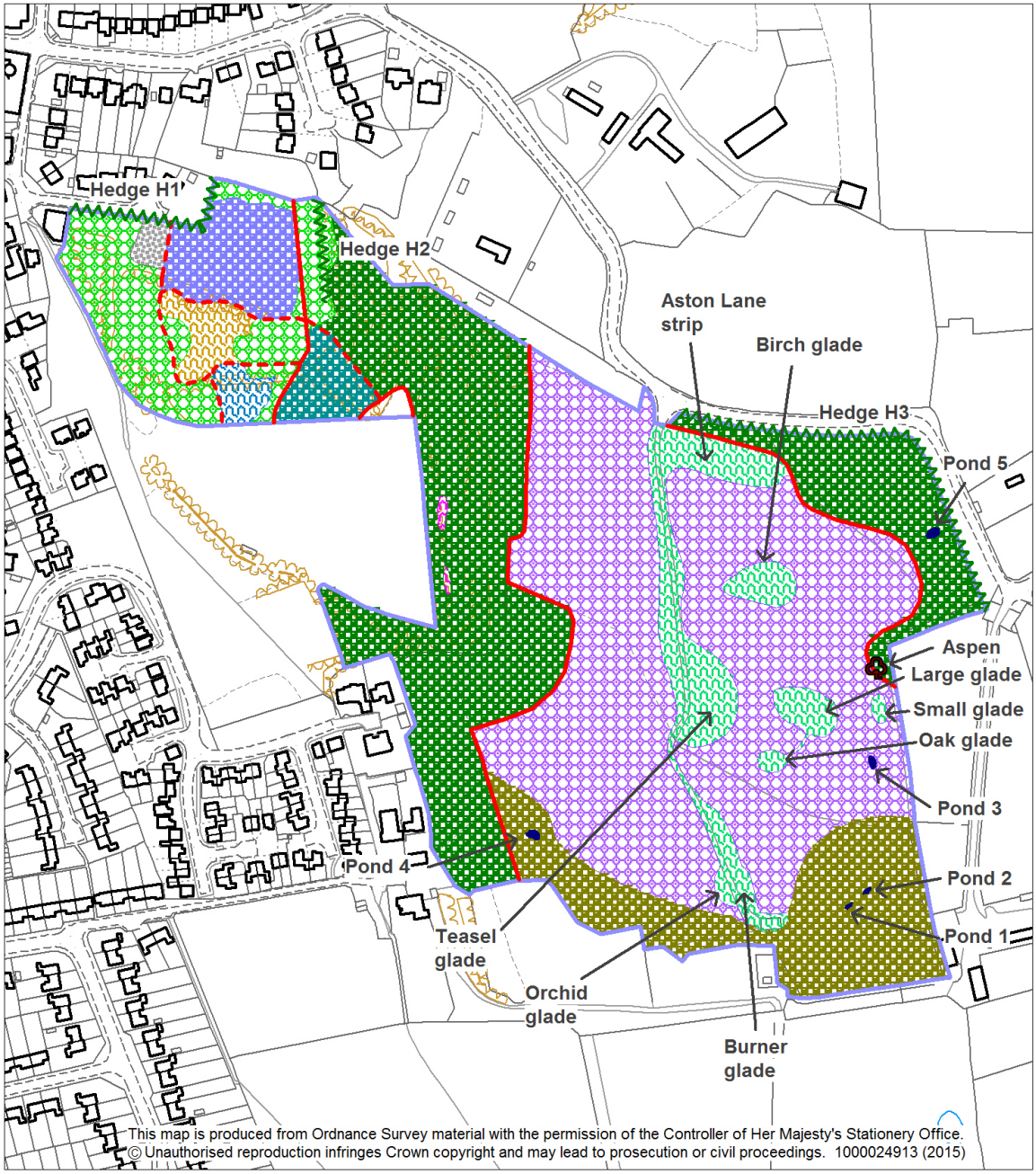


Map 1. Boundaries and compartments

KEY

- LNR Boundary
- Compartment boundary
- Sub-compartment boundary
- Access point
- Car park

N



Map 2. Existing Habitats

KEY

- Downy oat grassland
- Tall rank grassland
- Herb-rich short grassland
- Grassy woodland clearing
- Tall ruderal
- Open immature hawthorn scrub
- Open mixed species scrub
- Ash woodland
- Alder woodland
- Hawthorn woodland
- Hedge
- Pond
- Car park

N

Map 3. Optimal State

KEY

- Downy oat grassland
- Tall rank grassland
- Herb-rich short grassland
- Grassy woodland clearing
- Tall ruderal
- Open immature hawthorn scrub
- Open mixed species scrub
- Ash woodland
- Alder woodland
- Hawthorn woodland
- Hedge
- Pond
- Open rough grassland
- Car park

N

Appendix 1
Chellaston Brickworks LNR: Mammals & Amphibians

English name	Scientific name
hedgehog	*Erinaceus europaeus*
rabbit	*Oryctolagus cuniculus*
grey squirrel	*Sciurus carolinensis*
fox	*Vulpes vulpes*
weasel	*Mustela nivalis*
field vole	*Microtus agrestis*
common frog	*Rana tempororia*
great crested newt	*Triturus cristatus*

Appendix 2
Chellaston Brickworks LNR: Flora and fungi

English name	Scientific name	
Trees and shrubs:		
field maple	*Acer campestre*	
Norway maple	*Acer platanoides*	
horse chestnut	*Aesculus hippocastanum*	
alder	*Alnus glutinosa*	
grey alder*	*Alnus incarna*	
berberis*	*Berberis vulgaris*	
silver birch	*Betula pendula*	
dogwood*	*Cornus sanguinea*	
hawthorn	*Crataegus monogyna*	
beech	*Fagus sylvatica*	
ash	*Fraxinus excelsior*	
holly	*Ilex aquifolium*	
privet*	*Ligustrum vulgare*	
cultivated apple*	*Malus domestica*	
white poplar*	*Populus alba*	
aspen	*Populus tremula*	
pedunculate oak	*Quercus robur*	
gooseberry	*Ribes uva-crispa*	
dog rose	*Rosa canina agg.*	
goat willow	*Salix capraea*	
grey willow	*Salix cinerea*	
crack willow	*Salix fragilis*	
elder	*Sambucus nigra*	
rowan	*Sorbus aucuparia*	
snowberry*	*Symphoricarpos rivularis*	
lime*	*Tilia x vulgaris*	
wych elm	*Ulmus glabra*	
English elm	*Ulmus procera*	
elm 'autumn gold'*	*- Ulmus pumila x Ulmus davidiana var. japonica)*	
guelder rose	*Virbernum opulus*	
Grasses, sedges and rushes:		
common bent	*Agrostis capillaris*	
creeping bent	*Agrostis stolonifera*	
meadow foxtail	*Alopecurus pratensis*	
sweet vernal-grass	*Anthoxanthum odoratum*	
false oat-grass	*Arrhenatherum elatius*	
downy oat-grass	*Avenula pubescens*	#
false brome	*Brachypodium*	

	sylvaticum	
soft-brome	*Bromus hordeaceus*	
hairy-brome	*Bromus ramosus*	
glaucous sedge	*Carex flacca*	
common sedge	*Carex nigra*	
hairy sedge	*Carex hirta*	
crested dog's-tail	*Cynosurus cristatus*	
cock's-foot	*Dactylis glomerata*	
tufted hair-grass	*Deschampsia cespitosa*	
common couch	*Elymus repens*	
tall fescue	*Festuca arundinacea*	
red fescue	*Festuca rubra*	
Yorkshire-fog	*Holcus lanatus*	
wall barley	*Hordeum murinum*	
meadow barley	*Hordeum secalinum*	
toad rush	*Juncus bufonius*	
soft rush	*Juncus effusus*	
hard rush	*Juncus inflexus*	
perennial rye-grass	*Lolium perenne*	
smaller cat's-tail	*Phleum bertolonii*	
timothy	*Phleum pratense*	
annual meadow-grass	*Poa annua*	
smooth meadow-grass	*Poa pratensis*	
rough meadow-grass	*Poa trivialis*	
yellow oat-grass	*Trisetum flavescens*	
floating sweet-grass	*Glyceria fluitans*	
Forbs:		
yarrow	*Achillea millefolium*	
agrimony	*Agrimonia eupatoria*	#
garlic mustard	*Alliaria petiolata*	
scarlet pimpernel	*Anagallis arvensis*	
cow parsley	*Anthriscus sylvestris*	
lesser burdock	*Arctium minus agg.*	
horse-radish	*Armoracia rusticana*	
mugwort	*Artemisia vulgaris*	
spear-leaved orache	*Atriplex prostrata*	
daisy	*Bellis perennis*	
white bryony	*Bryonia dioica*	
common knapweed	*Centaurea nigra*	
common centaury	*Centaurium erythraea*	
common mouse-ear	*Cerastium fontanum*	
rosebay willowherb	*Chamerion angustifolium*	
fat-hen	*Chenopodium album*	
creeping thistle	*Cirsium arvense*	
spear thistle	*Cirsium vulgare*	
hemlock	*Conium maculatum*	

field bindweed	*Convolvulus arvensis*	
smooth hawk's-beard	*Crepis capillaris*	
common spotted-orchid	*Dactylorhiza fuchsii*	#
bee orchid	*Ophrys apifera*	
southern marsh orchid	*Dactylorhiza praetermissa*	
teasel	*Dipsacus fullonum*	
great willowherb	*Epilobium hirsutum*	
square-stalked willowherb	*Epilobium tetragonum*	
field horsetail	*Equisetum arvense*	
sun spurge	*Euphorbia helioscopia*	
fennel	*Foeniculum vulgare*	
cleavers	*Galium aparine*	
hedge bedstraw	*Galium mollugo*	
lady's bedstraw	*Galium verum*	
cut-leaved crane's-bill	*Geranium dissectum*	
meadow cranesbill	*Geranium pratense*	
wood avens	*Geum urbanum*	
ground -ivy	*Glechoma hederacea*	
ivy	*Hedera helix*	
hogweed	*Heraclium sphondylium*	
mouse-ear hawkweed	*Hieracium pilosella*	#
bluebell	*Hyacinthoides non-scripta*	+
perforate St John's-wort	*Hypericum perforatum*	
hairy St John's-wort	*Hypericum hirsutum*	
cat's-ear	*Hypochoeris radicata*	
white dead-nettle	*Lamium album*	
yellow archangel	*Lamium galeobdolon*	
meadow vetchling	*Lathyrus pratensis*	
common duckweed	*Lemna minor*	
rough hawkbit	*Leontodon hispidus*	#
oxeye daisy	*Leucanthemum vulgare*	
fairy flax	*Linum catharticum*	#
common bird's-foot-trefoil	*Lotus corniculatus*	
scented mayweed	*Matricaria recutita*	
black medick	*Medicago lupulina*	
tall melilot	*Melilotus altissima*	
ribbed melilot	*Melilotus officinalis*	
red bartsia	*Odontites verna*	
common restharrow	*Ononis repens*	#
green alkanet	*Pentaglottis sempervirens*	
bristly oxtongue	*Picris echioides*	
burnet-saxifrage	*Pimpinella saxifraga*	#
ribwort plantain	*Plantago lanceolata*	
greater plantain	*Plantago major*	
hoary plantain	*Plantago media*	#

knotgrass	*Polygonum aviculare*
creeping cinquefoil	*Potentilla reptans*
selfheal	*Prunella vulgaris*
meadow buttercup	*Ranunculus acris*
lesser celandine	*Ranunculus ficaria*
creeping buttercup	*Ranunculus repens*
weld	*Reseda luteola*
yellow rattle	*Rhinanthus minor*
bramble	*Rubus fruticosus agg.*
curled dock	*Rumex crispus*
broad-leaved dock	*Rumex obtusifolius*
wood dock	*Rumex sanguineus*
procumbent pearlwort	*Sagina procumbens*
hoary ragwort	*Senecio erucifolius*
common ragwort	*Senecio jacobaea*
red campion	*Silene dioica*
white campion	*Silene latifolia*
bittersweet	*Solanum dulcemara*
prickly sow-thistle	*Sonchus asper*
hedge woundwort	*Stachys sylvatica*
common comfrey	*Symphytum officinale*
tansy	*Tanacetum vulgare*
common dandelion	*Taraxacum officinale agg.*
upright hedge-parsley	*Torilis japonica*
goat's-beard	*Tragopogon pratensis*
hop trefoil	*Trifolium campestre*
lesser trefoil	*Trifolium dubium*
alsike clover	*Trifolium hybridum*
red clover	*Trifolium pratense*
white clover	*Trifolium repens*
scentless mayweed	*Tripleurospermum inodorum*
colt's-foot	*Tussilago farfara*
common nettle	*Urtica dioica*
great mullein	*Verbascum thapsus*
germander speedwell	*Veronica chamaedrys*
common field-speedwell	*Veronica persica*
hairy tare	*Vicia hirsuta*
common vetch	*Vicia sativa*
smooth tare	*Vicia tetrasperma*

Ferns:

male fern	*Dryopteris filix-mas*

Fungi:

honey fungus	*Armillaria mellia*
ear fungus	*Auricularia auricula-judae*

silverleaf fungus	*Chondrostereum purpureum*
shaggy inkcap	*Coprinus micraceus*
pleated inkcap	*Coprinus plicatitis*
variable osterling	*Crepidotus hirsutus*
King Alfred's cakes	*Daldinea concentrica*
mossbell	*Galerina hypnorum*
blackening waxcap	*Hygrocybe conica*
elder whitewash	*Hyphodontia sambuci*
fleecy fibrecap	*Inocybe flocculosa*
the deceiver	*Laccaria laccata*
dapperling reddening	*Leucoagaricus croceovelutinus*
deer shield	*Pluteus cervinus*
orange mosscap	*Rickenella fibula*
verdigris agaric	*Stropharia aeruginosa*
orange brain fungus	*Tremella mesenterica*
candlesnuff	*Xylaria hypoxylon*
poplar bells +	*Schizophyllum amplum*

KEY

\+ Priority BAP species
\# significant at Derby City level
* garden escape or planted

Appendix 3
Chellaston Brickworks LNR: Birds

KEY

Bold = RSPB/BTO red list
Italic = RSPB/BTO amber list
* = Priority BAP

Linnet*
*Bullfinch**
Greenfinch

Chaffinch
Goldfinch
Chiffchaff
Willow Warbler
Blackcap
Lesser Whitethroat
Blue Tit
Great Tit
Long Tailed Tit
Song Thrush*
Blackbird
Robin
Wren
Carrion Crow
Rook
Jackdaw
Turtle Dove*
Collared Dove
Woodpigeon
Green Woodpecker
Swallow
Skylark*
Buzzard
Jay
Sparrowhawk
Kestrel
Linnet
Starling
Fieldfare
Great spotted woodpecker

Appendix 4
Chellaston Brickworks LNR: Invertebrates

Butterflies:
brimstone
comma
peacock
tortoiseshell
red admiral
orange tip
speckled wood
holly blue
large white
small white
green-veined white
dingy skipper
common blue
brown argus
small copper
white letter hairstreak (adjacent to site)
large skipper
small skipper
ringlet
meadow brown
gatekeeper
small heath
painted lady

Day moths:
cinnabar
5-spot burnet
common heath
latticed heath
burnet companion
common carpet
mother shipton
chimney sweeper
vapourer
grass rivulet
green longhorn

Dragonflies:
Brown hawker
Common darter
Banded demoiselle