LANDSCAPE, ECOLOGICAL AND ARBORICULTURAL SURVEY

For

The University of the West of England

February 2009

COOPER PARTNERSHIP

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Section 1 Introduction

1.1 In January 2009 Cooper Partnership were commissioned by the University of the West of England (UWE) to carry out a landscape, ecological and arboricultural survey of their Frenchay campus, together with land purchased from Hewlett Packard Ltd. The geographical scope of the surveys, are shown in the key diagrams 2163/01 and 02 in the appendices to this report. For convenience the former Hewlett Packard site was divided into nine different areas prior to a 2007 landscape and ecological survey; this convention was maintained and extended to the UWE site.

1.2 Cooper Partnership undertook the landscape surveys. The ecological surveys were carried out by sub-consultants Cresswell Associates and Wessex Ecological Consultants and the arboricultural survey by Alan Engley Associates.

1.3 Appendices to all three surveys, are at the rear of this report.

Section 2 Scope and Background

2.1 In August 2007 Cooper Partnership Limited were appointed by Atisreal, on behalf of Hewlett Packard (HP), to prepare a landscape survey of 70 acres of land in north Bristol. This survey was checked and updated in January 2009.

2.2 The landscape survey covers topography, soils, soft and hard landscape, historically or visually important landscape features, views, listed buildings and their settings and landscape management.

2.3 The study covers:

i Areas 1, 2 and 4-9 on the former HP site, as shown on Plan No: 2163-01. Individual hedgerows and field numbers have been added to this plan for clarity. Area 3 is not included in this study;

ii Areas 10-13 on UWE Frenchay campus, as shown on Plan 2163-02.

2.4 In landscape terms the study area logically divides into the following:

i Hewlett Packard Buildings 1, 2 and the Cafeteria (Areas 1 and 2);

ii Wallscourt Farmhouse and its surroundings (Areas 4, 5, 6 and part of 7);

iii undeveloped land (most of Area 7 and Area 8);

iv Area 9 beyond the former Hewlett Packard internal estate road;

v Frenchay Campus perimeter (Area 10); and

vi the setting to UWE buildings (Areas 11-13).

2.5 The subsequent text will be divided into these zones.

General Background

2.6 The former Hewlett Packard site was formerly farmland and slopes from a high point along the University of the West of England (UWE) boundary westwards towards the MOD. A minor valley follows hedgerow A bordering Area 4.

2.7 Within the developed area of the former Hewlett Packard site, much of the original landform has been disguised by substantial cut and fill required to link the three main buildings at a common finished floor level of 67.5 AOD. The original hedgerows were removed as a result, although two large horse chestnut trees were retained to the north east of Building 1. Mature trees were also retained around the farmhouse and former orchard to the west.

2.8 Wallscourt Farmhouse was built in the mid 19th century. The farm itself was a model farm on the Duke of Beaufort's estate. It had a land drainage scheme and other innovations which are described in one of the barns in Area 4. Some of the old farm equipment is exhibited there too. The farm was originally called Starve All Farm referring to its doubtful agricultural quality.

2.9 The natural topsoil is generally 150mm thick and has a high clay content and has poor drainage. Beneath the topsoil are bands of limestone and clay subsoil underlain by mudstone. The natural soil profile can be seen in the cutting for the recently created stone track along the south boundary of the study area (Area 7). Building 1 service yard is approximately 4m below original ground level and the car park east of the Building 1 entrance approximately 7m below original ground level which created challenging conditions for plant establishment.

2.10 None of the trees on either site are protected by Tree Preservation Orders (TPO). Splatts Abbey Wood, on the adjoining MOD site and bordering the sub-station, is an ancient woodland, and Site

of Nature Conservation Interest.

2.11 Some of the trees on both sites predate any development. They are few in number. On the former Hewlett Packard (HP) some have been recently felled due to phytophera: a soil borne and ultimately fatal disease. Priority should be given to retaining the remaining mature trees. Their locations are discussed below.

2.12 The planting design on the former HP site is a product of the 1980s. The prevalent landscape style at the time comprised swathes of low maintenance shrub and ground cover planting. Grass, which requires high maintenance, was mainly limited to the area around the farmhouse. Peripheral planting comprises native trees and shrubs. Mounding and semi-ornamental shrub species screen the car parks from the internal estate road. More ornamental species occur near the buildings. Some of the shrubs have required periodic pruning to rejuvenate them. Some shorter lived species such as hebe and lavender have required replacement at approximately 10 year intervals when they reach the end of their aesthetic lifespan.

2.13 The UWE site occupies an east facing slope; the western site boundary forms a minor ridgeline that separates UWE from the former HP site. Ground conditions are similar to those on the former HP land and there is also evidence of cut and fill with some steep grass banks taking up level changes between building platforms and car parks.

2.14 The UWE site comprised agricultural land until the second half of the 20th century when it was developed as an educational campus. Some mature oaks (tree numbers 344, 345, 346 and 348) are still present east of B Block and oak and ash (tree numbers 293, 294 and 289) along the southern boundary. These trees are the remnants of former hedgerows which can be traced back at least 280 years.

2.15 Areas of ornamental planting at UWE were largely established since the 1980s. Comprehensive landscape schemes are associated with S and R Blocks, and Northavon House and the new student residences. Most of the site comprises grass.

Section 3 Areas 1 and 2

3.1 Areas 1 and 2 as shown on Plan 2163-01 comprise buildings erected in the 1980's with adjacent car parking; the latter being screened from the perimeter road by mounding and planting.

West of Building 2

3.2 Car parks have trees at three bay centres. None are growing well due to ground conditions. Car park boundaries comprise slopes or mounds with shrub planting including rose, purple hazel, laurel, euonymus and cotoneaster. In front of the west face of Building 2 planting of bergenia, euonymus, viburnum and dwarf pine is dotted with self seeded ash. Several of the grand firs are now making a visual impact as are the pines and poplar on the northwest corner of Building 2 and should be retained if possible.

3.3 The hard landscape includes tarmacadam, as well as the brown clay paviors, Scottish beach cobbles and granite boulders.

3.4 Views of the MOD are partly screened by trees. There are no other views of this area.

North of Building 2

3.5 The planting and hard landscape is of a similar character to the areas discussed above. White stemmed birch near Building 2, yellow poplar, cherry, an ash and grand fir make the biggest visual impact and are more worthy of retention than other trees.

3.6 A tarmacadam path north of the car park joins part of the peripheral path system which incorporates various pieces of trim trail equipment. One exercise station is located here; its condition could be poor.

3.7 Much of the peripheral planting is becoming overwhelmed with bramble.

3.8 The car park is overlooked by the upper floors of UWE residences constructed since 2000.

North of Building 1

3.9 The service yard has been cut into the landform revealing two 4m high steep slopes (approximately 1:1) stabilised with two layers of netlon geogrid pinned to the substrate. This was done to retain the mature horse chestnuts on the top. The health of these trees should be checked every 3 years by an arboriculturalist. Semi-mature horse chestnuts are located on the adjacent grass bank, but their condition is generally poor. The two mature horse chestnuts should be retained.

East of Building 1

3.10 The semi-mature birch, pine and ground cover planting conceal a steep slope down to the Building 1 plant room. Steps in brown clay paviors access the northeast corner of Building 1 and reveal a hidden courtyard with beach cobbles, boulders and planting. The trees create a good screen and should be retained if possible.

3.11 Outside the main entrance to Building 1 and between Building 1 and the Cafeteria, there is dense shrub and herbaceous planting including a semi-mature ornamental maple, Turkish hazel, Japanese maples and a liquidambar which should all be retained if possible. All the timber benches are in a poor condition.

3.12 The swathes of planting on the bank east of the car park are engulfed by bindweed and bramble. Some species such as hebe have outlived their aesthetic lifespan.

3.13 Hard landscape materials are as before.

3.14 The site was developed prior to the Disability Discrimination Act now enshrined in the Building Regulations. Consequently there are only steps to link Building 1 with the upper car parks A and B.

Both car parks are surrounded by native trees and shrubs. Much of the willow has been affected by willow scab disease exacerbated by the wet clay soil in winter giving a poor aesthetic effect. Other species include native shrubs and trees such as cherry, hazel, dogwood, ash, oak, and wayfairing tree. Car park B has false acacia trees; most are poor. The limes in car park A have struggled, and are not worth retaining.

3.15 The boundary between car park A and the squash courts includes fast growing willow and poplar; neither are long lived species. Their condition needs to be regularly checked due to their proximity to buildings.

3.16 This area is largely screened from views by boundary vegetation.

The Cafeteria

3.17 The Cafeteria has a brick paved terrace to the south. A bank of grass with white poplar trees lies to the east. The latter are leaning and need to be checked regularly for their structural stability. They create a prominent tree group although, due to their relatively short lifespan, retention is not essential. On the corner of the cafeteria service yard access road are two trees which predate development; an ash and a false acacia; both are in poor condition.

Section 4 Wallscourt Farmhouse and its Surroundings

4.1 This is covered by Areas 4, 5, part of 6 and part of 7 shown on Plan 2163--01.

4.2 The farmhouse is a grade II listed building. The setting of the listed building includes the four barns to the northwest (Area 4), the former orchard and fishing pond to the west (part of Area 7) and the walled garden to the north (Area 5). The extent of its setting to the south and southeast is less easily defined. The original garden boundary comprised the 2m stone wall, the southern end of which linked up with the dwarf stone wall to the west. The listed building and its setting will be material considerations in seeking planning consent for development.

4.3 The landscape components comprise:

i four stone barns, one of which displays old farm equipment including some of the innovative apparatus used to move goods between each barn. A stone wall links the barns on three sides. In the centre is a lawn, a few specimen trees including a memorial tree, Bhutanese pine, planted border and timber pergola covered in climbing roses and wisteria. The structural stability of the pergola needs to be checked given the weight of plant material on top. Beneath the pergola are the original limestone paving flags;

ii a former walled garden was subsequently used as a tarmac sports surface. The building adjacent to the farmhouse contains squash courts and changing facilities. East of the walled garden is a small lawn with a boules area and fine specimen semi-mature wellingtonia donated by one of the Hewlett Packard staff; this tree should be retained. Several cherries have been planted alongside the vehicular access and parking area. The yew and ash predate development. West of the yew is a commemorative oak. All of these trees should be retained if possible, particularly the yew;

iii west and south of the farmhouse a raised grass platform around the house slopes down to a flat lawn used in the past for croquet. The steps and low wall are original features. In the southwest corner of this area a very large horse chestnut has largely succumbed to phytophera and its replacement, a memorial oak tree, is planted nearby;

iv west of the croquet lawn is a former orchard with a few remnant poor quality fruit trees. It has recently been used for sports and social activities. It is bounded to the north by a low wall and railings; both original features, and to the west by Hedgerow A. The hedgerow includes ivy, bramble, dog rose, thorn, dogwood, blackthorn and hazel. It was augmented over the last twenty years by additional planting of dogwood, viburnum lantana and cherry on its east side and ash, willow and cherry on its west side. Long grass was left at the base to encourage a more species rich ground flora. Hedgerow A is likely to be an 'important' hedgerow under the 1997 Hedgerow Regulations, it should be retained;

v the fishing pond has previously been stocked with fish such as tench and used as a recreation area by Hewlett Packard's fishing club. The pond is clay lined and has an Island. It Is an original feature probably constructed in the 19th century. Trees surrounding the pond are largely mature ash which should be retained. The grass area south of the pond is prone to flooding, being a natural low point on the site. The southern boundary is a temporary willow hedge (planted in 1986) alongside a site security fence. A small section of this willow hedgerow remains (labelled B in Appendix 1). It is largely bramble, old man's beard, willow, dogwood and diseased willow and it is of poor quality in landscape terms;

vi south-east of the farmhouse is a 2m limestone wall enclosing a large fine ash tree (180 in the tree survey) possibly the same age if not older than the farmhouse and a smaller ash and sycamore. All should be retained if possible. A newly planted lime (circa 1988) replaced a large mature lime felled when the squash courts were constructed and should be retained if possible (183 in the tree survey). A redwood donated by a staff member is planted south of the squash courts and should be retained if possible (tree 184). To the south is amenity grassland used for sports;

vii Area 6 contains the base of temporary buildings and a car park; and

viii within Area 5 is a car park surrounded by native shrubs and trees including oak, ash, cherry, poplar, hawthorn and hazel. False acacias were planted between cars underplanted by Rosa Wiltshire; the acacias are poor quality.

4.4 Hard landscape materials comprise natural stone flags and concrete slabs east of the farmhouse.

4.5 This area is largely screened from UWE Frenchay campus by vegetation but will be visible from the new housing area to be constructed by Redrow Homes to the south.

4.6 Much of the landform is original.

4.7 Priority should be given to retaining the fishing pond, mature ash that surround it, Hedgerow A, the yew tree and ash, sycamore, lime and redwood group southeast of the farmhouse.

Section 5 Undeveloped Land

5.1 The undeveloped part of the study area comprises fields divided by hedgerows. The fields have historically been cut for hay. They are currently unmanaged. The hedgerows have been unmanaged for over 20 years.

5.2 Plan 2163-01 shows hedgerow locations.

5.3 Hedgerows are as follows:

i Hedgerow A discussed in Section 3.3 (iv), it should be retained;

ii Hedgerow B planted in 1986 is discussed in Section 3.3 (v);

iii Hedgerow C is a sporadic hedgerow of blackthorn, dogwood, bramble, elder and hawthorn. It has no trees and is in poor condition;

iv Hedgerow D comprises hawthorn, ash, blackthorn and bramble with dead or dying elm. There is evidence of past layering and no significant trees. The hedge is visually prominent, following a minor ridgeline and visible from Northville, Filton and the MOD;

v Hedgerow E again shows evidence of past layering. Species include whitebeam, hawthorn, elder, bramble, dogwood, field maple, blackthorn, lime and elm. This is the most species rich hedgerow on site and should be retained;

vi Hedgerow F is almost entirely blackthorn and includes two mature oaks. One is the most visually prominent tree on this part of the site. Both trees should be retained; and

vii Hedgerow G has largely been removed in recent months for construction of a junction on the new northern access road. The remaining western end largely comprises hawthorn.

5.4 It is possible that South Gloucestershire Council will require retention of the hedgerows. The hedgerows to be sacrificed in priority to others would be B and C; a proposal which may be acceptable to the local authority providing there is a wildlife link between Splatts Abbey Wood and Long/Hermitage Wood via retained hedgerows within the study area and within Redrow Homes land.

5.5 West of Area A is an area of subsoil fill 3-4m deep deposited some 20 years ago following construction activity. The mound is bounded by Hedgerows A and B and the eastern edge of Hewlett Packard's retained car park in Area 3.

5.6 Temporary stoned tracks follow the south side of hedgerow B and north side of the new green palisade boundary fence (erected 2007). Small areas of topsoil were stripped from Field 3; weed growth has concealed the extent of this. Otherwise the fields are untouched.

5.7 Area 8 is bounded on the north-west side by a ditch to aid drainage of the fields during wet weather.

5.8 Field 2 is on a minor ridgeline affording views north to Northville, Filton and MOD with the Welsh Hills in the distance. To the south and east, future housing and UWE roofs will be visible.

5.9 From Field 3 there are clear views of the MOD and retained Hewlett Packard building.

Section 6 Area 9 Periphery to Former HP Land

6.1 The northern, north western and eastern boundaries comprise native planting of ash and oak as climax species together with cherry, pine, birch, alder, willow, and field maple. There is an understorey of hawthorn, hazel, blackthorn, elder, dogwood and dog rose. Tree cover has been maintained by periodic thinning in numbers to provide light to the understorey and to achieve strong branch structures for the retained trees. The climax or dominant long term species are intended to be ash and oak. Shrubs have also been coppiced in the past to maintain their vigour.

6.2 Low edge planting includes ground cover snowberry, shrub roses, dwarf cherry laurel and rose of sharon.

6.3 Planting is showing signs of being engulfed by bramble. The density of the planting makes this difficult to eradicate.

6.4 Some areas of grassland around the pond have been allowed to grow long to vary the sward. This has been helpful in terms of health and safety as the slope east of the pond is steep.

6.5 Some trees, particularly alder, have died due to phytophera and some willows have succumbed to willow scab disease.

6.6 A tarmac path provides pedestrian access from site entrance Gates 1 and 2, although the path near the roundabout meanders through planting north of the car parks in Area 1. The path also acts as a trim trail with pieces of exercise equipment made from old railway sleepers and telegraph poles: most are in need of replacement.

6.7 The retention pond is lined with clay and surrounded with native and non-native shrubs and marginal plants. The pond attracts a range of wildlife and the stepped grass bank has been a popular sitting area in summer.

6.8 Most of this area has been regraded or mounded to accommodate level changes; some of the slopes are very steep.

6.9 Views out are largely screened by vegetation, although the recent widening of the northern access road has removed vegetation from the west side of the retention pond. It will be a few years before replacement planting screens the road and MOD car park beyond.

6.10 Overhead cables follow the northern boundary. This has limited the height of vegetation beneath. Trees other than birch have largely been omitted.

6.11 Around the pond tarmacadam gives way to hoggin with timber edgings. Both surfaces are showing signs of damage.

Section 7 Area 10 UWE Site Periphery

7.1 Area 10 comprises the perimeter to the campus, with a wide grass buffer along the eastern boundary adjacent to Coldharbour Lane and narrower planted margins along the north, west and south boundaries.

Coldharbour Lane Frontage

7.2 North of the main entrance, the eastern boundary is marked by a clipped hawthorn hedge obscuring a timber post and wire fence. The hedge largely screens traffic on Coldharbour Lane. Inside the site is an extensive grassed area, mounded to form a valley which acts as a flood containment area. In normal conditions, Ham Brook flows northward along the valley towards a culvert in the north-east corner of the site.

7.3 A dense belt of mature deciduous trees, including poplar, willow, ash, birch and occasional oak, follows the top of the mound on the east side, screening the site in views from the east. At the northern end, the tree belt includes numerous evergreen coniferous trees, enhancing the screening effect and providing winter colour. Although remedial work and thinning may be needed in places, the tree belt forms a strong landscape element worthy of retention.

7.4 Reeds, dogwood and small deciduous trees have been planted intermittently along the margins of the stream.

7.5 At the southern end of this area is a children's nursery building; to the north west stands a large mature oak tree which provides a strong feature that should be retained (tree 225).

7.6 South of the main site entrance, a dense variegated holly hedge obscuring a timber post and wire fence follows the eastern boundary. Inside the site is a large pond, with a central fountain and clumps of tall reeds at its margins. The pond is surrounded by grass with a few trees, mainly silver birch, a large willow, Norway maple and a fine Wellingtonia (tree 275), all of which should be retained if possible.

7.7 The stream north of the pond is lined by mature alders forming a strong landscape feature which should be retained. To the west, the grassed area slopes up to a mound with mature willows and alders. The tree planting largely screens the site in views from the east.

Southern Boundary

7.8 Along the southern boundary is a narrow belt of mainly deciduous trees, including oak, field maple, ash, rowan, hazel and yew with ivy ground cover.

7.9 A metal fence marks the southern site boundary, beyond which is a similar strip of planting, but with fewer trees and a hedge. The combined tree planting along this side effectively screens the site from the access road into the Redrow land.

7.10 Further west, the tree belt becomes narrower. A large mature oak (tree 289) stands just outside the fence; the tree should be retained.

7.11 Behind the service compounds are several white-stemmed birch and a narrow belt of small deciduous trees and scrub, with a mature oak and ash (trees 293 and 294). The latter should be retained.

South West Corner

7.12 In the south-west corner is the science pond with a butyl liner and native marginal and aquatic planting.

7.13 Outside the perimeter fence, a footpath follows the western site boundary, and is well used by pedestrians and cyclists. It has several access gates into the UWE site.

Western Boundary

7.14 At the southern end of the western boundary, the parking area is edged by ornamental shrub planting such as mahonia, dogwood and lonicera, in front of native hedge and young oak, ash, birch and cherry trees along the perimeter fence. This is part of the planting undertaken within the last 10 years in conjunction with the construction of S Block. At the mini-roundabout between Areas 12 and 13, shrub species include rugosa roses, red and green stemmed dogwoods, viburnum and snowberry, planted beneath white-stemmed birch trees. Native shrub planting with small oak and cherry trees continues along the perimeter fence line.

7.15 West of Felixstowe Court and D and P Blocks is a tall, clipped hawthorn hedge with occasional field maple and hazel which follows the boundary. Tree 204, an ash; 308, a field maple; and limes (numbers 310) should be retained if possible.

7.16 The hedge peters out west of Q Block. Beyond, a footpath and cycleway lead north along the west side of Area 11, bordered by a low bund vegetated by ivy, bramble, native shrubs and numerous young trees.

7.17 A belt of mature trees including ash, oak and Scots pine (trees 202, 203 and 204) follows the western boundary and provides a strong landscape element, screening the site in views from the west. These trees should be retained.

7.18 Alongside the sports pitches is a predominantly field maple hedge.

Northern Boundary

7.19 This comprises an intermittent native hedge and occasional trees such as poplar, birch and cherry.

7.20 Further east, alongside the new Sports Hall, extensive planting has recently been carried out on the north-facing bank sloping down to the Filton Road. This comprises mainly native hedgerow species with pines and holly, and some standard trees including oak. The boundary planting should be retained as a buffer along Filton Road.

Section 8 Areas 11-13 UWE

8.1 Inside the campus, the numerous buildings and car parks are set within paving, grass and patches of mainly ornamental planting. The character of the landscape settings varies across the site.

Area 11

8.2 Area 11 occupies a large part of the northern end of the campus, and includes recently built 7 storey student accommodation blocks, the new Sports Hall and all-weather sports pitches.

8.3 Planting to the north of the Sports Hall is described above. To the east, new ornamental planting within and adjacent to the car park includes viburnum, hebe, skimmia, phormium and choisya. To the south of the building is a block paved square with seating and nine silver birch trees planted in a grid.

8.4 New ornamental tree and shrub planting and hedges separate the residential blocks and create amenity areas within courtyards. Species include viburnum, hebe, bergenia, lavender, choisya, phormium, lonicera and ceanothus.

8.5 The most southerly part of Area 11 comprises Carroll Court, an area of two-storey, brick-built student accommodation set within grass areas with few trees. Occasional corners of ornamental shrub planting include ceanothus, phormium and clipped lonicera, with beech hedges around some parking areas. Tree groups 332 and 333 are the only significant vegetation and could be retained, but that is not essential.

Area 12

8.6 This area covers most of the site and comprises numerous buildings, courtyards and car parks.

8.7 R Block is set within blue clay paving and extensive, relatively recent, ornamental planting, including hebe, bergenia, viburnum, skimmia, roses and silver birch trees, retained by low brick walls or timber sleeper walls.

8.8 At the south end of Q Block, is dense, mainly evergreen planting of elaeagnus, dwarf laurel and snowberry, phormium and mahonia, enclosed by metal railings and a small kidney-shaped pond. Other planting comprises two large mature willows. The willows 317 and 318 should be retained if possible.

8.9 A small area of ornamental planting adjacent to the Octagon comprises hebe, mahonia, phormium, euonymus, euphorbia, ceanothus, pittosporum and clipped yew.

8.10 West of B Block is a row of pollarded lime, which will need to be re-pollarded annually, and will never make a significant contribution to landscape quality.

8.11 Small areas of ornamental planting are associated with Felixstowe Court, B Block and courtyards between A and C Block, L and F Block. Five false acacias (trees 339) are worth retaining if possible.

8.12 Between C Block and A Block is an enclosed courtyard with broad, ramped steps paved in blue clay paviors. The lower part of the courtyard is paved in concrete slabs. The ornamental planting includes viburnum, aucuba, fatsia, pittosporum, mahonia, holly, a false acacia and gleditsia (trees 340 and 341).

8.13 East of G and N Blocks, facing Coldharbour Lane are two large ash trees and a group of limes (trees 239 and 328) which are semi-mature and should be retained if possible. Other trees in this area are less mature – 6-7m in height and could be replaced or translocated.

8.14 East of G Block are five mature limes that should be retained.

8.15 East of A Block are semi-mature lime, birch, willow (trees 252, 253, 342, 343). The limes in

particular, being a long lined species should be retained if possible. Shrub planting includes holly and pittosporum, box hedging, viburnum, hypericum, cotoneaster, heathers and lavender.

8.16 Northavon House is directly inside the main entrance to the campus. The building is encircled by roadways. Mature shrub planting comprises elaeagnus, snowberry, hebe, dogwood, phormium, lonicera, dwarf pines and laurel, with alder, pine and silver birch trees. On the east side of the building, there are groups of large silver birch and pine (Group 257) forming a strong landscape feature opposite the main entrance. The landscape scheme associated with this building makes a positive statement and is one of the few areas of planting on the site worthy of retention.

8.17 East of B Block, there are several large mature oaks (trees 344, 345, 346, 348) that should be retained and a group of long term replacement oaks (group 347). Along the south side of the car park is a row of trees with lonicera and berberis, cotoneaster, dwarf laurel, snowberry and hebe; this is recent planting and could easily be replicated if redevelopment took place.

8.18 East of S Block are extensive car parks. Within the car parks, there is little vegetation except around a pond, west of the Estates Department. None of the trees here are worthy of retention.

8.19 There are a number of maturing trees within Area 12 of good landscape value. Many are of transplantable size.

Area 13

8.20 This area in the south-west corner of the campus mainly comprises S Block, where three courtyard gardens have recently been constructed, separated from parking by a beech hedge.

8.21 The courtyards contain a variety of paving materials and designs to give each a distinctive character. All contain semi-mature shrubs such as bergenia, hebe, mahonia, dwarf pine, viburnum, ceanothus, lavender, hebe and skimmia.

8.22 South of S Block the gas governor and substation are partly screened by ornamental shrub planting such as dogwood, dwarf Laurel, hebe and lonicera. Trees comprise white-stemmed birch.

8.23 East of S Block, there are three raised lawns edged by hebe, viburnum and lavender and rows of young ornamental pears. Paving is largely blue clay paviors to match the building.

8.24 Stepped grass banks take up the significant change in level between S Block and the extensive car parks to the east.

Section 9 Ecology

Introduction

9.1 This report presents the results of an ecological assessment of two areas of land between Filton and Frenchay, North Bristol undertaken by Wessex Ecological Consultancy for University of West of England. The two areas consist of the existing University site and an area purchased from Hewlett Packard. The University site is dominated by buildings and car parks with associated landscaping and amenity grassland, but also includes more extensive grasslands, blocks of planted woodland and wetland habitats. The Hewlett Packard land comprises former farmland and industrial units with landscaping, amenity grassland and an old farmhouse. The latter site was surveyed by Cresswell Associates for Atisreal Ltd in September 2007 and information from that survey has been incorporated into this report.

9.2 The aims of the study were to assess the nature conservation value of the survey area and the likely presence of rare or protected species, and to identify any features, habitats or species which would constitute potential constraints to any development which might take place within this area. The surveys were undertaken on 14th and 15th January 2009.

9.3 Within the Hewlett Packard site the study area covers Areas 1, 2 and 4-9 as shown on Drawing 2163/01. Area 3 was not included in this survey. The University site consists of Areas 10-15 as shown on Drawing 2163/02. The survey area falls naturally into a number of ecological units, which are identified and assessed separately in this report as follows:

i Areas 1 and 2: Industrial Units and associated car parks and landscaping;

ii Areas 5, 6, 7 and the eastern end of Area 4: Wallscourt Farmhouse and its surroundings;

iii Area 8 and the majority of Area 4: Farmland - fields and hedgerows;

iv Area 9: Planted woodland and landscaping beyond the perimeter road;

v Area 10: The boundaries of the University site, including a complex of grassland, planted woodland and wetland habitats on the eastern boundary of the site; and

vi Areas 11, 12, 13, 14 and 15: University buildings with associated car parks, landscaping, trees and amenity grassland.

9.4 An ecological constraints plan has been produced in order to identify the most valuable parts of the site for nature conservation, ecological constraints, and opportunities for biodiversity enhancement associated with any future proposals.

9.5 Whilst this report presents a broad ecological appraisal of the site, it has not been possible at this stage in the season to carry out full surveys for protected species. The report does not, therefore, represent a detailed assessment of nature conservation value and/or potential impacts. Recommendations are therefore provided for further ecological survey work that would be required to inform any future planning applications.

Methodology

Desk study

9.6 No formal desk study was undertaken but information previously supplied by Bristol Regional Environmental Records Centre (BRERC) has been consulted. Local

knowledge of the area is included in relevant parts of the results below. This relates largely to the fact that Cresswell Associates and Wessex Ecological Consultancy had previously surveyed neighbouring sites (Cresswell Associates, 2002; Cresswell Associates, 2007; Wessex Ecological Consultancy 2005; Wessex Ecological Consultancy, 2008), and thus have background knowledge of the area.

Field survey

9.7 An extended Phase I habitat and protected species survey was undertaken. This comprised a walkover search of the site to identify any habitats likely to be of conservation value, and to investigate the presence (or likely presence) of protected species of plants and/or animals.

9.8 The habitat survey involved identifying and mapping the dominant habitat types following the survey methodology recommended by Natural England (Nature Conservancy Council, 1990). Dominant plant species were noted, as were any uncommon species or species indicative of particular habitat types; however, given the season, no attempt was made to compile exhaustive species lists. Botanical names follow Stace (1997) for higher plants. Particular attention was paid to the hedgerows and trees, and the status of each hedge with regard to the Hedgerows Regulations (1997) was assessed using the Wildlife and Landscape Criteria.

9.9 The likely conservation value of the watercourses and water bodies was assessed, particularly with regard to protected species.

9.10 The value of the site for roosting and foraging bats was assessed, and all mature trees and buildings were carefully scrutinised with binoculars to assess their likely occupancy by roosting and/or hibernating bats. The likely value of the various habitat features for foraging and/or commuting bats was also critically assessed.

9.11 The site was also investigated for characteristic signs of use by badgers; such as setts, paths, latrines, hairs and feeding signs. Any badger sett identified was classified according to the definitions given in Appendix II. The current level of activity of each sett entrance hole was also classified as described in Appendix II.

9.12 The likely value of the various habitat features for dormice also critically assessed.

9.13 Birds were noted incidentally during the survey, and the potential value of the habitats present for nesting birds (including ground-nesting species such as skylarks) was also assessed.

Results

General

9.14 No Sites of Special Scientific Interest (SSSIs) are present within or near to the site, although there are three locally designated Sites of Nature Conservation Interest (SNCIs) within the vicinity of the site: Splatt's Abbey Wood SNCI to the north of the survey area, and Long Wood and Hermitage Wood SNCIs to the south.

9.15 The results of the Phase I habitat survey are presented in map form with Target Notes on Drawings 2163/03 and 05; protected species Target Notes are also shown on these plans. Mapping conventions and codes follow those described by Natural England (Nature Conservancy Council, 1990). Features of particular value, or habitats not readily conforming to the recognised types, are described individually as Target Notes (on Drawings 2163/03 and 05). The main characteristics of the site are described in the following sections, with sites or features of particular conservation value detailed as appropriate.

9.16 Overall ecological constraints are shown on Drawings 2163/04 and 06. These

summarise and illustrate the relative importance of different parts of the site for nature conservation, and should therefore represent a useful tool for masterplanning and/or for identifying which areas should be considered for retention within the landscape design for any scheme.

Areas 1 and 2 (Refer to Drawings 2163/01 and 03)

Plants and Habitats

9.17 This part of the former Hewlett Packard site (shown on Plan 2163/03) comprises buildings, car parks, roads and other areas of hard standing, amenity grass and landscape planting. The landscape planting has a mixture of non-native and native species of shrubs and trees. The non-native plants include species of Cotoneaster *(Cotoneaster spp*.), Laurel *(Prunus spp.),* Juniper *(Juniperus communis),* Snowberry *(Symphoricarpos albus),* Pine *(Pinus spp.),* shrub roses *(Rosa* spp.), Maple *(Acer spp.)* and Judas tree *(Cercis siliquastrum).* Native species include Ash *(Fraxinus excelsior),* Hazel *(Corylus avellana),* Dogwood *(Cornus sanguinea),* Hawthorn *(Crataegus monogyna),* Silver Birch *(Betula pendula)* and Pedunculate Oak *(Quercus robur).*

9.18 The largest trees in these two areas are two Horse Chestnuts *(Aesculus hippocastanum),* which appear to pre-date the development of the industrial units. These are denoted by Red Target Note 6.

9.19 The amenity grassland is mostly dominated by various moss species and Perennial Rye-grass (*Lolium perenne*), with herb species limited to abundant plants of lawns including Common Daisy (*Bellis perennis*) and Common Field-speedwell (*Veronica persica*). One area, however, denoted by Red Target Note 10, is dominated by Red Fescue (*Festuca rubra*), with a patch of Glaucous Sedge (*Carex flacca*) and scattered herb species including Parsley-piert (*Aphanes arvensis*), Bee Orchid (*Ophrys apifera*) and Ox-eye Daisy (*Leucanthemum vulgare*)

Protected species and other species of conservation value

9.20 One Horse Chestnut tree has features which might be suitable for roosting bats; this tree is denoted by Yellow Target Note 12. The nature of the landscape planting, creating sheltered areas, means that Areas 1 and 2 may also be of some limited value to foraging bats, in particular pipistrelle species *(Pipistrellus sp.),* which are known to roost nearby (possibly within the Stoke Park woodlands).

9.21 Bee Orchid, which occurs in the area denoted by Red Target Note 10, is a locally uncommon plant identified in The Flora of the Bristol Region as an Avon Notable Species. It is an indicator of unimproved grassland, as are glaucous sedge and ox-eye daisy, which also occur here, but the overall diversity of such plant species here is low.

9.22 Whilst the habitats are sub-optimal for dormice, it is possible that dormice may be present should the species occur in Areas 9 or 10. However, it is currently considered that the species is not present in the area, as there are no records from more favourable habitat in the vicinity, such as Splatt's Abbey Wood SNCI. No signs of badgers were noted, although parts of Area 1 and 2 may be of some value to foraging badgers, particularly the amenity grassland.

9.23 Little dead wood was noted. The areas are therefore likely to be of little value to saproxylic (dead-wood) invertebrates. It is likely that the two areas support a fairly restricted range of common invertebrate species.

9.24 No suitable breeding sites for amphibians were noted. It is possible that small numbers of slow worms will be present in the areas of landscape planting.

9.25 Bird species recorded in the two areas were Blackbird, Blue Tit, Carrion Crow, Goldcrest and Magpie. The planting is also highly likely to be used for nesting by a

variety of bird species.

Assessment

9.26 As illustrated on the constraints plan (Drawing 2163/04), almost all of this part of the former Hewlett Packard site is of low (yellow) or negligible (green) nature conservation importance. The only exceptions are the two relatively mature Horse Chestnut trees and the area of grassland with Bee Orchids.

9.27 The Horse Chestnut trees have the potential to support roosting bats. If at all possible, these trees should be retained (for landscaping/amenity reasons as much as ecological reasons); if this is not possible, the trees would need to be surveyed for bats prior to any felling. Whilst the landscape planting in this area could be used by foraging bats, it is very unlikely to represent an important foraging area, and it is likely that any subsequent landscape scheme for the site would be no less valuable. The buildings in this area do not offer potential bat roost sites.

9.28 The area of grassland at Red Target Note 10 supports a small population of Bee Orchid and two other plant species of unimproved grassland. It is possible that summer survey would reveal further plant species but the overall diversity of such plants is unlikely to be high. Exposure of nutrient-poor subsoils during excavation of the area has probably allowed these plants to colonise. The area is of some nature conservation value and its retention would be beneficial. If this is not possible then the adverse impact could be mitigated by creating a similar area of grassland on nutrient-poor soils elsewhere.

Areas 5, 6, 7 and part of Area 4 (Refer to Drawing 2163/03)

Plants and Habitats

9.29 The majority of this part of the site comprises amenity grassland. However, mature fruit trees, a pond with mature trees, buildings, derelict land, car parks, landscape planting, a large Ash tree, a belt of planted shrubs and trees and small areas of more diverse grassland are also present.

9.30 Six mature fruit trees indicate the presence of a derelict orchard, denoted by Red Target Note 4 on Drawing 2163/03. A large Ash tree is denoted by Red Target Note 5.

9.31 Along the western side of the orchard, on either side of a hedgerow and ditch, there is a band of shrubs and trees, planted some twenty years previously and comprising mostly native species (see Red Target Note 2). The hedgerow qualifies as an important hedgerow under the Hedgerow Regulations. South of this band of trees and shrubs, and continuing the same line, is a short section of hedgerow that also qualifies as important under the Hedgerow Regulations (1997). This short section, which is part of a hedgerow which continues south beyond the survey area, is described in Appendix III as Hedgerow A.

9.32 Adjacent to, and to the east of, the boundary shrub planting described above is a strip of rough unmanaged grass which includes small amounts of Devil's-bit Scabious *(Succisa pratensis),* Common Knapweed *(Centaurea nigra)*, Meadow Vetchling (*Lathyrus pratensis*) and Meadow Crane's-bill *(Geranium pratense).* These species are associated with unimproved neutral grassland.

9.33 The pond denoted by Red Target Note 3 supports a few emergent plant species and a small stand of Common Reed *(Phragmites australis)*. It is partly shaded by mature trees standing on its banks.

9.34 The remainder of the area comprises derelict land supporting plant species commonly associated with disturbed habitats, buildings, car parks and landscape planting comprising a mixture of native and non-native species.

Protected species and other species of conservation value

9.35 Three old stone buildings, denoted by Yellow Target Notes 7, 8 and 11, have a few gaps under tiles and eaves which have the potential to be entry points for roosting bats. It is likely that the bushy field boundary marked by red Target Note 2 is particularly valuable for foraging bats.

9.36 The pond denoted by Yellow Target Note 9 is suitable for breeding amphibians, although it is known to contain fish. It was surveyed for great crested newts *(Triturus cristatus)* in 2002 by Cresswell Associates*;* none was found. However, a palmate newt *(Triturus helveticus)* and Common Toads (*Bufo bufo)* were recorded.

9.37 An outlying badger sett was recorded in the boundary of planted trees and shrubs, denoted by Yellow Target Note 10. This is likely to be of seasonal importance associated with the adjacent orchard: windfall fruit is an important food source for badgers in the autumn. Other signs, including paths and latrines, were also recorded within this field boundary, providing further evidence of the presence of badgers. It was not possible to survey a dense patch of Bramble *(Rubus fruticosus* agg.), denoted by Yellow Target Note 1; however, it is unlikely that anything other than a small or disused sett would have been missed here. More information on badgers is provided in Appendix II.

9.38 The old fruit trees within the orchard (Red Target Note 4) have the potential to be of some value for invertebrates and for nesting birds. Old orchards represent an important habitat, and the potential exists for scarce species to be present. A 2m tall stump of a large dead tree, denoted by Yellow Target Note 15, represented suitable habitat for saproxylic (deadwood) invertebrates. Woodpecker holes in this tree also have potential to support roosting bats.

9.39 Bird species recorded in the area include Chaffinch, Collared Dove and Pied Wagtail. Several Moorhens were present on the fishing pond; Green Woodpecker was recorded in Area 6 and hedgerow A; and Bullfinch was present in hedgerow A. Barn owl bred in the old stone buildings in the past, but no longer does so.

Assessment

9.40 This part of the site is of greater ecological importance than Areas 1 and 2, and contains a number of features of conservation importance (see the areas marked in orange on the constraints plan, Drawing 2163/04). In particular, the juxtaposition of the orchard, the hedgerow, the pond and a narrow belt of species-rich grassland represents a potentially valuable association of habitats. This mosaic of features should be retained and enhanced if at all possible. The retention and conservation management of these features would enhance the biodiversity of the site, and provide valuable habitat for invertebrates, amphibians, reptiles, birds and bats.

9.41 The boundary supporting the outlying badger sett is clearly of some importance to badgers and should be retained if possible.

9.42 Although Great Crested Newts were not recorded in the pond during the previous survey (Cresswell Associates, 2002), it may be necessary to update that survey, and this should be discussed with South Gloucestershire Council.

9.43 If the old stone buildings or the orchard trees are to be affected by the proposals, further surveys for bats would be required. The proximity of the wetland, hedgerow and orchard habitats described above would certainly represent good foraging habitat for bats.

Area 8 and the majority of Area 4 (Refer to Drawings 2163/01 and 03)

Plants and Habitats

9.44 The south-western corner of the site comprises unmanaged farmland and hedgerows with areas of tall ruderal plants, a new road, two stone tracks, and a ditch along the northern boundary of Area 8.

9.45 The fields (Fields 1 to 5 on Drawing 2163/01) are generally species-poor semi-improved grasslands dominated by False Oat-grass *(Arrhenatherum elatius),* with other species of grass including Yorkshire-fog *(Holcus lanatus),* Timothy *(Phleum pratense)* and Creeping Bent (*Agrostis stolonifera*). Locally there are extensive patches of Creeping Thistle *(Cirsium arvense),* Bristly Oxtongue *(Picris echioides)* and Common Ragwort *(Senecio jacobaea).* Other species present include Grass Vetchling (*Lathyrus nissolia*), Common Fleabane (*Pulicaria dysenterica*), Hard Rush (*Juncus inflexus*), Wild Carrot (*Daucus carota*), Ox-eye Daisy and Hoary Ragwort (*Senecio erucifolius*), all of which are associated with species-rich neutral grassland. These species were concentrated at the south-eastern end of Field 5, Red Target Note 11, and in the south-eastern part of Field 3, Red Target Note 12. Area 8 has small quantities of Wild Carrot. Scrub encroachment is widespread across several of the fields, with frequent Hawthorn seedlings in Field 2 and Ash seedlings in parts of Field 1.

9.46 There is evidence of soil disturbance, with several piles of soil vegetated with Common Nettle *(Urtica dioica)* and other ruderals in Field 4 and 5; the surface of Field 5 was uneven, again suggesting substantial soil disturbance a few years prior to the survey. A wide strip along the eastern and northern boundaries of Field 5 has been spread with top soil and supports a range of ruderals, including Red Dead-nettle (*Lamium purpureum*) and Charlock (*Sinapis arvensis*).

9.47 The hedgerows surrounding the fields in this area are mature and unmanaged; several have banks and/or ditches. They are composed of a range of species such as Blackthorn *(Prunus spinosa,* Hawthorn, Ash, Field Maple, Dogwood and Sallow *(Salix x reichardtii.),* with Blackthorn and Bramble forming dense thickets along each side of most of them. The hedges are described in more detail in Appendix III, and are shown on Drawings 2163/01, 03 and 04; Hedgerow B is not described in Appendix III as it simply comprises willow shrubs growing along a chain-link fence, amongst Bramble thickets. Hedgerow G is a gappy, defunct line of Hawthorn shrubs, part of which has been removed for the construction of the new roundabout.

9.48 Hedgerows E, F and the southern end of Hedgerow A qualify under the Hedgerow Regulations (1997) as important hedgerows. Hedgerow A extends beyond the survey area boundary, and was noted as being 'important' under the Hedgerow Regulations (1997) in the Wallscourt Farm Environmental Statement (Cresswell Associates 2007).

9.49 The road and roundabout had recently been constructed, and disturbed ground in the vicinity of the construction site had been colonised by plants commonly associated with such habitats, especially Bristly Oxtongue. A recently constructed temporary stone track ran around the south western boundary, and an older, partly-vegetated track followed an older fence line. This track is denoted by Red Target Note 9 on Drawing 2163/03.

9.50 The ditch denoted by Target Note 8 appears to hold water intermittently and it was dry in January 2008; it supports very few wetland species.

Protected species and other species of conservation value

9.51 Several bat species are known to forage within these areas (Cresswell Associates 2007) - it is likely that the mature hedgerows and rough grassland are particularly valuable for foraging and commuting bats. Two mature oak trees, denoted by Yellow Target Notes 2 and 3 on Drawing 2163/03, have features that could potentially be used

by roosting bats.

9.52 The hedgerows in this part of the site are not only of intrinsic nature conservation value (see above) but also form an important link between Splatt's Abbey Wood Site of Nature Conservation Interest (SNCI) to the north of the survey area and Long Wood/Hermitage Wood SNCIs to the south. Due to the dense nature of the Blackthorn and Bramble scrub next to the hedgerows, in the areas denoted by yellow Target Note 1, it was not possible to rule out the presence of badgers. However, only disused or small setts are likely to have been missed.

9.53 Surveys were previously undertaken (Cresswell Associates 2007) in Long Wood/Hermitage Wood SNCIs which confirmed the absence of Dormice from these woodlands. Similarly, there are no records of the species from Splatt's Abbey Wood SNCI (Wessex Ecological Consultancy 2005). Surveys of the site were not therefore carried out, as it was inferred from these results that Dormice would not be present in the network of hedgerows lying both within and immediately south-west of Area 4. However, further consultation may be required with South Gloucestershire District Council to confirm that further surveys are not needed.

9.54 Bird species recorded in the area include Song Thrush: in Field 5, Hedge E and Hedge F; Bullfinch in Hedge F; Kestrel in Field 1; and Woodcock in Field 3. The 2007 survey found Linnet in the area. Grey partridge was previously present here, but has disappeared due to habitat change and development in the wider area. A small group of Roe Deer is present.

9.55 The fields in these areas are sufficiently large and open as to provide habitat suitable for use by ground nesting birds such as Skylark (a UK BAP species), whilst Linnet, Bullfinch and Song Thrush, all UK BAP and red list species, have been recorded on the site. The hedgerows are also likely to provide nesting habitat for a number of other bird species.

9.56 All five fields in Area 4 have habitat that is suitable for supporting reptiles, especially Grass Snake *(Natrix natrix)* and Slow Worm *(Anguis fragilis).* The field margins are likely to be the most valuable sites for reptiles, and earth banks and bunds provide suitable refuges and hibernation sites (yellow Target Notes 4 and 5). The edges of the stone track provides suitable basking sites for reptiles (yellow Target Note 4), and there are also possible egg laying sites for grass snakes in compost heaps denoted by yellow Target Notes 6 and 13. No suitable breeding sites for amphibians were noted.

9.57 The lack of management of the fields, the presence of stands of plants such as Common Fleabane and Bristly Ox-tongue and the presence of small ephemeral pools suggest that Field 5 in particular might be of some value for invertebrates.

Assessment

9.58 Some of the grassland in this area supports a range of plant species associated with species-rich grassland. One of these species, Grass Vetchling, is listed in The Flora of the Bristol Region as an Avon Notable Species. Summer survey would probably reveal further species, although the existing survey data suggest that the diversity of such plants is not likely to be high. The most diverse areas of Fields 3 and 5, shown on Drawing 2163/04 are of some nature conservation value in a local context and it is recommended either that they are retained or that replacement areas of grassland are created.

9.59 The other fields in this part of the site are of relatively limited intrinsic value, but the network of hedgerows (including the rough grassland adjacent to them) represents an important ecological feature used by a range of species. It is therefore recommended that the hedges should be retained, as far as possible, in the course of any proposed development; retention would reduce potential fragmentation effects of any future development. Options should also be investigated, through new landscaping, that

would restore the fragmentation that has already taken place through the construction of the new link road and roundabout and in particular to strengthen links between Splatt's Abbey Wood and Long and Hermitage Woods. The key area for such a link is between the hedge to the west of the orchard and the western site boundary.

9.60 Oak trees in hedge F have potential to support roosting bats.

9.61 It is recommended that a spring survey is carried out in order to identify any use of the site by Sky Lark and other ground-nesting species.

9.62 There are various features in this part of the site that are likely to be of value to reptiles, including grassy edges to the hedgerows, compost heaps and vegetated bunds. It may therefore be necessary either to retain the majority of these features and/or to ensure that reptiles are relocated away from these features prior to development. A specific mitigation strategy for reptiles would therefore be required.

Area 9 (Refer to Drawings 2163/01 and 03)

Plants and Habitats

9.63 Area 9, which forms the northern and eastern boundaries of the site, is a band of native tree and shrub species planted some twenty years prior to the survey with an associated pond. Tree and shrub species include Ash, Pedunculate Oak, Field Maple, Silver Birch, Cherry species *(Prunus sp.),* Hawthorn, Hazel and Dogwood. These trees and shrubs stand on a bank that slopes down to the perimeter road; the lower parts of the banks have largely been planted with non-native shrub species, such as those described in paragraph 3.4 above. Bramble forms patches in some places and the ground flora is sparse, although small quantities of Cuckoo Pint (*Arum maculatum*) and Wood Avens (*Geum urbanum*) are present.

9.64 A balancing pond, denoted by Red Target Note 7 on Drawing 2163/03, lies in a hollow beneath the level of the perimeter road. The pond supports emergent plants, including Greater Reedmace *(Typha latifolia)* and Greater Pond-sedge (*Carex riparia*), with ornamental water-lilies and Common Duckweed (*Lemna minor*) on the water surface. It is surrounded by species-poor grassland and both native and nonnative trees and shrubs.

Protected species and other species of conservation value

9.65 The area of landscape planting has the potential to support dormice, particularly due to the abundance of fruiting Hazel shrubs, although there are no records of the species in the area. Further surveys may, be needed to confirm their presence or absence, although the likelihood of them being present is considered low. This would best be carried out in autumn or winter.

9.66 Area 9 is likely to support a substantial number of nesting birds and also to provide foraging opportunities for bats feeding over the shrubs and trees.

9.67 The balancing pond, denoted by yellow Target Note 14, has the potential to support Great Crested Newt, and surveys for this protected species should be carried out in the spring, either to confirm their absence or to inform a mitigation strategy, should the species be found. The pond and its surroundings also provide suitable habitat for Grass Snake and if changes to the area are proposed they should be preceded by a survey for this species.

9.68 Bird species recorded in the area were Blackbird, Blue Tit, Great Tit, Long-tailed Tit, Magpie and Robin.

Assessment

9.69 The whole of Area 9 has been shaded orange on the constraints plan (Drawing 2163/04), owing largely to its potential to support nesting birds, bats, Great Crested Newt and possibly Dormice. It also represents a valuable buffer between the site and neighbouring development, as well as a link to Splatt's Abbey SNCI. However, full assessment of this area will depend upon the outcome of further survey work.

Area 10 (Refer to Drawings 2163/02 and 05)

Plants and Habitats

9.70 Area 10 forms the boundaries of the University of West of England site, comprising a hedgerow and associated tree planting on the western edge of the site; tree planting and associated grassland on the northern edge of the site; a wide belt of grassland with a stream and pond on the eastern edge of the site; and a belt of tree planting on the southern edge of the site.

9.71 The western edge of the site has a hedgerow, described as hedge H in Appendix III. It is diverse, with woody species including Field Maple, Dogwood and Hazel in the central part of the site, but is less diverse to the south. The northern section of the boundary, to the west of Area 11, is a band of immature Ash, Sycamore (*Acer pseudoplatanus*), Field Maple and English Elm (*Ulmus procera*) trees. In the southern part of the site there is a belt of ornamental planting, dominated by Wilson's Honeysuckle (*Lonicera nitida*) and the hedge has been supplemented with planted native trees.

9.72 The northern edge of the site has a belt of recent shrub planting, which is dominated by native species including Hazel, Wild Privet (*Ligustrum vulgare*) and Field Maple. In the western part of the boundary the planting is more established, consisting of Beech (*Fagus sylvatica*) hedge with other native shrub species. The southern part of the area has a strip of rough grassland. The dominant grasses here are Yorkshire Fog, Creeping Bent and Cocksfoot, with herb species including Ox-eye Daisy, Stone Parsley (*Sison amomum*) and Spotted Medick (*Medicago arabica*).

9.73 The eastern boundary of the site has a wide belt of species-poor amenity grassland on the slopes of a shallow valley and on east-facing slopes of a bund facing the Coldharbour Lane. In places the grassland is slightly more diverse. Several small colonies of Bee Orchid are indicated by Red Target Note 13 on Drawing 2163/05. A small bank close to the stream, indicated by Red Target Note 14, has a variety of species, including Wild Carrot and Common Bird's-foot Trefoil (*Lotus corniculatus*). A shallow stream, Red Target Note 15, has emergent species including Greater Pond Sedge and Fool's Water-cress (*Apium nodiflorum*). At Red Target Note 16 there is a pond, which has a narrow fringe of Common Reed. There are several blocks of tree planting within the grassland area. These are dominated by immature trees, which include Ash, Lime (*Tilia x vulgaris*) and Field Maple. The ground flora of these areas is dominated by Ivy, with other species including Stone Parsley. Elsewhere, particularly alongside the stream, there are scattered trees of Alder (*Alnus glutinosa*) and Crack Willow (*Salix fragilis*).

9.74 The southern boundary of the site has a narrow belt of immature trees, which include Field Maple, Sycamore and Pedunculate Oak, with associated shrub species including Wild privet and Blackthorn. The ground flora of the area is dominated by Ivy, but also includes Wood Sedge (*Carex sylvatica*), Wood False-brome (*Brachypodium sylvaticum*), Hart's-tongue Fern (*Phyllitis scolopendrium*) and Broad Buckler Fern (*Dryopteris dilatata*).

9.75 The south-western corner of the site has a small pond. This has been planted with a variety of native water plants, including Yellow Flag (*Iris pseudacorus*) and Pendulous Sedge (*Carex pendula*).

Protected species and other species of conservation value

9.76 The hedge on the western edge of the area has several trees that could support roosting bats. These are a mature Ash, shown on Drawing 2163/05 as Yellow Target Note 16, a mature Pedunculate Oak at Yellow Target Note 19 and a semi-mature Pedunculate Oak at Yellow Target Note 20. The hedge on the southern edge of the area has a semi-mature Pedunculate Oak and associated Ash at Yellow Target Note 21.

9.77 Birds recorded in the area were Blackbird, Blue Tit, Chaffinch, Goldfinch, Great Tit, Greenfinch, Long-tailed Tit, Magpie, Redwing, Robin, Song Thrush and Wood Pigeon, with the most diverse area being the belt of trees along the southern boundary. In addition, Goldcrest, Lesser Redpoll and Treecreeper were recorded in the eastern part of the area, with Coot, Grey Wagtail, Mallard and Moorhen on the stream and pond.

9.78 Area 10 is likely to support a substantial number of nesting birds and also to provide foraging opportunities for bats feeding over the shrubs and trees.

9.79 The ponds, denoted by Yellow Target Note 17 and Red Target Note 16, have the potential to support Great Crested Newt, and surveys for this protected species should be carried out in the spring, either to confirm their absence or to inform a mitigation strategy, should the species be found. The ponds and their surroundings also provide suitable habitat for grass snakes and if changes to either area are proposed they should be preceded by a survey for this species.

9.80 There are old records of Water Vole around the lake and both this feature and the stream on the eastern side of the site, denoted by Yellow Target Note 18, has the potential to support Water Vole and if changes here are proposed they should be preceded by a survey for this species.

Assessment

9.81 There are several habitats of some nature conservation value within Area 10, which are shaded orange on the constraints plan.

9.82 The hedges on the western and southern boundaries of the area and the tree planting blocks in the eastern part of the area are of value for birds and may provide foraging habitats and commuting routes for bats. The strip of tree planting on the southern edge of the area has some woodland ground flora species, although all are common and widespread. Three trees in the western boundary and two in the southern boundary have the potential to support roosting bats.

9.83 The small areas of grassland denoted by Red Target Notes 13 and 14 on Drawing 2163/05 support a limited range of plant species associated with unimproved grassland, including Common Bird's-foot Trefoil, Wild Carrot and Ox-eye Daisy. There are several colonies of Bee Orchid, a species that is identified in The Flora of the Bristol Region as an Avon Notable Species.

9.84 There are several wetland habitats in the area. These are likely to be of some value for invertebrates. The ponds have potential for Great Crested Newt and the stream for Water Vole.

9.85 There is potential for ecological enhancement of the area, particularly along the eastern boundary of the site. These include shrub planting and grassland enhancement by top-soil stripping, although the more diverse patches of grassland identified at Red Target Notes 13 and 14 should be protected, and enhanced management of pond and stream margins, in particular relaxation of mowing regimes.

Areas 11, 12 and 13 (Refer to Drawings 2163/02 and 05)

Plants and Habitats

9.86 The vast majority of this compartment consists of buildings, car parks and other surfaced areas. Associated with these are several small areas of amenity grassland, dominated by Perennial Rye-grass and Common Daisy, and ornamental tree and shrub planting. The latter is dominated by non-native species such as Hebe (*Hebe spp*), but includes natives such as Silver Birch and Beech.

9.87 There are five mature and semi-mature Pedunculate Oak trees within Area 12. These are shown on Drawing 2163/05 as Yellow Target Notes 22 to 26. Other wooded habitats within the area are lengths of remnant hedgerow (Red Target Notes 18, 19 and 21), and multi-stemmed Sallows with associated vegetation (Red Target Notes 17 and 20). There are several pollared Hawthorn and Field Maples around the pond described below.

9.88 Almost all of the grassland within the area is species-poor, but a steep bank at Red Target Note 22 is more diverse, with species including Glaucous Sedge and Hoary Ragwort (*Senecio erucifolius*).

9.89 The small pond at Red Target Note 23 has a narrow fringe of both Greater Reedmace and Lesser Reedmace (*Typha angustifolia*), the latter probably planted. The open water has ornamental Water-lily and Canadian Pondweed (*Elodea canadensis*).

Protected species and other species of conservation value

9.90 The Pedunculate Oak trees shown on Drawing 2163/05 as Yellow Target Note 22 to 26 all have potential to support roosting bats.

9.91 The buildings within all three areas are all of modern construction, either lacking roof spaces or with well sealed roofs and eaves, and do not offer potential bat roosts.

9.92 Birds recorded in the areas were Blue Tit, Carrion Crow, Chaffinch, Goldfinch, Great Tit, Greenfinch, Magpie and Wren, with Moorhen on the pond and Treecreeper on the tree at Yellow Target Note 26.

9.93 Areas 11, 12 and 13 are likely to support a small number of nesting birds in ornamental planting, remnant hedges and trees and may also provide foraging opportunities for bats feeding over the shrubs and trees.

9.94 The pond denoted by Yellow Target Note 23 has the potential to support Great Crested Newt, and surveys for this protected species should be carried out in the spring, either to confirm their absence or to inform a mitigation strategy, should the species be found.

Assessment

9.95 The overwhelming majority of Areas 11, 12 and 13 is of minimal nature conservation value, but there are features of some nature conservation value, which are shaded orange on the constraints plan.

9.96 The oak trees have the potential to support roosting bats and are also likely to be of value for invertebrates and birds.

9.97 The remnant hedges and sallow trees are likely to be of value for birds and invertebrates and, like the oak trees, are a link with the area's past.

9.98 The rough grassland at Red Target Note 22 has some species of unimproved grassland. Summer survey would probably reveal further species, although the number

of these is likely to be limited. Although this feature is of some nature conservation value appropriate mitigation could provide a feature of equivalent or greater value.

9.99 The pond is likely to be of some value for invertebrates and could support amphibians, potentially including Great Crested Newt.

Summary Assessment and Recommendations for Mitigation and Enhancement

9.100 It is important to emphasize that the assessment of nature conservation value and ecological constraint illustrated on Drawings 2163/04 and 06 has been carried out on the basis of a relatively brief initial walkover survey in January. Following more detailed survey work (see Section 5, below), it is possible that some of these areas could be 'upgraded' to red, especially if protected species such as Great Crested Newt or Water Vole are recorded.

9.101 No extensive areas of BAP habitats have been recorded, although some of the features, notably the hedges in Areas 4 and 10 and ponds in Areas 4, 10 and 12, are examples of priority habitats. Small areas of grassland have some species characteristic of BAP habitats, but none is diverse enough to qualify as a priority habitat. Some species of bird identified as priority species, including Bullfinch and Song Thrush, were recorded in Area 4. None of the habitats or species on the site is considered at this stage to be of high nature conservation value, but there are several features of some nature conservation value. Further survey might reveal the presence of BAP priority species, including Hedgehog, Bat species and Great Crested Newt.

9.102 The most important features of the site are marked on the constraints plan in orange. They include hedgerows D and E and parts of hedgerows A and F and the oak trees in Area 12, which should be retained if at all possible. Other features of some ecological value include: the grasslands with Bee Orchid in Areas 1 and 10; parts of Fields 3 and 5 in Area 4; the orchard and pond complex in Area 4; the other hedgerows in Area 4; hedgerows in Area 10; and ponds and the stream in Area 10. These are marked orange partly because they are of some local value, and their loss would therefore have an impact which would need to be mitigated, but also because if retained they have the potential to be of greater value to biodiversity.

9.103 Features shaded in yellow or green on Drawings 2163/04 and 06 are of limited or negligible nature conservation value. Whilst their loss would not be significant in nature conservation terms, there would be implications associated with their removal, notably seasonal constraints on the clearance of landscape planting that could potentially support nesting birds. The vast majority of buildings on the Hewlett Packard site, and all of the buildings on the University site, are unsuitable as bat roosts.

9.104 Although the site supports features of some local value for nature conservation, which should be retained and enhanced wherever possible, there are large areas that should not represent a significant constraint on future development.

9.105 It is recommended, therefore, that those parts of the site considered to be of ecological importance should be retained within any masterplan.

9.106 Further surveys in the spring and early summer of 2009 (see below) are required to inform both the masterplan process and any impact assessment of the proposals, including detailed mitigation measures.

9.107 Opportunities exist to enhance some of the retained habitats as mitigation for any land-take. The mosaic of grassland, scrub, hedgerow, orchard and wetland habitat in Area 4 could be managed to create an area of high local nature conservation importance, with new fruit trees planted to provide continuity and the grassland managed to be of greater ecological interest. The eastern part of Area 10 could be managed to enhance grassland, wetland and woodland habitats. There is potential to create species-rich grassland by exposing areas of nutrient-poor subsoils.

9.108 Any hedgerows retained in the site could be enhanced as ecological features through targeted nature conservation management. New hedgerow planting, in particular targeted to strengthen strategic links between woodlands, could provide either partial mitigation for the loss of hedgerow habitat or enhancement.

9.109 More detailed proposals for mitigation and enhancement would be needed at the impact assessment stage.

Further Surveys

9.110 Further surveys for protected species would be required if the relevant areas are to be affected by development proposals. The presence of such species must be a material consideration in any planning application.

9.111 The requirement for any such surveys would need to scoped in detail with the local planning authority, However, the following further surveys will probably be required:

i although Great Crested Newt have not been recorded in previous surveys of Area 4, they are known to occur in the wider area and might colonise the pond here and may be present in ponds elsewhere on the site that have not been surveyed for this species. Spring surveys of the ponds in Areas 4, 9, 10 and 12 will be required if development within 500m of the ponds is proposed;

ii any hedgerows in Areas 4 and 10 that are proposed for removal should be surveyed for ground flora, foraging bats and nesting birds;

iii any areas of the fields in Area 4 or the surroundings of ponds in Areas 4, 9 and 10 directly affected by development proposals should be surveyed for Grass Snake and Slow Worm;

iv several trees and buildings have been identified above as potentially suitable for roosting and/or hibernating bats. Should these be proposed for removal, further surveys will be required either to confirm the absence of bats or to inform a method statement for their removal under licence. It would also be appropriate to carry out bat activity surveys across the whole site, not only to identify the most important feeding areas but also to flag up the major commuting routes/features (this will be particularly important for identifying the most suitable wildlife corridors for the Masterplan);

v surveys of the denser areas of scrub for badgers would be required if it is likely that any setts within these habitats would be affected by development, either directly through loss under the footprint, or indirectly through disturbance;

vi the stream in the eastern part of Area 10 should be surveyed for Water Vole;

vii Hedgehog is a South Gloucestershire BAP species and it is likely that South Gloucestershire Council will require a survey for this species;

viii vegetation surveys of Fields 3 and 5 would be useful in confirming the nature conservation value of these areas and to target mitigation proposals if required; and

ix Dormice are unlikely to be present on the site, but the local planning authority may require confirmation that this species is not present. If this is the case, surveys for characteristically-chewed hazelnuts will be required wherever Hazel exists, with nesting tube surveys carried out in hedges without Hazel.

References

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9.114 Stace, C. (1997). *New Flora of the British Isles Second Edition.* Cambridge University Press.

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9.117 Wessex Ecological Consultancy (2005), Management Plan for Splatt's Abbey Wood. South Gloucestershire Council.

9.118 Wessex Ecological Consultancy (2008), Ecological Assessment of Land East of Coldharbour Lane. University of West of England.

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Section 10 Ecology Drawings – Red Target Notes

Red Target Notes: Plants and Habitats (Drawings 2163/03 and 05)

10.1 Target Note 1 - This end of the boundary feature is part of the original hedgerow network, and qualifies as important under the Hedgerow Regulations (1997). Please refer to Hedgerow A in Appendix III. The hedgerow continues beyond the survey boundary.

10.2 Target Note 2 - A band of planted woodland continuing northward from the boundary described in Target Note 1. The western half of the woodland, on a bank, is mainly Ash *(Fraxinus excelsior)* and Crack Willow *(Salix fragilis*) trees, with Hazel *(Corylus avellana),* Hawthorn *(Crataegus monogyna),* Blackthorn (*Prunus spinosa*), Dog Rose (*Rosa canina agg*), Field Rose (*Rosa arvensis*), Wayfaring Tree (*Viburnum lantana*), Sallow (*Salix x reichardtii*), English Elm (*Ulmus procera*), Hazel (*Corylus avellana*), Dogwood *(Cornus sanguinea)* and Snowberry *(Symphoricarpos albus),* the shrubs particularly prominent along the edges. The woodland appears to have been planted approximately 20 years prior to the survey and the trees are approximately 10m tall. Associated ground flora species include Angelica (*Angelica sylvestris*). Blue Tit, Great Tit, Song Thjrush, Blackbird, Carrion Crow, Goldfinch, Wood Pigeon, Jay and Bullfinch were recorded here. A strip of rough grassland on the eastern side of the hedge has herb species including Common Knapweed (*Centaurea nigra*), Devil's-bit Scabious (*Succisa pratensis*), Meadow Cranesbill (*Geranium pratense*), Meadow Vetchling (*Lathyrus pratensis*) and Purple Loosestrife (*Lythrum salicaria*).

10.3 Target Note 3 - This fishing pond is partly shaded by Ash trees and Hawthorn shrubs on its margins. The banks are steep and emergent vegetation is sparse, but there is a small stand of Common Reed *(Phragmites australis)* at the western end and small quantities of Pendulous Sedge (*Carex pendula*). Several Moorhens were present on the pond and Canada Goose droppings indicate occasional use by this species.

10.4 Target Note 4 - This derelict orchard comprises amenity grass with six mature apple (*Malus domestica*), Plum (*Prunus domestica*) and Pear (*Pyrus communis*) trees.

10.5 Target Note 5 - A large mature Ash tree.

10.6 Target Note 6 - Two mature Horse Chestnut *(Aesculus hippocastanum)* trees. These trees pre-date the business park.

10.7 Target Note 7 - Balancing pond and recreation area. Approximately a fifth of the pond has open water, with ornamental water-lilies and Common Duckweed (*Lemna minor*). The remainder is occupied by emergent vegetation dominated by Greater Reedmace *(Typha latifolia)* with smaller quantities of Soft Rush (*Juncus effusus*), Hard Rush (*Juncus inflexus*), Greater Pond-sedge (*Carex riparia*), Yellow Flag (*Iris pseudacorus*), Purple Loosestrife (*Lythrum salicaria*) and Gunnera (*Gunnera tinctoria*). The pond is surrounded by species-poor grassland. There are semi-mature willow trees and shrubs on the northern bank of the pond; a mature White Willow *(Salix alba),* pre-dating the industrial park, stands near the north-east corner of the pond area. Planted trees and shrubs in the vicinity of the pond include Alder *(Alnus glutinosa),* Ash, Field Maple *(Acer campestre),* Hawthorn, Hazel and Pedunculate Oak *(Quercus robur).*

10.8 Target Note 8 - This boundary ditch contained no water at the time of survey, but the presence of a few wetland plant species such as Soft Rush *(Juncus effusus)* indicated that the ditch may hold water at times; the ditch flora is species-poor and largely comprised terrestrial plants. Tall ruderal species and Bramble *(Rubus fruticosus* agg.*)* scrub are present on the earth mound alongside the ditch.

10.9 Target Note 9 - A partly-vegetated stony track next to the former perimeter fence. The species growing on the track include mosses with False Oat-grass *(Arrhenatherum elatius),* Yorkshire-fog *(Holcus lanatus),* Common Fleabane *(Pulicaria dysenterica),* Wild Teasel *(Dipsacus fullonum),* Bristly Ox-tongue *(Picris echioides)* and Wild Carrot *(Daucus carota).* The fence is a chain-link fence against which stood willow shrubs, apparently planted some years previously, and Bramble scrub. An earth mound next to the track on the opposite side from the fence is vegetated with coarse grasses, ruderal species and Bramble scrub.

10.10 Target Note 10 – A bank of close-mown grassland dominated by Red Fescue (*Festuca rubra*), with extensive patches of Glaucous Sedge (*Carex flacca*), frequent herb species include Common Daisy (*Bellis perennis*), Self-heal (*Prunella vulgaris*), Lesser Trefoil (*Trifolium dubium*) and Thyme-leaved Speedwell (*Veronica serpylifolia*). There are patches of Ox-eye Daisy (*Leucathemum vulgare*), several plants of Bee Orchid (*Ophrys apifera*) and small quantities of parsley-piert (*Aphanes arvensis*).

10.11 Target Note 11 – Rough grassland in Field 5, which has been disturbed in places. In damp patches there is frequent Glaucous Sedge and Common Fleabane, with scattered clumps of Hard Rush. Drier grassland is dominated by False Oat-grass, Creeping Bent (*Agrostis stolonifera*) and Cocksfoot (*Dactylis glomerata*), with small tussocks of Tufted Hair-grass (*Deschampsia cespitosa*). Herb species here include Glaucous Sedge, Common Fleabane, Grass Vetchling (*Lathyrus nissolia*) and Stone Parsley (*Sison amomum*). There are scattered Sallow saplings across the grassland, and small clumps of Alder (*Alnus glutinosa*), Silver Birch (*Betula pendula*) and Sallow.

10.12 Target Note 12 – Rough grassland in Field 3, dominated by False Oat-grass. Other grass species include Timothy (*Phleum pratense*), Creeping Bent, Yorkshire Fog, Crested Dogstail (*Cynosurus cristatus*) and Common Bent (*Agrostis capillaris*). The following herb species are present: Curled Dock (*Rumex crispus*), Wild Carrot, Common Ragwort (*Senecio jacobaea*), Hoary Ragwort (*Senecio erucifolius*), Spear Thistle (*Cirsium vulgare*), Bristly Ox-tongue, Common Vetch (*Vicia sativa*), Ox-eye Daisy, Ribwort Plantain (*Plantago lanceolata*), Common Mouse-ear (*Cerastium fontanum*), Cut-leaved Cranesbill (*Geranium dissectum*), Common Fleabane, Grass Vetchling and Self-heal. Meadow Pipit and Woodcock were flushed from the area. The field becomes more grass-dominated and less diverse to the north-west.

10.13 Target Note 13 – Patches of slightly more diverse grassland within amenity grassland in Area 10. All have plants of Bee Orchid, with other species including Ox-eye Daisy, Lesser Trefoil and Crow Garlic (*Allium vineale*).

10.14 Target Note 14 – A small bank within Area 10, with a moderate diversity of herb species including Common Bird's-foot Trefoil (*Lotus corniculatus*), Wild Carrot, Common Catsear (*Hypochaeris radicata*), Ox-eye Daisy and Red Clover (*Trifolium pratense*).

10.15 Target Note 15 – The stream has emergent vegetation dominated by Fool's Water-cress (*Apium nodiflorum*), with other species including Water-plantain (*Alisma plantago-aquatica*) and Pink Water Speedwell (*Veronica catenata*). The banks of the stream have a narrow fringe of wetland vegetation, which includes Soft Rush, Jointed Rush (*Juncus articulatus*), Common Fleabane, Hairy Sedge (*Carex hirta*), Greater Pond Sedge and Common Reed. In places the grassland by the stream is damp and has scattered plants of Cuckoo Flower (*Cardamine pratensis*).

10.16 Target Note 16 – The lake has a fringe of Common Reed, with other emergent species including Pendulous Sedge, Soft Rush and Greater Pond Sedge. Bird species seen here were mallard, Moorhen, Coot and Herring Gull.

10.17 Target Note 17 – An area of scrubby Sallow, with large beds of Bramble, small trees of Field Maple and Hawthorn and bushes of Gorse (*Ulex europaeus*).

10.18 Target Note 18 - A remnant hedge, which is cut fairly low. It consists of Hawthorn, Spindle (*Euonymus europaeus*), Dog Rose, Hazel, Dogwood and Blackthorn, with associated ornamental planting.

10.19 Target Note 19 – A tall remnant hedge comprising Hawthorn, Field Maple, Dogwood and Elder (*Sambucus nigra*). Ground flora species include Ivy, Wood Avens and Ground Ivy (*Glechoma hederacea*).

10.20 Target Note 20 – A large multi-stemmed sallow with associated ground flora species including Stinking Iris (*Iris foetidissima*).

10.21 Target Note 21 – A remnant Hawthorn hedge with Blackthorn, Holly (*Ilex aquifolium*), pedunculate Oak and Dog Rose. Within adjacent landscape planting there are several moderately large multi-stemmed Sallows and coppice stools of Hazel. Ground flora includes Stinking Iris.

10.22 Target Note 22 – A steep bank supporting rough grassland. Frequent grass species are Red Fescue, Creeping Bent and Yorkshire Fog. Herb species include Glaucous Sedge, Self-heal, Common Catsear, Red Clover and Hoary Ragwort.

10.23 Target Note 23 – A small pond with a narrow fringe of Greater Reedmace and Lesser Reedmace (*Typha angustifolia*), and Canadian Pondweed (*Elodea canadensis*) and ornamental water-lily. Moorhen was seen here, with Blue Tit, Chaffinch, Great Tit, Greenfinch and Wren in adjacent pollarded Hawthorn and Field Maple trees.

Section 11 Ecology Drawings – Yellow Target Notes

Yellow Target Notes: Protected Species (Drawings 2163/03 and 05)

11.1 Target Note 1 - Dense areas of Blackthorn *(Prunus spinosa)* and Bramble scrub. Due to the density of the vegetation it was not possible to rule out the presence of a badger sett. However, as far as possible all the pathways leading into the areas were checked, and it is unlikely that anything other than a small or disused sett was missed.

11.2 Target Note 2 - A mature Pedunculate Oak tree with a woodpecker hole on the west face and with the potential to support roosting bats.

11.3 Target Note 3 - A mature Pedunculate Oak tree with a limited amount of dead wood in the crown and with the potential to support roosting bats. The dead wood did not appear to lead to cavities from the ground but this could be confirmed through a climbing inspection or emergence surveys.

11.4 Target Note 4 - A stone track, the edges of which provided suitable basking sites for reptiles. In addition to this, a bank separating the track from field 4 and 1 had the potential to provide suitable hibernation features.

11.5 Target Note 5 - Earth/ stone bunds in the centre of the field provided possible hibernation sites and refuges for reptiles.

11.6 Target Note 6 - Newly created compost heaps likely to be of value to grass snakes as egg laying sites.

11.7 Target Note 7 - A barn with the potential to support roosting bats. It had been recently re-roofed, but had gaps under the western eaves and several loose tiles.

11.8 Target Note 8 - A barn, as for Target Note 7, but with gaps under the west and east facing eaves.

11.9 Target Note 9 - This pond was potentially suitable for breeding amphibians although known to contain fish. There were few emergent plants around the pond edges apart from a stand of Common Reed, and the pond was partly shaded by trees.

11.10 Target Note 10 - An outlying badger sett with two holes, one well used, one partly used, and with a spoil heap with bedding and hairs. Both holes were likely to be of seasonal importance associated with the adjacent orchard (apples, damsons and pears).

11.11 Target Note 11 - An old stone building, recently restored with few features suitable for use by bats. However, there were some gaps underneath tiles on the west end of the building, and possibly gaps under a copper turret/bell tower in the centre of the building.

11.12 Target Note 12 - A mature Horse Chestnut tree with several features that had the potential to support roosting bats, including a woodpecker hole, the scar from a lost limb and a knot hole.

11.13 Target Note 13 - The old Hewlett Packard composting area. This was considered likely to provide a suitable egg laying site for grass snakes.

11.14 Target Note 14 - A pond with extensive Reedmace and water-lily species. The pond had the potential to support great crested newts and foraging grass snakes.

11.15 Target Note 15 - A dead Horse Chestnut tree, the stump 2m tall. No features of

particular value for bats were noted in the stump. Standing dead trees are, however, particularly valuable for deadwood invertebrates.

11.16 Target Note 16 – An ash tree with a dense covering of Ivy is of moderate potential value for roosting bats.

11.17 Target Note 17 – The pond at the south-western corner of Area 10, Corkes Corner Pond, supports Common Frog, Common Toad and Smooth Newt according to the adjacent sign. It appears suitable for Great Crested Newt.

11.18 Target Note 18 – The stream has the potential to support Water Voles, although no burrows or other signs were seen, and there are old records from the lake.

11.19 Target Note 19 – A mature Pedunculate Oak with moderate potential to support roosting bats in crevices.

11.20 Target Note 20 – A semi-mature Pedunculate Oak with low potential to support roosting bats in dense Ivy.

11.21 Target Note 21 – A semi-mature Pedunculate Oak and an adjacent semi-mature Ash with moderate potential to support roosting bats in holes.

11.22 Target Note 22 – A semi-mature Pedunculate Oak with low potential to support roosting bats in shallow crevices.

11.23 Target Note 23 – A mature Pedunculate Oak with moderate potential to support roosting bats in holes.

11.24 Target Note 24 – A semi-mature Pedunculate Oak with low potential to support roosting bats in shallow crevices.

11.25 Target Note 25 – A mature Pedunculate Oak with high potential to support roosting bats in deep holes.

11.26 Target Note 26 – A semi-mature Pedunculate Oak with low potential to support roosting bats in dense Ivy.

Section 12 Report on Arboricultural Assessments at Hewlett Packard and UWE

UNDERTAKEN BY

ALAN J ENGLEY

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JANUARY 2009

ARBORICULTURAL ASSESSMENT FOR THE UNIVERSITY OF THE WEST OF ENGLAND

1. Date – 28th January 2009

1.1 Site Inspection Date - 20th and 28th January 2009

1.2 Weather – on 20.1.09 - Fine Visibility - Good
On 28.1.09 – Rain Visibility - Poor

2. Instruction/Scope

2.1 I have been instructed by Cooper Partnership Ltd to undertake a Pre-Development Tree Survey in accordance with British Standard 5837: 2005 'Guide to Trees in Relation to Construction – Recommendations' at the above and to carry out a visual inspection of the trees (hedges), comment on their health and safety and make suitable recommendations for safe tree retention on the proposed development site.

2.2 Documents provided by Cooper Partnership are:

- Drawing number 2163-01 and 02 indicating the zones and areas for tree surveying.

2.3 With reference to the above drawing, indicating the location of the trees I have inspected. Note the canopy radii are estimated unless otherwise indicated.

2.4 Trees and shrubs are living organisms whose health and condition can change rapidly. I therefore recommend that the trees are re-inspected annually or immediately after severe storm conditions, if sooner. This survey takes account of the site as seen and recommendations are made to reduce the risk of failure but do not

account for any proposed changes in surroundings such as new development.

2.5 This report is based on a ground level visual inspection of the trees carried out by a person experienced in arboriculture.

3. Tree Survey Notes

3.1 The attached survey has been carried out with reference to the guidance and recommendations set out by British Standard 5837: 2005 "Trees in Relation to Construction - Recommendations".

- Due to variations of existing ground levels throughout the site, and unless otherwise shown, height dimensions are estimated and are given in metres. Accurate optically measured heights can be taken for detailed assessments on request.
- Trunk diameters are estimated (unless otherwise shown) and are given in millimetres.
- Branch, canopy and crown spreads, where given, are in metres and estimated radially from the centre of the trunk to the main living lateral branch tips and where required, are defined by compass point or given as an average spread. Core samples/soil samples have not been taken.
- Age Categories

  Young - Age less than one-third life completed.

  Middle Age - One-third to two-thirds life completed.

  Mature - Two thirds plus life completed.

  Over-mature - Two-thirds plus life completed and declining.

  Veteran (or near veteran status) - "Veteran" trees have no precise definition, but are trees considered to be of biological, aesthetic or wildlife interest, because of their age, trees in the ancient stage of their lives or trees that are old relative to others of the same species. Special measures, such as increasing the tree protective zone distances and selective surgery could significantly increase their useful life expectancies.

  There may be some overlapping with the above categories.

- Tree Condition (TC) (Good, average, poor or moribund/dead)
  To mean the physiological condition for that particular species and age-group and geographical location.

3.2 Assessment and Category Classification

The species, condition and classifications of all trees included in the survey have been assessed by a person experienced in arboriculture. In making the assessment, particular consideration has been given to:-

- The general health, vitality and condition of each tree.
- Any structural defects in each tree and useful life expectancy.
- The size and form of each tree, and its suitability within the context of possible integrated development.
- The location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.
- Recommendations are given to improve the safety of each tree.
- Where appropriate, its value as wildlife habitat.

3.3 This assessment has not considered any specific proposed development on the site and is concerned with identifying and protecting better trees worthy of retention, and will have noted and accounted for any changes on or off site that have an effect on the accustomed conditions around the trees surveyed.

3.4 Tree Categories (Extract from BS5837: 2005)

<table>
<tr><th>Category and definition</th><th colspan="3">Criteria</th></tr>
<tr><td><u>Category R</u>
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.</td><td colspan="3">• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (ie where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)
• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline.
• Trees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality.
NOTE Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).</td></tr>
<tr><td rowspan="2">Category and definition</td><td colspan="3">Criteria – Subcategories</td></tr>
<tr><td>1 Mainly arboricultural values</td><td>2 Mainly landscape values</td><td>3 Mainly cultural values, including conservation</td></tr>
<tr><td><u>Category A</u>
Trees 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)</td><td>Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)</td><td>Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)</td><td>Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)</td></tr>
<tr><td><u>Category B</u>
Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)</td><td>Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)</td><td>Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A quality specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality.</td><td>Trees with clearly identifiable conservation or other cultural benefits.</td></tr>
<tr><td rowspan="2"><u>Category C</u>
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.</td><td>Trees not qualifying in higher categories</td><td>Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit</td><td>Trees with very limited conservation or other cultural benefits</td></tr>
<tr><td colspan="3">NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation..</td></tr>
</table>

3.5 It should be noted that in the case of a proposed development on the survey site, this report only indicates the basis for deciding which trees might be suitable for retention. In that respect, preference should be given to high and moderate category trees. Low category trees may be retained where "they are not a significant constraint on development". Both sites have many trees that are of transplantable size. 'Tree spades' commonly 'lift' trees that have up to 300mm trunk diameters. In addition, if wished, the recently planted trees could be transplanted or replaced.

3.6 The Root Protection Area (RPA) Protection of Retained Trees/The Exclusion Zone, Barriers and Ground Protection/Tree Constraints

During the development period all retained trees should be adequately protected preferably using scaffold poles/panels and weld mesh wire (see detail enclosed) or similar barriers and/or ground protection such as fixed heras fencing. The fencing should be erected, where possible, to conform to the British Standard 5837: 2005 Table 2 "Calculating the RPA" recommendations when distancing tree to protective fence. This distance is a radius of 12 x the trunk diameter at 1.5m (or 10 x basal diameter of a multi-stemmed tree), the fence to be erected prior to any development/demolition works commencing. These minimum distances are shown on the Schedule Sheets as RPA and is the below ground constraints.

3.7 Once erected the barriers and ground within the RPA should be regarded as sacrosanct and should not be removed or altered without prior consultation with an Arboriculturalist. This distance is from the tree centre to the protective fencing and is primarily concerned with root protection, other considerations, particularly the need to provide adequate space around the tree including allowances for future growth and also working space, will usually indicate that structures should be further away. Under certain circumstances, the RPA may change its shape but not reduce its

area; any shape change should be assessed by an Arboriculturalist. Tree work may be undertaken before the erection of the barriers, with the agreement of the Local Authority.

3.8 Additional precautions outside of the RPA

Notices should be erected on the barriers such as "Tree Protection Zone – no operations within exclusion zone".

3.9 Prevention of Damage to Roots

In order to avoid unacceptable damage to the trees, as a result of severance or asphyxiation of the root system within the protected/fenced area:-

- There should be no storage or stacking or discharging of builders' cement, diesel, oil or bitumen within 10m of a bole and materials generally within 5m of a bole.
- There should be no trenching to accommodate services (unless this complies with the NJUG 10 guidelines).
- There should be no fires beneath or in close proximity to the canopy of a tree.
- There should be no alteration of ground levels.
- Concrete mixing should not be carried out within 10m of a bole.
- Any hard-surfacing, footpaths, driveways etc. and temporary working zones that are beneath tree canopies, should, where feasible, be constructed over the existing levels and be of permeable material. Preferably, the method of construction and materials should be a no-dig solution as described in Para. 11.8 of the BS *"Low invasive vehicular access in proximity to trees"*. Consultation may be necessary with Engineers and Planners concerning adoption of suitably engineered surfaces that are acceptable to the Local Authority.

3.10 For the purposes of this survey, I have carried out a ground level inspection and made comments and recommendations, where

necessary, for tree felling/surgery to maintain the trees in reasonable order which is described on the Schedule Sheets as "Preliminary Management Recommendations".

4. Site Description and Observations and above ground constraints

4.1 The former **Hewlett Packard** site is an irregular shaped plot with the built complexes constructed towards the centre and northerly areas. To the south, the landform slopes down towards the Old Farm House, where there are open fields, an orchard and a fishing pond. To the south east the landform rises.

4.2 The site contains few mature trees of any significance. Towards the north easterly corner are two mature Horse Chestnut Nos 106 (Page one picture) and 113 that pre-date the industrial units. They have had previous tree surgery works and now require further treatment to reduce the risk of failure. Towards the easterly end of the southerly boundary, around the fishing pond, are a group of mature Ash, one of which No 176 is hollow and deteriorating in condition, the remaining nearby Ash are prominent landscape features that require surgery to reduce the risk of failure.

4.3 Towards the south westerly corner of the site there are two near veteran Oak trees, Nos 189 and 190, that are prominent and important landscape features.

4.4 There are a number of young and maturing trees that are fine looking specimens. These include a Sequoia No 184 and a Sequoiadendron No 139. They grow close to the farm house building.

4.5 Part of the landscaping around the industrial units comprises of dense stands of Poplar, Willow and Gean which have now become good strong screens and are overdue for thinning in numbers.

5. The Trees

5.1 Tree works should be undertaken in accordance with BS3998:1989 "Recommendations for Tree Works".

5.2 With reference to the Cresswell Associates Ecological Appraisal.

There are a number of hollows in the trunks and larger branches of some of the trees, particularly the Oak and Ash, which could be used by birds or bats for shelter and breeding. It is an offence under the Wildlife and Countryside Act to disturb a nesting bird or roosting/breeding bat. Work to trees with the potential for roosting bats is best carried out from mid September to late October. This assumes that young bats are weaned and independent, and is before hibernation. Mid-March to the end of April is also a suitable time, after hibernation and before young are born, although due account should be taken of nesting birds, which also (with few exceptions) enjoy statutory protection. Further advice, particularly if bats are discovered during tree work, may be obtained from Cresswell Associates or English Nature.

6. University of the West of England

6.1 The site is on undulating land with a slope from the west down to the east, towards a water course. The extensive built complex is set amongst very occasional fully mature Oak and Ash. However, the majority of the trees are best described as young and middle aged and presumably planted at the time of the original landscaping to the complex. In addition, there is numerous new planting throughout the site but principally around the accommodation blocks. These very young trees do not form part of this survey as they would all be BS category 'C' (*low value… transplantable size*). However, where there are a number of young/maturing trees that have been included within the survey because of their increasing amenity value.

6.2 The retained mature Oaks are mostly field/hedgerow specimens and excellent wildlife habitats. Your attention is drawn to Oak No 349 that is a 'wind heave' victim, therefore I have recommended crown reduction to reduce the risk of failure.

6.3 There are a number of hedgerows and woodlands that are excellent wildlife corridors and habitats and good screens to the site, all of which are identified within the Cresswell Appraisal. These include the southerly boundary W279, which comprises mostly Field Maple and Oak and the westerly boundary which is a similar mixture and includes Hawthorn. Within the north easterly corner of the site is a small, prominent, dense, young, mixed maturing wood, No W200 that is overdue for thinning as are the similar wooded sections located along the easterly boundary with Coldharbour Lane. To the north of the main entrance there is a dense Crack Willow plantation No W359 and to the south of the entrance is an Alder plantation, No W263, both of which are overdue for thinning in numbers.

7. Legal Constraints

7.1 Unless otherwise stated, at least an annual inspection should be carried out of the mature trees, or sooner following exceptional weather conditions such as very high winds.

7.2 Should the trees be covered by a Tree Preservation Order or be within a Conservation Area, consent should be obtained from the Local Planning Authority prior to works commencing.

7.3 It is an offence under the Wildlife and Countryside Act to disturb a nesting bird or roosting/breeding bat. Work to trees with the potential for roosting bats is best carried out from mid September to late October. This assumes that young bats are weaned and independent, and is before hibernation. Mid-March to the end of April is also a suitable time, after hibernation and before young are

born, although due account should be taken of nesting birds, which also (with few exceptions) enjoy statutory protection.

8. Terms Used Include:- (Ref BS3998 (1989) Recommendations for Tree Wor

8.1 'Crown Thin' - Reduction of leaf density by judicious pruning. No height or spread reduction intended.

8.2 'Crown Reduction' (sometimes 're-shaping') - Overall height and spread reduction by judicious pruning.

8.3 'Fell' - To mean cutting as close to ground level as reasonably practicable. Species that are capable of re-sprouting from the cut stems should be treated with a herbicide.

8.4 'Pollard/Pollarding' - Repeated cutting back all new growth to pruning points usually low in the canopy usually restricting crown, trunk and root increment. The method and amount of tree pruning will directly affect their ability to photosynthesise, their transpiration rate and, as a consequence, their demand on the soil moisture. Periodic pruning will be necessary to manage the trees at the reduced level.

8.5 'Lift' - The removal of low branches to a pre-determined height, ground level to lowest branch.

8.6 'Bracing' - The fitting of flexible cables at height to support lower forks and give additional strength to branches using traditional methods or using non-invasive Cobra systems.

8.7 'Remove Deadwood' – Removal or reducing deadwood that is unstable or prone to failure and of significance to safety. Retained deadwood could be coronet-cut and managed as a useful wildlife habitat.

8.8 'Cleaning Out' – Removal of dead, dying or diseased wood, unwanted shoots and other objects such as wires, clamps or boards.

8.9 'Veteran Trees' – A Guide to Good Management, Helen Read ISBN I 85716474 I

9. Reference/Further Information

British Standard 3998 (1989) 'Recommendations for Tree Works'.

British Standard 5837: 2005 'Trees in Relation to Construction - Recommendations'.

The Hedgerows Regulations 1997. SI No. 1160 DoE

Wildlife and Countryside Act.

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Alan J Engley

AJE/AF/25423

28th January 2009

TREE SURVEY SCHEDULE – Hewlett Packard, Filton

CLIENT - Cooper Partnership

Abbreviations:

AGE:
VET - Veteran
OM - Over-mature
M - Mature
MA – Middle Age
Y – Young
SULE – short useful life expectancy
TD – Trunk Diameter
MS - Multi-stemmed
M – Measured using a
Sonic-based Vertex
Hypsometer and (or) tape
measuring
Dwd - Crown contains deadwood
SSS – self sown seedling

DI- Dense ivy cover or vegetation, sufficient to prevent a condition inspection
CT- Crown Thin
CL – Crown Lift
CI – Climbing Inspection
CO – Clean Out Crown
FP – Formative Prune
CDW-(Conservation deadwood) remove or treat deadwood of significance to safety
"Probe" – Use a decay detection device to assess heartwood condition prior to surgery commencing
SULE – Short Useful Life Expectancy

ROOT PROTECTION AREA (RPA):

(See BS Table 2, = a radius 12 times TD or 10 times basal diameter for MS trees) max 15m radius. Note: BS 5.2.4 "The RPA … may change its shape but not reduce its area ... as assessed by an Arboriculturalist"

USEFUL LIFE EXPECTANCY (ULE):

Less than 10 years	1
10-20 years	2
20-40 years	3
40+ years	4

TREE CATEGORIES (CAT):

R – Removal
A – High quality and value (min 40 years contribution)
B – Moderate quality and value (min 20 years contribution)
C – Low quality and value (min 10 years contribution)
Or young trees with a stem diameter below 150mm)

SUB-CATEGORIES (SUB CAT):

1 – Mainly arboricultural values
2 – Mainly landscape values
3 – Mainly cultural values

Surveyor: A J Engley

Survey Dates: 20.01.09, 28.1.09, 30.1.09, 3 & 4.2.09,

Weather: 20.1.09 – Fine
28.1.09 - Rain

Visibility: 20, 30.1.09 – Good. 3.2.09 Good. 28.1.09 & 4.2.09 - Poor

Tagged: No

PHYSIOLOGICAL CONDITION (CON):

G – Good condition
F – Fair condition
P – Poor condition
M – Moribund condition D – Dead

NOTE:

- **Ivy should be retained as wildlife habitat and removed only to allow a detailed condition inspection.**

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
1	Blue Atlas Cedar (*Cedrus atlantica 'Glauca'*)	5	N E S 4 W	MS 300	Y	B	1	4	N E S 1 W	G	Good form	-
2	Grand Fir *Abies sp*	6	N E S 3 W	MS 200	Y	B	1	4	N E S .5 W	G	Good form	-
3	*Abies sp*	6	N E S 3 W	MS 200	Y	B	1	4	N E S .5 W	G	Good form	-
G4	(Dense screen) Belt of Alder (*Alnus sp*) Ash (*Fraxinus excelsior)* Field Maple (*Acer campestre)* Cherry (*Prunus spp*) occasional Willow (*Salix spp)*	10	N E S W	MS 200	Y	B	1	4	N E S W	G	Fine screen and wildlife habitat, over dense.	Best thinned in numbers by 50% Retain better specimens only
5	Oak (*Quercus robur)*	9	N E S 5 W	330	Y	B	1	4	N E 1.8 S W	G	Fine appearance	-
G6	Oak (*Quercus robur)*	8-9	N E S 4 W	MS 250 – 300	Y	B	1	4	N E 1.3 S W	G	Fine group, one has bark damage	-
7	Ornamental Cherry (*Prunus)*	6	N 5 E 5 S 2 W 3	330	M	C	1	2	N E 2 S W	F	Heavily one sided (E) tight forks	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G8	Mixed Cherry x 24 (*Prunus)* + 2 Goat Willow	8-10	N E S W	330 MS 850	Y M	C	1	3 2	N E S 1 W	F F	Dense group Tight forks	
G9	Dense shrub planting, occasion Crack Willow and Ash and Field Maple	6-13	N E S 4 W	MS 350	Y	C	1	3-4	N E S W	F	Average form	
car park 10 – 29	Acer *(saccharum?)*	2.5 – 3	N average E .5 S - W 1.5	160	Y	R/C		1	N E S 1.5 W	P & VP	Unworthy of retaining	
car park 30 – 39	Acer (*saccharum?)*	3-7	N E 1-5 S W	250	Y	C	1	1-2	N E S 1.5 W	F	Better form and condition, poor long term prospects.	
G40	3 x White Birch (*Betula alba)*	11	N E S 5 W	MS 300	Y	B	1	3	N E S 1.5 W	G	Fine group	
41	*Abies grandis*	4.5	N E S 3 W	MS 250	Y	B	1	4	N E 1 S W	G	Good form	
G42	2 x White Birch	7	N E S 6 W	MS 200	Y	B	1	3	N E S 1 W	G	Previously reduced in height	
G43	5 x White Birch 1 x *Abies*	7-8	N E S 5 W	MS 200	Y	B	1	3-4	N E S 1 W	G	Previously reduced in height (except *Abies*)	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
44	*Abies*	11	N E S 4 W	MS 200	Y	B	1	4	N E S 2 W	G	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G45	2 x *Abies*	6-11	N E 4 S W	MS 200	Y	B	1	4	N E 1.5 S W	G	Good form	
G46	3 x Black Pine (*Pinus Nigra)*	8	N E S 5 W	MS 450	Y	B	1	4	N E GL S W	G	DI Fine strong group	
G47	6 x Black Pine (*Pinus Nigra)*	5-8	N E 5 S W	MS 450	Y	B	1	4	N E GL S W	G	DI Fine strong group	
G48	6 x hybrid Poplar (*Populus x robusta)*	15	N E 9 S W	500	Y	B	1	4	N E S 1.5 W	F	Prominent group Good L/S feature	
car park 49-54	All *Sorbus Aria*	5	N E S 5 W	210	M	C	1	2	N E S 2 W	F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
55	*Sorbus aria*	5	N 5 E 3 S 0 W 3	210	M	R	-	-	N E S W	F	Heavy lean	Fell
G56-58	3 x Norway Maple (*Acer platanoides)*	3.5	N E S 1.5 W - 2	160	Y	C	1	2	N E S 2 W	P/F	Average form	
G59-63	5 x Norway Maple (*Acer platanoides)*	3.5	N E S 1.5 W - 2	210	Y	C	1	2	N E 2 S W	P/F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
64	Norway Maple	3.5	N E S 1.5 W	160	Y	R			N E S W		Bark damage	
65	Norway Maple	3.5	N E S 1.5 W	160	Y	R			N E S W		Bark damage	
G66-68	Norway Maple	3.5	N E S 1.5 W	160	Y	C	1	2	N E S 2 W	P/F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
car park G69 – 73	*Sorbus aria* x 5	5	N E S 4.5 W	250	M	C	1	2	N E S 1.5 W	F	Better form	
car park G74 – 81	*Sorbus aria* x 8	4-5	N E S 4 W	250	M	C	1	2	N E S 1.5 W	F	Better form	
82	Crack Willow (*Salix fragilis)*	7	N E 7 S W	MS 350	M	C	1	2	N E S 2 W	F	DI weighted (E) average form	
83	Crack Willow	7	N E S 7 W	MS 250	M	C	1	2	N E 2 S W	F	Weighted (E) average form	
84	Crack Willow	15	N E S 8 W	MS 550	M	C	1	2	N E 2 S W	F	DI average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
85	Crack Willow	7	N E S 5 W	MS 250	M	C	1	2	N E S 2 W	F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
car park G86-90	*Acer spp*	3.5	N E 1 S W	160	Y	C/R	1	1	N 1.8-2 E S W	P	All poor form and condition, unworthy of retention	
91	Crack Willow	17	N 9 E 12 S 7 W 8	960	M	C	1	3	N E 1.5 S W	F	DI Dense crown heavy (E) and (N) lean	• CR 1/3
G92	2 x Grey Poplar (*Populus x canescens)*	14	N E 8 S W	330	Y	C	1	3	N E S 1 W	F	Average form	
G93	13 x Grey Poplar	average 14	N E 7 S W	460	Y	C	1	3	N E S 1 W	F	DI All biased (E)	
94	*Robinia pseudacacia*	10	N E 6 S W	460	MA	C	1	3	N E 1.5 S W	F	DI Broken limbs	• CO
95	Grey Poplar	14	N E S 7 W	460	Y	C	1	3	N E S 2.5 W	F	Over cut pruning wounds	
96	Silver Birch (*Betula pendula)*	10	N E 6 S W	290	Y/ MA	C	1	3	N E S 1.5 W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
97	Grey Poplar	9	N E S 6 W	330	Y	C	1	3	N E S 1 W	F	Good form	
G98	4 x Grey Poplar	9	N E 2-5 S W	MS 250	Y	C	1	3	N E 1 S W	F	Average form	
G99	3 x Grey Poplar 1 x Field Maple	4-9	N E 2-6 S W	MS 350	Y	C	1	3	N E 1 S W	F	Average form	
G100	2 x *Abies*	12	N E 3 S W	MS 400	Y	B	1	4	N E 1.3 S W	G	Good form	
G101	4 x White Birch	5-7	N 2-4 E S W	210	Y	B	1	3	N E S 1.3 W	G	Average form	
G102	3 x Silver Birch	12	N E S 5 W	MS 300	Y	B	1	3	N E S 1.5 W	G	Good form	
103	Silver Birch	12	N E S 5 W	330	Y	B	1	3	N E 1.3 S W	G	Good form	
104	Paper Birch *(Betula papyrifera)*	7	N E S 4 W	210	Y	B	1	3	N E 1.3 S W	G	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
105	Sumach *(Rhus sp)*	6	N E S 5 W	MS 250	OM	C	1	1	N E S 1 W	F	Deteriorating condition SULE	
106 (page one pic)	Horse Chestnut (*Aesculus hippocastanum*)	18	N E 9 S W	960	M	B	1 & 2	4	N E S 2 W	G	DI Fine form, dense crown, prominent, important L/S feature. Heavy (N) sub leader. Old scars and cavities throughout.	• CT 15% • CI • CT extra 5% (N) leader
G107	2 x Horse Chestnut	4-5	N E 2 S W	MS 250	Y	C	1	4	N E S 1.5 W	F/P	Long term replacements but struggling here?	
G108	2 x Horse Chestnut	3-5	N E S 2 W	MS 250	Y	R			N E S W	P	Moribund/bark damage	Fell
109	Beech	7	N E S 4 W	MS 250	Y	B	1	4	N E S 1.5 W	F	Fine long term replacement, birfurcates at 2m	• remove or shorten (SE) bifurcated stem
110	Horse Chestnut	6	N E S 3 W	330	Y	C	1	4	N E S 2 W	F	DI Better form	
G111	2 x Horse Chestnut	8	N E S 6 W	MS 400	Y	R			N E S W	P	Bleeding canker and bark loss	
112	Horse Chestnut	7	N E S 6 W	400	Y	B	1	4	N E S 1.6 W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
113	Horse Chestnut	14	N E S 10 W	875	M	B	1	4	N E S 1 W	F	Good form. Old occluding and occluded scars. Very heavy (N) leader	• CT 15% • reduce length of (N) sub leader by 3m • Fit brace
G114	Mix White Birch & Scots Pine & Black Pine	9-14	N E 3 S W	MS 350	Y	B	1	4	N E S 1.5 W	F/G	Good screen and strong group. Overdue for thinning.	Thin Nos 50%
G115	7 x Norway Maple	9	N E S 5 W	290	Y	B	1	4	N E S 1.5 W	G	Good screen, good form (one has curve at base of trunk)	
G116	Mix Gean Ash Oak	10	N E S 5 W	330	Y	B	1	4	N E S 1.5 W	G	Good dense screen	Thin Nos 50%
G117	3 x *Robinia*	2 x 10 1 x 5	N E S 5 W	MS up to 350	Y	C	1	2	N E 2 S W	F/P	1 x small poor tree 2 x larger trees have tight forks and canker. Unworthy of retaining	
118	*Robinia*	5	N E S 5 W	330	Y	R			N E S W	P	Cankered Stem	Fell
119	*Robinia*	4	N E S 5 W	290	Y	R			N E S W	P	Cankered stem	Fell
120	*Robinia*	4	N E 5 S W	290	Y	R			N E S W	P	Cankered stem	Fell

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
121	*Robinia*	4	N E 5 S W	210	Y	C	1	2	N E S 1.5 W	F	Better form	
G122	3 x *Robinia*	10	N E S 5 W	330	Y	C	1	3	N E S 1.5 W	F	Average form	
G123	6 x *Robinia*	10	N E S 5 W	120-330	Y	C	1	3	N E S 1.5 W	F/P	2 Poor trees	Fell poor trees
G124	3 x *Prunus padus*	7	N E S 5 W	330	Y	C	1	3	N E 1.5 S W	F	Average form	
125	*Malus 'Tchnowski'*	7	N E S 1 W	210	Y	C	1	3	N E S 2 W	F	Good form	
126	*Prunus padus*	4	N E S 2 W	210	Y	C	1	3	N E S 2 W	F	Previously 'topped' Poor form	
127	*Prunus padus*	7	N E S 2 W	210	Y	C	1	3	N E S 2 W	F	Better form	
G128	5 x *Robinia*	3-7	N E S 4 W	210	Y	C/R		1	N E S W	F/P	Poor form SULE (unworthy of retention)	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G129	2 X *Malus*	8	N E 1 S W	210	Y	C	1	3	N E S 2 W	F	Good form	
130	Crack Willow	10	N E S 5 W	MS 500	Y	C	1	2	N E S W 2	F	Average form	
131	27.1.09 *Acer platanoides* var	13	N E S 5 W	MS 250	Y	C	1	4	N E S 2 W	G	Average form	
132	Turkish Hazel	8	N E S 3 W	MS 200	Y	B	1	4	N E S 2 W	G	Good form and condition	
133	Snake Bark Maple (*Acer pensylvanicum)*	5	N E S 5 W	210	Y	B	1	4	N E 3 S W	G	Good form and condition	
134	Snake Bark Maple	6	N E S 6 W	210	Y	B	1	4	N E S 1.5 W	G	Good form and condition	
135	Pine	9	N E S 2 W	210	Y	R			N E S W		Moribund	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G136	14 x Lime (*Tilia x euchlora)*	4	N E S W 1-3	160	Y	C	1	3	N E S W 1.5	F/P	Poor form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G137	18 x mixed hybrid Poplar	16-18	N E S W 2-5	MS 500	M & Y	C	1	4	N E S W 1.5	F	Tall screen above Pine	
G138	Willow occasional Ash, Gean & Oak	15	N E S W 5	MS 250	Y	C	1	3	N E S W	F	Good wildlife habitat	
139	*Sequoiadendron giganteum*	9	N E S W 4	MS 500	Y	B	2	4	N E GL S W	G	Fine form	
140	Pear *(Pyrus sp)*	7	N E S W 4	MS 500	OM	C	1	1	N E 3 S W	P	Tight fork at 200, deteriorating condition SULE	
141	Elder (*Sambucus nigra)*	7	N E S W 4	MS 500	OM	C	1	1	N E S W 2	P	Tight fork at 200, deteriorating condition SULE	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
142	Norway Maple	10	N E S 5 W	330	Y	C	1	4	N E S 2 W	F	Average form	
143	Norway Maple	2.5	N E S .5 W	160	Y	C	1	1	N E 2 S W	P	Stunted, poor form	
144	Oak	5	N E 3 S W	210	Y	B	1	4	N E S 1.5 W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G145	White Poplar (*Populus alba)*	15	N E 9 S W	MS 400	MA	C	1	4	N E S 1.5 W	F	Dense group	
	Black Pine	10	N E S 5 W	210	Y	C	1	4	N E 1 S W	F	Good screen and wildlife habitat	
146	White Poplar	14	N 6 E 13 S 13 W 8	500	MA	C	1	4	N E S 1.5 W	F	Crown weighted (SE) and contains deadwood	• CO

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
147	White Poplar	14	N 7 E S W	460	MA	C	1	4	N 1.5 E S W	F	Better form	• CO
148	White Poplar	14	N 10 E 10 S 6 W 6	460	MA	C	1	4	N 1.5 E S W	F	Average form Deadwood	• CO
149	White Poplar	5	N E S 3 W	160	Y	R			N E S W	P	Suppressed	Fell
150	White Poplar	14	N E S 5 W	420	MA	C	1	4	N E S 1.5 W	F	Average form Deadwood	• CO
151	White Poplar	14	N E 9 S W	460	MA	C	1	4	N E S 2 W	F	Wide spreading crown Deadwood	• CO

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
152	White Poplar	15	N E S 9 W	500	MA	C	1	4	N E S 1.3 W	F	Wide spreading crown. Deadwood	• CO

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
153	Ash	12	N E 6 S W	835	OM	R/C	1	3	N E S W	P	Severe trunk decay	If retained CR 1/3
154	*Robinia*	10	N E S 6 W	MS	Y	R/C	1	1	N E 1 S W	F	Poor form bark loss	• CR 1/3
155	Hawthorn	5	N E 5 S W	MS 800	OM	R			N E S W	P	DI stump	
156	Gean	9	N E S 6 W	300	M	C	1	2	N E S 1.5 W	F	Average form	
157	Gean	10	N E 6 S W	420	M	C	1	3	N E 2 S W	F	Good form	
158	Gean	10	N E 6 S W	420	M	C	1	3	N E S 2 W	F	Average form, fork at 3m	
159	Yew	16	N E 8 S W	MS 900	M	A	1	4	N E S 1.5 W	G	Fine form forks at GL (metal fork embedded at 1.2m)	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
160	Oak (commemorative tree)	7	N E S W 7	330	Y	B	1	4	N E S W 1.5	G	Fine form	
161	Ash	12	N E S W 5	MS 450	Y	R		1	N E S W 3	F	Tight fork at 1m will fail	Fell
162	Ash	12	N E S W 8	330	Y	C	1	4	N E S W 2	F	Good form	
163	Apple	6	N E S W 6	375	OM	C	1	1	N E S W	P	Poor form	
164	Apple	7	N E S W 6	375	OM	R			N E S W	P	Hollow trunk	
G165	Mostly Young Ash above mature Thorn, Hazel and occasional Willow	12	N E S W 6	625	Y	C	1		N E S W	F	Good strong screen and wildlife habitat	
166	Apple fallen		N E S W		OM	R			N E S W		Wind heave victim	
167	Apple	8	N E S W 8	460	OM	R/C		1	N E S W 1.5	P	Decay in base	if retained CR 1/3

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
168	Pear	13	N E S 7 W	540	OM	R/C	1	1	N E S 2 W	P	Trunk decay and cavity	If retained CR 1/3
169	Pear	10	N E S 5 W	375	OM	R/C	1	1	N E 2 S W	P	Trunk decay and cavity	If retained CR 1/3
170	Field Maple	7	N E 6 S W	330	M	C	1	4	N E 2 S W	F	Good form bark damage	• CO
171	Ash	17	N E 9 S W	MS 900	M	C	1	3	N E S 4 W	F	DI Dense crown	• CO • CT 15%
172	Ash	16	N E S 6 W	625	M	C	1	3	N E S 5 W	P	DI Dense crown	• CO • CT 15%
173	Ash	16	N E 6 S W	625	M	C	1	3	N E 4 S W	P	DI Dense crown	• CO • CT 15%
G174	Ash	16	N E 8 S W	MS 750	M	C	1	3	N E 1.5 S W	F	DI Dense crown, barbed wire attached	• CO • CT 15%
G175	Goat Willow & Ash (young)	10	N E 15 S W	MS 800	M/Y	C	1	3	N E S GL W	F	Wide spreading good wildlife habitat	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
176	Ash	17	N E S 8 W	920	M	R/C	C	1	N E S F W	F	DI Hollow trunk and limbs	If retained CR 1/3
177	Ash	17	N E S 12 W	920	M	C	1	3	N E F S W	P	DI Much deadwood	• CT 15% • CO
178	Oak	7	N E S 3 W	160	Y	C	1	4	N E F S W	F	Good form	
179	Gean	10	N 0 E 3 S 8 W 7	MS 650	M	C	1	3	N E S 1 W	F	DI heavy (SW) lean	•CL
180	Ash	18	N E S 8 W	1000	M	C	1	4	N E 6 S W	F	DI previously crown reduced	• CO
181	Sycamore	11	N E S 6 W	420	MA	C	1	4	N E 2 S W	F	DI old scars, average form	
182	Ash	14	N E 8 S W	330	MA	C	1	4	N E 3 S W	F	DI grown against wall	Remove top section copping of wall?
183	Lime	13	N E 6 S W	330	Y	C	1	2	N E 1.5 S W	F	Very weak fork at 1.5m	• CR 1/3

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
184	*Sequoia*	14	N E 3.5 S W	330	Y	B	2	4	N E S .5 W	G	Fine form and long term prospect?	
G185	5 x *Robinia*	6	N E S 4 W	MS 250	Y	R/C	1	1	N E S 1.5 W	F	Poor form and condition	
G186	7 x Gean and Field Maple	5	N E 4 S W	MS 300	Y	C	1		N E 1.5 S W	F	Tight forks and Gummosis poor trees (better Field Maple)	
G187	Poplar Oak Gean above thorn	10	N E 10 S W		Y	C	1	3/4	N E S W	F	Strong hedge and screen ?	
188	Crack Willow above bramble	7	N E S W	160	Y	C	1	3	N E S W		Overgrown hedge	
189	Oak	14	N E S 8 W	960	M	B	3	4	N E S 1.5 W	F	DI dense crown contains deadwood, good hedgerow specimen	
190	Oak	7	N E S 12 W	1000	Nr Vet M	B	3	4	N E S 1 W	F	DI dense crown contains deadwood hedgerow. hollow trunk, sporophore (N) side	• CR 1/3 Probe Near veteran management
H191	Mostly Blackthorn	5	N E S W	MS 500		C	1	4	N E S W	F	Overgrown and suckers	Flail cut

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G192	2 x Ash	14	N E 8 S W	MS 750	MA	C	1	4	N E S 2 W	F	DI SSS, typical hedgerow specimen	
G193	Several Ash	14	N E S W 7	MS 750	MA	C	1	4	N E 2 S W	F	DI SSS, typical hedgerow specimen	
G194	Alder Silver Birch Field Maple	6-8	N E 4 S W	MS 400	Y	C	1	3	N E S W	F	Average form (small group)	
195	Not inspected Ash	14	N E S W	350	Y/ MA				N E S W		Not closely inspected part of hedgerow	
car park beyond fence G196	15 X Norway Maple	3-5-4	N E 1 S -2 W	160	Y	C	1	1	N E S 1.8 W	P	Mostly poor misshapen trees unworthy of retention	
	UNIVERSITY WEST OF ENGLAND 30.1.09		N E S W						N E S W			
197 (NW corner of site)	Oak	18	N 10 E 10 S 6 W 5	950	M	B	3	4	N E S W	F	DI heavy (N) and (E) bias	
G198	All weather pitch (inaccessible) mix Silver Birch, Poplar, Ornamental Cherry, Gean, Beech	10 14 12	N E S 4 W -6	400?	MA	C	1	4	N E S W	F	Better Beech (good long term prospects)	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G199	located on steep bank down to the A4174 Norway Maple x 2 Ash x 2 Oak	12	N E 4-6 S W	MS 600	Y/ MA	C	1	4	N E S W	F	Average form and condition	
W200	mix small wood Acer Ash Oak	14	N E S W	MS 350	Y/ MA	C	1	4	N E S W	F	DI dense group, prominent feature overdue for thinning in numbers	Thin numbers 50%
H201 (N) end of (W) boundary)	Hedge Field Maple 80%	8	N E S 5 W	MS 300	Y	C	1	4	N E S W	F	Recent thinning in numbers and reduction of thorn hedge. Good wildlife habitat	
	Ash – occasional Hawthorn some	12-15 4	N E S W		Y M				N E S W		and screen	
G202	9 x Scots Pine	10	N E S 5 W	MS 950	MA	C	1	4	N E 2 S W	F	(S) Tree has a tight fork. Good group occasional deadwood.	• CT 15% • fit x 1 brace
203	Oak	15	N E S 6 W	900	M	B	1	4	N E S 5 W	F	DI good wildlife habitat	
204	Ash	15	N E 8 S W	MS 900	M	C	1	4	N E 2 S W	F	(S) end of a row of (MA) and (M) Ash and Oak	Typical hedgerow form good screen

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G205	Ash Wych Elm (*Ulmus glabra)*	14	N E S 5 W	MS 500 each	MA Y	C	1	3 1?	N E 3 S W	F	DI recent stem removed, typical hedgerow form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G206	Silver Birch Pine Sorbus 4 x Pyrus	5	N E 3 S W	MS up to 120	Y	C	1		N E S W	F	all new L/S planting	
north east corner of complex 207	Scots Pine	4	N E S 3 W	MS 280	Y	C	1	4	N E S GL W	F	Distorted top	
208	Norway Maple	5	N E S 2 W	MS 200	Y	C	1	2	N E S 2 W	F	Average form	
209	Sequoiadendron	8	N E S 4 W	MS 450	Y	B	3	4	N E S GL W	G	Very good form	
210	Oak	8	N E S 4 W	MS 350	Y	C	1	4	N E S 1 W	F	Average form slight (N) lean	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
211	*Eucalyptus gunneii*	14	N E 7 S W	MS 450	Y	C	1	3	N E S 1 W	F	Average form	
212	Deodar	12	N E S 4 W	MS 300	Y	C	1	4	N E 1 S W	F	Good form	
213	Acer	5	N E S 4 W	MS 180	Y	C	1	3	N E 2 S W	F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
214	Norway Maple	5	N E S 4 W	280	Y	R			N E S W		Severe squirrel damage	Fell
G215	2 x Atlas Cedar 1 x Sequoiadendron	4-5	N E S 4 W	MS 200-350	Y	B	2	4	N E S W	F	Good form Good form	
G216	3 x Acer	6	N E S 5 W	MS 280	Y	C	1	2-3	N E S 1.5 W	F	Squirrel damage and tight fork	• FP • CO

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
217	Field Maple	6	N E S 5 W	MS 350	Y	C	1	4	N E S 2 W	F	Good form	
218	Grey Poplar (*Populus X canescens)*	8	N E S 8 W	400	Y	C	1	3	N E S 3 W	F	Average form	
219	Norway Maple	7	N E S 4 W	MS 350	Y	C	1	3	N E 2 S W	F	Tight fork	• FP
G220	8 x Alder *(Alnus spp)*	9	N E S 3 W	MS 300	Y	C	1	3	N E S 2 W	F	Good group	
G221	3 x Norway Maple	4	N E S 4 W	MS 250	Y	C	1	3	N E 2 S W	F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
222	Fastigiate Oak	10	N E S 1.5 W	MS 250	Y	C	1	4	N E S 2 W	F	Very good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G223	3 x Fastigiate Hornbeam	8	N E S 2 W	MS 250	Y	C	1	4	N E S 2 W	F	Good form	
G224	2 x Silver Birch 1 x Ash	5 9	N 2 E S W 4	100 MS 250	Y Y	C C	1 1	2 4	N E 2 S W 2	F F	Average form Average form	
	1 x Tulip Tree	3.5	N E S 1.5 W	100	Y	C	1	4	N E 1.8 S W	F	Good form	
225	Oak	20	N E 10 S W	1000	M	B	1 & 2	4	N E 3 S W	F	DI good form, dense crown	• CT 15%
G226	Mostly Field Maple above thorn	9	N E 7 S W	MS 450	M	C	1	4	N E 1.8 S W	F	Good screen and wildlife habitat	
227	Poplar	10	N E S 5 W	300	Y	C	1	3	N E S 2 W	F	Good form	
G228	3 x Red Oak (*Quercus rubra)*	8	N E S 5 W	MS 250	Y	C	1	4	N E 2 S W	F	Occasional tight forks	• FP

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229	Weeping Willow	10	N E S 7 W	350	M	B	1	3	N E 2 S W	F	Good form	
G230	Ash x 2 Cherry x 3 Willow x 2	5	N E 5 S W	MS ?300	MA	C	1	3	N E 2 S W	F	DI Average form Deadwood	• CO
G231	3 x Field Maple	4.5	N E 4 S W	MS 300	MA	C	1	4	N E 2 S W	F	Average form	
G232	5 x hybrid Poplar 1 x Willow 1 x Gean	17	N E S 5 W	MS 550	MA	C	1	3	N E S 2 W	F	Part of local wooded area	
G233	2 Goat Willow 1 x Silver Birch	13	N E S 4 W	MS 300	MA	C	1	3	N E S 2 W	F	Part of wooded area Average form	
G234	lightly wooded mix both sides of water course Grey Poplar Weeping Willow Willow Grey Willow	8-15	N E 6 S W	MS 200-600	MA	C	1	3	N E S 1.8 W	F	(E) side Willow previously 'topped'. Wood overdue for thinning in numbers	
235	Gean	4	N E 3 S W	250	MA	C	1	3	N E 1.8 S W	F	Average form	
236	Ash	6	N E S 4 W	230	Y	C	1	3	N E S 3 W	F	Better form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G237	Hornbeam x 13	6	N E S 5 W	150-280	Y	C	1	4	N E S 3 W	F	Average form	
G238	2 x Sorbus	7	N E S 6 W	300	M	C	1	1-2	N E S 4 W	F	(W) tree leans (NE)	• CT 20%
G239	2 x Ash	14	N E 5 S W	250	Y	C	1	4	N 2 E S W	F	Average form	
240	Winter Cherry	4	N E 5 S W	150	MA	C	1	2	N E 2 S W	F	Average form	
G241	Portuguese Laurel	4	N E S 4 W	MS 300	M	C	1	3	N E S 1 W	F	Average form	
242	Evergreen Oak (*Quercus ilex)*	5	N E 4 S W	MS 300	Y	C	1	4	N E S 1 W	F	One sided	
243	Evergreen Oak	5	N E 4 S W	MS 300	Y	C	1	4	N E 1 S W	F	Better form	
244	Lime	7	N E S 4 W	280	Y	C	1	4	N E 1 S W	F	Better form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
245	Lime	13	N E S W 6	350	Y	C	1	4	N E S W 1.8	F	Good form dense crown	
246	Lime	13	N E S W 4	280	Y	C	1	4	N E S W 1.2	F	Good form dense crown	
247	Lime	13	N E S W 6	300	Y	C	1	4	N E 1.2 S W	F	Good form dense crown	
248	Lime	12	N E S W 5	300	Y	C	1	4	N E 1.2 S W	F	Good form dense crown	
249	Lime	13	N E S W 6	300	Y	C	1	4	N E 1.2 S W	F	Good form dense crown	
G250	4 x Ornamental Cherry	4.5	N E S W 3	250	Y	C	1	4	N E 1.5 S W	F	Good form dense crown	
251	Grey Willow	7	N E S W 6	MS 400	M	C	1	2	N E 1.8 S W	F	DI	
252	Lime	14	N E S W 6	350	Y	C	1	4	N E 1.8 S W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G253	6 x Birch 1 x Pine	10	N E S 4 W	MS 300	MA	C	1	3	N E S 1.8 W	F	Average form	
G254	4 x Birch 2 x Pine 1 x Oak	7	N E S 3 W	MS 300	Y	C	1	3-4	N E S 1 W	F	Average form	
G255	3 x Alder 1 x Birch	7	N E S 3 W	MS 300	Y	C	1	3	N E 1 S W	F	Average form	
G256	Mix Sycamore 14 x Oak, Alder, Pine, Birch	8	N E 4 S W	MS 300	Y	C	1	3	N E 1 S W	F	Average form	
G257	14 x Birch 4 x Pine	15	N E S 3 W	MS 300	MA Y	C	1	4	N E 1 S W	F	Better form	
G258	mix Birch, Alder Pine, occasional Oak, Sycamore	5	N E 2 S W	MS 150	Y	C	1	4	N E 1 S W	F	Average form	
G259	2 x Ornamental Cherry	4-7	N E S 5 W	MS 300	Y	C	1	3	N E S 2 W	F	Average form	
G260	5 x Gean 4 x Field Maple 2 x Alder	8-12	N E S 5 W	MS 300	MA	C/R	1	1-4	N E S 2 W	F	1 x Gean and both Alder have bark damage	Fell bark damaged trees

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G261	Ash	12	N E S W 7	400	Y	C	1	4	N E S W 2	F	Occasional stubs	• CO
G262	3 x Alder	7	N E S W 4	MS 300	Y	C	1	4	N E S W 2	F	Individual trees average form	
W263	Both sides of water course Alder	4-13	N E S W 5	MS 300 – 450	MA/Y	C	1	3	N E S W 1	F	DI strong landscape feature, overdue for thinning in numbers	• Thin 50%
264	roadside Crack Willow	17	N E S W 9	MS 850	M	C	1	2	N E S W 2	F	DI Previously reduced at 12m	• CR 1/3
265	Weeping Willow	12	N E S W 8	450	M	B	1	3	N E S W 1.5	F	Good form	
266	Ornamental Cherry	3	N E S W 1.5	150	Y	C	1	3	N E S W 2	G	Good form	
267	Alder	9	N E S W 4	300	Y	C	1	3	N E S W 1.5	F	Good form	
G268	2 x Sycamore	13	N E S W 8	450	MA	B	1	4	N E S W 1.8	F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
	1 x Ash	14	N E 7 S W	450	MA	B	1	4	N E 1.8 S W	F	Average form	
	3 x Gean	14	N E 6 S W	300 – 350	MA	C	1	4	N E 1.8 S W	F	Average form	
	1 x Ash	12	N E 5 S W	300	Y	C	1	4	N E 1.8 S W	F	Damaged bark	
269	Lawson's Cypress 'Allumii'	7	N E S 1.5 W	MS 300	Y	C	1	3	N E GL S W	F	Good form	
270	Poplar	9	N E S W	300	M	R			N E S W	P	Cankered tree	Fell
271	Weeping Willow	10	N E S 6 W	MS 450	MA	B	1	3	N E 1.8 S W	F	Good form	
272	Poplar	12	N E S 5 W		M	R			N E S W	P	Cankered (keep young Oak that grows nearby?)	
273	Weeping Willow	10	N E S 7 W	MS 450	MA	B	1	3	N E S 1.8 W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
274	(Estates Office) Weeping Willow	10	N E S 7 W	MS 450	MA	B	1	3	N E S 1.8 W	F	Good form	
275	Sequoiadendron	10	N E S 5 W	MS 600	Y	A	1 & 2	4	N E GL S W	G	Excellent form	
G276	4 x Silver Birch 1 x Norway Maple 1 x Sorbus	7	N E 4 S W	MS 200-350	MA	B	1	2	N E S GL W	F	Important group	
277	White Birch	7	N E S 7 W	MS 500	MA	B	1	2-3	N E S 1.8 W	F	Fine form, good feature	
G278	9 x Gean 2 x Scots Pine 1 x Field Maple 2 x Norway Maple 1 x Ash	8	N E S 4 W	MS 150-350	Y	C	1	4	N E 1.8 S W	F	Good Group	
W279	Southerly boundary Linear wood mix Oak, Field Maple, Yew	15	N E S W		Y	B	1 & 2	4	N E S GL W	F	DI Excellent screen and wildlife habitat. Overdue for thinning in numbers	• Thin 50%
G280 car park	5 x Robinia 2 x Sorbus 7 x Oak	2-4	N E S 2 W	MS 150	Y	C	1	2	N E 1.8 S W	F	Better Oak, poor Robinia	
281	Field Maple	7	N E S 5 W	MS 450	MA	C	1	4	N E 1.8 S W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
282	Field Maple	5	N E S 4 W	MS 350	MA	C	1	4	N E S 1 W	F	Average form	
283	Field Maple	6	N E S 7 W	MS	MA	C	1	4	N E S 1 W	F	DI average form	
284	Field Maple	6	N E 6 S W	MS	MA	C	1	4	N E S 1 W	F	DI average form	
H285	Hawthorn	2	N E S 4 W	MS	OM	C	1	4	N E S W	F	Remnant hedge, reduced to 1.6m	
G286	11 x Sorbus	8-10	N E 4 S W	MS 350	OM	C	1	1	N E S 1.8 W	F	Poor form	
G287	2 x Birch (Paper Bark)	4-6	N E 2 S W	200	Y	C	1	3	N E 1.4 S W	F	Average form	
288	Alder	5.5	N E S 4 W	300	Y	C	1	3	N E 1.4 S W	F	Better form	
289 (S) boundary	Neighbouring Oak	17	N E S 10 W	950	M	B	1 & 2	4	N E 4 S W	F	DI, prominent important landscape specimen	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
290	Gean	10	N E S 5 W	300	M	C	1	2	N E 3 S W	F	Old scars	
291	Gean	10	N E S 5 W	280	M	C	1	2	N E 3 S W	F	Old scars	
292	Field Maple	10	N E S 5 W	MS 400	M	C	1	3	N E S 1.8 W	F	Average form	
293	Oak	17	N E 8 S W	950	M	B	2	4	N E S 2 W	F	DI slight (N) lean, average form	
294	Ash	17	N E S 8 W	550	M	C	1	4	N E 3 S W	F	DI slight (S) lean, average form	
295	Lime	12	N E S 6 W	MS 550	MA	C	1	1	N E S 3 W	F	Very tight fork at 1.5m	• FP
296	Lime	12	N E 8 S W	MS 1000	MA	C	1	1	N E S 3 W	F	Old coppice at GL	
297	*Malus*	3	N E S 1.5 W	150	OM	C	1	1	N E 2 S W	P	Poor form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
298	*Malus*	4.5	N E S 4 W	250	OM	C	1	1	N E S W 2	P	Average form	
299	Hornbeam x 2	2	N E S 8 W	MS 450	MA	C	1	4	N E S 2 W	F	Group effect, tight forks	• FP
300	Field Maple	6	N E S 5 W	MS 350	M	C	1	3	N E 1.8 S W	F	Average form	
G301	Thorn & Euonymus	4	N E S 3 W	MS 300	OM	C	1	3	N E S 1.8 W	F	Part of old hedgerow	
302	Deodar	15	N E S 5 W	MS 250	Y	B	2	3	N E S GL W	F	Good form. Will outgrow this position.	
G303	Lime Avenue	5.5	N E S 3 W	MS 400	Y	B	2	4	N E S W	F	Pollarded at 5m	Re-pollard at 5m annually
304	Bay	4.5	N E S 3.5 W	MS 900	M	C	1	4	N E S GL W	F	Dense crown	
305	Ash stump	10	N E S 4 W	950	M	C	1	1	N E S 1.5 W	F	Dl old stump at 3m	• CR 1/3

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
306	Norway Maple	5.5	N E S 4 W	300	Y	C	1	3	N E 2 S W	F	Better form	
307	Lime	12	N E S 5 W	MS 450	MA	C	1	1	N E S 2 W	F	Tight forks at 1.5m & 2m	• FP
308	Field Maple	12	N E 5 S W	MS 650	M	C	1	4	N E S 2 W	F	Part of old hedgerow	
H309	Clipped Hawthorn	1.8	N E S W						N E S W	G	Good hedge	
G310	2 x Lime	14	N E S 4 W	MS 300	Y	C	1	4	N E S 1.8 W	F	Good form	
G311	2 x Robinia	9	N E S 5 W	MS 300	Y	C	1	4	N E S 1.8 W	F	Average form	
G312	Beyond fence Hawthorn Norway Maple Hazel	8	N E S 5 W	MS 500	OM	C	1	3	N E 1.8 S W	F	Part of hedgerow	
G313	3 x Apple 1 x Pear	2.5	N E S 3 W	MS 200	M	C	1		N E S W 1	F	All recently pruned	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
314	Robinia	5	N E S 1 W	150	Y	C	1	3	N E 2 S W	P	Recently planted	
315	Acer	3.5	N E S 1.5 W	180	Y	C	1	3	N E S 2 W	F	Recently planted	
316	Acer	4.5	N E S 2 W	180	Y	C	1	3	N E S 2 W	F	Recently planted	
317	Willow	17	N E S 8 W	500	Y	C	1	4	N E 3 S W	G	Good form previously reduced	• CR 1/3
318	Willow	17	N E S 8 W	500	Y	C	1	4	N E 3 S W	G	Good form previously reduced	• CR 1/3
319	Field Maple	6	N E 4.5 S W	250	Y	B	1	4	N E S 2 W	G	Commemorative tree good form	
320	Gean	8	N E S 4 W	250	Y	C	1	3	N E 2 S W	G	Tight fork	• FP
321	Hawthorn	5	N E 3 S W	200	Y	C	1	2	N E 2 S W	F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
322	Poplar	12	N E 5 S W	450	Y	R			N E S W		Cankered	Fell
323	Winter Cherry	5	N E S 5 W	150	Y	C	1	3	N E 2 S W	F	Average form	
324	Gean	6	N E 6 S W	MS 350	Y	C	1	3	N E 2 S W	F	Average form	
325	Field Maple	8	N E S 6 W	MS 350	Y	C	1	4	N E S 2 W	F	Good form	
G326	Group Goat Willow	9	N E S 4 W	MS 300	?Y & M	C	1	2	N E S 2 W	F	Poor form	
G327	2 x Rowan 1 x Goat Willow	6	N E S 4 W	150 MS 600	Y OM	C C	1 1	1 1	N E 2 S W	F	Average form	
G328	2 x Lime 1 x Ash	9	N E S 4 W	300	Y	C	1	4	N E 2 S W	F	Good form	
G329	3 x Sorbus	4.5	N E S 2 W	150	Y	C	1	3	N E 2 S W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
330	Bird Cherry	5	N E S 4 W	280	Y	C	1	5	N E S 2 W	F	Good form	
331	Bird Cherry	5	N E S 4 W	280	Y	C	1	5	N E S 2 W	F	Good form	
G332	2 x Field Maple 1 x Ash	6 10	N E S 5 W	MS 350	Y	C	1	4	N E S 2 W	F	Average form	
G333	4 x Poplar	18	N E S 8 W	MS 750	MA	C	1	2	N E S 2 W	F	Dense crown tight forks	• CR 1/3
	1 x Ash	8	N 4 E S W		Y			4	N 2 E S W	F	Average form	-
G334	6 x Ornamental Cherry	6	N E S 4 W	120	Y	C	1	1	N E S 3 W	F	Average form	
G335	Ornamental Cherry	2-6	N E S 4 W	200	Y	C	1	2	N E S 3 W	F	Average form	
G336	6 x Norway Maple	5	N E 2 S W	150	Y	C	1	3	N E S 2 W	F	Average form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
G337	Pine Lime Beech Norway Maple Hornbeam Sorbus	6-7	N E 6 S W	MS 300	Y	C	1	4	N E S 2 W	F	Some good long term Pine, Beech, Hornbeam and Lime	Fell 2 x poor Maple and 1 leaning Sorbus
H338	Field Maple occasional Elm	8	N E S W	MS 400	MA	C	1	4	N E S W	F	Occasional better trees retained within the hedge	
G339	5 x Robinia	12	N E S 7 W	MS 450	Y MA	C	1	1	N E S 5 W	F	Some tight forks/lost tops. Deadwood	• CR 1/3
340	Robinia	15	N E S W 8	MS 450	MA	C	1	3	N E S 2 W	F	Tight low fork previously reduced	• CR ¼
341	Gleditsia?	9	N E S 6 W	MS 450	MA	C	1	3	N E S 4 W	F	Tight forks	
G342	Grey Willow	10	N E S 7 W	MS 450	M	C	1	2	N E 3 S W	F	Dl poor form	
G343	3 x Lime	10	N E 6 S W	MS 250	Y	C	1	4	N E 3 S W	F	Good form	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
344	Oak	15	N E 7 S W	1000	Near Veteran	B	1, 2 & 3	4	N E S 5 W	G	Fine looking, regrown pollard, heavily reduced in past, bark lost/cavities and deadwood	• CR 20%

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
345	Oak	12	N 2 E 6 S 6 W 5	500	M	C	1	4	N E 5 S W	P	Stag headed cavity at base	• CR 1/3
346	Oak	12	N E S 0.5 W	150	Y	C	1	4	N E 2 S W	F	Fastigiate form	
G347	3 x Oak	9	N E S 4 W	150	Y	C	1	4	N E S 2 W	F	Long term replacements	
348	Oak	14	N 8 E 9 S 10 W 8	1000	near veteran	B	1, 2 & 3	4	N E 2 S W	F	Bark loss (N) side loss of roots (N) side, heavy (S) lean, will fail	• Veteran management • reduce all leaders by 1/3 year one. • Year 5 reduce all back to 2m from main fork

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
349	Oak	9	N E S 0.5 W	150	Y	C	1	4	N E S 2 W	F	Long term replacement	
350	Oak	15	N E 9 S W	800	M	R/C	1	1.4	N E 2 S W	F	Dense crown. Leans to (S) wind heave victim, raise root plate	• CR 1/3
351	*Prunus cerasifera*	7	N E S 7 W	MS 500	M	C	1		N 1 E S W	F	Dense crown	
G352	12 x Lime	6	N E 3 S W	MS 200	Y	C	1	4	N E 2 S W	F	Newly planted	

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
353	Field Maple	10	N E 5 S W	MS 600	MA	C	1	4	N E S W	F	Average form	
G354	Ash Cherry Rowan	6	N E 4 - S 7 W	MS 400	Y & MA	C	1	2 -3	N E S W	F	Occasional tight forks	• FP

Tree Ref No.	Species	Hgt (m)	Crown Radius (m),(or average)	TD (mm)	Age	CAT.	SUB CAT	ULE	Lowest Outer Crown (above existing GL) (m)	CON	Structural Condition & Observations	Preliminary Management Recommendations
355	Hawthorn	6	N E S 5 W	MS 300	M	C	1	2	N E S 1.5 W	F	Average form	
G356	Ash Horse Chestnut Maple Young Cherry	6-10 4	N E S 5 W	MS 300	Y	R			N E S W	P/F	Very poor group, stag headed/tight fork	Fell all except young Cherry
G357	2 x Poplar	12	N E S 4 W	300	Y	C	1	2	N E 2 S W	F	Average form	
G358	3 x Rowan	5	N E S 3 W	120	Y	C	1	2	N E ? 1.5 S W	F	DI average form	
W359	Crack Willow (roadside)	15	N E S 5 W	450	MA	C	1	2	N E S W	F	All previously reduced, prominent group	• CR 1/3 Thin Nos one third

Appendix 1:

UWE Frenchay Campus
(see plan no. 2163-02)

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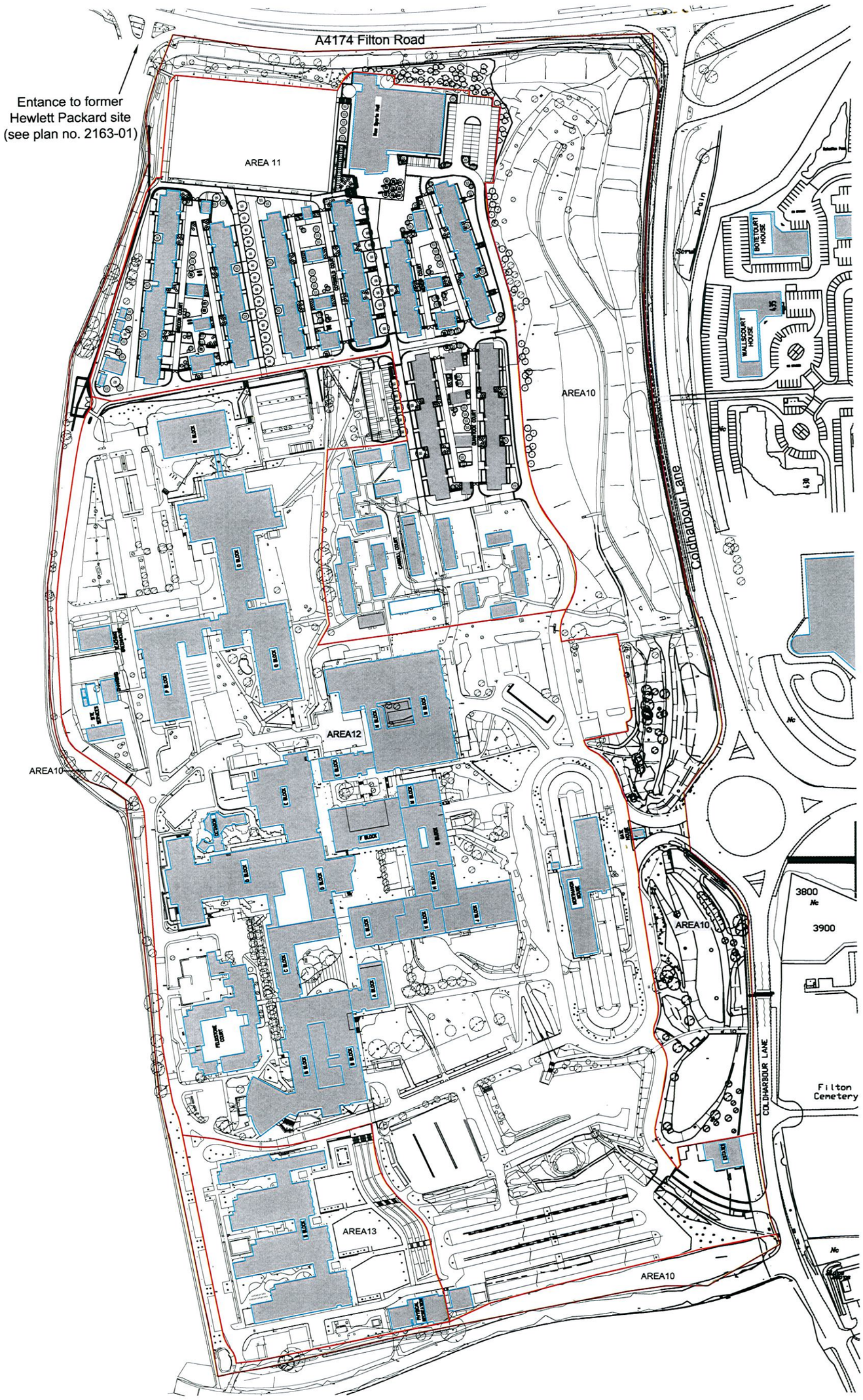
Title
Former Hewlett Packard Site: Key Diagram

Scale	Date	Drawn	Checked	Approved
N/A	January 09	RC	CM	CM

Drawing no
2163-01

LANDSCAPE
TOWNSCAPE
ENVIRONMENT



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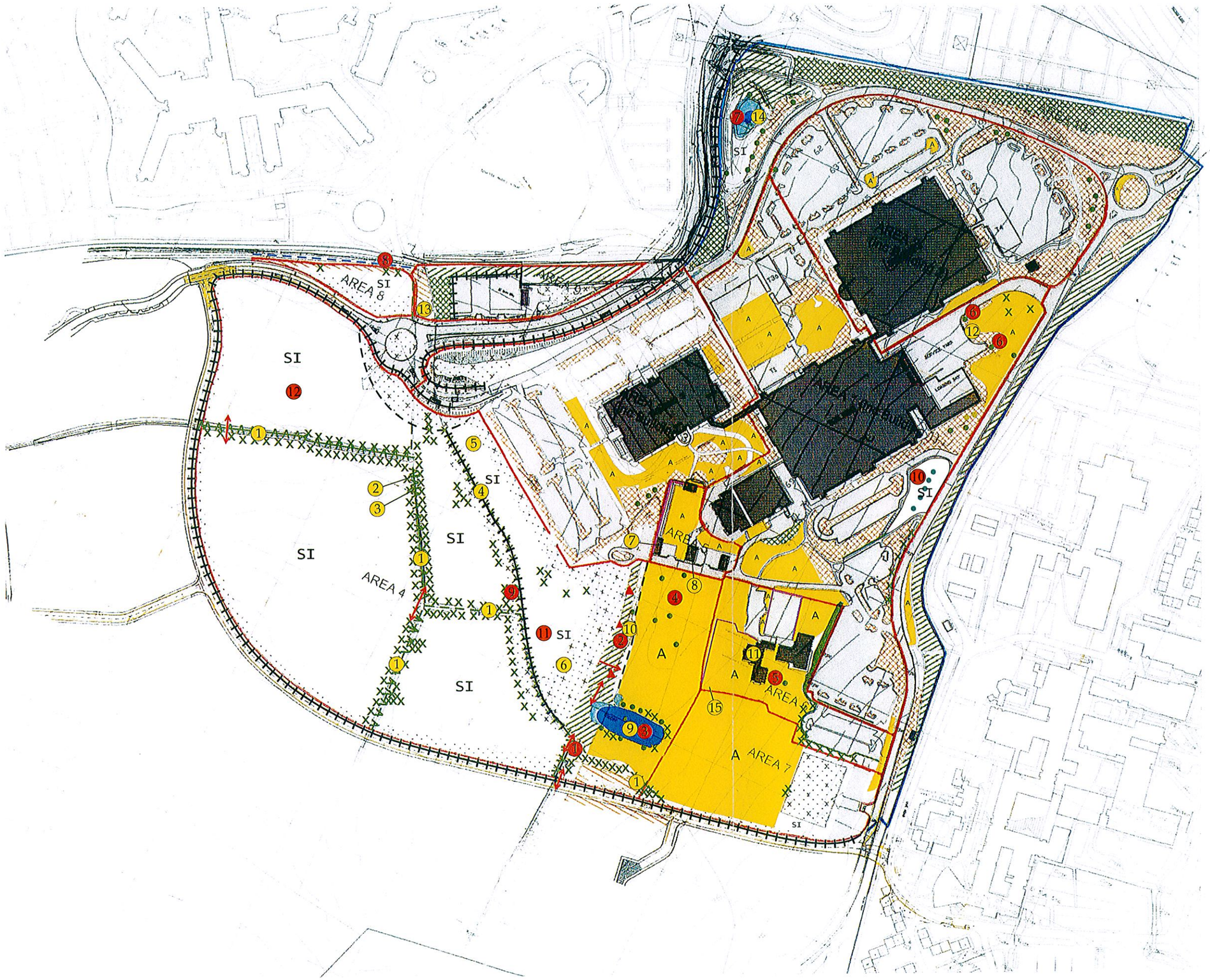
Job
University of the West of England

Title
Frenchay Campus: Key Diagram

Scale	Date	Drawn	Checked	Approved
N/A	January 09	TB	CM	CM

Drawing no
2163-02

LANDSCAPE
TOWNSCAPE
ENVIRONMENT



Key

- Broad-leaved semi-natural woodland
- Broad-leaved plantation woodland
- Dense/continuous scrub
- Scattered scrub
- Broad-leaved parkland/scattered trees
- Coniferous parkland/scattered trees
- SI — Species-poor semi-improved grassland
- Tall ruderal herbs
- Swamp
- Open standing water
- A — Amenity grassland
- Introduced shrub
- Intact species-rich hedge
- Intact species-poor hedge
- Defunct species-rich hedge
- Defunct species-poor hedge
- Intact species-rich hedge with trees
- Defunct species rich hedge with trees
- Fence
- Wall
- Dry ditch
- Building
- Hardstanding
- Bare ground
- Bare ground and ephemerals
- Vegetation boundary
- Badger path
- Badger latrine
- Plant/Habitat Target Note
- Protected Species Targe Note

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Job
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Title
ECOLOGICAL SURVEY RESULTS

Scale	Date	Drawn	Checked	Approved
N/A	January 2009	TB	CM	CM

Drawing no
2163/03

LANDSCAPE
TOWNSCAPE
ENVIRONMENT

LEGEND		
AREA	SIZE (Acres)	(Sq Meters)
1	14.9	60315
2	9.7	36295
3	9.8	39572
4	27	109222
5	0.9	3672
6	3	12496
7	3.9	15767
8	0.75	3018
9	1.7	7038
10	9.4	37860

All areas are approximate

AREA 9

AREA 2
(inc Building 2)

AREA 1 (inc Building 1)

Possible
Future Bus
Link

Hedgerow G

AREA 8

AREA 3
(inc Building 3)

Dams

AREA 5

Field 3

Field 4

Field 5

Hedgerow E

Hedgerow B

Hedgerow F

Subsoil Mound

Orchard

AREA 6

Hedgerow A

AREA 4

AREA 7

Field 2

Hedgerow C

Possible
Access -
must not allow
rat-running

Possible
Connecting
Road

Hedgerow D

Field 1

N

Key

- High ecological value/constraint
- Medium ecological value/constraint
- Low ecological value/constraint
- Negligible ecological value/constraint

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Title
ECOLOGICAL CONSTRAINTS PLAN

Scale	Date	Drawn	Checked	Approved
N/A	January 2009	TB	CM	CM

Drawing no
2163/04

LANDSCAPE
TOWNSCAPE
ENVIRONMENT

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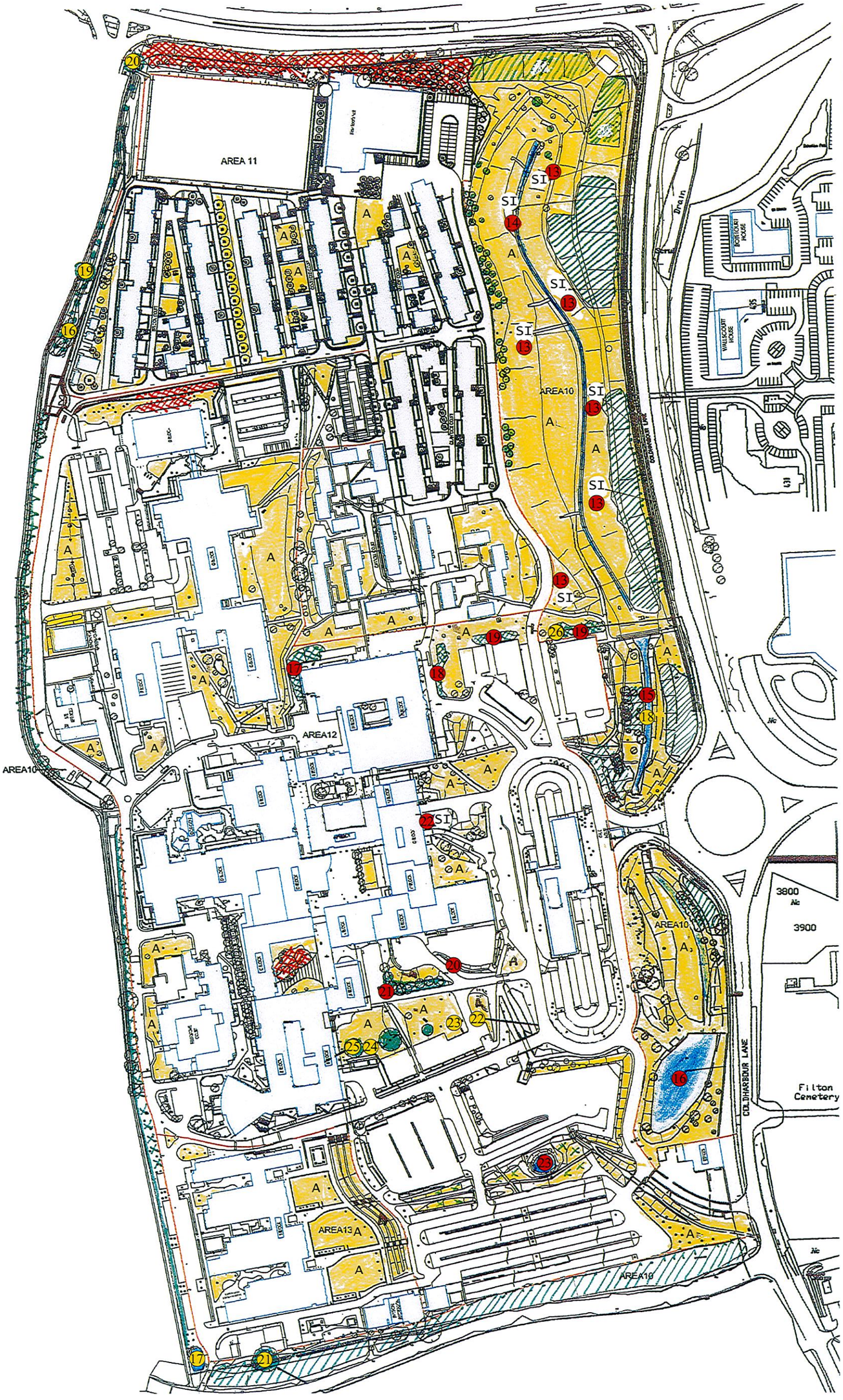

Key

- Broad-leaved semi-natural woodland
- Broad-leaved plantation woodland
- Dense/continuous scrub
- Scattered scrub
- Broad-leaved parkland/scattered trees
- Coniferous parkland/scattered trees
- SI — Species-poor semi-improved grassland
- Tall ruderal herbs
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- Introduced shrub
- Intact species-rich hedge
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- Badger path
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- 1 — Plant/Habitat Target Note
- 1 — Protected Species Targe Note

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Job
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Title
ECOLOGICAL SURVEY RESULTS

Scale	Date	Drawn	Checked	Approved
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Drawing no
2163/05

LANDSCAPE
TOWNSCAPE
ENVIRONMENT

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Key

- High ecological value/constraint
- Medium ecological value/constraint
- Low ecological value/constraint
- Negligible ecological value/constraint

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Title
ECOLOGICAL CONSTRAINTS PLAN

Scale	Date	Drawn	Checked	Approved
N/A	January 2009	TB	CM	CM

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2163/06

LANDSCAPE
TOWNSCAPE
ENVIRONMENT

Appendix 2

Appendix 2: BATS

Background Biology and Legislative Protection

Sixteen species of bats are resident in Britain, belonging to two families, the Rhinolophidae and the Vespertilionidae. These species, together with an 'extinct' species* and a rare vagrant, are listed in the table below, along with their status and distribution in Britain.

Common Name	Scientific name	Status	Distribution
Greater horseshoe bat	*Rhinolophus ferrumequinum*	Native, Endangered	SW England S Wales
Lesser horseshoe bat	*Rhinolophus hiiosideros*	Native, Endangered	SW & W England Wales
Whiskered bat	*Myotis mystacinus*	Native Local	England, Wales, S Scotland
Brandt's bat	*Myotis brandtii*	Native Local	W & N England
Natterer's bat	*Myotis nattereri*	Native Fairly common	England, Wales, Scotland
Bechstein's bat	*Myotis bechstenii*	Native Very rare	S & W England Wales
Greater mouse-eared bat	*Myotis myotis*	Extinct *	Formerly S England
Daubenton's bat	*Myotis daubentonii*	Native Fairly common	England, Wales, Scotland
Particoloured bat	*Vespertilio murinus*	Vagrant	Occasional records throughout Britain
Serotine	*Eptesicus serotinus*	Native Locally abundant	S & SE England
Noctule	*Nyctalus noctula*	Native Uncommon	England, Wales, SW Scotland
Leisler's bat	*Nyctalus leisleri*	Native Scarce	S, C & E England, Wales
'Common' Pipistrelle (45kHz)**	*Pipistrellus pipistrellus*	Native Common	England, Wales, Scotland
'Soprano' Pipistrelle (55kHz) **	*Pipistrellus pygmaeus*	Native Common	England, Wales, Scotland
Nathusius' pipistrelle	*Pipistrellus nathusii*	Former migrant winter visitor, now a resident.	Occasional records throughout Britain
Barbastelle	*Barbastella barbastellus*	Native Rare	England, Wales
Brown long-eared bat	*Plecotus auritus*	Native Common	England, Wales, Scotland
Grey long-eared bat	*Plecotus austriacus*	Native Very rare	S England

There are no records of *Myotis myotis* in England prior to 1940, and the last known resident individual died in 1990. The species was at the very edge of its range in southern Britain and was probably never well established. However, following the discovery of a young male found hibernating in Sussex in winter 2002/3 (and recorded each year since, including the winter of 2006/7), the current status of this species is unclear.

Research into the echolocation calls and genetics of pipistrelles has demonstrated that the species formally identified as *Pipistrellus pipistrellus* actually consists of two distinct species, to be called *P. pipistrellus and P. pygmaeus.* The common names in the tables are suggested but not formally adopted.

As shown in the table above, at least half of the species of bat found in Britain are rare or endangered. Even those which are relatively common have undergone massive population declines in the last fifty years and all species are of conservation concern.

Most bats are colonial and roost in groups in trees, buildings, caves, mines and other structures. Large numbers of bats may congregate at a particular roost site and this makes populations very vulnerable, since the loss of one roost site may affect the entire population of that species in a given area. Different roosts are used at different times of year: these can be within the same building or several kilometres apart.

Bats hibernate to conserve energy during the winter months when their insect food is in short supply. Hibernation roosts are normally in caves, buildings or hollow trees, where a constant low temperature and a high relative humidity can be guaranteed. In spring bats may move from roost to roost fairly regularly and gather into small groups. (At this time of year bats will often feed only on warmer nights and may remain torpid for several days at a time in bad weather.)

In June the females of a colony will congregate at a nursery roost to give birth and many species, such as brown long-eared bats, are very faithful to their natal nursery colony. Nursery colonies are often in buildings or trees. Males may visit the nursery colony at intervals throughout the summer, although they tend to spend most of the year singly in traditional roosts of their own. Once the young are weaned, the adult females, followed by the juveniles, will leave the nursery roosts.

In autumn, mating roosts (each held by a single territorial male) are set up and females visit to mate. Transitory roosts are then used, as the animals feed and gain weight before entering hibernation roosts again.

All British bats are insectivorous and rely mainly on habitat types which can provide a large biomass of insects, such as woodland and wetland, for feeding. The loss of such habitat types due to large - scale landscape change has led to a significant decline in bat numbers over the last 50 years. It should be noted, however, that bats regularly roost in urban areas, and they will also cross apparently unfavourable areas to reach distant foraging sites. Thus, with the exception of exposed high ground and intensive arable land, bats can be found almost anywhere.

Bats commute between roosting sites and feeding areas which may be quite distant, using echolocation as a means of navigation. Greater horseshoe bats, for example, may travel 2-3km in the course of a night's activity. Most species of bats tend to follow linear landscape elements such as tree-lines or hedges, and these features can be important in supporting a population of bats in a given area.

As part of any ecological appraisal or environmental assessment, all mature trees and other suitable structures should be carefully scrutinised (with binoculars) to assess their likely occupancy by roosting or hibernating bats. *Where* trees with potentially suitable conditions for roosting bats have been identified which would have to be felled, these should be felled under the supervision of a licensed bat worker and, if possible, outside of the times when hibernating bats or bats with dependent young could be present. Ideally, this would mean felling such trees in either April-May or September - October, (there may be a conflict of interest with regard to occupation by nesting birds, which means that September-October is the optimum period). Trees with potentially suitable conditions for roosting bats which show signs of current or recent occupation by bats, or trees which require felling during periods of the year outside those specified above, should be monitored prior to felling (under supervision), should removal be essential.

Any buildings likely to be affected by a development should be investigated for evidence of use by bats. The buildings should be searched by experienced, licensed bat workers in order to locate evidence of current or past bat roosts, in the form of bats, droppings, staining, feeding signs, and/or remains of bats. The outside of the buildings should be searched for access points, and any evidence of their use by bats. If significant areas of the roof spaces are inaccessible, a bat detector survey should also be carried out to establish if bats emerge from any of the buildings, and to monitor bat activity across the site. Recommendations for the appropriate course of action would depend on the numbers and species of bats present in the property, and the times of year that bats used the property.

The habitat should be assessed for its likely value for foraging bats including an assessment of any linear landscape elements such as water-courses, tree-lines or hedges which might be affected by *any* development proposals.

The legislation relating to the protection of bats in Britain is contained mainly within the Wildlife and Countryside Act (1981) and the Habitats and Species Directive (92/43/EC), enacted in the UK through the Conservation (Natural Habitats, &c.) Regulations (1994).

Bats and their roosts are protected under the Wildlife and Countryside Act (1981). Under this Act it is an offence to intentionally kill or injure any wild bat. It is also an offence to handle any wild bat unless an appropriate licence is held.

It is an offence to destroy, damage or to obstruct access to any 'shelter' (roost) used by a bat, or to disturb a bat using such a place. It should be noted that to 'disturb' a bat can include simply to enter its roost and that an appropriate licence should be held to enter a known bat roost. The roost itself is protected by law, even if bats are seasonally absent.

The relevant Statutory Nature Conservation Organisation (SNCO) must be notified of any proposed operation which could cause damage or disturbance to a bat roost, and allowed a reasonable time to provide advice. In the context of most large development schemes, this means that, when approached as a statutory consultee, the SNCO should be provided with any information regarding bats collected during the Environmental Assessment. Bat surveys, where there is potential for bats to be disturbed, should be undertaken by a licensed bat worker.

Under the Habitat Regulations, it is necessary to apply for a licence to Natural England for any works / development involving a European-protected species, which includes all species of bats.

In the context of maintenance operations, the SNCO should be contacted well in advance of any proposed operations which are likely to affect bats. If a structure becomes occupied by bats, or bats are discovered at any time during a development scheme, work should be suspended immediately and advice sought from the SNCO.

The Council Directive 92/43/EEC of 21st May 1992 on the Conservation of Natural Habitats and of Wild Flora and Fauna exists to promote the maintenance of biodiversity in Europe. The Annexes of this Directive list habitats and species of importance in a Europe-wide context, and all bats are included. The strict protection afforded to these species is already enshrined in the Wildlife and Countryside Act.

A further aim of the Habitats Directive is to create a network of protected sites across the European Union known as Natura 2000. This will consist of Special Areas of Conservation (for habitats and species identified under the Habitats Directive) and Special Protection Areas (designated under the Birds Directive). Four species of bat occurring in Britain are covered by Natura 2000 provisions (greater horseshoe bat, lesser horseshoe bat, Bechstein's bat and barbastelle) and several candidate SAC sites for the conservation of these bats have been put forward by the UK.

Further information is available in:

English Nature's leaflet *Focus ON BATS* available from Natural England, PO Box 1995, Wetherby, West Yorkshire LS23 7EP; and

The Bat Conservation Trust's leaflet *BATS AND TREES A guide to the management of*

trees available from The Bat Conservation Trust, 15 Cloister's House, 8 Battersea Park Road, London SW8 4BG.

Appendix 2: Badgers

Background Biology and Legislative Protection

Badgers live in groups and the members of each group jointly defend a territory. Other badgers are more or less excluded from this land which will encompass sufficient foraging areas to support the group throughout the year. Badgers defaecate in pits termed 'dung pits' and aggregations of these pits are called 'latrines'. The biggest 'latrines' tend to be found close to setts and along territorial boundaries, with smaller aggregations of 'dung pits' at path intersections and within important feeding areas. Badgers tend routinely to use a network of well-worn paths to access different parts of their territory. The territory may include a number of setts of different sizes and functions:

- Main setts - These are in continuous use, they are large, well-established, often extensive and may have large spoil heaps outside the entrances. There are likely to be well-worn paths leading to the sett. It is where the cubs are most likely to be born. There is only one main sett per social group of badgers;

- Annexe setts -These occur in close association with the main sett (usually within 150m), and are linked to the main sett by clear well-used paths. Annexe setts consist of several holes, but they are not necessarily in use all the time, even if the main sett is very active. If a second litter of cubs are born, this may be where they are reared;

- Subsidiary setts - These usually comprise five holes or more, but are not in continuous use and are usually some distance from the main sett (50m or more). There is no obvious path connecting them to the main sett and their 'ownership' can often only be determined by baitmarking; and

- Outlying setts - These consist of only one or two holes. They can be found anywhere within the territory and usually have small spoil heaps, indicating that they are not very extensive underground. There are no obvious paths connecting them to other setts, they are only used sporadically and often used by foxes or rabbits when not occupied by badgers.

The size, status and level of activity of each sett can be assessed by counting the number of entrance holes. The degree of use of each entrance hole can be classified as follows:

- Well-used holes - These are clear of any debris or vegetation and are obviously in regular use. There may be evidence of recent excavation or fresh footprints;

- Partially-used holes - These are not in regular use and have debris such as twigs or leaves in the entrance and moss or other plants growing in or around the entrance. A minimal amount of clearance would be necessary for badgers to continue using the hole;

- Disused holes - These are holes which have not been in use for some time and would require a considerable amount of clearance before they could be used. A very long-disused hole may be just a depression in the ground and the remains of a spoil heap.

In addition to their setts, badgers occasionally lie-up above ground in small depressions lined with dry grass and leaves, usually under a fallen log or a dense patch of bramble. These are termed 'day nests', although it is uncommon for badgers to occupy them during the day - the animals more often use them as shelter for short periods during the night. These structures are not usually given the legal protection accorded to setts (see below).

Badgers are protected under the Protection of Badgers Act (1992) and the Wildlife and Countryside Act (1981) and subsequent Amendment (1985). As such it is an offence to wilfully take, kill, injure or ill-treat a badger. Under the Protection of Badgers Act (1992) their setts are also protected against obstruction, destruction, or damage in any part, and the animals within a sett cannot be disturbed.

If necessary, it is possible to move badgers from a sett, but the difficulty / success of such actions

depends upon the importance of the sett to that group of badgers and whether a suitable alternative sett exists within their territory. For all setts on an occupied territory (that appear to have been used by badgers within the last 12 months), a licence must be issued (by Natural England) before the badgers can be moved and/or the sett destroyed. In general, the smaller the sett, the less important it is likely to be to the continued survival of a group of badgers, and the more successfully the badgers can be excluded from it.

Any attempt to move badgers by indirect means (using exclusion fencing, for example) must be done responsibly, and with suitable expertise. The licensing procedure should ensure that the implications of such an action have been fully investigated, any mitigating measures have been undertaken, and that a person with suitable expertise carries out the operation. Licences will not normally be issued for work on occupied setts between December and June inclusive. There is effectively a 'close season' on activities which disturb badgers during this period because (a) the animals are markedly less active during winter and hence such actions are unlikely to be effective, and (b) pregnant/lactating females and their dependent cubs are likely to be found underground between mid January and the end of June. In general, work involving heavy machinery and/or excavation within 30m of a sett may require a licence, as may work involving light machinery within 20m, and work with hand tools within 10m of the nearest entrance hole of a sett. Particularly extensive or potentially disruptive operations (blasting, pile-driving etc.) at greater distances may also require a licence.

When retaining setts in situ within or close to developments, consideration should be given to the provision of appropriate 'buffer zones'. The size and shape of such retained areas depend upon landform, sett size and importance, and the details of any development proposals. Clearly, these need to take account of the licensing considerations detailed above but, in many cases, larger areas than would be strictly required by the licensing procedure may be desirable. Depending upon the total area that might be taken up by any new development (and hence the amount of the badgers' territory that would be lost during construction) it may also be appropriate to investigate further the foraging resources of the resident badgers. This would then help to assess properly the impacts of the development and propose necessary mitigation. If appropriate, areas of landscaping can be designed to maximise the value of parts of the site for foraging badgers.

Access to different parts of their territory is also important. Consideration should therefore also be given to retaining or providing corridors to facilitate the movements of the resident badgers to and from their setts and between favoured foraging areas.

Further information is available in English Nature's leaflet BADGERS Guidelines for developers available from Natural England, PO Box 1995, Wetherby, West Yorkshire LS23 MP.

Appendix 2: Hedgerow Assessments

Hedgerows Regulations (1997) Record Sheet
(see accompanying notes for an explanation of the terms and definitions used)

Hedge No.	**HA** (south end only)	**HC**	**HD**	**HE**	**HF**	**HH**
Important	Y	X	X	Y	Y	X
Bridleway/path	X	X	X	x	x	Y
Pn/Sot/Ticf fip	X	X	X	X	x	X
No. woody spp./30 m	7	3	4	7	6	4
Bank/wall	x	X	✔	✔	x	Y
Intact	✔	X	✔	✔	✔	Y
Trees	x	X	✔	X	x	Y
3 **flora spp.**	✔	X	X	X	x	X
Ditch	✔	X	✔	✔	✔	X
Connect 4 points	x	X	X	X	x	X
Parallel hedge	x	X	X	X	x	X
Woody spp. Present	Ps Fe Ros Ug Cm Ac Cos Ca Um Vl Sx	Ac Sx Cm Cos Ps	Cm Fe Ros Sn Ug	Ps Cm Cos Qr Ac Rosa Fe Ee Rc Sx	Qr Qcer hybrid Cm Ca Fe Ac Ps Sa Sn Ra	Ac Cm Ps Cos Ca Fe
Ground flora (dominant)	Hh	Hh	Hh	Hh	Hh	Hh
Other ground flora inc. notable spp.	Gro Dfm Gu Rx san					
Notes	The above applies to the 30m immediately north of the southern boundary of the survey area (south of the fishing pond)	Scrub too dense to see groundflora; survey season not suitable	Scrub too dense to see groundflora; survey season not suitable	Scrub too dense to see groundflora; survey season not suitable	Northern half is species rich with two oak trees. Scrub too dense to see groundflora; survey season not suitable.	Survey season not suitable for ground flora survey

Accompanying Notes for Hedgerows Regulations (1997) Record Sheet

These Regulations only apply to hedgerows adjacent to land in agricultural/horticultural use. A hedgerow may be classified as 'important' for archaeological/historical reasons, or according to Wildlife and Landscape criteria. To be classified as 'important' under the Wildlife and Landscape criteria, the hedgerow must be over 30 years old and should comprise one of the following:

- at least 7 woody species/30 m;
- at least 6 woody species/30 m and at least 3 features;
- at least 6 woody spp/30 m including any one of Pn/Sot/Tic/Tip (see below); *at least 5 woody species and at least 4 features;
- or if adjacent to a bridleway/footpath, at least 4 woody species and at least 2 features.

If the hedgerow is situated wholly or partly in one of the counties listed in Criteria 7 sub-paragraph (2) of the Regulations, the number of woody species should be reduced by one.

(N.B. A hedgerow may also be classified as 'important' due to the presence/recorded presence of particular animal and plant species (see Criteria 6 sub-paragraphs (1)-(4) of the Regulations for details).

The woody species 'recognised' by the Hedgerows Regulations are listed below, along with the species codes to be used on the record sheet:

SPP Code	Latin Name	English Name	Spp Code	Latin Name	English Name
Ac	*Acer campestre*	Field Maple	**Pa**	*Prunus avium*	Wild Cherry
Ag	*Alnus glutinosa*	Alder	**Pp**	*Prunus padus*	Bird Cherry
Bpe	*Betula pendula*	Silver Birch	**Ps**	*Pnunus spinosa*	Blackthorn
Bpu	*Betula pubescens*	Downy Birch	**Pyc**	*Pyrus communis*	Pear
Bxs	*Buxus sempervirens*	Box	**Qp**	*Quercus petraea*	Sessile Oak
Cb	*Carpinus betulus*	Hornbeam	**Qr**	*Quercus robur*	Pedunculate Oak
Cos	*Cornus sanguinea*	Dogwood	**Rc**	*Rhamnus catharticus*	Buckthorn
Ca	*Corylus avellana*	Hazel	**Ruv**	*Ribes uva-crispa*	Gooseberry
Cla	*Crataegus laevigata*	Midland Hawthorn	**Ros**	*Rosa sp(p)*	Rose
Cm	*Crataegus rnonogyna*	Hawthorn	**Rac**	*Ruscus aculeatus*	Butcher's-broom
Cys	*Cytisus scoparius*	Broom	**Sx**	*Salix sp(p)*	Willow
Dl	*Daphne laureola*	Spurge-laurel	**Sxv**	*Salix viminalis*	Osier
Ee	*Euonymus europaeus*	Spindle	**Sn**	*Sambucus nigra*	Elder
Fs	*Fagus sylvatica*	Beech	**Sac**	*Sorbus aucuparia*	Rowan
Fa	*Frangula alnus*	Alder Buckthorn	**Sor**	*Sorbus sp(p)*	Whitebeam
Fe	*Fraxinus excelsior*	Ash	**Sot**	*Sorbus torminalis*	Wild Service-tree
Hr	*Hippophae rhamnoides*	Sea-buckthorn	**Tb**	*Taxus baccata*	Yew
Ia	*Ilex aquilfolium*	Holly	**Tic**	*Tilia cordata*	Small leaved Lime
Jr	*Juglans regia*	Walnut	**Tip**	*Tilia platyphyllos*	Large-leaved Lime
Jc	*Juniperus communis*	Common Juniper	**Ue**	*Ulex europaeus*	Gorse
Liv	*Ligustrum vulgare*	Wild Privet	**Ug**	*Ulex gallii*	Western Gorse
Ms	*Malus sylvestris*	Crab Apple	**Umi**	*Ulex minor*	Dwarf Gorse
Pal	*Populus alba*	White Poplar	**Um**	*Ulmus sp(p)*	Elm
Pn	*Populus nigra sub-species betulifolia*	Black-poplar	**Vl**	*Viburnum lantana*	Wayfaring-tree
Pot	*Populus tremula*	Aspen	**Vop**	*Viburnum opulus*	Guelder Rose
Pcan	*Populus x canescens*	Grey Poplar			

The wood species recorded in hedgerows but not recognised as such by hedgerows Regulations.

SPP Code	Latin Name	English Name
Ap	*Acer pseudoplatanus*	Sycamore

The presence of a number of features along a hedgerow influences the classification under the Regulations. The terms used on the record sheet are explained below, and their presence is indicated by a ✓:

- Bank/wall - The hedgerow is supported along at least half of its length by a bank/wall;
- Intact - The hedgerow contains less than 10% gaps along its length;
- Trees **-** The hedgerow supports at least 1 standard tree per 50 m length of hedgerow (standard trees are defined as those which when measured at 1.3 m above ground level have a diameter of at least 200 mm, or 150 mm for multi-stemmed trees);
- 3 flora spp **-** The hedgerow supports at least 3 of the valuable ground flora species defined by the Regulations. The hedgerow is considered to support a plant if it is rooted within 1 m (in any direction) of the hedgerow;
- Ditch - There is a ditch along at least half of the length of the hedgerow;
- Connections >4 points - A hedgerow must score greater than 4 'connections points', where connections with an adjoining hedgerow(s) score 1 point each, and a connection with a pond or woodland (in which the majority of the trees are broad-leaved)scores 2 points each. A hedgerow is considered to be connected if it meets the feature, or if it has a point within 10 m of it and would meet it if the line of the hedgerow continued;
- Parallel hedge **-** A parallel hedgerow is present within 15 m.

An explanation of additional terms used on the Hedgerows Regulation Record Sheet follows:

- Hedge No. **-** Hedgerow Number (within survey area/ site);
- Important **-** Would the hedgerow be classified as 'important' under the Hedgerows Regulations?
- Bridleway/path – The hedgerow runs parallel to a designated bridleway/footpath;
- Pn/Sotffic/Tip - The presence of these trees within the hedgerow influences the classification. An explanation of the species codes is shown above;
- Woody species - A list of the woody species found along the hedgerow (this is likely to list more species than are present along 30 m length(s); and
- Ground flora spp - A list of the dominant and any notable ground flora species recorded along the hedgerow.

Valuable ground flora species with regard to the Hedgerows Regulations (1997)

Valuable ground flora species with regard to the Hedgerows Regulations (1997):

*Aff**	*Athyrium filix femina*	Lady-fern
Bsp*	*Blechnum spicant*	Hard-fern
Cl	*Circaea lutetiana*	Enchanter's Nightshade
Daff	*Dryopteris affinis*	Scaly Male-fern
Dfm	*Dryopteris filix-mas*	Male-fern
Gro*	*Geranium robertianum*	Herb-Robert
Gu*	*Geum urbanum*	Wood Avens
Hn*	*Hyacinthoides non-scripta*	Bluebell
Oxa*	*Oxalis acetosella*	Wood Sorrel
Pste	*Potentilla sterilis*	Barren Strawberry
Vodo	*Viola odorata*	Sweet Violet
Vrei	*Viola reichenbachiana*	Early Dog-violet
Vriv	*Viola riviniana*	Common Dog-violet

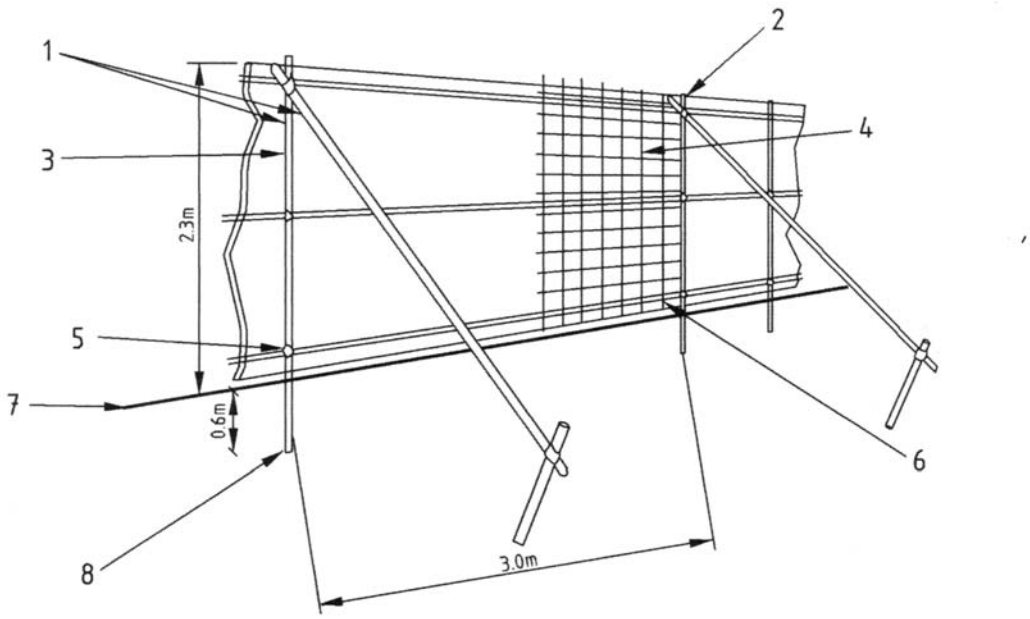
For the table above and below, denotes code taken from Phase 1 handbook.

Below are species codes for other species often found in hedgerows, with their codes as stated in Phase 1 handbook / CA suggested codes. The table suggests some of the possible dominant species for the recording table above, but is not exclusive. If any Ancient Woodland Indicators are encountered (some are included below and marked 'AM') which are not dominant and not listed as valuable under the Hedgerow Regulations, they should be included in the 'notes' section, not in the 'notables' section.

Ddl*	*Dryopteris dilatata*	Broad Buckler-fern
Hh*	*Hedera helix*	Ivy
Rf*	*Rubus fruticosus* agg.	Bramble

Appendix 3

BS5837 2005 - FIG 2 TREE PROTECTION ZONE BARRIER FENCE (Note. A similar design using heras fence but fixed with pins to the ground may be acceptable)



1 Scaffold poles

2 Uprights, to be driven into ground

3 Panels, secured to uprights with wire tires and where necessary scaffold clamps

4 Weldmesh, wired to the uprights and horizontals

5 Clamp

6 Wire, twisted and secured

7 Ground level

8 Approx 0.6 m driven into the ground

N

W E

S

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email: alan@engleytrees.co.uk

Site: UWE	1-500@A0
Drawing Title: TREE SURVEY	JAN/FEB 2009

5m 10m 20m 30m 40m 50m

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02 03
04

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