Complete Ecology Limited

Complete Ecology Limited (CEL) is a freelance ecological consultancy and contracting company based in London owned and managed by Alan Scott. Alan is an experienced ecologist who has worked in nature conservation for over 25 years and London for 20 years. He is a member of the Institute of Ecology and Environmental Management and has been registered by the Society for the Environment as a Chartered Environmentalist. He has worked in many nature conservation organisations, statutory bodies and local authorities including The Nature Conservancy Council (now Natural England), Nottinghamshire Wildlife Trust, London Borough of Islington and Groundwork Hackney. He is on the Executive of the Urban Wildlife Network and the UNESCO Man and Biosphere Urban Forum.

CEL specialises in practical nature conservation, habitat management, management plans and ecological surveys and assessments.
1. Introduction

This plan has been compiled by Complete Ecology Limited (CEL) under contract to the London Borough of Haringey (LBH) and was written by Alan Scott of Complete Ecology Limited following a site visit on 29th September 2011 with Ian Holt from L B Haringey and a second visit on 4th February 2012.

This plan covers the period of the next 5 years (2012/13 to 2016/17). The habitats and species present are described and the management required to preserve and enhance the wildlife value of the site is detailed.
2. Description

2.1 General Information

2.1.1 Name
Tunnel Gardens Nature Reserve

2.1.2 Location
The site is situated approximately 500m West of Bounds Green Tube Station in the London Borough of Haringey. It is a long narrow site on top of a railway tunnel and runs from Durnsford Road in the south to Cline Road in the north.

2.1.3 Area
2.6 Hectares

2.1.4 Grid Reference
TQ 294 913

2.1.5 Access
The site is open to the public at all times. Access is from Durnsford Road, Cline Road and Blake Road.

2.1.6 Land Tenure
London Borough of Haringey holds the freehold.

2.1.7 Public Rights of Way
There are no public rights of way through the site.

2.1.8 Planning Authority
London Borough of Haringey.

2.1.9 Status
Tunnel Gardens has been designates as a site of Borough Grade 2 Site Importance for Nature Conservation.
2.2 General Description
The site sits on top of a railway tunnel and comprises a long raised hill, presumably at least partly composed of the spoil from the excavation of the tunnel. The site is approximately 600m long but only 50m wide.

Virtually the entire site is covered with dense bramble beds and mature scrub (Photos 2, 3, 4, 5 & 7). This makes most of the site impenetrable. However a path runs to the whole length which although unsurfaced, does appear to have been maintained in the past by cutting the vegetation regularly. Very little other management appears to have been carried out in the recent past (Photo 4).

2.2.1 Boundaries
The southern boundary on to Durnsford Road is open with no boundary structures.

The eastern boundary for almost the entire length of the reserve is composed of fences along the back of neighbouring gardens. Where these are visible they appear to be mostly in good condition but the dense bramble and scrub prevented detailed viewing of the boundaries. At the very north west corner where the reserve meets Cline Road there is a short section of chainlink fencing in very poor condition (Photo 11).

The western boundary in the southern section (Compartment 1) also consists of garden fences which appear to be in quite good condition but again detailed inspection was not possible due to the dense nature of the vegetation.

The western boundary of the northern section (Compartment 2) mostly consists of a good condition metal palisade fence along the boundary with the golf course. However in the south west corner a short section of wooden featherboard fencing beside an access route to the neighbouring houses is in very poor condition.

The boundaries on Blake road consist of low walls with a wooden post and rail fence which are in reasonable condition.

2.2.2 Paths and entrances.
The 4 entrances are all in poor condition and make the reserve very unwelcoming (Photos 8, 9, 10 & 11). There are no signs or information boards and at the Blake Road and Cline Road entrances there is some tipping of garden and other waste.

A path runs the entire length of the reserve (Photo 4). It is unsurfaced and quite muddy in places but is obviously kept open be periodic cutting back of vegetation and does allow access to the reserve. At the southern end steps lead up from Durnsford Road and
elsewhere there are some slopes which are too steep to allow disabled access to be created easily.

2.3 Biological Description

This plan has been compiled in the winter and so the vegetation survey carried out will have inevitable missed many species which are not visible outside the spring and summer. It is therefore recommended that a new vegetation survey is carried out in the spring. However the site visits are considered to have been sufficient to identify the main habitats present and the management work required.

2.3.1 Habitats

The habitats identified are shown on Map 2. Scientific names are given at the first mention of a species – thereafter English names only are used. A species list of plants is given in Appendix 1.

2.3.1.1 Compartment A

This is the area of the reserve to the south of Blake Road. It is split into 2 main habitats, dense bramble (*Rubus fruticosus*) beds (Sub-compartments 1a and 1b) (Photos 3, 4 & 5) and mature scrub (Sub-compartment 1c) (Photo 5). A small area of amenity grassland in the south, adjacent to the more formal gardens beside Durnsford Road. has also been included in the plan although it may technically be outside the site (Sub-compartment 1d) (Photo 1). 1a and 1b cover the central area of the compartment, separated by a strip of dense scrub. The dominant species is bramble. Other species present include great willowherb (*Epilobium hirsutum*), couch grass (*Elytrigia repens*), cleavers (*Galium aparine*), cock's-foot (*Dactylis glomerata*) and a variety of other common tall herb species. Some scattered scrub occurs throughout which is composed predominantly of hawthorn (*Crataegus monogyna*), sycamore (*Acer pseudoplatanus*), dog rose (*Rosa canina*), blackthorn (*Prunus spinosa*) and elder (*Sambucus nigra*). In places along the path there are some small areas of semi-improved neutral grassland, with false oat grass (*Arrhenatherum elatius*), cock's-foot and other (Photo 6). This is probably a remnant of the habitat which covered much of the site in the past before it was encroached by bramble and scrub.

The dense scrub (Sub-compartment 1c) is situated mostly around the boundaries of the compartment. Shrub and tree species include hawthorn, holly (*ilex aquifolium*), sycamore, ash (*Fraxinus excelsior*) and pedunculate oak (*Quercus robur*). At the southern side there is a very dense area of young blackthorn and ash (Photo 2). The ground flora is sparse with bramble, cow parsley (*Anthriscus sylvestris*) and ivy (*Hedera helix*) being the commonest species present.
1d consists of a small area of amenity grassland which is adjacent to the formal gardens on
the side of Durnsford Road. It is probably technically outside the reserve but has been
included because with suitable management it could compliment the adjacent scrub habitat
(see below for suggested management regime for this area). The sward is dominated by
perennial rye-grass (*Lolium perenne*) together with common herbaceous species such as
dandelion (*Taraxacum sp.*), common chickweed (*Stellaria media*), daisy (*Bellis perennis*)
and creeping buttercup (*Ranunculus repens*).

2.3.1.2 Compartment B
This is the area of the reserve to the north of Blake Road. Again it is primarily composed
of dense bramble beds (Sub-compartment 2a) and dense scrub (Sub-compartment 2b).

2a is very similar in composition to Sub-compartments 1a and 1b, with most of the same
species present. Again there are some very small remnants of grassland along the side of
the path.

2b is very similar to species composition and structure to 1c. However to the north there is
a much larger area of dense scrub with a higher number of larger (although still not mature)
trees (sycamore, ash and oak) (Photo 7).

2.3.2 Fauna

2.3.2.1 Invertebrates
No invertebrate records have been made available for the site.

2.3.2.2 Amphibians and Reptiles
No amphibian or reptile records have been made available for the site.

2.3.2.3 Birds
The only species observed on the site were blackbird (*Turdus merula*), robin (*Erithacus
rubecula*) and magpie (*Pica pica*). It is likely that the site supports a range of common
urban bird species.

2.3.2.4 Mammals
No mammal records have been made available for the site.
3 Evaluation

3.1 Habitat evaluation
The habitats present on the site (dense scrub, bramble, amenity grassland) are all very common in the London area. However at nearly 3Ha it is a reasonable large site for such an urban area the site does compliment the habitats in the neighbouring golf course and other nearby sites such as Scout Park and Albert Road Recreation Ground.

3.2 Plant Species Evaluation
No plant species fully protected under Schedule 8 of the Wildlife and Countryside Act 1981 were identified during this survey. It is a criminal offence to pick, uproot or otherwise damage any of these species. It is considered unlikely that any schedule 8 protected plant species were present at the site.

No UK or London (regional) Biodiversity Action Plan vascular plant species were recorded during the survey.

3.3 Animal species evaluation
No animal species fully protected under the Schedule 5 of the Wildlife and Countryside Act were identified during the survey.

No UK or London (regional) Biodiversity Action plan animal species have been recorded from the site.

However a database search by Greenspace Information for Greater London (GIGL) for Albert Road Recreation Ground carried out in 2010 found a number of notable species in the area. As this site is only about 250m away the search covered Tunnel Gardens and sites nearby. No protected or BAP species were recorded for Tunnel Gardens but the following BAP were identified nearby:

**UK Biodiversity Action Plan Priorities Species:**
- Stag beetle
- Wall
- Slow worm
- Noctule Bat
- Daubenton's bat
- Hedgehog
- White-letter hairstreak
- Common toad
- House sparrow
- Pipistrelle Bat
- Natter's bat
London Biodiversity Action Plans Priority Species:

- Stag beetle
- Wall
- Slow worm
- Song thrush
- Noctule Bat
- Daubenton's bat
- White-letter hairstreak
- Common toad
- House sparrow
- Pipistrelle Bat
- Natter's bat
- Hedgehog

Of these species the following are also legally protected:

- Stag beetle Wildlife and Countryside Act
- White-letter hairstreak Wildlife and Countryside Act
- Common toad Wildlife and Countryside Act
- Common frog Wildlife and Countryside Act
- Slow worm Wildlife and Countryside Act
- Pipistrelle Bat European Conservation Regulations
- Noctule Bat European Conservation Regulations
- Natter's bat European Conservation Regulations
- Daubenton's bat European Conservation Regulations

A number of these species are quite likely to occur on the site (common frog, common toad, slow worm, hedgehog) and others may use the site on occasions (e.g. foraging bats).
It is also understood that there are records of great crested newt in the pond at Scout Park. This is very near the reserve, less than 100m at the closest point. Great crested newts can move quite long distances from ponds to hibernate. It is therefore possible that this species does use the reserve on occasions. However the animals would have to negotiate houses and roads to get from one site to the other so it is unlikely they occur regularly.

3.4 Amenity and Educational Evaluation

The site is obviously used by the local community and the path through the site is well used. However the untidy/uncared for appearance of the entranceway and adjacent fencing make the site less appealing. A relatively small amount work to improve the entrance areas could significantly improve the entire site.

There is no evidence of use by local schools it would be possible to contact local schools and look at ways they could be encouraged to use the site.
4. References


Greenspace Information for Greater London, 2010 An Ecological Data Search for Albert Road Recreation Ground.


5. **Ideal Management Objectives**

The general long-term aims are to conserve the existing nature conservation interest of the site and to enhance or restore this where appropriate. These aims incorporate the following ideal management objectives:

**To conserve the existing biodiversity of the reserve, and enhance it where appropriate.**

- To manage the habitats present to conserve and improve their value for biodiversity.
- To monitor populations of the reserve’s biodiversity to assess progress of conservation management.

**To maintain the reserve for the quiet enjoyment and understanding by people.**

- To make the reserve more attractive for local people to use.
- To provide information on the ecological value of the reserve.
- To promote the reserve as an educational resource for people of all ages.
6. Policy

6.1 General Principles on Ecological Issues

6.1.1 Survey and monitoring

It is essential that all management work is recorded and monitored in order to be able to ensure that the work carried out is of benefit to the wildlife on the site and to visitors. Management tasks should be recorded and an annual report of work produced.

It is therefore necessary to know what species and habitats are already on the site. As the visits to produce this plan were in the winter it is recommended that vegetation of the site be surveyed in the spring. This will give a much better picture of the species present. Also there is very little information on the fauna of the site. Ideally vegetation/habitat surveys and broad-based invertebrate surveys should be carried out every 5 years and regular bird monitoring should be carried out on an ongoing basis if suitable volunteers can be found. Reptile and amphibian and mammal (especially bat) surveys are also required. There are some groups where little, if any, information prevails – e.g. molluscs, annelids, micro-moths, etc. – and surveying of these should be undertaken as and when resources permit.

All surveying should conform to standardised techniques, from which accurate and relevant data can be drawn. Monitoring, likewise, should conform to standardised methodology. The London Ecology Unit/Greater London Authority bird monitoring transect and butterfly transects should also be considered. Ideally biological data recorded on site should be made available to Greenspace Information for Greater London (GIGL). Records of unusual sightings, especially birds and invertebrates, should also be relayed quickly to the appropriate London Natural History Society recorders.

6.1.2 Dead Wood

Dead wood is an important resource for many invertebrates, fungi and other wildlife. Where timber is cut it should normally be left on site in piles in appropriate places. Any standing dead trees should be retained where safety considerations allow.

6.1.3 Introductions, translocations and planting

No planting is recommended in this plan. However if any planting is carried out it should normally be of native species, preferably of local provenance.

There should be a presumption against the introduction of animals into the site. If any introductions are considered in order to meet management objectives, reference should be made to policies of relevant organisations, e.g. the London Wildlife Trust’s Translocation Policy.
6.1.4 Fires
There should be a general presumption against burning any material on the reserve.

6.2. General Principles on Amenity Issues

6.2.1 Paths
A clearly defined and well maintained path is the best way of reducing trampling of sensitive vegetation and will ensure that people can enjoy their visit and not have an adverse effect. The path through site are already well defined, however it is muddy in places and would benefit from surfacing, especially at the entrances (Photo 4).

6.2.2 General Safety
All boundaries, footpaths and other visitor facilities need to be inspected regularly and any necessary remedial action taken immediately. Regular inspections must also be carried out of all trees near boundaries and footpaths, to ensure they are in a safe condition, i.e. not about to fall over or shed dead branches onto an area frequently used by the public. Appropriate action should be taken but in recognition that standing dead wood is an essential feature of the woodland ecosystem.

6.2.3 Access
The site has public access at all times. LBH therefore has a responsibility to ensure that all footpaths and other visitor facilities are in a safe condition at all times.

6.2.4 Litter
Litter makes a site look untidy and uncared for and can spoil the enjoyment of visitors. Some litter can also be unsafe, or lethal to small mammals and some invertebrates. Litter should therefore be cleared on a regular basis.

6.2.5 Dogs
Ideally dogs should not be allowed into the reserve (except guide dogs). They disturb wildlife and their faeces are a health hazard. However this is an open site and popular with dog walkers so this is not feasible. The owners should be encouraged to keep their dogs on a leash to minimise disturbance to wildlife. Fouling by dogs presents a problem and visitors should be requested not to allow their animals to defecate within the site and to clear up after them if they do. Dog bins could be installed at the entrance.
6.2.6 Interpretation

It is important to provide visitors to the site with information about the wildlife that occurs there and the management that is being carried out to conserve it. This can be achieved in a variety of ways, for example through information leaflets, guided walks, articles in the local press etc.

The provision of information boards is a simple and direct way of informing people about the site. They can make people feel more welcome and positive about their visit and, by providing information about what is to be seen, can increase the level of enjoyment. Boards should be kept clean and in good repair and have a contact telephone number to report problems or other information about the site.

6.3 General Principles on Management Practice

6.3.1 Health and Safety and Risk Assessment

It is essential that all activities take place in a healthy and safe environment. Management of the site poses a number of potential risks, which any one working there must be aware of. The site must have an updated risk assessment to highlight any particular dangers to workers or visitors. This must be reviewed annually.

Tasks should normally be carried out by more than one person at any one time, especially if tools are being used.

All work tasks will require a risk assessment identifying hazards, level of risk and appropriate measures taken to avoid or reasonably reduce risk. Reference should be made to the relevant LBH safety policies and current risk assessments.

6.3.2 Herbicides

There should be a presumption against the use herbicides. By their very nature all herbicides are damaging to the environment to a greater or lesser extent, and can be a danger to the public. Consequently their use should be restricted to only necessary tasks and only if other management methods are inappropriate or have failed. It may sometimes be necessary to treat the stumps of species scheduled for removal from the site where these have grown too large and where it would be a waste of resources to keep on cutting the plants back every year.

Similarly herbicides may be the only way to combat some invasive non-native species such as Japanese knotweed. If chemicals are used, the appropriate LBH policies and risk assessments must be followed and should only be used by appropriately qualified persons.
7. Management

7.1 Compartments Management Proposals

7.1.1 Compartments 1

Description
This is the area to the south of Blake Road. It consists of 3 main areas, dense bramble beds (Sub-compartments 1a and 1b)(Photos 3, 4 & 5), mature scrub (Sub-compartment 1c)(Photo 5) and a small area of amenity grassland in the south, adjacent to the more formal gardens beside Durnsford Road (Sub-compartment 1d)(Photo 1). Some very small remnants of semi-improved neutral grassland exist alongside the path (Photo 6).

A path leads from the gardens on Durnsford Road north through the site to another entrance on Blake Road. It appears to be kept open by cutting back vegetation but is not surfaced and is muddy in places. The entrance onto Blake road is untidy and there is some tipping of garden waste inside the gate (Photo 9). The boundary along Blake Road has a post and rail fence which is in reasonable condition.

The other boundaries with the neighbouring gardens all have fences which are in good condition.

Management
The bramble areas were probably open grassland in the past and it would be desirable to restore some of the area to this habitat. To achieve this it is suggested that a cutting regime is instigated which cuts back the bramble. It is recommended that the central area of each of the sub-compartment 1a and 1b are cut annually (approx. 1/3 of the area). This should take place in the late summer/early autumn and the cuttings should be raked off and piled in the nearby scrub as habitat piles. Then later in the autumn (after the blackberries have all gone) 50% of the remaining bramble should be cut and raked off. This will hopefully create a central grassy area surrounded by taller bramble beds. The bi-annual cutting of these beds (50% /year) will help to retain their vigour and encourage new growth of bramble. A mosaic of this type will support many species. Birds can nest in the bramble or scrub but feed in the open grass areas. Similarly butterflies and other insects can forage in the open but get shelter in the dense vegetation. Reptile such as slow worms thrive in open mosaics of this nature.

No major clearance is recommended for the scrub areas (Sub-compartment 1c). The area should be inspected annually and any dangerous trees made safe, bearing in mind the need to retain standing dead timber. Any other trees which die should be retained on site for wood peckers etc. if it is safe to do so.
In addition to this it would be desirable to create a graded edge between the scrub and the open grassland/bramble areas (see diagram below). Transition areas like this maximise the habitats in a small area thereby increasing the number of species which can be supported. They support rich invertebrate communities and are favoured foraging and nesting habitats for many bird species. For example many birds like to forage in the open areas but require the woodland as cover to hide from predators and for nesting sites. Some insects such as butterflies require different plants at different stages of their life; the adults could be reliant on nectar from plants which grow in the open sunny areas but the larvae may require food plants which occur in the woodland.

![Diagram showing graded edge between scrub and grassland]

<table>
<thead>
<tr>
<th>Short Grass</th>
<th>Long grass</th>
<th>Brambles/tall herbs</th>
<th>Low shrubs</th>
<th>Woodland</th>
</tr>
</thead>
</table>

It is therefore suggested that some coppicing (cutting down shrubs and allowing them to re-grow from the stumps) is carried out along the edges of the scrub where the adjacent bramble has been cut. Approximately 50% of this scrub edge should be cut back to a distance of 3 to 4m each time the adjacent bramble is cut. The work should take place in the winter to avoid breeding birds etc. The brash should be piled in the adjacent woodland as habitat piles.

A similar graded edge could be created at the southern end of the reserve by instigating a meadow regime on the amenity grass area (Sub-compartment 1d). The area should be left uncut until late summer or early autumn (after the flowering season when the seeds of had the chance to set) and then mown at a height of approx. 10cm. The cuttings should be raked off to keep the fertility of the soil low. In high fertility soils the sward tends to be taken over by fast growing species such as nettles and amenity grasses. In lower fertility soils everything grows slowly and therefore more species thrive leading to a more diverse
sward. This management will also help to diversify the species mix by allowing more species to thrive in the grassland sward.

The footpath should be maintained by cutting the vegetation back to approximately 1m twice in the summer months (May and July) and again in the autumn (October). This will keep the paths open for visitors and encourage the development of a less shade tolerant flora along the path sides. Ideally the path through the compartment should be upgraded by surfacing with a material such as Coxwell gravel or another self binding gravel. However this is an expensive process and may be beyond any available budget.

It is strongly recommended that the entrance ways are improved, especially that at Blake Road. Cutting back the vegetation, removing debris and possibly surfacing the path would all make the reserve much more welcoming. Also an interpretation board and/or a sign would be advantageous too.

7.1.2 Compartment B

Description
This is the area to the north of Blake Road. It is very similar to Compartment 1, with a central dense bramble bed (Sub-compartment 2a) mostly surrounded the dense scrub (Sub-compartment 2b)(Photo 7) and some remnant grassland areas along the path.

As with Compartment 1 an unsurfaced path runs the length of the compartment joining Blake Road to Cline Road. The Blake Road entrance is not very welcoming (Photo 10) but the boundary fences are in reasonable condition. The same cannot be said for the Cline Road entrance where a chainlink fence is in very poor condition (Photo 11).

Most of the other boundaries with neighbouring gardens and the golf course are in good condition. However a short section of wooden featherboard in the south west corner is in poor condition.

Management
The management aims for this area are the same as for Compartment 1. In order to re-establish grassland it is recommended that central area of sub-compartment 2a is cut annually (approx. $\frac{1}{3}$ of the area) in the late summer. Then later in the autumn (after the blackberries have all gone) 50% of the remaining bramble should be cut and raked off.

Again no major clearance is recommended for the scrub areas (Sub-compartment 1c) but some coppicing (cutting down shrubs and allowing them to re-grow from the stumps) should be carried out along the edges of the scrub where the adjacent bramble has been cut. Approximately 50% of this scrub edge should be cut back to a distance of 3 to 4m each time the adjacent bramble is cut. The work should take place in the winter to avoid breeding birds etc. The brash should be piled in the adjacent woodland as habitat piles. Also an annually tree inspection should be carried out inspected annually and any
dangerous trees made safe, bearing in mind the need to retain standing dead timber. Any other trees which die should be retained on site for woodpeckers etc. if it is safe to do so.

The footpath should be maintained in the same way as in Compartment 1 by cutting the vegetation back to approximately 1m twice in the summer months (May and July) and again in the autumn (October). Ideally the path through the compartment should be upgraded by surfacing with a material such as Coxwell gravel or another self binding gravel if funding can be identified.

The highest priority for this Compartment is to improve the entrance areas, especially that in the North at Cline Road. The chainlink fence should be replaced or repaired, the whole entranceway tidied up and a sign/information board installed. This will hopefully make the reserve much more attractive and encourage local people to use and respect the site. The entrance from Blake Road should also ideally be improved and a sign installed.

7.2 **Species Management Proposals**

7.2.1 **Bird and bat boxes**

Bird boxes can be an important resource for many woodland birds. They come in a variety of different sizes and shapes to suit different species but basically they all aim to create the equivalent of a cavity in a tree or rocks etc. They are an important alternative if dead trees have to be felled and provide lasting nesting sites which are relatively safe from common garden predators such as cats, close to feeding areas. They also give essential winter protection for roosting birds. It is recommended that a range of boxes be installed on trees in all three areas. A mixture of hole fronted boxes (liked by tits, nuthatches and sparrows) and open fronted (preferred by robins and wrens) should be installed.

Once installed the boxes should be cleaned out to remove the old nests, dead birds, etc. in the autumn.

Bat boxes are similar in design to bird boxes but only have a narrow slit to allow the animals to enter. They can be important for roosting bats and are a good way to encourage bats to utilise the site. Once a box is used as roost it must not be disturbed as the animals are legal protected from disturbance.

It is suggested that a mixture of different styles of bat and bird boxes are installed on trees in the scrub areas and in the treelines. More details of design and positioning are given in Appendix 3.

7.2.2 **Stag beetles**

The stag beetle *Lucanus cervus* is a globally threatened species, protected under the Wildlife and Countryside Act 1981, as amended, and listed as a priority species for the UK
and London Biodiversity Action Plans. London is one of the most important areas in the UK for this species which has declined in the last 40 years. It is believed that the destruction of its key habitat (dead wood) through the ‘tidying-up’ of woodlands and parks is the prime reason for its decline, although in urban areas the impacts of traffic, human feet, cats and other predators are also significant (London Wildlife Trust 2000).

The stag beetle requires dead wood to complete its lifecycle. The eggs are laid underground by logs, or stumps of dead trees, and the larva (or grub) will spend up to seven years inside slowly growing in size. A wide range of woods are used, especially oak, but also ash, elm, sycamore, lime, hornbeam, apple, cherry and even some garden tree varieties. An exception, however, is coniferous species such as fir, pine and cypress, which they usually avoid. The larvae do not eat the wood of live trees and shrubs, and are thus not a pest. Instead they are an important decay agent, helping to return the minerals of dead plant material to the soil. Adults emerge from the soil beneath logs or stumps from mid-May until late July. Males emerge earlier and appear to be more active as they search for females to mate and can often be seen flying on summer evenings an hour or two before dusk. As adults they are short-lived and generally die after mating, although occasionally some may over-winter in places such as compost heaps.

To encourage this species it is therefore important to have suitable dead wood. The practice of leaving dead stumps standing will help with this (see section on dead wood). Also it is suggested that some stag beetle ‘loggeries’ are created in the scrub as shown in the diagram below.

7.3 General Management Proposals

7.3.1 Access
The access points from Blake Road and Cline Road are in poor condition and rather unattractive. The entranceway should be improved by repairing fencing, cutting back encroaching vegetation, resurfacing the area of path immediately inside the reserve and installing a reserve sign/information board. Dog bins should be install at these points too.

The footpath through the reserve is un-surfaced and ideally should be surfaced with a self-binding gravel or similar substrate if funds can be identified. It should be maintained by cutting the vegetation back in the autumn to keep the walkway clear.

7.3.2 Litter
The site should be cleared of litter on a regular basis.

7.3.3 Interpretation
There are no signs on the site at present. It is strongly recommended that signs/information boards be installed at the entrances. The new boards should have information about wildlife and management and an address and telephone number for the site mangers and emergency contact details so that visitors can get further information or report problems.

7.3.4 Surveys and Monitoring
As the visits to produce this plan were in the winter it is recommended that vegetation of the site be surveyed in the spring of 1012. This will give a much better picture of the species present. The plan should then be reviewed to assess if any changes to management are necessary.

Very few faunal records exist for the site. It would be very desirable to carry out monitoring of birds, bat and invertebrates if resources allow and suitable experienced volunteers can be found.

All work on the reserve should be recorded and monitored.

The vegetation should be re-surveyed in the summer of 2016 and the management plan reviewed in 2017.

7.3.5 Safety
All boundaries, footpaths, and other visitor facilities need to be inspected annually and any necessary remedial action taken immediately. Inspections must also be carried out of all trees near boundaries and footpaths, to ensure they are in a safe condition, i.e. not about to fall over or shed dead branches onto an area frequently used by the public. Appropriate
action should be taken but in recognition that standing dead wood is an essential feature of the woodland ecosystem.
8 Work Programme

8.1 Five year work programme

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<tbody>
<tr>
<td>Cut central area of bramble beds/grassland annually in late summer and rake off arisings</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
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<tr>
<td>Cut grassland annually in late summer and rake off arisings</td>
<td>1d</td>
<td>1d</td>
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<tr>
<td>Cut 50% of ramble beds annually in late autumn and rake off arisings</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
<td>1a, 1b, 2a</td>
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<tr>
<td>Coppice 50% shrubs back 2 to 3m when adjacent bramble areas cut</td>
<td>1c, 2b</td>
<td>1c, 2b</td>
<td>1c, 2b</td>
<td>1c, 2b</td>
<td>1c, 2b</td>
</tr>
<tr>
<td>Carry out safety/arboricultural inspection of reserve annually and implement any necessary work</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cut back vegetation to 1m along footpaths in May, July and October</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Surface path with self-binding gravel</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve entrance areas by resurfacing path, repairing fences and cutting back vegetation</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install dog bins at entrances</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collect litter regularly</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Install signs/ interpretive board at entrances</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Survey vegetation in Spring
Repair boundary fence 2b
Install bat and bird boxes
Clear out bird boxes in autumn
Install stag beetle loggeries
Re-survey the vegetation and review management plan
8.2  **Annual Work Programme Financial Year 2012/13**

**April - September**

- Cut central area of bramble beds/grassland in late summer and rake off arisings  
  1a, 1b, 2a
- Cut grassland annually in late summer and rake off arisings  
  1d
- Cut back vegetation to 1m along footpaths in May and July  
  Throughout
- Surface path with self-binding gravel  
  Throughout
- Improve entrance area by resurfacing path, repairing fences and cutting back vegetation
- Install dog bins at entrances
- Collect litter regularly  
  Throughout
- Install signs/ interpretive board at entrances
- Survey vegetation in Spring  
  Throughout
- Repair boundary fence  
  2b
- Install bat and bird boxes  
  Throughout
- Install stag beetle loggeries  
  1c, 2b

**October - March**

- Cut 50% of ramble beds in late autumn and rake off arisings  
  1a, 1b, 2a
- Coppice 50% shrubs back 2 to 3m when adjacent bramble areas cut  
  1c, 2b
- Carry out safety/arboricultural inspection of reserve annually and implement any necessary work  
  Throughout
- Cut back vegetation to 1m along footpaths in May  
  Throughout
8.3 **Annual Work Programme Financial Year 2013/14**

**April - September**

- Cut central area of bramble beds/grassland in late summer and rake off arisings
  
  1a, 1b, 2a

- Cut grassland in late summer and rake off arisings
  
  1d

- Cut back vegetation to 1m along footpaths in May and July
  
  Throughout

- Collect litter regularly
  
  Throughout

- Install signs/interpretive board at entrances

**October - March**

- Cut 50% of ramble beds in late autumn and rake off arisings
  
  1a, 1b, 2a

- Coppice 50% shrubs back 2 to 3m when adjacent bramble areas cut
  
  1c, 2b

- Carry out safety/arboricultural inspection of reserve annually and implement any necessary work
  
  Throughout

- Cut back vegetation to 1m along footpaths in May
  
  Throughout

- Clear out bird boxes in autumn
  
  Throughout
8.4 Annual Work Programme Financial Year 2014/15

April - September

Cut central area of bramble beds/grassland in late summer and rake off arisings 1a, 1b, 2a

Cut grassland in late summer and rake off arisings 1d

Cut back vegetation to 1m along footpaths in May and July Throughout

Collect litter regularly Throughout

Install signs/ interpretive board at entrances

October - March

Cut 50% of ramble beds in late autumn and rake off arisings 1a, 1b, 2a

Coppice 50% shrubs back 2 to 3m when adjacent bramble areas cut 1c, 2b

Carry out safety/arboricultural inspection of reserve annually and implement any necessary work Throughout

Cut back vegetation to 1m along footpaths in May Throughout

Clear out bird boxes in autumn Throughout
8.5 Annual Work Programme Financial Year 2015/16

April - September

Cut central area of bramble beds/grassland in late summer and rake off arisings 1a, 1b, 2a

Cut grassland in late summer and rake off arisings 1d

Cut back vegetation to 1m along footpaths in May and July Throughout

Collect litter regularly Throughout

Install signs/interpretive board at entrances

October - March

Cut 50% of ramble beds in late autumn and rake off arisings 1a, 1b, 2a

Coppice 50% shrubs back 2 to 3m when adjacent bramble areas cut 1c, 2b

Carry out safety/arboricultural inspection of reserve annually and implement any necessary work Throughout

Cut back vegetation to 1m along footpaths in May Throughout

Clear out bird boxes in autumn Throughout
8.6  **Annual Work Programme Financial Year 2016/17**

**April - September**

Cut central area of bramble beds/grassland in late summer and rake off arisings  
1a, 1b, 2a

Cut grassland in late summer and rake off arisings  
1d

Cut back vegetation to 1m along footpaths in May and July  
Throughout

Collect litter regularly  
Throughout

Install signs/ interpretive board at entrances

Re-survey the vegetation  
Throughout

**October - March**

Cut 50% of ramble beds in late autumn and rake off arisings  
1a, 1b, 2a

Coppice 50% shrubs back 2 to 3m when adjacent bramble areas cut  
1c, 2b

Carry out safety/arboricultural inspection of reserve annually and implement any necessary work  
Throughout

Cut back vegetation to 1m along footpaths in May  
Throughout

Clear out bird boxes in autumn  
Throughout

Review management plan  
Throughout
# Appendices

## Appendix 1: Plant Species List for Tunnel Gardens Nature Reserve

From survey carried out by Alan Scott 4th February 2012

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific name</th>
<th>Abundance¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sycamore</td>
<td>Acer pseudoplatanus</td>
<td>A</td>
</tr>
<tr>
<td>Creeeping bent</td>
<td>Agrostis stolonifera</td>
<td>O</td>
</tr>
<tr>
<td>Cow parsley</td>
<td>Anthriscus sylvestris</td>
<td>A</td>
</tr>
<tr>
<td>False oat grass</td>
<td>Arrhenatherum elatius</td>
<td>F</td>
</tr>
<tr>
<td>Common daisy</td>
<td>Bellis perennis</td>
<td>O</td>
</tr>
<tr>
<td>Butterfly bush</td>
<td>Buddleia davidii</td>
<td>R</td>
</tr>
<tr>
<td>Hawthorn</td>
<td>Crataegus monogyna</td>
<td>D</td>
</tr>
<tr>
<td>Cock's-foot</td>
<td>Dactylis glomerata</td>
<td>O</td>
</tr>
<tr>
<td>Common Couch</td>
<td>Elytrigia repens</td>
<td>F</td>
</tr>
<tr>
<td>great willowherb</td>
<td>Epilobium hirsutum</td>
<td>O</td>
</tr>
<tr>
<td>Ash</td>
<td>Fraxinus excelsior</td>
<td>A</td>
</tr>
<tr>
<td>Cleavers</td>
<td>Galium aparine</td>
<td>O</td>
</tr>
<tr>
<td>Ivy</td>
<td>Hedera helix</td>
<td>A</td>
</tr>
<tr>
<td>Yorkshire-fog</td>
<td>Holcus lanatus</td>
<td>O</td>
</tr>
<tr>
<td>Holly</td>
<td>Ilex aquifolium</td>
<td>O</td>
</tr>
<tr>
<td>Garden privet</td>
<td>Ligustrum ovalifolium</td>
<td>R</td>
</tr>
<tr>
<td>Perennial rye-grass</td>
<td>Lolium perenne</td>
<td>A</td>
</tr>
<tr>
<td>Ribwort plantain</td>
<td>Plantago lanceolata</td>
<td>R</td>
</tr>
<tr>
<td>Great plantain</td>
<td>Plantago major</td>
<td>R</td>
</tr>
<tr>
<td>Blackthorn</td>
<td>Prunus spinosa</td>
<td>O</td>
</tr>
<tr>
<td>Pedunculate oak</td>
<td>Quercus robur</td>
<td>F</td>
</tr>
<tr>
<td>Creeping buttercup</td>
<td>Ranunculus repens</td>
<td>R</td>
</tr>
<tr>
<td>Dog rose</td>
<td>Rosa canina</td>
<td>F</td>
</tr>
<tr>
<td>Bramble</td>
<td>Rubus fruticosus agg.</td>
<td>D</td>
</tr>
<tr>
<td>Elder</td>
<td>Sambucus nigra</td>
<td>O</td>
</tr>
<tr>
<td>Common chickweed</td>
<td>Stellaria media</td>
<td>R</td>
</tr>
<tr>
<td>Snowberry</td>
<td>Symphoricarpos albus</td>
<td>R</td>
</tr>
<tr>
<td>Dandelion</td>
<td>Taraxacum officinale agg.</td>
<td>O</td>
</tr>
<tr>
<td>White clover</td>
<td>Trifolium repens</td>
<td>R</td>
</tr>
<tr>
<td>Common nettle</td>
<td>Urtica dioica</td>
<td>O</td>
</tr>
</tbody>
</table>

¹ **DAFOR Scale**: This provides an estimate of the relative abundance of each species recorded, whereby D = Dominant; A = Abundant; F = Frequent; O = Occasional and R = Rare.
Appendix 2: Photographs

Photograph 1
Amenity grassland area just outside reserve on side of Durnsford Road (Sub-compartment 1d)

Photograph 2
Dense young scrub (Sub-compartment 1c)

Photograph 3
Dense bramble beds (Sub-compartment 1a)
Photograph 4
Path through dense bramble beds (Sub-compartment 1a)

Photograph 5
Bramble beds and dense scrub (Sub-compartment 1b)

Photograph 6
Remnants of semi-improved neutral grassland (Sub-compartment 1b)
Photograph 7
Dense mature scrub (Sub-compartment 2b)

Photograph 8
Southern entrance from Durnsford Road

Photograph 9
Entrance to Compartment 1 from Blake Road
Photograph 10
Entrance to Compartment 2 from Blake Road

Photograph 11
Entrance to Compartment 2 from Cline Road showing derelict chainlink fence
Appendix 3: Bird Boxes

Bird boxes can be an important resource for many woodland birds. They come in a variety of different sizes and shapes to suit different species but basically they all aim to create the equivalent of a cavity in a tree or rocks etc. They are an important alternative if dead trees have to be felled and provide lasting nesting sites which are relatively safe from common garden predators such as cats, close to feeding areas. They also give essential winter protection for roosting birds. It is recommended that a range of boxes be installed on trees in all three areas. A mixture of hole fronted boxes (liked by tits, nuthatches and sparrows) and open fronted (preferred by robins and wrens) should be installed.

The exact positioning of nest boxes depends on the type of box and the species which are being targeted. However the following advice is taken from www.lincstrust.org.uk/factsheets/nestbox.php:

**Aspect**
If there is no natural shelter, it is best to mount a box facing somewhere between south-east and north, to avoid strong direct sunlight and the heaviest rain. The box should be tilted slightly forwards so that the roof may deflect the rain from the entrance.

**Height**
Whether fixed to a tree or a wall, the height above ground is not critical to most species of bird, so long as the box is clear of inquisitive humans and prowling cats.

**Predators**
It may be possible to deter predators by fixing the nest box in a thorny bush or by placing chicken-wire around the entrance, but always ensure a direct flight-path to the entrance. If squirrels or woodpeckers are a serious threat, fix a metal plate around the entrance, so that it can not be enlarged.

**Fixing**
Some authorities recommend nails to attach the box directly to a tree trunk or branch; others prefer the use of rope or wire right around the box and trunk (remembering to protect the trunk from wire cutting in by the use of a piece of rubber or the like). Both methods are satisfactory, but obviously annual maintenance is easier if the box is wired and can thus be taken down easily for cleaning.

**Number**
The number of nestboxes which can be placed in a garden depends on the species you wish to attract. Many species are fiercely territorial, such as Blue Tits, and will not tolerate another pair close by. About 2 to 3 pairs per acre is the normal density for Blue Tits. Other species such as Tree Sparrow, which are colonial nesters, will happily nest side by side.

Do not place any nest box close to a bird-table or feeding area, as the regular comings and goings of many other birds are likely to prevent breeding in the box.
More information on the design and installation of boxes can be found at  
www.lincstrust.org.uk/factsheets/nestbox.php or on the following web pages:

http://www.nestbox.co.uk

http://www.bto.org

http://www.alanaecology.com/acatalog/Bird_Boxes.html

Schwegler are possible the best make of box and are available from Alana Ecology
(http://www.alanaecology.com/acatalog/Bird_Boxes.html). They are made from a mixture
of concrete and sawdust so they have a very long life expectancy and are good for
deterring predators. However they are more expensive to buy.

Once installed the boxes should be cleaned out to remove the old nests, dead birds, etc. in
the autumn.