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