

TREE INSPECTION REPORT AND WOODLAND MANAGEMENT RECOMMENDATIONS: THE CHILDREN'S WOOD, NORTH KELVIN, GLASGOW



**Prepared for The Children's Wood
January 2016**

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**TREE INSPECTION REPORT, THE CHILDREN'S WOOD, NORTH KELVIN,
GLASGOW**

General Introduction and Summary:

This tree inspection has been carried out for The Children's Wood (SC 045378), with respect to trees and woodland located at The Children's Wood, North Kelvin, Glasgow. The inspection took place on 19th and 20th January 2016. Weather conditions were dry and overcast with light winds on the 19th and wet with light winds on the 20th.

The survey included a total of 57 individual trees and several areas of woodland, the locations of which are shown on the attached drawing (Drawing Number 2016/001/01).

All survey work was carried out in accordance with the recommendations contained in BS 3998:2010 '*Tree Work – Recommendations*' and BS 5837:2012, '*Trees in relation to Design, Demolition and Construction - Recommendations*'.

Standard Conditions Relating to Tree Survey Information:

1. Unless otherwise stated, tree surveys are undertaken from ground level using established visual tree assessment (VTA) methodology. The inspection is designed to determine the following:

- a. The presence of fungal disease in the root, stem, or branch structure that may give rise to a risk of structural failure of part or all of the tree;
 - b. The presence of structural defects, such as root heave, cavities, weak forks, hazard beams, included bark, cracks, and similar, that may give rise to a risk of structural failure of part or all of the tree;
 - c. The presence of soil disturbance, excavations, infilling, compaction, or other changes in the surrounding environment, such as adjacent tree removal or erection of new structures, that may give rise to a risk of structural failure of part or all of the tree;
 - d. The presence of the foregoing or any other factor not specifically referred to, which may give rise to a decline or death of the tree; and
 - e. The presence of surrounding structures, roads, footpaths, utilities, boundaries and the like where growth of the tree may present a hazard or nuisance.
2. Where further investigation is required, either by climbing or the use of specialised decay detection equipment, this will be identified in the report.
 3. The findings and recommendations contained within this report are valid for a period of twelve months. Trees are living organisms subject to change - it is strongly recommended that they are inspected at regular intervals for reasons of safety.
 4. Whilst every effort has been made to detect defects within the trees inspected, no guarantee can be given as to the absolute safety or otherwise of any individual tree. Extreme climatic conditions can cause damage to apparently healthy trees.

5. This report has been prepared for the sole use of the landowner and their appointed agents. Any third party referring to this report or relying on information contained within it does so entirely at their own risk.

General Site Description:

The Children's Wood (also known as North Kelvin Meadow) is located on former playing fields in the North Kelvin area of Glasgow. The site extends to approximately 1.43ha. The site is bounded to the south by Clouston Street, to the east by Sanda Street and to the north by Kelbourne Street and the grounds of Kelbourne Park Primary School. Tenements lie to west of the site accessed from Garrioch Road and two back lanes run adjacent to sections of the eastern and western boundaries of the site accessed from Clouston Street. The site was formerly red blaes playing fields and tennis courts but was last in use over 20 years ago. The topography of the site is generally flat, although there is a drop in levels from the former playing fields to the former tennis courts (about 50cm difference in height) and the site rises slightly towards the southern boundary. The site rises quite steeply by about a metre in height at the south eastern edge of the former football pitches to a raised area adjacent to Clouston Street. The topography of the site suggests that there has been some engineering work in the past to create levels suitable for use of the site for playing fields. There is a noticeable difference in height between the site and Kelbourne Street suggesting that the levels within north eastern part the site have been raised at some point to create the tennis courts.

A row of mature lime trees lines the southern boundary of the site bordering Clouston Street. These are protected by a Glasgow City Council Tree Preservation Order. Several other mature and middle-aged trees are found along the boundaries of the site, including a wych elm (tag number 5015), the regenerating stump of a mature white willow (tag number 5016), and a hybrid poplar (tag number 5017). Several self-set trees, mainly ash and birch are found on all boundaries of the site with the exception of the Clouston Street boundary, many of which are embedded

in the palisade boundary fence and are deformed and damaged as a result. A group of fruit trees (approximately 10) have been recently planted south of the Kelbourne Street boundary.

Since its use as playing fields was abandoned prior to 1995, the site has remained unmanaged and has been colonised mainly through natural regeneration, although some occasional planting of shrubs and trees is evident throughout the site too. Several areas of woodland dominated by pioneer species (predominately birch and willow) have established on the site (see drawing number 2016/001/01). Minor species present within the woodlands include sycamore and ash. Sapling stage ash regeneration is evident throughout the site, particularly along the western boundary and the woodland to the south east of the site. An area of neutral grassland (known as 'the meadow') with occasional young and middle-aged birch and willow has developed in the central part of the site. *Rhododendron ponticum* is invading parts of the site and will prevent colonisation by native plants. Some garden escapees are also colonising the site including *Lonicera nitida* (in the south east of the site).

Since its use as playing fields was abandoned, the site has been used for informal recreation. A network of well-used paths has developed throughout the site. One in particular, that starts at the existing pedestrian access to the site on Kelbourne Street, and ends at the south west corner of the site onto Clouston Street, is recognised as a public right of way (see Glasgow City Council's Officer's Report on planning application number 15/1223/DC).

A painted (green) metal palisade fence is found on the borders of much of the site except along the Sanda Street boundary, where it has been replaced with a chestnut pale fence. Some unmanaged privet is also well-established along parts of the Sanda Street boundary suggesting that at some stage a hedge was planted here. The fence has several holes and is damaged in places but is generally in good repair, particularly along the Clouston Street boundary. Part of the fence along the western boundary has been removed and replaced with a brick wall as part of the

development of the block of flats (on Garrioch Street) that lie adjacent to the site. A high mesh-fence set behind the remaining sections of palisade fencing extends along the western boundary. Along the western boundary of the site regeneration of various species (especially ash, birch and willow) at sapling and thicket stage is evident, some of which has been cut back. Several middle-aged birch trees are also located on this boundary, several of which are growing through the mesh fence and have been damaged as a result.

A brick building located on the south western part of the site is used by the Committee to store tools and play equipment. The building is in poor condition and requires upgrading to be made fit for purpose. A small pond has been created to the south east of the shed. Bird and bat boxes are located throughout the site as well as several bird feeders.

Since 2009 the site has been occupied by North Kelvin Meadow Green Space Initiative and since 2013, The Children's Wood, which was granted charitable status in January 2015. The site is used variously as a community garden, woodland and open space. The Children's Wood Committee promotes use of the site by the community for a range of educational and recreational activities through regular organised events as well as for informal recreational use by the wider community. The Committee has developed strong links with local schools and has regular activities for school groups run by trained Forest Schools co-ordinators. The group has recently been awarded funding for a Schools and Community Engagement Officer for one year.

The site is owned by Glasgow City Council, and lies entirely within the Glasgow West Conservation Area.

Legal Framework:

(i) Duty of Care

There is an obligation under the Occupiers Liability Act 1960 et seq. of reasonable safety owed by site owners to both visitors to and those adjacent to any site. The owner of the land may be held liable for any physical harm to person or property arising from an accident that was both reasonably foreseeable and reasonably preventable in that situation.

In order for an owner to foresee and prevent harm arising from failure, it is necessary to subject trees to 'regular inspection' by someone competent to identify defects and interpret the significance to public safety.

In law it is assumed that the owner of a tree is the owner of the land on which the tree stands. The person responsible for any tree has a 'duty of care' to ensure that all reasonable care is taken to avoid foreseeable harm to anyone on or adjacent to their land.

In practice it is never possible to eliminate all danger, so the law requires that a landowner takes reasonable care to identify possible sources of foreseeable danger and, where hazards have been identified, eliminate them as far as is possible.

Negligence is a breach of legal duty resulting in damage; for example, where a tree owner fails to take necessary action resulting in harm to people, animals or property.

(ii) Trees and Wildlife

Bats: In Britain all bat species and their roosts are legally protected, by both domestic and international legislation. In Scotland, the key legislation that

applies is the Conservation (Natural Habitats &c.) Regulations 1994 (as amended). It is criminal offence in the UK to:

1. deliberately capture, injure or kill a bat;
2. intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
3. damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
4. possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; or
5. intentionally or recklessly obstruct access to a bat roost.

Licences to permit illegal activities relating to bats and their roost sites can be issued for specific purposes by Scottish Natural Heritage. These are called 'derogation licences' or 'European Protected Species' licences, and are issued under the Habitats Regulations. It is an offence not to comply with the terms and conditions of a derogation licence. Work that affects bats or roosts undertaken without a licence is a criminal offence (see <http://www.snh.gov.uk/protecting-scotlands-nature/protected-species/which-and-how/mammals/bat-protection/> for further information).

Birds: In Scotland, all wild birds, their nests and their eggs are protected by the Wildlife and Countryside Act (1981) as amended by the Nature Conservation (Scotland) Act 2004. Further protection is offered to some species of birds that are particularly sensitive to disturbance. The amount of protection afforded to wild birds varies depending on whether the species are listed on various Schedules or Licences (see <http://www.snh.gov.uk/protecting-scotlands-nature/protected-species/which-and-how/birds/> for more information on this).

In summary, it is an offence to intentionally or recklessly:

- kill, injure or take a wild bird;
- take, damage, destroy or interfere with a nest of any wild bird whilst it is in use or being built
- obstruct or prevent any wild bird from using its nest; or
- take or destroy an egg of any wild bird.

Other species: Other protected species of wildlife may also be affected by tree works, for example, squirrels and pine martens as well as mosses and lichens (see <http://www.snh.gov.uk/protecting-scotlands-nature/protected-species/protected-species-az/> for further information).

The Proposed Development:

The Children's Wood Committee has applied to Glasgow City Council to formalise the use of the site as a community woodland and park (see Glasgow City Council planning application number 15/1223/DC).

Tree and Woodland Survey and Analysis:

The tree survey undertaken relates to 57 trees within the site boundary. The locations of these trees are plotted on the attached plan (Drawing Number 2016/001/01) and their condition, and any suggested remedial works, are set out in detail in the table at Appendix 1. This contains (where relevant) the following information with respect to each tree surveyed:

- Tree number;
- Tree species;
- Stem diameter at breast height (1.5m above ground level);
- Canopy spread (estimate in metres);
- Tree height (estimate in metres);

- Crown height (clearance to lowest branches in metres);
- Tree Condition Category (A, B, C or U);
- General condition (good, fair, poor or dead);
- Age (young, middle-aged, young-mature, mature, over-mature or veteran); and
- Whether single or multi-stemmed.

Individual trees have been tagged 3982 – 4000 and 5001 – 5037. Tag number 5003 is a group of c.15 stems of mainly young and middle-aged birch but also some young pine, maple, willow and sycamore with some seedling beech. Small trees of less than 10cm stem diameter, and areas of undergrowth, are described in general terms but have not been surveyed in detail.

Trees and groups have been categorised as follows, in accordance with the guidelines contained in BS 5837:

- **Category A** - Trees of high quality with an estimated remaining life expectancy of at least 40 years (shown in green on the attached plan);
- **Category B** - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years (shown in blue on the attached plan);
- **Category C** - Trees of low quality with an estimated remaining life expectancy of at least 10 years (shown in grey on the attached plan); and
- **Category U** - Trees in such a condition that they cannot realistically be retained in the context of the current land use for longer than 10 years (shown in red on the attached plan).

Several areas of developing woodland and scrub are also shown on Drawing Number 2016/001/01 as W1, W2 and W3 and described in general terms below. As the site

was surveyed in January a full assessment of woodland ground flora could not be undertaken. The woodland areas are all less than 20 years old and are dominated by pioneer species, particularly silver birch and goat willow.

Area W1

This copse occupies the north eastern corner of the site and is contiguous with an area of more mature woodland within the grounds of the adjacent Kelbourne Park Primary School. It is dominated by middle-aged, multi-stemmed silver birch with dense ash regeneration at sapling stage. Willow regeneration is also becoming established. Holly and hawthorn are becoming well-established along the northern boundary. Compost bins for the community garden are located on the northern boundary of the W1 with an informal network of paths providing access to them. Bramble is becoming well-established in the field layer along the western boundary and adjacent to the back lane along part of the south eastern boundary and while this is protecting the natural regeneration from trampling, it is also catching litter making it difficult to remove. Ivy is well-established in the field layer along the northern boundary of the copse and is smothering other field layer species.

Area W2

This area of developing woodland lies to the south of the site on the former pitches. The woodland is dominated by birch and willow which varies in density throughout the area. W2 has been divided into three sub-compartments (as shown on Drawing Number 2016/001/01). Compartment W2a is dominated by multi-stemmed, widely spaced birch and willow. This area is well-used for recreation and includes a small bike skills area created by local children. The south western edge of W2a rises steeply by about 1.5m up to a flat bank where the mature lime trees are located. This area does not appear to have been blaes pitch. Ash regeneration is evident above and below the bank. The land in W2a also rises up towards the eastern boundary between the site and rear gardens of the adjacent tenements. Bramble

and *Lonicera nitida* are dense in this part of the site and sycamore is also present here. W2b is also dominated by willow and birch but appears to be younger than W2a. The woodland here is denser than in W2a and there appears to be less public access. W2c is very open with only a few birch trees present.

Area W3

W3 has been divided into 2 sub-compartments (as shown on Drawing Number 2016/001/01). W3a is more established than the other woodland areas and is dominated by middle-aged birch trees and dense thicket stage regeneration of birch, willow, ash and some sycamore. There are several middle-aged and mature trees located along the boundaries of the site with Sanda Street and Kelbourne Street which pre-date the abandonment of the site. A large mature multi-stemmed white willow (tagged 5016) located on the boundary of W3 has been felled to a height of approximately one metre within the last few years but is re-growing from the cut stumps. Waste, mostly organic garden waste and arisings from the felled willow have been tipped within the north western corner of the site. The south western part of the site is a raised bank adjacent to the wall of the adjacent tenements and gardens with only scattering of young trees, several of them growing from the base of the wall. W3b is a prominent area of birch and willow regeneration on the former playing fields, contiguous with W3a.

Recommendations for Management:

Mature lime trees adjacent to Clouston Street)

The lime trees (tree numbers 3982 – 4000) along the southern boundary are a significant feature of the site and Clouston Street. The amenity value of the trees and their contribution to the character of the conservation area has been recognised by the serving of a Tree Preservation Order on 17 of the trees. The trees are generally in good condition although some deadwood is evident in the crowns of

most as would be expected of lime trees of this age. There is a cavity at 2m on the south side of the stem of tree 3987 which requires further investigation to assess the extent of the cavity and the integrity of the surrounding wood. Given the proximity of the trees to the road and pavement, complete dead wooding of several of the trees is recommended (refer to Appendix 1 for details) to avoid damage to persons or property during high winds. The lower canopies of some of the trees are beginning to encroach on the highway and it is therefore recommended that where the canopy of a tree extends over the footpath, it is raised to a height of 2.5m and where it extends over the carriageway, it is raised to a height of 5.2m to avoid damage to branches from passing high-sided vehicles. The ground conditions within the root zones of the trees are showing signs of compaction, particularly tree 3982 which has an informal path passing through its root zone extending from a hole in the fence.

The trees would all benefit from regular mulching with, for example, wood chip, pulverised bark or leaf mould combined with well-rooted animal manure, particularly in the outer root zone where the majority of the feeder roots are found. Care should be taken when applying mulch to avoid the bark of the stem and major structural roots protruding above ground as this may encourage infection from pathogens. Ivy on the trunks and excessive epicormal growth prevented detailed inspection of the lower trunks of some of the trees. Given the proximity of the trees to major targets (residential property, pavements, public road, parked cars etc.) epicormic growth and ivy should be removed from the stems and the stems kept clear to allow for regular thorough inspection. Ivy is also becoming an issue on the ground and the dense mat that is developing is smothering other plants. Effort should be made to control the ivy growth on the ground and encourage the development of a more diverse ground flora.



Photograph 1: *Lime trees (Tilia x europaea) on the Clouston Street boundary protected by Tree Preservation Order*

The established right of way passes through the root zone of tree 3999 and this has caused serious compaction within the root zone. Gentle cultivation with hand tools is recommended to aerate the soil followed by mulching and the addition of a thick layer of wood chip over the wearing surface to reduce further damage. In the long term it would be appropriate to consider installing a 'no-dig' ground protection system for the first 10m of footpath from the entrance to beyond the trees to minimise further damage (see, for example, <http://www.groundtrax.com/> or <http://www.terram.com/>).

Other Individual Trees

Several other mature and semi-mature individual trees were picked up as part of the tree survey. Several of these trees (tagged 5004, 5005, 5006, 5007, 5008, 5011, 5013, 5014) are growing through the boundary fencing of the site and are distorted, poor specimens as a result. These trees are permanently damaged and it would be

appropriate to remove them before they cause further damage to surrounding structures or fail as a result of the sustained damage. Tree 5008 has only superficial bark damage at present and could be retained and the fence re-aligned.

Tree 5016, a mature multi-stemmed white willow has been recently felled leaving a 1m high stump which is re-growing. Tree 5017, a hybrid black poplar, located on the Sanda Street boundary has been topped in the past at about 16m. Topping is a poor management practice and once a tree has been topped it will have to be managed in this way in the future. The re-growth from the cut stem has weak attachments with the scaffold branches and needs to be regularly cut back to avoid breakage. There are several pockets of decay in the stem and buttress of the tree which require more detailed assessment (with for example a PiCUS tomograph) to determine the extent of decay and integrity of the wood. This tree has a limited safe useful life and the costs of on-going management that will be required to ensure safety while the tree is retained needs to be considered in relation to the benefits of retaining it.

A number of other individual trees within the meadow area were picked up as part of the survey. These are mostly young and middle-aged self-sown birch and willow. Several are classed as A category in accordance with the guidance given in BS5837 only by virtue of the fact that they are young and have not yet developed defects than would result in a lower classification. The management of these trees is discussed below in relation to the management of the meadow area.

If the Children's Wood Committee is successful in its bid to formally take on the management of the site, it is strongly recommended that the Project Officer is trained to at least Lantra Level 1 in professional tree inspection in order to identify hazardous trees, determine the level of risk and decide on an appropriate course of action.

Woodland Management

General

The developing woodland does not form recognisable woodland communities as defined by the National Vegetation Classification but the structure of naturally developing vegetation on a brownfield site is determined primarily by the availability of local seed sources as well as the site conditions. The existing natural regeneration is dominated by silver birch and willow species with prolific ash regeneration in some areas of the site. These species are all native pioneer species associated with the initial processes of colonisation. As the process of succession continues, in this urban location seed availability is likely to be limited and is also likely to include a higher number of non-native and naturalised plants than might be found in a more rural location. It will also be influenced by human intervention (planting). The poor soil conditions will limit the species that can thrive on the site and choice of species for planting may be limited to appropriate species that can survive the harsh site conditions. The site is, however, an island refugia for wildlife in an urban landscape and locally important for biodiversity. As the woodland matures it has the potential to develop further biodiversity interests and increase in importance, providing an important link in the local habitat network.

In all of the areas of woodland described below the woodland has developed on blaes and the compacted nature of the rooting medium has resulted in poor rooting conditions and exposed roots as a result. The extent of compaction and poor rooting means that the trees on the site will be more vulnerable to windthrow as they gain height and mature. There is an urgent need throughout the site to introduce management techniques to reduce compaction and improve aeration and nutrient status of the rooting medium by soil cultivation (with hand tools to minimise damage to tree roots) and frequent mulching (with well-rotted bulky organic matter) to improve nutrient levels and encourage the development of soil

structure. All leaf litter should be left on site (within the woodland areas) or composted and returned to the root zones of the trees.



Photograph 2: *Compaction and poor rooting medium has resulted in poor rooting throughout the site leaving the trees vulnerable to windthrow.*

Ideally, the site should be zoned and mapped according to its intended use (e.g. woodland, grassland, garden, play space etc.) so that appropriate management techniques can be implemented to achieve sustainable management of the site and maximise its potential as a mosaic of woodland and grassland habitats with a diverse range of community facilities.

New planting should initially be with species appropriate for reclamation of a brownfield site that will establish and thrive on the site as well as improve the site conditions. Introduction of further pioneer species would be appropriate, particularly aspen and alder. Alder species have a symbiotic relationship with the nitrogen-fixing bacteria *Frankia alni* that exist in root nodules of the trees providing the nitrogen requirements of the plants as well as improving the nitrogen status of

the soil allowing the trees to thrive in nutrient poor soils. On reclaimed sites the native alder (*Alnus glutinosa*) sometimes does not thrive because site conditions can be too dry but Italian alder (*Alnus cordata*) and red alder (*Alnus rubra*) can both thrive in dry conditions and would be ideal for planting on this site. Aspen is another pioneer species able to colonise and thrive in poor site conditions and is known to absorb high levels of pollutants and is therefore an ideal species for land reclamation. Other species such as rowan, whitebeam, field maple, Corsican pine and hawthorn are also tolerant of reclaimed land and would be suitable for planting in The Children's Wood. Holly and hazel should be planted to help create an understorey in existing woodland areas. All new planting will require a high level of aftercare to ensure establishment including watering during extended dry periods.

Trees should be planted as 60 – 90cm forest transplants into pre-prepared cultivated beds in accordance with the specification in Appendix 3. It may be possible to establish trees without importing top-soil as specified in Appendix 3. If top-soil is not to be imported to the site, smaller planting stock should be used (1 + 1 <60cm forest transplants).

Seed sources for larger secondary species are likely to be lacking in the wider area and site conditions will be too harsh at this stage for trees to establish. It might be possible, however, to pit-plant some larger species (such as oaks) planted as advanced stock provided that they receive a high level of aftercare. Planting of some large feature trees within the meadow area or near the entrances would be appropriate but this is an expensive option that is not guaranteed success so should be limited to a few feature trees at this stage. A specification for planting advanced stock in this location is given in Appendix 4.

There are opportunities to undertake further planting of fruit trees to expand and enhance the orchard area. Pit-planting is also recommended for establishing orchard trees although smaller stock such as whips (100-125cm) or feathered whips (up to 175cm with side branches) would be appropriate planted into smaller pits

(about one third larger than the size of the trees roots), single staked with stakes no more than one third the height of the tree (and at least 60cm below ground) and backfilled as per the specification in Appendix 4.

There are significant opportunities throughout the site to enhance the biodiversity value of the woodland. Efforts should be made to introduce more plant species that benefit pollinating insects as well as species that provide winter cover and foraging habitat for birds and small mammals. Invertebrate interest could be enhanced through the development of a deadwood management plan where deadwood habitat can be safely created (see [http://www.forestry.gov.uk/pdf/FCPG020.pdf/\\$FILE/FCPG020.pdf](http://www.forestry.gov.uk/pdf/FCPG020.pdf/$FILE/FCPG020.pdf) and [http://www.english-heritage.org.uk/content/learn/conservation/2544404/LAN - the treatment of deadwood.pdf](http://www.english-heritage.org.uk/content/learn/conservation/2544404/LAN_-_the_treatment_of_deadwood.pdf)).

The Committee should consider the development of a formal biological recording and monitoring system to clearly identify species present on site and use the information to demonstrate how the value and interests of the site change and develop over time. The Committee should liaise with Biological Recording in Scotland for more help and information (see <http://www.brisc.org.uk/>). Established volunteer programmes and citizen science initiatives could potentially assist with site monitoring and recording e.g. BTO's Birdtrack (<http://www.bto.org/volunteer-surveys/birdtrack/about>), The Bumblebee Conservation Trust's BeeWalk (<http://bumblebeeconservation.org/get-involved/surveys/beewalk/>) etc. There may even be opportunities for a long-term study monitoring and assessing the rate and extent of the recovery of the site.

Rhododendron ponticum is becoming established within the site and should be removed. Removal of non-native invasive species should be an on-going management objective of site management. See <http://www.nonnativespecies.org/home/index.cfm> and

http://www.plantlife.org.uk/our_work/campaigns/inns/ for more information on how to recognise invasive species and best practice methods for their control.

Specific Management Recommendations by Compartment (refer to Drawing Number 2016/001/01):

Area W1

W1 should be managed as an amenity woodland. This attractive birch copse is well sited, providing a natural extension to the existing woodland on the adjacent site and providing separation between the community garden and the adjacent flats. Management should include the removal of some of the suppressing ground vegetation (particularly the ivy) along the northern boundary. The establishing holly should be encouraged to develop along the boundary and any encroaching laurel and *ponticum* from the adjacent site should be cut back.

Ash regeneration should be removed or thinned out so that only a few groups of stems are retained (which can eventually be thinned out in favour of the better stems left to develop into standards). The birch should be thinned out in favour of better stems to allow development of the crowns of the trees.

Young birch regeneration should be thinned in favour of single, straight stems located in more open parts of the site (e.g. the woodland edges) where they will not be suppressed by other trees and will have adequate space and light for development. Some understorey planting would be appropriate, particularly of hazel.

Soil improvement through gentle cultivation with hand tools (avoiding damage to any roots) followed by mulching should be undertaken annually to improve soil conditions.



Photograph 3: W1 with community garden in the foreground

The ground vegetation in area W1 is becoming rank and dominated by aggressive weeds. The sward would benefit from some weeding, seeding and the introduction of a mowing regime (similar to that proposed below for the meadow). Some planting of (native) bluebells and snowdrops would be appropriate, particularly along the northern and western boundaries once the ivy and bramble is under control. Care should be taken to ensure that only native bluebells (*Hyacinthoides non-scripta*) are planted and not the invasive Spanish bluebell.

The path network should be rationalised so that compaction and trampling is minimised and the areas no longer used restored through cultivation and seeding or planted with understorey species.

Area W2

For the purposes of management this compartment has been divided into 3 sub-compartments (see Drawing Number 2016/001/01 for approximate boundaries).

Compartment W2a

This area of woodland is on and below the bank running along the southern boundary and extends north into the former pitches. The woodland is dominated by widely spaced young birch and willow regeneration with thicket stage ash and sycamore regeneration along the eastern boundary adjacent to the tenements. The bottom of the bank appears to represent the southern extent of the blaes pitches and it is likely that the soil depth and conditions are more favourable on top of the bank and along the eastern boundary.

Trees growing along the eastern boundary fence should be removed to prevent further damage to the fence and the fence should be repaired. The ash and sycamore regeneration within this part of the site should be thinned in favour of the better ash specimens.

The garden escapees (particularly the *Lonicera nitida*) should be removed from the eastern strip of the site and supplementary planting should be carried out with hazel, holly. Several of the established birch trees within this area have developed stem sweep and should be removed once the ash saplings are more established. The aim here should be to encourage the development of low-growing woodland with occasional large trees so that the woodland does not become so dense that it causes excessive shading of the adjacent flats.

The ash, birch and willow regeneration along the edge of the bank should be thinned out and managed as coppice as it is likely to be vulnerable to windthrow. A coppice cutting cycle of about 7 years should be suitable and will guarantee a steady supply of woodfuel, arisings for deadwood management etc. The birch and willow on the former pitches is widely spaced in W2a and the area is clearly well-used for activities and events. This part of the site should be managed to encourage development of mature birch standards in groups with some willow with maintained open space between the groups to accommodate on-going recreational

use of the area. Cultivation and mulching of the ground within the tree groups should be undertaken to improve soil conditions. Some supplementary planting with alder species would be appropriate in these groups following the specification in Appendix 3 provided suitable aftercare can be provided.



Photograph 4: *Lonicera nitida*, a garden escapee, in Compartment W2a

Compartment W2b

This is a denser area of regeneration with paths running along the edges rather than through it. The area should be thinned in favour of better specimens and underplanted with additional species to improve its biodiversity value. Soil improvement through gentle cultivation with hand tools (avoiding damage to any roots) followed by mulching should be undertaken annually to improve soil condition

Compartment W2c

This compartment is very open with just a scattering of middle-aged birch trees

which should be retained. The compartment provides an excellent opportunity for establishing new planting with alder species to the specification in Appendix 3, provided suitable aftercare can be provided.

Area W3

Compartment W3a

Area W3 is the largest woodland area on the site. It is dominated by semi-mature and thicket stage birch which has developed over the former tennis courts. The site is heavily used for group activities and trampling will inevitably limit the development of ground cover and understory species in some areas. Ideally this area of woodland should be 'zoned' for use, so that areas for recreation and community use can be defined and managed with these uses as the principal management objective allowing the remaining areas to be managed with woodland development and management as the principal objective.

Shallow rooting due to compaction is an issue throughout W3 and soil improvement through gentle cultivation with hand tools and regular mulching will be essential to improving site conditions in the long term. Colonising *Rhododendron ponticum* within W3a should be removed and replaced with alternative non-invasive species (e.g. holly and hazel).

Dense thicket stage birch regeneration is evident throughout the site with willow particularly in the southern part of the compartment. This should be heavily thinned leaving only the better specimens and supplementary planting with alternative species should be undertaken in accordance with the specification in Appendix 3. A high level of aftercare will be required to ensure successful establishment.

The ash and sycamore establishing along the southern boundary of W3a immediately adjacent to the walls of the tenements and gardens should be removed

to avoid future structural damage to the walls. It may be necessary to cut to ground level and treat the stumps with a systemic herbicide such as glyphosate as it is unlikely that the root systems can be removed. On-going weeding along this boundary will be necessary to prevent further tree establishment.

Compartment W3b

This is a prominent small area of woodland opposite the main pedestrian entrance to the site. The sensory garden lies immediately adjacent to it. Currently the group is dominated by birch and willow regeneration but there is scope to enhance and extend this area of woodland through further planting.

Given its prominence and the more intensive use of the area, introduction of additional species to provide colour, shade and structure to the site to enhance the users experience would be appropriate. The ground conditions clearly restrict the species but rowan, alder species, whitebeam and Corsican pine, planted in groups of 3-5 would introduce colour and diversity into the area. Pit-planting is also recommended for establishing trees in this area. Trees planted as whips (100-125cm) or feathered whips (up to 175cm with side branches) would be appropriate planted into pits about one third larger than the size of the trees roots, single staked with stakes no more than one third the height of the tree (and at least 60cm below ground) and backfilled as per the specification in Appendix 4.

In the existing woodland area soil improvement through gentle cultivation with hand tools (avoiding damage to any roots) followed by mulching should be undertaken annually to improve soil conditions. Some additional planting could be undertaken to improve diversity.

The existing woodland should be thinned in favour of the better birch specimens.



Photograph 5: Existing woodland in Compartment W3b

Recreation and Access

Currently there is a dense network of paths through the site, indicative of the high level of use the site receives. The resulting erosion and compaction is preventing vegetation from establishing in many areas. Work is progressing to formalise a path network through the site by delineating the preferred paths with woodchip. Ideally once the permanent path network is defined within the woodland areas, the other areas should be cultivated and planted to deter further use and to encourage development of field and understorey layers to the woodland. Once the permanent footpath network is well-defined and vegetation is established on the adjacent areas, the footpaths outwith the woodland areas could be scrapped back to the underlying blaes which is hardwearing and compact and with regular maintenance to remove leaf mould, fill holes etc. will provide an appropriate permanent wearing surface. Within the woodland areas on-going protection of the tree root systems will be required to minimise damage. Installation of 'no-dig' ground protection

systems for heavily used footpaths and events areas could be considered or alternatively, on-going regular application of woodchip.



Photograph 6: *Work is progressing to delineate the path network through the site using woodchip*

The site is currently used by less-able visitors but wheelchair access within the site is limited. There are significant opportunities within the site to improve disabled access, particularly at the pedestrian access point at Kelbourne Road where the current gradient is too steep (>1:12) to be recognised as suitable for disabled access. The Countryside for All/ Fieldfare Trust provides advice on widths, gradients, access control designs and management of sites for all-abilities access (see http://www.fieldfare.org.uk/?page_id=53). Paths for All can provide technical support and advice on path construction and may be able to provide advice on funding opportunities (see <http://www.pathsforall.org.uk/pfa-home> or contact on info@pathsforall.org.uk). Upgrading of the Kelbourne Street access will not provide all-abilities access into the main woodland area however, due to the difference in site levels, and it would therefore be necessary to create a ramp or an alternative

point of access. There is, however, an opportunity to create a further pedestrian access from the corner of Sanda Street and Kelbourne Street directly into the woodland where a clearing already exists in the boundary woodland. Currently this area of the woodland suffers fly-tipping and a formal use and management of the area might discourage further misuse of the site. The site levels within this part of the site do not readily lend themselves to the creation of a DDA compliant access, but an engineered path could be created which would allow direct disabled access into the woodland.

Ideally, a permanent vehicular access should be created into the site and an access route maintained open to allow access to the edge of the woodland areas to assist with future management of the site (particularly felling and extraction within the woodland areas) as well as events management. A locked gate at the entrance would prevent unauthorised vehicular access.

The site is heavily used for informal recreation as well as for events and regular group activities run by the Children's Wood Committee. There are significant opportunities to formalise the facilities within the site. More urgently, adequate waste facilities need to be provided within the site, particularly dog waste bins and litter bins. Ideally at least three dog waste bins should be installed; one at the Cloutson Street entrance, one at the Kelbourne Street entrance and one within the site beside the footpath and the meadow. Facilities currently exist on the site for litter disposal and separation of litter for recycling. Bins are all emptied and maintained by volunteers. Again, waste disposal and recycling facilities need to be formalised. The Keep Scotland Beautiful campaign may be able to provide further advice and support on this as well as training for volunteers

<http://www.keeptoscotlandbeautiful.org/our-services/community-support/>.

The site contains some signage and temporary interpretation most of which is in poor repair or temporary in nature. The site would benefit from the development

of an interpretation strategy which involves erecting formal interpretation and information boards at strategic points within the site and at entrances.

Meadow

The meadow area is an important community resource that is well-used for informal recreation. As a result, it experiences a high level of trampling. The Committee's aspiration is to develop the area into a wildflower meadow but it is likely that continued heavy use of the area is likely to limit the success of this. It is therefore recommended that the central area is maintained as an area for intensive use while the peripheries and western site boundary are managed as wildflower meadows. Successful establishment of wildflowers requires low fertility, particularly for the establishment of calcareous grassland. Blaes is generally quite alkaline suggesting that the site would be suited to the development of a calcareous grassland.

However, it would be appropriate to undertake soil testing to determine the pH and nutrient status of the soil prior to progressing work on site. A lower pH may dictate that it would be more appropriate to develop neutral grassland using a general use seed mix. Soil testing will also determine whether the growing medium is nutrient deficient and inform the management of the site in terms of use of soil ameliorants (i.e. fertilisers). Following the selection of areas to be developed as wildflower meadow, the areas should be rotovated to remove existing vegetation) or dug over into the growing medium. Existing trees (particularly those tagged 5019 – 5023) should be removed from the open areas to aid future management of the site, although a few of the better birch specimens could be retained as feature trees if it was considered to be appropriate. Following weed removal, the surface of the ground should be broken up with a rake into a fine tilth during dry, calm weather to avoid soil erosion. A seed mix suited to the site (see Appendix 5 for suggested species mixes) with a ratio mix of grass seed: wildflower seed of 4:1 at a rate of 2-5 should then be sown at a rate of 2-5g/m². Local (Scottish) suppliers (e.g. <http://www.scotiaseeds.co.uk/>) should be able to provide seed of Scottish provenance. If sowing by hand, the seed should be mixed with damp sand or

sawdust to aid even distribution and to allow the sower to see where the seed has fallen. If there is a prolonged dry spell following sowing, light watering will aid germination. Birds and other seed predators should be kept off the areas sown as far as possible. It may also be necessary to exclude people from the areas (by, for example delineating the areas with steel fencing pins or bamboo canes and barrier tape with information panels explaining the purposed).

In order to maintain and develop biodiversity interest it will be necessary to mow the meadow areas. In the first year the emerging meadow should be cut to maintain the sward at height of 10-15cm (but not less than 5cm). Cuttings should be removed from the site to retain low fertility. In the second and subsequent years the meadow will require cutting at least once, preferably in late summer/early autumn once the plants have flowered and set seed. An occasional spring cutting will help to keep pernicious weeds (e.g. nettle, docks, dandelions etc.) and developing scrub in check, although hand pulling or spot spraying with an approved herbicide may be more suitable management for small meadow areas.



Photograph 7: *Meadow area with willow natural regeneration*

Boundaries

The metal palisade fence which extends along much of the site boundary is a feature of the area, particularly the Clouston Street and Kelbourne Street boundaries. Most of the fence is still present on site but is being damaged in places by tree regeneration. The trees growing through the fence are generally poor specimens that are damaged to a point that they will have reduced life expectancies. The roots of some of the trees on Kelbourne Street are also damaging the pavement.



Photograph 8: *Trees damaging the boundary fence on Kelbourne Street*

Ideally all of the boundary trees that are growing through the fence should be removed and the fence repaired. There are significant opportunities along the boundaries, particularly the Kelbourne Street boundary to establish trees set back from the boundary. Species such as rowan and whitebeam would create an attractive feature along the boundary to the west of the entrance. To the east of the entrance, bordering the woodland along Kelbourne Street and along the Sanda Street boundary it would be appropriate to establish a hedge. A suitable

specification for the hedge is provided in Appendix 6. Some hawthorn is already establishing along this boundary, indicating that the conditions are suitable for this species. Other existing natural regeneration, including sycamore and ash could be incorporated into the hedge provided it is subsequently managed as a hedge by frequent cutting and not allowed to develop into standard trees. Preparation of the ground for hedge planting also offers the opportunity to incorporate spring flowering bulbs into the planting.

The western boundary is currently unmanaged and dense natural regeneration is developing. Some trees are already growing through the fences and are damaged as a result (e.g. tree 5004) and should be removed. As discussed above, there is an opportunity to manage the western margin of the site as a wildflower meadow in accordance with the advice given above.

Funding Opportunities

The site lies within the priority area for Woodland In and Around Towns (WIAT) funding through the Forestry Commission Scotland's Forestry Grant Scheme (see <https://www.ruralpayments.org/publicsite/futures/topics/all-schemes/forestry-grant-scheme/woodland-improvement-grant/woods-in-and-around-towns/>).

Should The Children's Wood Committee be successful in its bid to formally take on the management of the site, it is strongly advised that the funding opportunities available through WIAT are explored with the FCS Woodland Officer (based in the Central Scotland Conservancy Office centralscotland.cons@forestry.gsi.gov.uk) for the area. WIAT funds a variety of works including footpath creation, repair and maintenance, installation of interpretation boards, litter bins and outdoor furniture etc. as well as woodland creation and management.

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January 2016

KEY TO TREE SURVEY SCHEDULE

All measurements in metres unless otherwise stated

No	Tree/Group number as shown on survey plan
Species	Common name
Ht	Tree height (approximate)
DBH	Stem Diameter at Breast Height, measured at 1.5 m above ground level
Canopy Spread	Average canopy radius
C. Ht	Crown height indicating clearance from ground level to lowest branches
Age	Life stage (e.g. young (Y), middle-aged (M-A), young-mature (Y-M), mature (M), over-mature (OM) or veteran (V))
BS Cat	British Standard 5837:2012 tree categorisation (A, B, C or U)
Comments	Comments on any observed defects within the root zone or affecting the root system, stem or main branches of the tree
Recommendations	Description of any recommended remedial tree work operations to be carried out

TREE SURVEY SCHEDULE

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
3982	Lime-common (<i>Tilia x europaea</i>)	0.45	3,1,2,3	20	1	B1	Good	M	1	Restricted rooting due to ground conditions. Canopy 1-sided. Soil compaction within root zone.	Remove ivy and keep stem and buttress clear. Mulch root zone and block up hole in fence to reduce further compaction.
3983	Lime-common	0.5	3,1,3,2	21	2	B1	Good	M	1	Restricted rooting due to ground conditions. Excessive epicormic growth. Minor dead wood (<50mm diameter). Canopy 1-sided.	Remove ivy and keep stem and buttress clear. Remove epicormic growth. Mulch root zone.
3993	Lime-common	0.55	2,3,3,2	21	3	A1	Good	M	1	Restricted rooting due to ground conditions. Ivy growth obscuring detailed assessment. Minor dead wood (<50mm dia).	Remove ivy and keep stem and buttress clear. Remove epicormic growth. Mulch root zone. Lift canopy over footpath to a height of 2.5m.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
3984	Lime-common	0.55	4,5,1,2	20	2	B1	Good	M	1	Restricted rooting due to ground conditions. Minor dead wood (<50mm dia).	Remove epicormic growth and keep buttress clear. Mulch root zone. Lift canopy over footpath to a height of 2.5m.
3985	Lime-common	0.7	4,3,2,2	21	2	B1	Good	M	1	Restricted rooting due to ground conditions. Ivy growth obscuring detailed assessment. Major dead wood (>50mm dia). Forks at 2.5m.	Remove epicormic growth and ivy and keep stem and buttress clear. Mulch root zone. Remove deadwood. Raise crown over pavement to height of 2.5m.
3986	Lime-common	0.55	5,4,2,2	22	2	B1	Good	M	1	Restricted rooting due to ground conditions. Ivy growth obscuring detailed assessment. Minor dead wood (<50mm dia).	Remove epicormic growth and ivy and keep stem and buttress clear. Mulch root zone. Remove tipped waste from root zone. Raise crown over pavement to height of 2.5m.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
3987	Lime-common	0.7	5,3,1,2	23	2	C1	Fair	M	1	Restricted rooting due to ground conditions. Ivy growth obscuring detailed assessment. Major dead wood (>50mm dia). Stem lean. Minor cavity at approximately 2m (south side).	Remove ivy and keep stem and buttress clear. Mulch root zone. Remove tipped in root zone. Raise crown over pavement to height of 2.5m. Further investigation of cavity required to assess extent and integrity of surrounding wood.
3988	Lime-common	0.6	4,3,2,2	20	2	B1	Good	M	1	Restricted rooting due to ground conditions. Storm damage. Major dead wood (>50mm dia). Hanging branch at approximately 4m (north side of crown).	Remove epicormic growth and ivy and keep stem and buttress clear. Remove deadwood. Aerial inspection of broken stem should be undertaken when deadwood is removed from the crown. Mulch root zone and remove tipped waste. Raise crown over pavement to height of 2.5m. Remove hanging branch.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
3989	Lime-common	0.6	5,5,3,3	24	2	B1	Good	M	1	Restricted rooting due to ground conditions. Excessive epicormic growth. Major dead wood (>50mm dia).	Remove deadwood. Remove epicormic growth and ivy and keep stem and buttress clear. Mulch root zone. Raise crown over pavement to height of 2.5m.
3990	Lime-common	0.3	3,3,1,2	17	3	B1	Good	M-A	1	Restricted rooting due to ground conditions. Excessive epicormic growth. Canopy suppressed.	Growing directly adjacent to boundary fence which will eventually cause it damage. Being suppressed by 3989. Mulch root zone.
3991	Lime-common	0.3	2	16	5	A1	Good	M-A	1	Restricted rooting due to ground conditions. Ivy growth obscuring detailed assessment.	Remove ivy and keep stem and buttress clear. Mulch root zone.
3992	Lime-common	0.55	4,3,4,3	24	2	B1	Good	M	1	Restricted rooting due to ground conditions. Excessive epicormic growth. Major dead wood (>50mm dia).	Remove epicormic growth and keep stem and buttress clear. Remove deadwood. Mulch root zone.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
3994	Lime-common	0.5	5,4,2,2	23	2	B1	Good	M	1	Restricted rooting due to ground conditions. Minor cavity/decay in stem. Excessive epicormic growth. Minor dead wood (>50mm dia).	Remove epicormic growth and keep stem and buttress clear. Mulch root zone.
3995	Lime-common	0.5	3,3,2,2	22	2	B1	Good	M	1	Restricted rooting due to ground conditions. Excessive epicormic growth. Minor dead wood (>50mm dia).	Remove epicormic growth and keep stem and buttress clear. Mulch root zone.
3996	Lime-common	0.65	4,4,2,3	22	2	B1	Fair	M	1	Restricted rooting due to ground conditions. Poor crown structure. Excessive growth from previous pruning cuts. Adventitious shoots on scaffold branches.	Remove epicormic growth and keep stem and buttress clear. Prune to restore crown structure. Mulch root zone.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
3997	Lime-common	0.6	5,4,4,1	24	2	B1	Good	M	1	Restricted rooting due to ground conditions. Excessive epicormic growth. Minor dead wood (<50mm dia).	Remove epicormic growth and keep stem and buttress clear. Mulch root zone.
3998	Lime-common	0.4	5,4,1,2	21	2	B1	Good	M	1	Restricted rooting due to ground conditions. Minor dead wood (<50mm dia). Excessive epicormic growth.	Remove epicormics growth and keep stem and buttress clear. Mulch root zone. Lift crown over pavement to a height of 2.5m.
3999	Lime-common	0.6	1,3,2,3	22	2	B1	Good	M-A	1	Restricted rooting due to ground conditions. Stem lean. Excessive epicormic growth. Minor dead wood (<50mm dia).	Remove epicormic growth and keep stem and buttress clear. Mulch root zone. Heavy use of the footpath passing through the root zone has caused compaction. Ground protection system required to reduce further damage to root zone.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
4000	Lime-common	0.45	5,3,3,4	22	2	B1	Good	M	1	Excavations/level changes in root zone. Excessive epicormic growth. Stem lean. Branches affecting adjacent structure. Minor dead wood (<50mm dia).	Remove epicormics growth. Waste tipped in root zone of 4000 and 3999 should be removed. Top back secondary growth on western side of tree to avoid contact with adjacent building.
5001	Lime-common	0.2	2,1,3,1	12	1	B1	Good	Y	1	Restricted rooting due to ground conditions. Canopy 1-sided.	Consider early removal.
5002	Hawthorn (<i>Crataegus monogyna</i>)	0.4	2	12	3	C1	Fair	M	M	Restricted rooting due to ground conditions. Major crown dieback.	Remove deadwood and retain.
5003	Various spp.	0.15	10x7	14	3	A1	Good	Y	1	Copse of c.15 stems mostly birch but also maple, lime, pine, sycamore. All young. Located on western boundary.	Thin in favour of better specimens and remove any stems within 60cm of the boundary fence. Consider transplanting smaller stems to more appropriate locations.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
5004	Birch-silver (<i>Betula pendula</i>)	0.3	2	16	0	C1	Fair	Y-M	M	Physical damage to buttress. Included bark, compression fork. Growing into boundary fence. Damage to 2 stems.	Consider early removal.
5005	Whitebeam (<i>Sorbus aria</i>)	0.25	2	14	0	C1	Fair	M	1	Restricted rooting due to ground conditions. Excavations/level changes in root zone. Growing through metal fence. Stem deformed. Physical damage to buttress. Physical damage to bark.	Consider early removal.
5005	Elder (<i>Sambucus nigra</i>)	0.25	1,2,3,3	<5	0	C1	Poor	O-M	M	Restricted rooting due to ground conditions. Multi-stemmed elder. Several dead stems. Copse of younger elder and hawthorn stems to the east. Surrounded by bramble.	Make safe dead stems and retain.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
5006	Ash (<i>Fraxinus excelsior</i>)	0.4	2,4,1,3	14	1	C1	Fair	Y-M	M	Restricted rooting due to ground conditions. Growing into boundary fence. Some stems already removed. Lower stem and buttress deformed from metalwork.	Consider early removal.
5007	Ash	0.45	2,2,3,1	14	1	C1	Fair	Y-M	M	Restricted rooting due to ground conditions. Growing into boundary fence. Metalwork embedded in trunk. Stems deformed. Physical damage to buttress. Physical damage to bark	Consider early removal.
5008	Ash	0.45	3	16	2	B1	Good	Y-M	1	Restricted rooting due to ground conditions. Fence embedded in trunk but could be removed without causing more damage to tree.	Remove fence where it is touching trunk and re-align fence or consider early removal of the tree.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
5009	Ash	0.3	3	14	4	B1	Good	Y-M	1	Restricted rooting due to ground conditions.	If tree is retained in the long-term the fence will become embedded in the trunk. Either remove section of fence to allow tree to develop without damage or remove tree and replant back from boundary.
5010	Ash	0.15	1	11	5	B1	Good	Y	1	Located on boundary. No current issues but limited rooting to north. Group of pole stage hawthorn and ash to east.	Retain thorn and remove ash from the group of saplings.
5011	Sycamore (<i>Acer pseudoplatanus</i>)	0.25	3	16	3	B2	Good	Y-M	1	Restricted rooting due to ground conditions. Metalwork embedded in stem. Young ash growing from buttress	Consider early removal of the sycamore. Also remove 2 young ash stems to east.
5012	Ash	0.3	2	10	3	B1	Good	M-A	1	Restricted rooting due to ground conditions. Included bark, compression fork.	Retain in medium term.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
5013	Ash	0.3	2	10	4	B1	Fair	M-A	1	Restricted rooting due to ground conditions. Fence embedded in trunk. Young sycamore, ash and thorn stems to east.	Consider early removal. Remove young sycamore and ash and retain thorn.
5014	Sycamore	0.65	4	18	3	B1	Good	Y-M	M	Restricted rooting due to ground conditions. Bark necrosis. Stems embedded in fence. One ash stem also growing from buttress.	Consider early removal.
5015	Elm – wych (<i>Ulmus glabra</i>)	0.65	3	12	3	B1	Good	M	M	Restricted rooting due to ground conditions. Distended buttress. Root plate may have lifted at some stage but appears to be stable. Stems on north-side (over pavement) removed.	Retain and monitor.

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
5016	Willow-white (<i>Salix alba</i>)	1	1	<5	3	A1	Good	M	M	Restricted rooting due to ground conditions. Recently cut to 1m in height. Coppice re-growing (c. 2yrs worth).	Removed tipped material and garden waste in root zone.
5017	Poplar-black hybrid (<i>Populus x canadensis</i>)	1.25	5,3,6,4	23	4	C1	Fair	O-M	1	Restricted rooting due to ground conditions. Several pockets of decay evident in buttress and throughout stem. Several stem wounds leaving exposed wood. Previously topped at 16m.	Needs re-pollarding/cutting. Extent of decay and integrity of wood needs further assessment using, for example, PiCUS or similar.
5018	Sycamore	0.35	3	15	3	B1	Fair	Y-M	1	Restricted rooting due to ground conditions. Low vigour, poor shoot extension, thin foliage.	Remove epicormic growth and keep stem clear.
5019	Birch-silver	0.2	2	10	1	A1	Good	M-A	M	Some excavation in root zone.	
5020	Willow-goat (<i>Salix caprea</i>)	0.3	2	6	0	B1	Good	Y	M	Group of 3 young multi-stemmed willows.	

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
5021	Willow-goat	0.3	2	7	0	B1	Good	Y	M	Group of two multi-stemmed young willow. Large buddleja (partially uprooted) also in group.	
5022	Willow-goat	0.15	1	5	1	A3	Fair	Y	1	Stem wound, exposed timber remains sound.	
5023	Willow-goat	0.4	2	9	1	B1	Fair	M-A	M	Included bark, compression fork. Stem wound, exposed timber remains sound. Growing in group with one birch and one willow both <10cm dbh.	
5024	Birch-silver	0.15	1	7	1	A1	Good	Y	M	Roots exposed. One stem previously removed.	
5025	Birch-silver	0.25	2	14	1	A1	Good	M-A	1		
5026	Birch-silver	0.2	2	10	3	B1	Good	M-A	1	Roots exposed. Roots exposed. Crown previously lifted.	

Tag No	Species	DBH	Canopy	Ht.	C. Ht.	BS Cat	Condition	Age	Stems	Comments	Recommendations
5027	Birch-silver	0.15	1	9	1	A1	Good	Y	M		
5028	Birch-silver	0.15	1	6	0	A1	Good	Y	M		
5029	Birch-silver	0.2	2	11	1	A1	Good	M-A	1		
5030	Willow-goat	0.3	2	<5	0	B1	Good	Y	M		
5031	Willow-goat	0.3	2	5	0	A1	Good	Y	1	Digging within root zone. Some bark damage.	
5032	Birch-silver	0.4	2	10	0	A1	Good	Y	M		
5034	Birch-silver	0.25	2	12	0	A1	Good	M-A	1		
5033	Willow-goat	0.4	3	9	3	A1	Good	M-A	M		
5035	Birch-silver	0.1	1	8	1	A1	Good	Y	1		
5036	Willow-goat	0.4	2	8	0	A1	Good	M-A	M		
5037	Birch-silver	0.15	1	12	1	A1	Good	M-A	1		

HISTORIC MAPS



Map 1: 1st edition OS plan (Dumbartonshire sheet XXVIII), published 1864) showing the approximate location of the site circled in red (from <http://maps.nls.uk/>)



Map 2: 2nd edition OS plan (Dunbartonshire sheet XXV N.E. & XXVI N.W., published 1899 showing the approximate location of the site circled in red (from <http://maps.nls.uk/>)

SPECIFICATION FOR TREE PLANTING

Where necessary, and outwith the root protection areas of existing trees to be retained, the following soil treatment should be undertaken in areas to be planted:

- The existing sub-soil base should be cultivated to a depth of 200mm;
- All pernicious weeds, roots, stones greater than 45mm, bricks and other non-organic material should be removed where possible; and
- Where necessary good quality, weed-free top- soil should be imported to the site, graded as specified in accordance with BS 3882:2007 Specification for Top-soil and Requirements for Use and spread to a depth of 300mm for planted area.

Where soil improvement is required within the root zones of trees, the following treatments should be undertaken:

- Aggressive weeds and grasses should be sprayed off during the growing season prior to planting;
- Localised cultivation of soil with hand tools to a depth of 200mm should be undertaken where possible;
- All pernicious weeds, roots, stone greater than 45mm, bricks and other non-organic material should be removed where possible;
- The ground to be planted should be mulched;
- Where necessary good quality, weed-free top- soil should be spread within the root zones of trees, graded as specified in accordance with BS 3882:2007 Specification for Top-soil and Requirements for Use.

Following ground preparation, tree planting will be undertaken as follow:

- Plants should be 1 + 1 60- 90cm bareroot transplants and comply with BS 3639:1992 Nursery Stock Specification for Trees and Shrubs;
- Plants should be notch planted and protected with 40cm spiral rabbit guards and supported with 75cm stakes or canes;
- Plants should be planted in single-species groups of 3-5 plants at 60-100cm spacings ;
- All planting should take place between October and March.
- All planting should be maintained to establishment with regular mulching, weeding, watering and feeding as necessary.

PROPOSED SPECIFICATION FOR PLANTING OF ADVANCED TREE STOCK

Tree planting with advanced stock (e.g. sessile oak (*Quercus petraea*) or English oak (*Q. robur*) should be to the following specification:

- All trees should be root-balled heavy standards, 12-14cm girth and 3-4m in height;
- All stock should comply with BS 3639:1992 Nursery Stock Specification for Trees and Shrubs;
- The excavated planting pits should be of sufficient size to accommodate the root-ball or container, allowing approximately 500mm clearance around the root ball. Before planting the sides of the pit should be broken up and the base dug over to a depth of 150mm to improve drainage. If natural drainage in the pits is found to be poor, a drainage layer (200mm of gravel covered with terram) should be included below the base of the pit;
- Trees should be planted to nursery mark;
- Trees should be back-filled with 50% excavated material (if it is appropriate for use, if not top soil should be imported to the site for this purpose – see below) mixed with 50% peat-free planting compost and 100g bonemeal;
- Where necessary good quality, weed-free top- soil should be imported to the site to be used as backfill for pit planting of trees. This should be graded as specified in accordance with BS 3882:2007 Specification for Top-soil and Requirements for Use;
- Backfill should be firmed in around the rootball to prevent any air pockets;
- An irrigation system should be installed with each tree. Pipe diameter should be approximately 60mm with a securable cap. The pipe should be installed approximately 250mm below the finished level and should protrude from the finished ground level by between 10mm-50mm;

- Each tree should be secured using the guying system shown below;
- At completion of planting all trees should be watered to field capacity to ensure settlement of backfilling pit. Following settlement, ground levels should be made up with backfill mix as necessary;
- Following settlement, an organic mulch should be applied to each tree pit to a depth of 50mm – 75mm;
- The trees should be water as required to maintain healthy growth following planting and during periods of drought. Watering should commence following 10 consecutive days of no rainfall during the months of April – September.
- All trees should be given an application of an approved slow release top dressing at the rate of 40g/m² in May each year (e.g. Enmag or similar) and a bark mulch applied and maintained at an even depth of approximately 50-75mm.

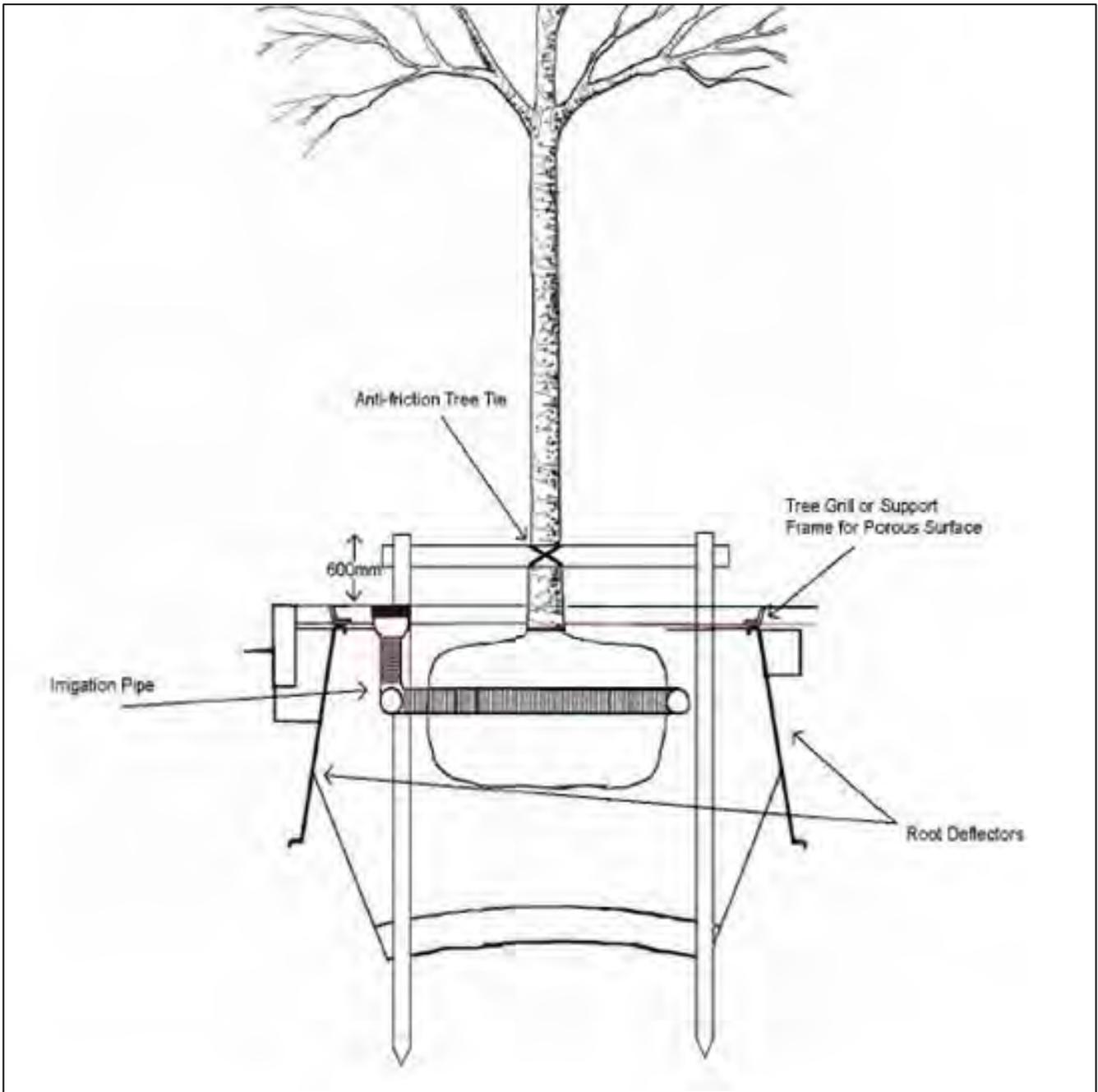


Figure 1: Proposed guying system for advanced stock.

WILDFLOWER MEADOW SEED MIXES

Table 1: General Use Seed Mix

Common name	Scientific name	Common name	Scientific name
Yarrow	<i>Achillea millefolium</i>	Ribwort Plantain	<i>Plantago lanceolata</i>
Common Bent	<i>Agrostis capillaris</i>	Hoary Plantain	<i>Plantago media</i>
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>	Smooth Meadow-grass	<i>Poa pratensis</i>
Betony	<i>Betonica officinalis</i>	Tormentil	<i>Potentilla erecta</i>
Common Knapweed	<i>Centaurea nigra</i>	Salad Burnet	<i>Poterium sanguisorba</i> ssp. <i>sanguisorba</i>
Greater Knapweed	<i>Centaurea scabiosa</i>	Cowslip	<i>Primula veris</i>
Wild Carrot	<i>Daucus carota</i>	Selfheal	<i>Prunella vulgaris</i>
Foxglove	<i>Digitalis purpurea</i>	Bulbous Buttercup	<i>Ranunculus bulbosus</i>
Red Fescue	<i>Festuca rubra</i>	Common Sorrel	<i>Rumex acetosa</i>
Lady's Bedstraw	<i>Galium verum</i>	Wild Clary	<i>Salvia verbenaca</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>	Red Campion	<i>Silene dioica</i>
Oxeye Daisy	<i>Leucanthemum vulgare</i>	White Campion	<i>Silene latifolia</i>
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	Night-flowering Catchfly	<i>Silene noctiflora</i>
Musk-mallow	<i>Malva moschata</i>	Devil's-bit Scabious	<i>Succisa pratensis</i>
Black Medick	<i>Medicago lupulina</i>	Goat's-beard	<i>Tragopogon pratensis</i>
Field Forget-me-not	<i>Myosotis arvensis</i>		

Table 2: Seed Mix for Alkaline Conditions

Common name	Scientific name	Common name	Scientific name
Yarrow	<i>Achillea millefolium</i>	Common Rock-rose	<i>Helianthemum nummularium</i>
Agrimony	<i>Agrimonia eupatoria</i>	Field Scabious	<i>Knautia arvensis</i>
Common Bent	<i>Agrostis capillaris</i>	Oxeye Daisy	<i>Leucanthemum vulgare</i>
Kidney Vetch	<i>Anthyllis vulneraria</i>	Common Toadflax	<i>Linaria vulgaris</i>
Betony	<i>Betonica officinalis</i>	Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>
Quaking-grass	<i>Briza media</i>	Black Medick	<i>Medicago lupulina</i>
Upright Brome	<i>Bromopsis erecta</i>	Wild Marjoram	<i>Origanum vulgare</i>
Common Knapweed	<i>Centaurea nigra</i>	Mouse-ear-hawkweed	<i>Pilosella officinarum</i>
Greater Knapweed	<i>Centaurea scabiosa</i>	Hoary Plantain	<i>Plantago media</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>	Smooth Meadow-grass	<i>Poa pratensis</i>
Wild Carrot	<i>Daucus carota</i>	Salad Burnet	<i>Poterium sanguisorba</i> ssp. <i>sanguisorba</i>
Sheep's-fescue	<i>Festuca ovina</i>	Cowslip	<i>Primula veris</i>
Meadowsweet	<i>Filipendula ulmaria</i>	Selfheal	<i>Prunella vulgaris</i>
Dropwort	<i>Filipendula vulgaris</i>	Small Scabious	<i>Scabiosa columbaria</i>
Hedge Bedstraw	<i>Galium album</i>	Goat's-beard	<i>Tragopogon pratensis</i>
Lady's Bedstraw	<i>Galium verum</i>	Common Vetch	<i>Vicia sativa</i>

from [http://www.forestry.gov.uk/pdf/BPG_15.pdf/\\$FILE/BPG_15.pdf](http://www.forestry.gov.uk/pdf/BPG_15.pdf/$FILE/BPG_15.pdf)

SPECIFICATION FOR HEDGE

Planting of a mixed hedge around the boundary of woodland (east of the pedestrian entrance on Kelbourne Street) should be to the following specification. Existing young and establishing plants of suitable species (e.g. hawthorn, elder, beech, ash, sycamore) that are establishing on the site naturally should be incorporated into the hedge provided they are set back from the boundary and not likely to cause future damage to pavements, walls, fences or other structures. The remaining privet hedge on Sanda Street should be coppiced and incorporated in the line of the new hedge.

Where soil improvement is required to prepare ground for hedge planting, the following treatments should be undertaken:

- Aggressive weeds and grasses should be sprayed off during the growing season prior to planting;
- Localised cultivation of soil with hand tools to a depth of 200mm should be undertaken where possible;
- All pernicious weeds, roots, stone greater than 45mm, bricks and other non-organic material should be removed where possible;
- The ground to be planted should be mulched;
- Where necessary good quality, weed-free top-soil should be spread within the root zones of trees, graded as specified in accordance with BS 3882:2007 Specification for Top-soil and Requirements for Use.

Following ground preparation, tree planting will be undertaken as follow:

- The hedge should comprise 50% hawthorn, 25% beech, 25% holly;

- Hedging plants should be planted in double staggered rows where possible with 30cm between plants and rows (i.e. 7 plants per metre) and 30cm back from the edge of the pavement;
- Hedging plants should be 1 + 1 30-45cm bareroot transplants and will comply with BS 3639:1992 Nursery Stock Specification for Trees and Shrubs;
- Hedging stock should be notch planted, protected with 40cm spiral rabbit guards and supported with 60cm stakes or canes;
- The hedges should be protected on the roadside boundary by a fence. It may be possible to repair and re-erect the existing chestnut pale fence or alternatively a new post and wire fence could be erected (see specification below);
- All planting will take place between October and March.

Post and Wire Fence Specification:

Fencing will be post and wire with 2.13m x 150mm top diameter (minimum) strainers suitably strutted at changes of angle or at maximum intervals of 50m on straight runs; 1.68m x 80-100mm top diameter (minimum) intermediate posts at 3m intervals (maximum); all posts to be tanalised or similarly pressure treated; 4 line wires of 8g mild steel plain wire will be fitted with 3cm staples with the bottom strand 20cm above ground level and all other strands at 30cm above lower strand and not less than 1.10m from ground level to top wire.