Wombwell, Barnsley

Arboricultural Impact Assessment

Report for Barnsley Partnership for Learning
(Laing O'Rourke)

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Institute of Chartered Foresters
Registered Consultant

Ref:011/	Prepared by:	Checked by:
V1 – 30/07/10	Guy Morrison	Claire Leather

Greengage Arboriculture & Ecology
Linfield House, 2 Bernard Lane, Green Hammerton, York YO26 8BP
T: 01423 331924 E: info@greengage-arbeco.co.uk W: www.greengage-arbeco.co.uk

CONTENTS

SUMMARY 1
1. INTRODUCTION 2
2. STATUTORY TREE PROTECTION 4
3. TREE SURVEY SUMMARY 5
4. ARBORICULTURAL IMPACTS 7
5. RECOMMENDATIONS 17
6. REFERENCES 20
APPENDIX A – ARBORICULTURAL IMPACT AND WORKS SCHEDULE 21

SUMMARY

Greengage Arboriculture & Ecology was commissioned to carry out an arboricultural impact assessment of a site at Wombwell, Barnsley. The site is an area of public open space and woodland proposed for construction of a new school as part of the Building Schools for the Future programme.

A survey of trees on the site was carried out previously and the results of this survey are reported separately. The large site has a high tree density. The majority of the trees are middle-age and early-mature trees growing in plantation blocks. The most common trees are silver birch, white poplar, grey alder and false acacia. Other species present include Italian alder, Corsican pine and crack willow. A wide range of native and non-native shrubs also occur, particularly on the plot edges. The survey assessed 182 individual trees, 40 groups of trees and shrubs, and 22 woodland blocks.

None of the trees on the site are protected by Tree Preservation Orders and the site is not located in a Conservation Area.

A large school building and associated sports facilities and car-parking will be built on the site in an area currently occupied by a block of plantation woodland. This area will be subject to extensive re-grading prior to the construction. The main vehicle access to the site will be from the A633 Mitchells Way to the south, where a new roundabout will be constructed with an access road and cycle/footways to the site. It is likely that there will be significant re-grading associated with this construction.

The development proposal will require the removal of 7.09ha of plantation woodland. Of this, the majority is of moderate quality and value (B category) with a smaller area of high quality and value (A category). In addition it will also be necessary to fell 41 individually assessed trees and shrubs and 7 groups of trees and shrubs (or parts of groups) to implement the proposal. It is also proposed to fell an additional 11 individually assessed trees and two groups of poor quality trees (R category), either to implement the proposal or as part of general site management. It is not envisaged that the construction works will lead to residual impacts on any of the trees proposed for retention, subject to the adoption of tree protection measures and precautions.

The main arboricultural impact on the site is associated with the loss of the plantation woodland. The proposed removal of 7.22ha of woodland will reduce woodland cover in the local area. This will be partially mitigated in the medium and long-term by the proposed planting of 3.89ha of new woodland adjacent to the site. It is considered that the proposed removal of individual trees and groups of non-woodland trees will not have a significant impact on public amenity, subject to proposals for adequate tree planting in the landscape details to be developed.

Recommendations are made for the production of an arboricultural method statement, with details and procedures for the protection of the retained trees and shrubs.

1. INTRODUCTION

1.1 Scope and Brief

This arboricultural report was commissioned by Laing O'Rourke on behalf of Barnsley Partnership for Learning. Laing O'Rourke have been appointed by Barnsley Metropolitan Borough Council (Barnsley MBC) to design and construct new school buildings and facilities under Phase 3 of the Barnsley Building Schools for the Future (BSF) programme.

The report was prepared by Guy Morrison, Principal Arboriculturist and Partner of Greengage Arboriculture & Ecology. He is a Chartered Forester and Registered Consultant with the Institute of Chartered Foresters. He is also a Professional Member of the Arboricultural Association and holds the Royal Forestry Society Professional Diploma in Arboriculture.

The scope of the report was to carry out an arboricultural impact assessment of the proposed development. The assessment and tree protection details accord with BSS5837:2005 '*Trees in relation to construction – Recommendations*' (BSi, 2005). The assessment is accompanied by a schedule for facilitation works to trees that are necessary in order to accommodate the proposed development, as well as remedial works necessary to improve tree condition and address tree hazards. A *Tree Protection Plan* has been produced for the school site (Plincke drawing no. BP4L_WOM_PLI_91_SW_00_05 Rev.P01) and access road (Plincke drawing no. BP4L_WOM_PLI_91_SW_00_09 Rev.P01) and these should be referred to when reading this report.

Arboricultural impact assessment reports have been commissioned for the three sites that form Phase 3 of the Barnsley BSF programme. These are Holgate and Kingstone, Wombwell, and St Michael's. This report relates to the Wombwell site.

A pre-development tree survey of the site had been carried out previously. This *Tree Survey Report* (Greengage, 2010) and the accompanying *Tree Constraints Plan* (Greengage drawing no. 011-08) should be referred to when reading this report.

1.2 Site Description

A full description of the existing site and the site location plans are provided in the *Tree Survey Report* (Greengage, 2010). A summary of the site description is provided below.

The site is located within an area of informal public open space lying between Wombwell and Darfield, near Barnsley. The proposed school development site has an area of approximately 12.7ha, excluding the area required for the access road corridor and highway improvements. It is understood that most of the site

was a former colliery and this has been restored and landscaped. The site under consideration includes an access road corridor which passes in an arc from the A633 Mitchells Way / Littlefield Lane junction and crosses the Transpennine Trail national cycleway before meeting the south-west corner of the proposed school development site.

The large site has a high overall tree density, with most of the trees occurring as middle-age and early-mature trees located in plantation woodland blocks. These have been planted with a mixture of species, predominantly white poplar, grey alder, silver birch and false acacia. Other species present include Italian alder, crack willow, Corsican pine, Scots pine, beech, red oak and sycamore. In many of the plots a wider variety of small tree and shrub species have been planted on the edges. Mature sycamore and Turkey oak are present in a small woodland located to the west of the site, whilst mature sessile oak and crack willow occur in a small woodland plot to the north-west of the site.

There are a mixture of planted and naturally regenerated trees growing besides the Transpennine Trail. The most common species here is silver birch, grey alder, Italian alder, goat willow and hawthorn. Dense bands of mixed broadleaved trees have been planted on either side of the A633 Mitchells Way to the south of the site. Species here include middle-age and early-mature Norway maple, common alder, ash, wild cherry and field maple.

2. STATUTORY TREE PROTECTION

2.1 Tree Preservation Orders / Conservation Areas

The Local Planning Authority (LPA) has confirmed (e-mail dated 29/06/10) that there are currently no trees on or immediately adjacent to the site protected by Tree Preservation Order (TPO) and the site is not located in a Conservation Area.

2.2 Felling Licences

Tree felling on non-residential land is also controlled by the need to obtain a Felling Licence from the Forestry Commission before felling more than $2m^2$ of timber (or $5m^2$ if timber is not sold) per three month period, subject to various exemptions (FC, 2005).

2.3 Protected Species

Trees and scrub provide habitat for a wide range of species, some of which are protected. Most nesting birds and their nests are protected by the Wildlife and Countryside Act 1981 (as amended). All bats and their roosts are protected by the Wildlife and Countryside Act 1981 (as amended) and gain additional protection as under the Conservation (Natural Habitats, &c.) Regulations 1994. Birds listed under Schedule 1 of the Wildlife and Countryside Act 1981 and all bat species are also protected from disturbance when using nesting or roosting sites.

3. TREE SURVEY SUMMARY

3.1 Tree Survey Methodology

A tree survey was carried out on the site in accordance with BSS5837:2005 '*Trees in relation to construction – Recommendations*' (BSi, 2005). The tree survey report (Greengage, 2010) should be referred to for the survey methodology.

The trees' overall quality and value for retention was assessed in accordance with BS5837:2005 Table 1. This was dependent on the trees' physiological and structural condition, safe useful life expectancy and arboricultural, landscape, cultural and ecological value. Trees were assigned to the following quality and value categories:

Table 1. Tree quality and value categories

Quality and value	Characteristics
Category A	Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).
Category B	Those of moderate quality and value: in such a condition as to make a significant contribution (a minimum of 20 years is suggested).
Category C	Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm.
Category R	Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

The root protection area (RPA) radius and area for each tree was calculated in accordance with BS5837:2005. The RPA is an area of ground that provides sufficient soil rooting volume to ensure the survival of the tree.

3.2 Tree Survey Results

The full survey results are shown in the *Tree Survey Report* (Greengage, 2010) and accompanying *Tree Constraints Plan* (Greengage drawing no. 011-08). An extract of the survey information is provided in the arboricultural impact and works schedule (Appendix A).

The survey assessed 182 individual trees, 40 groups of trees and shrubs, and 22 woodland blocks.

The survey identified six blocks of woodland of high quality and value (A category). These include an area of mature trees to the north of the River Dove, a small mature woodland surrounding a pond at the north-west corner of the site and two blocks in the north-east of the site with mature Corsican pine and false acacia. The remaining blocks of high quality woodland is an area of alder and willow carr and a birch woodland located adjacent to Mitchell's Way on the southern boundary of the site.

The majority of the woodland blocks on the site were identified as being of moderate quality and value (B category). All of these are planted amenity woodlands consisting of middle-age and early-mature mixed broadleaves and occasional scattered pine.

Three individually surveyed trees were considered to be of high quality and value (A category). These are two early-mature sessile oak located close to the northern boundary and one mature sycamore located close to the River Dove.

The survey identified 74 individually surveyed trees and 17 groups of trees and shrubs of moderate quality and value (B category). Individually surveyed trees in this category include middle-age and early-mature silver birch, Corsican pine, Italian alder, Turkey oak and sycamore located on plantation edges and alongside the TransPennine Trail. The groups in this category included two groups of early-mature black poplar at the northern end of the site.

Ninety four individually surveyed trees and 23 groups of trees and shrubs were assigned to the low quality and value (C category). These include younger and smaller trees and small groups of trees that are easily replaced. Other trees in this category include those with significant structural defects and wounding (which nevertheless have a safe useful life expectancy of more than ten years) and trees of poor form.

Eleven trees were identified as being in a poor condition and require felling because of their condition, irrespective of any development proposal (R category). Trees in this category include trees with significant bark wounds and associated decay, trees with very weak and split main forks and dead trees. These include five early-mature Turkey oak and sycamore which are at significant risk of collapse.

4. ARBORICULTURAL IMPACTS

4.1 The Development Proposal

It is proposed to develop the site by constructing a large secondary school, the Wombwell and Foulstone Advanced Learning Centre, which will replace and combine the nearby Wombwell School and Foulstone School.

A new large school building will be built at the western end of the main site in an area currently occupied by a block of plantation woodland. An energy centre and cycle store will be built in the north-west of the site and a wind turbine will be erected close to the northern boundary. An all-weather pitch and several sports courts will be constructed to the east and north-east of the building and several grass sports pitches will be located in the eastern half of the main site. Most woodland in the eastern half of the site will be retained and an existing path will be upgraded to form a fitness loop.

The main vehicle access to the site will be from the A633 Mitchells Way to the south, where a new roundabout will be constructed, with proposed improvements to an existing roundabout to the north-west. An access road will be constructed from the highway along with cycle/footways and a pedestrian bridge over the A633. The access road runs north in an arc to cross the Transpennine Trail cycleway and cross the River Dove on a proposed bridge to enter the main site in its south-west corner. Along the length of the access road is a car-park and a bus-turning and drop-off point. The main area of car parking is located close to the southern edge of the main site. There will be no vehicle access from Netherwood to the north but a pedestrian and cycle access and a parents' drop-off point will be constructed.

Existing ground levels will be retained in the strips of woodland to be retained around the eastern half of the site and in a strip alongside the River Dove. Elsewhere the main school site will be subject to extensive re-grading to create level ground for the construction of the building, sports facilities and car-parking. Information on the proposed levels of the access road is not available at this stage, but it is likely that there will be significant re-grading associated with this construction.

An existing public footpath and several non-statutory footpaths within the main site will be diverted This will require the construction of a new footpath along the northern bank of the River Dove in the south-east of the main site and two new footpaths running close to the eastern edge of the site.

The main school site will be landscaped and tree planting is proposed along the northern boundary and within the car park and amenity areas of the school's grounds. Landscape proposals have not yet been developed for the access road.

It is proposed to plant two new areas of woodland to mitigate the loss of the plantation woodland area associated with the development. These will be a plot of 1.00ha located in public open-space to the west of the access road and a plot of 2.89ha on farmland on the opposite side of Netherwood Road to the north-west of the site.

The layout of the development proposal for the school site is shown on the *Tree Protection Plans* (Plincke drawing no.s BP4L_WOM_PLI_91_SW_00_05 Rev. P01 and _09 Rev.P01) and *Landscape Masterplan* (Plincke drawing no. BP4L_WOM_PLI_91_SW_00_01 Rev.P03).

The routing of surface water and foul water drainage are shown on the *Civil Infrastructure External Drainage Plan* (Burro Happold drawing no. BP4L_WOM_BUR_DR_51_EX_LL_01 Rev.P01). Details on the routing of water, gas, electricity and telecommunication services are not available at this stage.

4.2 Typical Development Impacts

Impacts by trees can be divided into direct and indirect impacts. Direct impacts refer to the removal of trees to facilitate the development and physical damage caused to retained trees during construction works. Indirect impacts refer to future pressures on the trees arising from their location in relation to the proposed use of the site.

Damage can be caused to trees in various ways during construction works. Direct damage to the roots is commonly encountered and is caused by excavation, for example to construct foundations or hardstandings or to install services. Roots are generally most frequent in the upper 600mm of soil, with many encountered at far shallower depth, and significant root damage can be caused by site soil stripping.

Damage to the soil may be as equally damaging to trees as direct root damage. Compaction is a commonly encountered problem and causes long-lasting damage to the soil. The anaerobic conditions which are often caused by compaction are unsuitable for most plant rooting and may cause tree decline. Compaction soil damage by vehicle movement is most common on, but not restricted to, high clay-content and poorly drained soils. Damage to tree rooting conditions is also caused during hard-standing construction where impermeable construction prevents the infiltration of water and oxygen to the roots.

Direct damage to trees by construction at close distance can be minimised or even eliminated by the adoption of special construction methodologies. These include non-dig permeable hardstanding construction, pile and beam foundation design and non-trenched service installation. All these methodologies require careful design and supervision if they are to be used to minimise impact on trees.

Other common causes of tree damage on construction sites are accidental bark damage or branch breakage by vehicles and plant, fire damage, herbicide damage and soil pollution by cement-based products, diesel, hydraulic oil and other chemicals.

Trees may face indirect impacts where their retention in relation to the development causes a significant nuisance to future users of the site. This may lead to future pressure to fell the trees or prune them heavily in a way that destroys their form and much of their value. Another significant indirect impact is where indirect space has been allowed for the future crown-spread of the tree and BS5837 advises that trees should not be retained on the basis that their crown spread can be controlled by periodic pruning unless this is a desired management outcome. It is also important to allow space for trees to grow and develop without causing significant nuisances such as severe loss of light to adjacent property.

4.3 Direct Impacts

The arboricultural impact and facilitative works schedule (Appendix A) describes the impact of the development proposal on the trees surveyed, proposes mitigation measures and describes the arboricultural works that are necessary to implement the proposal. This is summarised below.

The main direct impacts on trees on the site are associated with the loss of large areas of plantation woodland which is to be cleared to allow the construction of the main school building and associated landscaping, car-parking and sports facilities. A large swathe of plantation woodland will also be cleared to allow the construction of the main access road to the site.

Woodland clearance

All woodland to be cleared and other trees to be removed are shown on the *Tree Protection Plans* (Plincke drawing no.s BP4L_WOM_PLI_91_SW_00_05 Rev.P01 and _09 Rev.P01).

Areas of woodland proposed for clearance to implement the development proposal are shown below on Table 2. This includes woodland on the footprint of proposed construction works, land proposed for re-grading and corridors to be cleared to allow the construction of the access road. All the areas proposed for removal are plantation woodland.

Table 2. Woodland proposed for removal to implement proposed development

Category	No.	Species	Age class
A 4,720m^2 woodland	W5 (1,680m^2)	Corsican Pine*, False Acacia*, Silver Birch*	EM

Category	No.	Species	Age class
	W10 (part) (460m^2)	Crack willow*, Sessile Oak, Ash, Sycamore, Alder	Mat / MA
	W19 (part) (1,290m^2)	Alder*, White Willow*, Silver Birch*, Crack Willow, White Poplar, Aspen, Grey Willow, Hawthorn, Guelder Rose	EM/MA
	W23 (part) (1,290m^2)	Silver Birch*, Red Oak, Sessile Oak, Hawthorn	EM/MA
B 67,490m^2 woodland	W6 (42,370m^2)	White Poplar*, Crack Willow*, Grey Alder*, Italian Alder Goat Willow, Silver Birch, Black Poplar, Sycamore, False Acacia	MA/EM
	W7 (part) (2,240m^2)	Sycamore*, Alder*, False Acacia, Crack Willow, Ash, White Poplar, Red Oak, Hybrid Black Poplar, Grey Alder	EM/MA
	W13 (part) (9,410m^2)	White Poplar*, Corsican Pine*, Crack Willow*, Grey Alder, Silver Birch, False Acacia, Scots Pine, Goat Willow, Turkey Oak, Sessile Oak, Beech, Field maple, Aspen	EM/MA
	W16 (part) (590m^2)	Alder*, Ash*, Norway Maple*, Field Maple, Rowan, Sessile Oak, Hawthorn, Hazel	EM/MA
	W17 (part) (7,040m^2)	Hawthorn*, Field Maple*, False Acacia*, Red Oak, Sycamore, Norway Maple, Elder, Blackthorn	MA/EM
	W18 (part) (4,530m^2)	Alder*, Crack Willow, Field Maple, Hawthorn, Silver Birch, Red Oak, Sessile Oak, Guelder Rose, Elder	MA/EM
	W22 (part) (1,310m^2)	Norway Maple*, Alder*, Sycamore, Ash, Italian Alder, Grey Alder, Silver Birch, Beech, Field Maple, Hawthorn	EM/MA
C None	None		
Total *72,210m^2 (7.22ha) woodland*			

Other tree removal

Other trees requiring removal because they are located in the footprint of proposed construction works are listed in Table 3 below. This table includes all

individually surveyed trees and groups proposed for removal and it does include some trees located within the woodland areas listed in Table 2 above.

Table 3. Trees and shrubs (A-C category individual trees and groups only) to be removed to implement proposal where they are located on the footprint of proposed construction

Category	No.	Species	Age class
A None	None		
B 12 no. individual trees 2 no. groups	G9	Black Poplar	EM/MA
	G10	Black Poplar	EM/MA
	65	Corsican Pine	MA
	72	Corsican Pine	MA
	73	Corsican Pine	MA
	74	Corsican Pine	MA
	75	Corsican Pine	MA
	79	Corsican Pine	MA
	80	Corsican Pine	MA
	88	Scots Pine	MA
	89	Scots Pine	MA
	159	Italian Alder	EM
	205	Silver Birch	EM
C 3 no. individual trees	118	Hawthorn	MA
	160	Italian Alder	EM
	204	Silver Birch	MA
Total *15 no. individual trees* *2 no. groups*			

Table 4 below lists trees which are not located on the direct footprint of the proposed construction works, but which are proposed for removal because they are located close to areas of construction and are likely to suffer major damage leading to a long-term decline in their condition. This table also includes trees within corridors to be cleared to allow the construction of the proposed access road. This table includes all individually surveyed trees and groups proposed for removal and it does include some trees located within the woodland areas listed in Table 2 above.

Table 4. Trees and shrubs (A-C category individual trees and groups only) to be removed to implement proposal where they are located beyond the footprint of proposed construction works

Category	No.	Species	Age class
A None	None		

Category	No.	Species	Age class
B 17 no. individual trees 1 no. group (part)	43	Sycamore	EM
	52	Turkey Oak	MA
	57	Turkey Oak	MA
	71	Corsican Pine	MA
	76	Corsican Pine	MA
	77	Corsican Pine	MA
	78	Corsican Pine	MA
	84	Scots Pine	MA
	85	Corsican Pine	MA
	86	Scots Pine	MA
	90	White Poplar	MA
	116	Silver Birch	EM
	117	Silver Birch	EM
	G152 (part)	Silver Birch; Grey Alder; Italian Alder	MA
	158	Italian Alder	Mat
	198	Sycamore	MA
	199	Ash	MA
	202	Silver Birch	EM
C 19 no. individual trees 2 no. groups 2 no. groups (part)	40	Sycamore	EM
	41	Sycamore	EM
	G42	Turkey Oak; Hawthorn	Y
	54	Sycamore	Y
	G56	Hawthorn; Turkey Oak	Y
	69	Corsican Pine	MA
	70	Corsican Pine	MA
	82	Corsican Pine	MA
	83	Scots Pine	MA
	87	Scots Pine	MA
	92	Silver Birch	MA
	G115 (part)	Hawthorn	EM
	G161 (part)	Silver Birch; Goat Willow; Grey Alder	MA
	162	Italian Alder	EM
	163	Grey Alder	EM
	179	Apple	EM
	180	Horse Chestnut	MA
	181	Hawthorn	MA
	182	Hazel	MA
	200	Sycamore	MA
	201	Silver Birch	Mat
	203	Silver Birch	EM
	206	Hawthorn	EM

Category	No.	Species	Age class
Total *36 no. individual trees* *2 no. groups* *3 no. groups (part)*			

Trees requiring removal because of their poor condition (R category trees), irrespective of the development proposal, are listed in Table 5 below. This table includes some trees (no. 28-31) within woodland where it is proposed to pollard the trees and retain the stems to provide deadwood habitat.

Table 5. Trees and shrubs to be removed due to poor condition (R category)

Category	No.	Species	Age class
R 11 no. individual trees	8	Hawthorn	EM
	28	Sycamore	EM
	29	Turkey Oak	EM
	30	Turkey Oak	EM
	31	Turkey Oak	EM
	53	Grey Alder	Y
	55	Sycamore	EM
	59	Alder	MA
	106	Grey Willow	EM
	130	Goat Willow	Mat
	207	Goat Willow	Mat

Other tree felling is proposed within woodland compartments and groups of trees where the stems are closely spaced and the stand would benefit from thinning to promote the long-term growth and development of the retained trees. These are listed below in Table 6. These works are recommended for the enhancement of the site and are not essential to the implementation of the development proposal.

Table 6. Woodland compartments and groups of trees where thinning of the stand is proposed.

Category	No.	Species	Age class
A 1 no. woodland comp.	W1	Corsican Pine*, False Acacia*, Silver Birch*, Red Oak	EM/MA
B 7 no. woodland comp. 2 no. groups	W2	Italian Alder*, Silver Birch*, False Acacia*, White Poplar*, Grey Alder, Scots Pine, Field Maple	MA/EM
	W7 (remaining)	Sycamore*, Alder*, False Acacia, Crack Willow, Ash, White Poplar, Red Oak, Hybrid Black Poplar, Grey Alder	EM/MA
	W9	Sycamore, Ash, Alder	MA
	W12	White Poplar*, Silver Birch*, Crack Willow*, Grey Alder*, False Acacia, Goat Willow, Turkey Oak, Scots Pine, Field maple	EM/MA
	W13 (remaining)	White Poplar*, Corsican Pine*, Crack Willow*, Grey Alder, Silver Birch, False Acacia, Scots Pine, Goat Willow, Turkey Oak, Sessile Oak, Beech, Field maple, Aspen	EM/MA
	W16 (remaining)	Alder*, Ash*, Norway Maple*, Field Maple, Rowan, Sessile Oak, Hawthorn, Hazel	EM/MA
	W22 (remaining)	Norway Maple*, Alder*, Sycamore, Ash, Italian Alder, Grey Alder, Silver Birch, Beech, Field Maple, Hawthorn	EM/MA
	G140	Grey Alder; Silver Birch; Goat Willow	MA/EM
	G188	Small-leaved Lime; Sessile Oak; Ash; Silver Birch; Sea Buckthorn	MA
C 2 no. groups	G24	Sycamore; Hawthorn; Elder; Goat Willow	MA/EM
	G183	Sycamore; Ash; Hazel; Rowan; Hawthorn; Alder	MA
Total *8 no. woodland comp.* *4 no. groups*			

Recommendations for appropriate thinning are provided in section 5.1.

Damage to retained trees

No significant damage to retained trees is envisaged, subject to selection and marking of tree for felling at the stand edge by an arboriculturist (see section 5.2) and their satisfactory protection in accordance with the existing *Tree Protection Plan* and the additional tree protection details to be prepared (see section 5.2).

4.4 Indirect impact

Shading

The proposal is for extensive development of the site and all trees retained are retained within landscaped amenity area or within plantation blocks around the edge of the site.

Shading by both the retained trees and also the trees planted as part of the landscaping scheme will increase in the future. However, it is considered that the proposed retention of trees will not lead to undue shading of the site, either now or once the retained trees have grown to their full potential.

Pruning

Proposals for pruning are listed in the facilitative works schedule (Appendix B). Because of the extensive nature of the development, relatively little facilitative pruning is required. Remedial pruning is recommended to a small number of trees to address minor defects or for formative pruning to improve the future form and development of young and middle-age trees.

4.6 Impact summary

The development proposal will require the removal of 7.22ha of plantation woodland. Of this the majority (6.75ha) is of moderate quality and value (B category) with a smaller area (0.47ha) of woodland of high quality and value (A category) containing more mature trees.

In addition to the proposed removal of woodland, the proposed development will require the felling of 41 individually assessed trees and shrubs and 7 groups of trees and shrubs (or parts of) (A-C category only). These include some trees within woodland blocks identified for removal. In addition to this it is also proposed to fell an additional 11 individually assessed trees and two groups of poor quality trees (R category), either to implement the proposal or as part of general site management.

It is not envisaged that the construction works will lead to residual impacts on trees proposed for retention, subject to the adoption of tree protection measures and precautions.

The main arboricultural impact on the site is associated with the loss of the plantation woodland. The proposed removal of 7.22ha of woodland will reduce woodland cover in the local area. This will be partially mitigated in the medium and long-term by the proposed planting of 3.89ha of new woodland adjacent to the site.

It is considered that the proposed removal of individual trees and groups of non-woodland trees will not have a significant impact on public amenity, subject to proposals for adequate tree planting in the landscape details to be developed.

5. RECOMMENDATIONS

5.1 Arboricultural works and inspection

The arboricultural impact and works schedule (Appendix A) contains recommendations for arboricultural works that are necessary to facilitate the development. The works schedule also contains recommendations for works that are necessary to address defects or improve the condition of trees.

Trees to be removed to facilitate the development or because of their condition are shown on the *Tree Protection Plans* (Plincke drawing no.s BP4L_WOM_PLI_91_SW_00_05 Rev.P01 and _09 Rev.P01).

All works should be carried out by experienced arboricultural contractors and should comply with BS3998:1989 '*British Standard Recommendations for Tree Work'*.

A small number of trees are in a hazardous condition and require works to address these defects as soon as possible (see Appendix A and *Tree Survey Report* (Greengage (2010)). All other work recommendations are not urgent and could be postponed for up to 12 months until a development proposal receives planning permission and development commences.

Where thinning is proposed within woodland compartments and groups of trees, the trees to be felled should be marked in advance by an arboriculturist. Trees selected for retention should be well-formed and evenly spaced. The thinning operation should retain all the species currently in the stand, but preference should be given to the retention of native species and longer-lived and large-growing species, such as sessile oak and ash where they occur. Enquiries should be made on the requirement for a Felling Licence (see section 2.2) before the works are carried out.

Tree condition can change significantly over a relatively short period of time, and therefore the recommendations for works can only be held to be valid for a period of 12 months following the original tree survey date (June 2010). It is assumed that the local education authority has a programme of arboricultural inspection and the trees on this site should become part of that programme.

5.2 Tree protection

Tree Protection Plan

It is recommended that the trees to be retained on the site are protected in accordance with the *Tree Protection Plans* (Plincke drawing no.s BP4L_WOM_PLI_91_SW_00_05 Rev.P01 and _09 Rev.P01). These plans show the location of protective fencing which forms the construction exclusion zone to

ensure that the trees to be retained and their essential rooting zone are not damaged during the proposed demolition and construction.

The protective fencing should comply with BS5837:2005. The fencing should be constructed from 2.3m high Herris-type weld-mesh panels securely attached to a braced scaffold framework. The scaffold framework shall comprise a vertical and horizontal framework, well-braced against impact. Vertical tubes will be placed at a maximum spacing of 3.0m and driven at least 600mm into the ground.

Within the construction exclusion zone, all damaging operation should be excluded. In particular, the following activities must not take place within the construction exclusion zone:

- changes in levels;
- excavation, including trenching for service installation;
- storage of materials, including earth
- Temporary access
- movement or parking of plant and vehicles;
- siting of site cabins or other temporary buildings;
- mixing of materials and chemicals; and
- disposal of liquids.

In addition to the above no fires should be lit on the site.

Arboricultural Method Statement

It is recommended that an arboricultural method statement (AMS) should be produced for the proposed development because of the sensitivity of the site and the construction and demolition works proposed within the RPA of trees to be retained.

The *Arboricultural Method Statement* should detail methodologies and procedures for tree protection where additional measures are required in addition to protective fencing. The method statement for the site should consider the following:

a) General responsibilities and procedures
   i. Roles and responsibilities for tree protection
   ii. Appointment of an arboricultural consultant to monitor tree protection
   iii. A tree protection monitoring programme
   iv. Procedures for reporting to client and LPA
   v. Phasing of the tree protection measures in relation to the construction programme

b) Protective fencing
   i. Reference to the Tree Protection Plan for fencing location and detail
   ii. Phased erection, removal and movement of the protective fencing in relation to the proposed demolition, earthworks and construction works
   iii. Procedures for supervised work within the construction exclusion zone

c) Selection of trees for felling
   i. Procedures for the selection of trees for felling at the cleared edges of woodlands in relation to the extent of proposed earthworks and protective fencing

5.3 Protected Species

Trees on the site may be used for nesting by birds during the spring and summer. Nesting birds and their nests are legally protected and wherever possible the felling or pruning trees should be avoided between 1 March to 30 August to avoid an impact on nesting birds. Where it is necessary to carry out the work during this period then advice should be sought from a suitably qualified ecologist.

Some of the trees surveyed have features that could potentially be used by roosting bats, including cavities and cracks. It is recommended that a bat roost scoping study (BCT, 2007) is carried out by a suitably qualified ecologist of any trees due to be felled or where pruning might affect potential roosting features.

5.4 Replacement planting

The *Landscape Masterplan* for the main site (Plincke drawing no. BP4L_KIN_PLI_91_SW_00_01 Rev.P03) includes outline proposals for tree planting on the site. More detailed landscape planting plans for this site will be produced once planning permission has been gained. Planting plans will also be developed for the access road and planting of two woodland blocks in mitigation. It is recommended that the details are developed in accordance with the masterplan and opportunities are sought for areas of additional tree planting in order to mitigate the proposed loss of tree cover on the site.

5.5 Further details

It is also recommended that this assessment report is revised to take account of the proposed utility services layout once the details for the routing of water, gas, electricity and telecommunications services is available. These should be planned and routed so they do not pass through the RPA of trees to be retained. Where this is unavoidable, the impact should be assessed and measures taken to reduce the impact. Measures and procedures to be utilised should comply with BS5837:2005 and '*NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'* (2007) and be detailed in an arboricultural method statement (section 5.2).

6. REFERENCES

BCT. 2007. *Bat Surveys, Good Practice Guidelines*. Bat Conservation Trust, London. www.bats.org.uk

BSi. 1989. *BS 3998:1989 British Standard Recommendations for Tree Work*. British Standards Institute.

BSi. 2005. *BS5837:2005. Trees in Relation to Construction – Recommendations*. British Standards Institute.

FC. 2005. *Tree Felling – Getting Permission*. Forestry Commission leaflet.

Greengage. 2010. *Wombwell, Barnsley – Tree Survey Report*. Greengage Arboriculture & Ecology. July 2010. Report for Barnsley Partnership for Learning.

NHBC. 2006. *Chapter 4.2. Building Near Trees.* National House Building Council.

NJUG. 2007. *Volume 4 - NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.* Issue 2. National Joint Utilities Group. www.njug.org.uk

APPENDIX A – ARBORICULTURAL IMPACT AND WORKS SCHEDULE

APPENDIX A. ARBORICULTURAL IMPACT AND WORKS SCHEDULE

WOODLAND COMPARTMENTS

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
W1	Corsican Pine*, False Acacia*, Silver Birch*, Red Oak	EM/MA	A_2	Existing footpath to be widened and upgraded. This may require removal of some additional trees on line of footpath and adjacent trees that would suffer significant damage arising from the works.	Consider requirements for tree removal once path details available. Arboriculturist to mark trees for removal on site. Prepare AMS.	Fell trees to upgrade path. Thin stand 20%. Retain all larger trees except where defective.
W2	Italian Alder*, Silver Birch*, False Acacia*, White Poplar*, Grey Alder, Scots Pine, Field Maple	MA/EM	B_2	New footpaths to be constructed. This will require removal of trees on line of footpaths and adjacent trees that would suffer significant damage arising from the works.	Consider requirements for tree removal once path details available. Arboriculturist to mark trees for removal on site. Prepare AMS.	Fell trees to construct footpaths. Thin stand 20%.
W3	Silver Birch*, Hawthorn*, Sycamore*, Goat Willow*, Ash, Aspen, Turkey Oak, Red Oak, Sessile Oak, Osier, Oleaster	MA/EM	B_2	Existing footpath to be widened and upgraded. This may require removal of some additional trees on line of footpath and adjacent trees that would suffer significant damage arising from the works.	Consider requirements for tree removal once path details available. Arboriculturist to mark trees for removal on site. Prepare AMS.	Fell trees to upgrade path.

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
W4	False Acacia*, Silver Birch*, Alder, Italian Alder, Grey Alder	MA/EM	B_2	Existing footpath to be widened and upgraded. This may require removal of some additional trees on line of footpath and adjacent trees that would suffer significant damage arising from the works.	Consider requirements for tree removal once path details available. Arboriculturist to mark trees for removal on site. Prepare AMS.	Fell trees to upgrade path.
W5	Corsican Pine*, False Acacia*, Silver Birch*	EM	A_2	Woodland compartment located on site of proposed sports pitch and associated earthworks.	None	Remove entire woodland compartment (1,680m^2)
W6	White Poplar*, Crack Willow*, Grey Alder*, Italian Alder Goat Willow, Silver Birch, Black Poplar, Sycamore, False Acacia	MA/EM	B_2	Woodland compartment located on site of proposed school building, sports facilities, car-parking and associated earthworks.	None	Remove entire woodland compartment (42,370m^2)
W7	Sycamore*, Alder*, False Acacia, Crack Willow, Ash, White Poplar, Red Oak, Hybrid Black Poplar, Grey Alder	EM/MA	B_2	Woodland compartment partially located on site of proposed car park and associated earthworks.	Consider requirements for tree removal in relation to the extent of the proposed earthworks. Arboriculturist to mark trees for removal on site. Prepare AMS.	Remove part of woodland compartment (2,440m^2). Thin remaining stand by 20%. Carry out weed control to eliminate giant hogweed.
W8	False Acacia, Italian Alder, Silver Birch	MA/EM	B_2	None	None	No action
W9	Sycamore, Ash, Alder	MA	B_2	None	None	Thin stand by 33%. Lay hedge, retaining selected trees as standards.

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
W10	Crack willow*, Sessile Oak, Ash, Sycamore, Alder	Mat / MA	A_2	Eastern edge of woodland block partially located on site of proposed energy centre.	Consider requirements for tree removal in relation to the extent of the proposed works. Arboriculturist to mark trees for removal on site. Prepare AMS.	Remove part of woodland compartment (460m^2). Thin and coppice trees adjacent to the pond to increase light to the pond.
W11	Sycamore*, Turkey Oak, Common Lime, Ash	Mat	A_2	None	None	No action
W12	White Poplar*, Silver Birch*, Crack Willow*, Grey Alder*, False Acacia, Goat Willow, Turkey Oak, Scots Pine, Field maple	EM/MA	B_2	None	None	Thin stand by 33%
W13	White Poplar*, Corsican Pine*, Crack Willow*, Grey Alder, Silver Birch, False Acacia, Scots Pine, Goat Willow, Turkey Oak, Sessile Oak, Beech, Field maple, Aspen	EM/MA	B_2	Woodland compartment partially located on site of access road, car-park and bus drop-off parking. Extent of impact and requirements for tree removal cannot be fully assessed as highway design at preliminary stage only with no details on proposed levels	Consider requirements for tree removal once the detailed highway design is available. Arboriculturist to mark trees for removal on site. Prepare TPP and AMS	Remove part of woodland compartment (9,410m^2). Thin remaining stand by 33% where trees growing densely
W14	White Poplar*, Silver Birch*, False Acacia, Italian Alder	EM/MA	B_2	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
W15	Crack Willow*, White Poplar*, Grey Alder*, Scots Pine, Field Maple, Silver Birch, Wild Cherry	EM/MA	B_2	None	None	No action
W16	Alder*, Ash*, Norway Maple*, Field Maple, Rowan, Sessile Oak, Hawthorn, Hazel	EM/MA	B_2	Western end of woodland compartment is located on site of realigned road and associated earthworks. Extent of impact and requirements for tree removal cannot be fully assessed as highway design at preliminary stage only with no details on proposed levels	Consider requirements for tree removal once the detailed highway design is available. Arboriculturist to mark trees for removal on site. Prepare TPP and AMS	Remove part of woodland compartment (588m^2). Thin remaining plot by 33%, selecting ash and oak for retention where present
W17	Hawthorn*, Field Maple*, False Acacia*, Red Oak, Sycamore, Norway Maple, Elder, Blackthorn	MA/EM	B_2	A significant proportion of the woodland compartment is located on site of access road, pedestrian bridge, cycle path and associated earthworks. Extent of impact and requirements for tree removal cannot be fully assessed as highway design at preliminary stage only with no details on proposed levels	Consider requirements for tree removal once the detailed highway design is available. Arboriculturist to mark trees for removal on site. Prepare TPP and AMS	Remove part of woodland compartment (7,040m^2)

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
W18	Alder*, Crack Willow, Field Maple, Hawthorn, Silver Birch, Red Oak, Sessile Oak, Guelder Rose, Elder	MA/EM	B_2	The majority of the woodland compartment is located on site of access road, pedestrian bridge, cycle path and associated earthworks. Extent of impact and requirements for tree removal cannot be fully assessed as highway design at preliminary stage only with no details on proposed levels	Consider requirements for tree removal once the detailed highway design is available. Arboriculturist to mark trees for removal on site. Prepare TPP and AMS	Remove part of woodland compartment (4,530m^2)
W19	Alder*, White Willow*, Silver Birch*, Crack Willow, White Poplar, Aspen, Grey Willow, Hawthorn, Guelder Rose	EM/MA	A_2	A small section of the woodland compartment is located on site of the cycle path and associated earthworks. Extent of impact and requirements for tree removal cannot be fully assessed as highway design at preliminary stage only with no details on proposed levels	Consider requirements for tree removal once the detailed highway design is available. Arboriculturist to mark trees for removal on site. Prepare TPP and AMS	Remove part of woodland compartment (1,290m^2)
W20	Italian Alder*, White Willow, Norway Maple, Silver Birch, Alder, Goat Willow, Field Maple, Rowan, Hawthorn, Hazel	EM/MA	B_2	None	None	Thin plot by 20%
W21	Alder*, White Willow*, Osier, Hawthorn, Crab Apple, Cotoneaster, White Dogwood	MA/EM	B_2	None	None	Coppice white willow within plot

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
W22	Norway Maple*, Alder*, Sycamore, Ash, Italian Alder, Grey Alder, Silver Birch, Beech, Field Maple, Hawthorn	EM/MA	B_2	A small section of the woodland compartment is located on site of the footpath and associated earthworks. Extent of impact and requirements for tree removal cannot be fully assessed as highway design at preliminary stage only with no details on proposed levels	Consider requirements for tree removal once the detailed highway design is available. Arboriculturist to mark trees for removal on site. Prepare TPP and AMS	Remove part of woodland compartment (1,310m^2). Thin plot by 33%, selecting ash and cherry for retention where present
W23	Silver Birch*, Red Oak, Sessile Oak, Hawthorn	EM/MA	A_2	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

INDIVIDUAL TREES AND GROUPS

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
G1	Alder; Silver Birch	MA	C_2	None	None	No action
G2	Crack Willow; Alder	EM/MA	C_1	None	None	No action
3	Crack Willow	EM	C_2	None	None	No action
4	Ash	EM	C_1	None	None	No action
G5	Hawthorn	EM	C_2	None	None	No action
G6	Sea Buckthorn; Oleaster; Hawthorn	M	C_2	None	None	No action
7	Turkey Oak	EM	B_1	None	None	No action
8	Hawthorn	EM	R	Poor quality tree proposed for felling	None	Fell tree
G9	Black Poplar	EM/MA	B_2	Group of trees located close to proposed main building and partially on proposed access paths. Felling required.	None	Fell trees
G10	Black Poplar	EM/MA	B_2	Group of trees partially located on proposed MUGA.	None	Fell trees
11	Alder	MA	C_2	None	None	No action
12	Crack Willow	Mat	B_2	None	None	No action
13	Hawthorn	M	B_2	None	None	No action
14	Sessile Oak	EM	A_2	None	None	No action
15	Sessile Oak	MA	B_2	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
16	Sessile Oak	EM	A_2	None	None	No action
17	Ash	EM	B_2	None	None	No action
18	Ash	EM	B_1	None	None	No action
G19	Hybrid Black Poplar	MA	B_2	None	None	No action
20	Hawthorn	M	C_1	None	None	No action
21	Sycamore	MA	C_1	None	None	No action
22	Holly	EM	B_1	None	None	No action
G23	Sycamore; Apple; Hawthorn	MA	C_2	None	None	No action
G24	Sycamore; Hawthorn; Elder; Goat Willlow	MA/EM	C_2	None	None	Thin sycamore stems by 33%
25	Sycamore	EM	C_2	None	None	No action
26	Sycamore	EM	B_2	None	None	No action
27	Sycamore	EM	B_2	None	None	No action
28	Sycamore	EM	R	None	None	Crown reduce to 10m and retain as habitat feature.
29	Turkey Oak	EM	R	None	None	Crown reduce to 10m and retain as habitat feature. Bat survey necessary.
30	Turkey Oak	EM	R	None	None	Crown reduce to 10m and retain as habitat feature. Bat survey necessary.
31	Turkey Oak	EM	R	None	None	Crown reduce to 10m and retain as habitat feature. Bat survey necessary.

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
32	Turkey Oak	EM	C_2	None	None	No action
33	Turkey Oak	EM	B_2	None	None	No action
34	Sycamore	EM	B_2	None	None	No action
35	Turkey Oak	EM	B_2	None	None	Remove major deadwood over path.
36	Sycamore	Mat	A_2	None	None	No action
37	Ash	Mat	C_2	None	None	Crown reduce by 20%
38	Crack Willow	Mat	C_2	None	None	Remove broken branch.
G39	Crack Willow; Hawthorn; Wych Elm	Mat/MA	C_2	None	None	No action
40	Sycamore	EM	C_1	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
41	Sycamore	EM	C_1	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
G42	Turkey Oak; Hawthorn	Y	C_2	Trees located close to location of proposed new bridge and associated earthworks.	None	Fell trees
43	Sycamore	EM	B_1	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
44	Turkey Oak	Y	C_1	None	None	No action
45	Hawthorn	EM	C_1	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
46	Crack Willow	EM	C_1	None	None	No action
47	Crack Willow	MA	C_2	None	None	No action
48	White Poplar	MA	C_2	None	None	Remove snapped branch.
49	White Poplar	EM	C_2	None	None	No action
50	Crack Willow	EM	C_2	None	None	No action
51	White Poplar	EM	C_2	None	None	No action
52	Turkey Oak	MA	B_1	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
53	Grey Alder	Y	R	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
54	Sycamore	Y	C_1	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
55	Sycamore	EM	R	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
G56	Hawthorn; Turkey Oak	Y	C_2	Trees located close to location of proposed new bridge and associated earthworks.	None	Fell trees
57	Turkey Oak	MA	B_1	Tree located close to location of proposed new bridge and associated earthworks.	None	Fell tree
58	Sycamore	EM	B_1	None	None	No action

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
59	Alder	MA	R	Poor quality tree proposed for felling	None	Fell tree
G60	Beech; Turkey Oak	Y	C_2	None	None	No action
61	Sycamore	MA	C_2	None	None	Single out by selecting best stem.
62	Sycamore	MA	C_2	None	None	No action
63	Sycamore	MA	C_2	None	None	No action
64	Scots Pine	MA	B_2	None	None	No action
65	Corsican Pine	MA	B_2	Tree located on line of proposed access road	None	Fell tree
66	White Poplar	EM	C_2	None	None	No action
67	Corsican Pine	MA	C_2	None	None	No action
68	White Poplar	EM	C_2	None	None	No action
69	Corsican Pine	MA	C_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
70	Corsican Pine	MA	C_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
71	Corsican Pine	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
72	Corsican Pine	MA	B_2	Tree located on line of proposed access road	None	Fell tree
73	Corsican Pine	MA	B_2	Tree located on line of proposed access road	None	Fell tree

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
74	Corsican Pine	MA	B_2	Tree located on line of proposed footpath	None	Fell tree
75	Corsican Pine	MA	B_2	Tree located on line of proposed footpath	None	Fell tree
76	Corsican Pine	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
77	Corsican Pine	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
78	Corsican Pine	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
79	Corsican Pine	MA	B_2	Tree located on line of proposed access road	None	Fell tree
80	Corsican Pine	MA	B_2	Tree located on line of proposed access road	None	Fell tree
81	Corsican Pine	MA	C_2	None	None	No action
82	Corsican Pine	MA	C_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
83	Scots Pine	MA	C_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
84	Scots Pine	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
85	Corsican Pine	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
86	Scots Pine	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
87	Scots Pine	MA	C_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
88	Scots Pine	MA	B_2	Tree located on line of proposed access road	None	Fell tree
89	Scots Pine	MA	B_2	Tree located on line of proposed access road	None	Fell tree
90	White Poplar	MA	B_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
91	Corsican Pine	MA	B_2	None	None	No action
92	Silver Birch	MA	C_2	Tree located in corridor of woodland to be cleared to allow access road construction	None	Fell tree
93	Corsican Pine	MA	C_2	None	None	No action
94	Corsican Pine	MA	C_2	None	None	No action
95	Corsican Pine	MA	C_2	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
96	Corsican Pine	MA	C_2	None	None	No action
97	White Poplar	EM	B_2	None	None	No action
G98	Hawthorn; Ash; Apple	Y	C_2	None	None	No action
G99	Hawthorn	EM	C_2	None	None	No action
100	Ash	EM	B_2	None	None	No action
101	Goat Willow	EM	C_1	None	None	No action
102	Grey Willow	MA	C_1	None	None	No action
103	Grey Alder	EM	C_1	None	None	No action
G104	Grey Alder	Y	C_2	None	None	No action
105	Beech	Y	C_1	None	None	Cut 1 no. stem at base to retain single stem
106	Grey Willow	EM	R	Poor quality tree growing in ditch proposed for felling	None	Fell tree
G107	Sea Buckthorn; Hazel; Sycamore; Elder	MA/Mat	B_2	None	None	No action
G108	Sea Buckthorn; Hazel; Sycamore; Ash	Mat/Y/MA	B_2	None	None	No action
109	Silver Birch	MA	B_2	None	None	No action
G110	Ash	MA	C_2	None	None	No action
111	Silver Birch	MA	C_1	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
G112	Ash	MA	C_2	None	None	No action
G113	Hawthorn; Ash	EM/MA	C_2	None	None	No action
114	Hawthorn	EM	C_1	None	None	No action
G115	Hawthorn	EM	C_2	Small portion of the group located in corridor to be cleared to allow access road construction	None	Fell trees within highway corridor (see Tree Protection Plan)
116	Silver Birch	EM	B_1	Tree located in corridor to be cleared to allow access road construction	None	Fell tree
117	Silver Birch	EM	B_1	Tree located in corridor to be cleared to allow access road construction	None	Fell tree
118	Hawthorn	MA	C_1	Tree located on proposed access road footway	None	Fell tree
119	Elder	Mat	C_1	None	None	No action
120	Turkey Oak	MA	C_1	None	None	No action
121	Sessile Oak	MA	C_1	None	None	No action
122	Silver Birch	MA	B_1	None	None	No action
123	Silver Birch	EM	B_1	None	None	No action
124	Silver Birch	EM	B_1	None	None	No action
125	Silver Birch	EM	B_1	None	None	No action
126	Silver Birch	EM	B_1	None	None	No action
127	Hawthorn	EM	C_1	None	None	No action
128	Silver Birch	EM	C_1	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
129	Silver Birch	EM	C_1	None	None	No action
130	Goat Willow	Mat	R	Poor quality tree proposed for felling	None	Coppice tree
131	Goat Willow	Mat	C_1	None	None	No action
G132	Silver Birch; Grey Alder; Hawthorn; Elder	MA	C_2	None	None	No action
133	Silver Birch	EM	B_1	None	None	No action
134	Silver Birch	EM	B_1	None	None	No action
G135	Silver Birch	EM/MA	B_2	None	None	No action
136	Grey Alder	MA	C_2	None	None	No action
137	Grey Alder	MA	C_2	None	None	No action
138	Silver Birch	EM	B_2	None	None	No action
139	Silver Birch	EM	C_2	None	None	No action
G140	Grey Alder; Silver Birch; Goat Willow	MA/EM	B_2	None	None	Thin group by 33%. Select birch for retention.
141	Grey alder	EM	B_2	None	None	No action
142	Silver Birch	Mat	B_2	None	None	No action
143	Silver Birch	MA	C_2	None	None	No action
144	Silver Birch	MA	C_2	None	None	No action
145	Silver Birch	EM	B_2	None	None	No action
146	Italian Alder	Mat	B_2	None	None	No action

Key Y – Young MA – Middle-age EM - Early mature Mat – Mature OM - Over-mature * - Dominant species

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
147	Silver Birch	EM	C_2	None	None	No action
148	Silver Birch	EM	C_2	None	None	No action
149	Italian Alder	EM	B_2	None	None	No action
150	Grey Alder	EM	C_2	None	None	No action
151	Italian Alder	EM	B_2	None	None	No action
G152	Silver Birch; Grey Alder; Italian Alder	MA	B_2	Proportion of the group located in corridor to be cleared to allow access road construction	None	Fell trees within highway corridor (see Tree Protection Plan). Thin group by 33%. Select birch for retention
153	Italian Alder	EM	B_2	None	None	No action
154	Grey Alder	EM	C_2	None	None	No action
155	Italian Alder	EM	B_2	None	None	No action
156	Grey Alder	EM	B_2	None	None	No action
157	Italian Alder	EM	B_2	None	None	No action
158	Italian Alder	Mat	B_2	Tree located in corridor to be cleared to allow access road construction	None	Fell tree
159	Italian Alder	EM	B_2	Tree located on proposed access road footway	None	Fell tree
160	Italian Alder	EM	C_2	Tree located on proposed access road footway	None	Fell tree
G161	Silver Birch; Goat Willow; Grey Alder	MA	C_2	Proportion of the group located in corridor to be cleared to allow access road construction	None	Fell trees within highway corridor (see Tree Protection Plan)

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
162	Italian Alder	EM	C_2	Tree located in corridor to be cleared to allow access road construction	None	Fell tree
163	Grey Alder	EM	C_2	Tree located in corridor to be cleared to allow access road construction	None	Fell tree
164	Silver Birch	EM	B_2	None	None	No action
165	Silver Birch	EM	C_2	None	None	No action
166	Silver Birch	EM	B_2	None	None	No action
167	Goat Willow	Mat	C_2	None	None	No action
G168	Silver Birch; Goat Willow	MA/EM	C_2	None	None	No action
G169	Silver Birch; Grey Willow; Goat Willow	EM/MA/Y	B_2	None	None	No action
170	Silver Birch	EM	B_2	None	None	No action
171	Silver Birch	EM	B_2	None	None	No action
172	Silver Birch	EM	B_2	None	None	No action
173	Hybrid Balsam Poplar	MA	C_2	None	None	No action
174	Hybrid Balsam Poplar	MA	C_2	None	None	No action
175	Hybrid Balsam Poplar	MA	C_2	None	None	No action
176	Hybrid Balsam Poplar	MA	C_2	None	None	No action

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
177	Hybrid Balsam Poplar	MA	C_2	None	None	No action
178	Hybrid Balsam Poplar	MA	C_2	None	None	No action
179	Apple	EM	C_1	Tree located on proposed access road footway	None	Fell tree
180	Horse Chestnut	MA	C_1	Tree located in corridor to be cleared to allow access road construction	None	Fell tree
181	Hawthorn	MA	C_1	Tree located in corridor to be cleared to allow access road construction.	None	Fell tree
182	Hazel	MA	C_1	Tree located in corridor to be cleared to allow access road construction	None	Fell tree
G183	Sycamore; Ash; Hazel; Rowan; Hawthorn; Alder	MA	C_2	None	None	Thin stand 33%. Single retained multi-stemmed sycamore and ash.
G184	Sea Buckthorn; Hazel; Dog Rose; Silver Birch; Guelder Rose	MA	C_2	None	None	No action
185	Hawthorn	EM	C_1	None	None	No action
186	Hawthorn	EM	C_1	None	None	No action
187	Goat Willow	Mat	C_1	None	None	No action
G188	Small-leaved Lime; Sessile Oak; Ash; Silver Birch; Sea Buckthorn	MA	B_2	None	None	Thin stand 33%. Single retained multi-stemmed lime

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
G189	Small-leaved Lime; Sessile Oak; Ash; Silver Birch	MA	B_2	None	None	Formative pruning of lime tree. Crown- lift lime to 2m
G190	Silver Birch; Hawthorn	MA	C_2	None	None	No action
191	Norway Maple	MA	C_2	None	None	No action
192	Field Maple	EM	C_2	None	None	No action
193	Field Maple	EM	C_2	None	None	No action
194	Field Maple	EM	C_2	None	None	No action
195	Italian Alder	EM	B_2	None	None	No action
196	White Willow	EM	C_1	None	None	Coppice
197	Ash	MA	C_1	None	None	No action
198	Sycamore	MA	B_2	Tree located in corridor to be cleared to allow footpath construction	None	Fell tree
199	Ash	MA	B_2	Tree located in corridor to be cleared to allow footpath construction	None	Fell tree
200	Sycamore	MA	C_2	Tree located in corridor to be cleared to allow footpath construction	None	Fell tree
201	Silver Birch	Mat	C_2	Tree located in corridor to be cleared to allow footpath construction	None	Fell tree
202	Silver Birch	EM	B_2	Tree located in corridor to be cleared to allow footpath construction	None	Fell tree
203	Silver Birch	EM	C_2	Tree located in corridor to be cleared to allow footpath construction	None	Fell tree

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
204	Silver Birch	MA	C_2	Tree located on line of proposed footpath	None	Fell tree
205	Silver Birch	EM	B_2	Tree located on line of proposed footpath	None	Fell tree
206	Hawthorn	EM	C_2	Tree located in corridor to be cleared to allow footpath construction	None	Fell tree
207	Goat Willow	Mat	R	Poor quality tree proposed for felling	None	Fell tree
G208	Silver Birch; Sycamore	EM	B_2	None	None	No action
G209	Norway Maple; Grey Alder; Field Maple; Hawthorn	MA	B_2	None	None	No action
210	Norway Maple	MA	B_1	None	None	No action
211	Norway Maple	MA	B_1	None	None	No action
212	Rowan	MA	C_1	None	None	No action
213	Rowan	MA	C_1	None	None	No action
214	Norway Maple	EM	B_1	None	None	No action
215	Caucasian Fir	Y	C_1	None	None	No action
G216	Italian Alder; Field Maple; Cotoneaster; Rowan	MA/EM	B_2	None	None	No action
217	Silver Birch	MA	C_1	None	None	No action
218	Sycamore	MA	B_1	None	None	Prune to 1m clear of sign

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
219	Sycamore	MA	C_1	None	None	Single multi-stemmed tree
G220	Field Maple; Cotoneaster; Sea Buckthorn	EM	B_2	None	None	No action
G221	Norway Maple; Grey Alder; Field Maple; Hawthorn	MA	B_2	None	None	No action
G222	Norway Maple; Field Maple; Hawthorn; Alder; Rowan; Blackthorn	MA/EM	B_2	None	None	No action

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