

# TREE SURVEY AND ARBORICULTURAL ASSESSMENT

Strategic Housing Development at Ballykeeffe,  
Raheen, Co. Limerick

Applicant: DW Raheen Developments Ltd.

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## 1.0 Introduction

This report describes the existing tree stock, including hedgerows and scrub areas, at the site for the proposed Strategic Housing Development (SHD) at Ballykeeffe, Raheen, Co. Limerick. It provides information on the condition and quality of the existing stock (the 'Tree Survey') and assesses the potential effects of the proposed development on it (the 'Arboricultural Assessment'). Recommendations with regard to protective measures for those trees, hedgerows and scrub areas to be retained are also made (the 'Tree Protection Measures').

### 1.1 Terms of Engagement

SLR Consulting Ireland were appointed by DW Raheen Developments Ltd. in April 2021 to carry out a tree survey and Arboricultural Assessment (AA) on a site at Ballykeeffe, Raheen, Co. Limerick. The tree survey and AA are required to support the planning application for a proposed SHD on this site, with the aim to assess the effects of the proposed development design on the existing tree/shrub stock and detailing protection measures for those trees, hedgerows, scrub areas to be retained.

The site is located in the Raheen area of Limerick City, to the east of the R510 – Regional Road, north of the Inis Mór residential estate and south-west of a disused railway line (i.e. the former railway connection between Limerick and what is now the Irish Cement site to the west of the N69). The proposed development area is approximately 10.44ha in size and covers all or parts of 5 agricultural fields and associated hedgerows and scrub areas. The majority of the site is under pasture, however rubble has been placed into a number of locations and the ground is locally disturbed in those areas.

Mature, unmaintained hedgerows mark most of the boundaries of the fields covering the application area, some containing tall trees. The boundary lines, which are mostly irregular, follow those shown on the Historic 6 inch maps, dated between 1837 and 1842 and available on the GeoHive National Historic Maps Viewer (<https://geohive.maps.arcgis.com/apps/dashboards/8c489155089e4c1ba128c2a2ae9b8cf2>). It is therefore assumed that the hedgerows are potentially 200 years old, if not older. The western boundary of the application area, i.e. the boundary with the R510 is marked by a tree-line, which is assumed that it was planted when the R510 was constructed.

The proposed SHD comprises a high-density development of 384 residential house and apartment units. The proposed development will provide as follows:

- 202 no. housing units, comprising a variety of forms to include bungalows, detached, semi-detached and terraced houses. A mix of house sizes are proposed to include 20 no. two bedroom houses, 156 no. three bedroom houses and 26 no. four bedroom houses.
- 182 apartment and duplex units across 25 small scale blocks, 2 to 4 storeys in heights, throughout the development. The apartments and duplexes provide a mix of one, two, three and four bed units, comprising of 10 no. four bedroom duplex units, 10 no. three bedroom duplex units, 6 no. two bedroom duplex units, 18 no. three bedroom apartments, 92 no. two bedroom apartments and 46 no. one bedroom apartments.
- A childcare facility measuring 761.75m<sup>2</sup>, providing 79 childcare places (55 full time and 24 after school places), located at the south-western edge of the development.
- The provision of 377 no. car parking spaces and 311 secured bicycle parking spaces.



- The provision of 3 no. ESB sub-stations, ancillary services and infrastructure works including foul and surface water drainage, attenuation areas, landscaped public open spaces (approximately 29,500m<sup>2</sup>, or 28.2% of the total site area), landscaping, lighting, internal roads, cycle paths, and footpaths.

The proposed development is encircled to the west, north and east by a cycle-path/footpath, which links into existing paths to the south of the site. To the north and east, beyond this encircling path the existing fields and associated hedgerows and scrub areas will be retained.

## 1.2 Site visit and Surveyor

The tree survey was carried out on Thursday 23<sup>rd</sup> September 2021 by Anne Merkle of SLR Consulting Ireland who holds a Technician's Certificate in Arboriculture and is a Technician's member of the Arboricultural Association. The conditions throughout the survey were mostly sunny and dry, with no significant wind.

## 1.3 Limitations

The tree survey was carried out from ground level only. Further investigation, including aerial inspections, may be required for those trees, which are proposed for retention, as part of the proposed development (refer to section 4.0).

Trees and shrubs are living organisms whose health and condition can change rapidly. The health, condition and safety of trees should be checked on a regular basis, at least once a year. Any recommendations made in this report are only valid for a period of one year. This period of validity may be reduced in the case of any change in conditions in proximity to the trees and/or following extreme weather events.

## 2.0 Tree Survey

The tree/shrub population included in the tree survey consist of ten individually surveyed trees and four tree groups, as well as a number of hedgerows and scrub areas throughout the site.

The trees/shrubs along the boundary with the R510, but located outside the development area, were included in the tree survey, as they are likely to be affected by construction works in the vicinity of this boundary. As the trees along this boundary form distinctive tree lines, they were not individually surveyed, but are described as tree groups (i.e. Group 3, Group 4 and Hedge 13)

Refer to Drawing T1 in Appendix 02 of this report for the location and extent of the individual trees and tree groups, as well as hedgerows and scrub areas described in further detail below.

### 2.1 Individually Measured Trees (T5861-T5870)

Nine individual trees were surveyed within the development area and one just outside the development area (i.e. T5862), as it was not clear at the time of the survey, whether this tree will be affected by the proposed development. Four of the surveyed trees are free-standing specimen, while six are located along hedgerows, but which were found to be distinct trees and therefore merit an individual record. All ten trees were marked with a metal tree tag with the numbers on the tags corresponding to the tree ID number (i.e. 5861-5870).

Refer to Appendix 01 for the tree survey schedule covering these ten trees, which was prepared in accordance with BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations.

### 2.1.1 T5861

T5861 is a free-standing hawthorn (*Crataegus monogyna*) at the centre of the large field to the east of the site entrance. It is located on a local slope, where the levels within the field drop by approximately 1m over a short distance. The base of the tree is surrounded by dense nettles (*Urtica dioica*) and bramble (*Rubus fruticosus*), which makes it almost inaccessible. The tree has multiple stems, which are obscured by its dense branch system, as well as ivy. The tree is 8m in height and is classed as mature (i.e. within the final third of its life expectancy).

T5861 is placed into tree quality category B1, as per BS5837:2012, i.e. trees of medium arboricultural quality. While this is a good example of a free grown hawthorn, it does not have a particularly good form, possibly due to being restricted by dense ivy growth. It is therefore downgraded from the high quality category, as it lacks the special quality necessary to merit the category A designation.

Refer to Figure 1 for a photo of T5861, showing the dense growth of bramble and nettles around its base.



Figure 1: T5861



### 2.1.2 T5862-5867

T5862-T5867 are all distinct trees along the hedgerows within the site and include three ash (*Fraxinus excelsior*), one pedunculate oak (*Quercus robur*), one lime tree (*Tilia sp.*) and one sycamore (*Acer pseudoplatanum*).

The trees range from 9m (lime) to 18m (T5862, ash) in height, with the three ash and the sycamore classed as mature (i.e. within the final third of its life expectancy) and the oak and the lime classed as over mature (i.e. tree in decline). Due to their location along hedgerows, part of their lower crowns have merged with neighbouring trees/shrubs. However, they are distinctly taller and/or wider than these neighbouring trees/shrubs and therefore stand out.

The three ash and the sycamore are placed into tree category A1, as per BS5837:2012, i.e. trees of high arboricultural quality. They are all very good examples of their species, which in the case of the ash is of note, considering the effects of ash dieback disease on the Irish ash population. No signs of the disease were identified, but unfortunately that does not preclude these trees from becoming infected in the future. The oak and the lime are of impaired condition and showing signs of decline. They are placed into category B3 as per BS5837:2012, i.e. trees of moderate arboricultural quality with material conservation value.

Refer to Figures 2 and 3 for sample photographs of T5862 & T5865.



Figure 2: T5862



Figure 3: T5865

### 2.1.3 T5868-5870

T5868-T5870 are free-standing trees along the western boundary, two white willows (*Salix alba*) and one sycamore. The two willows are located inside the fence, which denotes the western development boundary. Both trees are leaning slightly into the site, probably due to their proximity to the trees outside the site boundary, along the R510, which block the light and restrict growth in that direction. The sycamore has potentially self-seeded in an area of disturbed ground near the site entrance, but has grown to a sufficient size to be recorded, as part of this tree survey.

The larger willow is placed into tree quality category B1, as per BS5837:2012, i.e. trees of medium arboricultural quality, as a good example of its species, but lacking the special quality necessary to merit the category A designation and also considering the short-lived nature of this species. The second willow and sycamore are placed into tree quality category C1, as per BS5837:2012, i.e. trees of low arboricultural quality, due to their small stem diameter.

Refer to Figure 4 for photographs of all three trees.



Figure 4: T5867-5870

## 2.2 Tree Groups

Two groups of trees were surveyed within the development area and two just outside the development area, along the western boundary of the site (i.e. Group 3 & Group 4). Group 1 is a group of mature trees, which may be present on the site for a long time. A small woodland area is shown in the same location on the Historic 25'' map (dated 1888-1913), as available on the GeoHive National Historic Maps Viewer. The other three groups are tree-lines, which were presumably planted in connection with the construction of the R510 to the west.

Refer to Appendix 01 for the tree survey schedule covering these four tree groups, which was prepared in accordance with BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations.



### 2.2.1 Group 1

This group comprises 14 large mature trees, 10 sycamore, 2 beech (*Fagus sylvatica*) and 2 ash, near the north-western corner of the site. As mentioned above they are likely to be over 100 years-old. The ground at the centre of the group is bare and uneven. There are some remnants of walls, which may have been associated with a spring and pump, which are shown in this area on the Historic 25'' map. There is an understorey of smaller trees, hazel (*Corylus colurna*) and hawthorn along the edge of the group. The mature trees are of a generally good condition, with healthy looking foliage. Some deadwood and small rot holes are present. The crowns of the trees are interlocked, restricting their growth in most directions. Therefore, the individual trees are not of great form/structure and would be prone to failure if they were retained, while some of the surrounding trees are removed.

Refer to Figure 5 for a photograph of Group 1, taken from the field to the south.



Figure 5: Group 1

### 2.2.2 Group 2

This group comprises a line of approximately 10 white willow, just inside the western development boundary, near its northern end. Since they form a line, it is assumed that they were planted. They were planted at such short distances from each other that now, as mature trees, they form a dense mass, with individual trees hard to identify. The crowns of the trees are interlocked, restricting their growth in a northern and southern direction for each tree. Therefore, the individual trees are not of great form/structure and would be prone to failure if they were retained, while some of the adjoining trees are removed.

Refer to Figure 6 for a photograph of Group 2, taken from the field to the east.



Figure 6: Group 2

### 2.2.3 Group 3

This group comprises a line of 40+ mature trees, of several different species, including ash, birch (*Betula sp.*), larch (*Larix sp.*), rowan (*Sorbus aucuparia*), sycamore and willow (*Salix sp.*) along most of the western boundary of the development site. These trees are assumed to have been planted in conjunction with the construction of the R510 and are not in the ownership of the applicant.

In a number of locations short sections of single species were planted, resulting in distinct changes in height and character along the tree line (e.g. sections of tall ash and birch, beside much smaller rowan). This gives the treeline an uneven/irregular appearance.

Refer to Figure 7 for a photograph of Group 3, taken from the field to the east and showing a section of tall birch, with smaller rowan on either side.



Figure 7: Group 3



#### 2.2.4 Group 4

Group 4 comprises nine oak (*Quercus* sp.), which were planted at regular distances on an earthen embankment along the western site boundary, just north of the site entrance. The trees have a dense understory of guelderrose (*Viburnum opulus*, refer to Hedge 13 below). Due to the embankment and understory, they are inaccessible. The trees have not yet reached maturity and therefore, do not yet present a distinctive landscape feature. It is possible that their location on an embankment restricts their vitality/growth, due to restricted rooting space and reduced access to water.

Refer to Figure 8 for a photograph of some of the trees that make up Group 4.



Figure 8: Group 4 & Hedge 13

### 2.3 Hedgerows

There are several hedgerows marking the boundaries between the individual fields throughout the site. They were broken up into smaller sections for the purpose of this tree survey, to illustrate changes in height, width, dominating species and/or understory. 13 separate sections of hedgerow were recorded, one of which is partially and one fully located outside the development area (i.e. Hedge 3 and Hedge 4). They were included, as it was not clear at the time of the survey, whether they will be affected by the proposed development. Please refer to Drawing T1 in Appendix 02 of this report, for the location of each of the hedgerow sections.

#### 2.3.1 Hedge 1

This hedge is a remnant of a longer/wider hedge, which was severed, due to the construction of the housing estate to its south/east. It contains a number of species, but is dominated by hawthorn and blackthorn (*Prunus spinosa*).

#### 2.3.2 Hedge 2-7

Hedges 2-7 are very similar to each other. All originated as a double line, with one row planted on a stone ditch and the second ca. 2m to one side. These hedgerows have been unmaintained for years, so that the individual trees/shrubs have grown up to be tall, widely spreading and gappy. All hedgerows contain hawthorn and blackthorn, which are also typically the dominant species, with the exception of Hedge 2 where Hazel and Hedge

6 where Elm are the dominant species. Hedge 7 also contains some ash and sycamore. In most cases there is a dense understorey of bramble and ivy, with the bramble forming wide bands along the edge of some of the hedges, which results in them being unusually wide.

Refer to Figures 9-11 for some typical photographs of Hedges 2-7.



Figure 9: Hedge 2



Figure 10: Hedge 3





**Figure 11: Hedge 7**

### **2.3.3 Hedge 8**

Hedge 8 comprises a single line of hawthorn on a stone ditch, with some understorey of bramble and ivy. As with the other hedgerows this has been unmaintained for years, so that the individual trees/shrubs have grown up to be tall, widely spreading and gappy.

### **2.3.4 Hedge 9**

Hedge 9 is a short gappy hedge to the south-west of Group 1, made up from hawthorn and elm, with an understorey of bramble and ivy. As with the other hedgerows this has been unmaintained for years, so that the individual trees/shrubs have grown up to be tall, widely spreading and gappy.

### **2.3.5 Hedge 10**

Hedge 10 is a continuation of Hedge 8, but separated by a gap. It comprises a single line of hawthorn on a stone ditch, with some understorey of bramble and ivy. As with the other hedgerows these have been unmaintained for years, so that the individual trees/shrubs have grown up to be tall, widely spreading and gappy.

Refer to Figure 12 for a typical photograph of Hedge 10.



**Figure 12: Hedge 10**

### 2.3.6 Hedge 11 & 12

Similar to hedges 2-7 these hedges originated as a double line, with one row planted on a stone ditch and the second ca. 2m to one side. Again, these hedgerows have been unmaintained for years, so that the individual trees/shrubs have grown up to be tall, widely spreading and gappy. The main species are hawthorn and elm, with some lime, dog rose (*Rosa canina*) and elder (*Sambucus nigra*) and a dense understorey of bramble and ivy.

### 2.3.7 Hedge 13

Hedge 13 is dominated by a mass of guelder-rose, which seems to have originated as underplanting to the row of oak (Group 4), north of the site entrance. Some incidental other species are present, including bramble, butterfly bush (*Buddleja* sp.), hawthorn, rowan and willow.

Refer to Figure 8 above, for an indication of the shrub mass below Group 4.

## 2.4 Scrub Areas

### 2.4.1 Scrub 1 & 2

These two scrub areas are located within the northernmost agricultural field within the development site. They appear to have been present for quite some time, as they are visible on the aerial photography dated 1995 on the GeoHive Map Viewer (<https://webapps.geohive.ie/mapviewer/index.html>). It is not clear how they originated.

They include woody species, some of which have grown up to 5m in height, but none form distinct individual trees. Woody species include blackthorn, bramble, elder, hawthorn, ivy, willow. Both have a dense understorey of bramble and nettle.

Refer to Figure 13 for a photograph of Scrub Area 1 taken from a location to the north-west.



Figure 13: Scrub Area 1

### 2.4.2 Scrub 3-7

Scrub areas 3-7 appear to have originated from areas of disturbed ground, within the last 15 years, as they are not yet visible on the aerial photography dated 2005 on the GeoHive Map Viewer. It is assumed that the scrub species present within these areas have self-seeded. They typically include blackthorn, bramble, buddleja, dog rose, elder, elm, guelder-rose, hawthorn, ivy, sycamore and willow. Scrub areas 3 and 5 contain a great variety of species and are quite large, while the other areas are smaller, less dense and contain fewer species. These scrub areas are still adjoined by areas of disturbed ground and/or rubble stockpiles.

Refer to Figure 14 for a sample photograph of Scrub area 3.





Figure 14: Scrub 3

## 3.0 Arboricultural Assessment

The Arboricultural Assessment evaluates the effects of the proposed design on the existing tree / shrub population on site. The proposed site layout provided was overlaid on the tree survey plan, in order to aid this evaluation.

### 3.1 Trees / Shrubs to be removed

Due to the high-density nature of the proposed development, it is not possible/viable to retain the vast majority of trees, tree groups, hedgerows and scrub areas. In other words, all individual trees, tree groups, hedgerows and scrub areas **not** mentioned under section 3.2 below, will have to be removed to facilitate the proposed development.

While there are some areas where existing trees or short sections of the existing hedgerows are located within one of the proposed open spaces at the centre of the site, it is not viable to retain these, as they are located too close to the proposed structures and would therefore be disturbed / damaged by the construction works. Also, the hedgerows would become fragmented and unlikely to survive within the final development. Further to that, they would look out of place in the formally designed open spaces at the centre of the site.

It should be noted that a short section of Group 3 will have to be removed, in order to facilitate the proposed construction site entrance. As these trees are located outside the development area, we recommend that the ownership of the trees is confirmed, and the owner's consent, prior to the removal of any trees in this area.

### 3.2 Trees / Shrubs to be retained

The trees / shrubs to be retained comprise of:

- the majority of Group 3,
- all of Group 4 and Hedge 13, and

- sections of Hedge 3, Scrub 3 and Scrub 5.

The areas of vegetation to be retained are highlighted on Drawing T1 in Appendix 02 of this report, as Areas 1-4. They are located along the western boundary, which will retain the vegetation buffer to the R510 and along the northern and eastern boundary in the more informal open spaces surrounding the development.

The proposed Tree Protection Measures, to ensure the successful preservation of these trees / shrubs are discussed under section 4.0 below.

It should be noted that Hedge 4 and T5862 are fully located outside the development area and at a great enough distance, so that their Root Protection Areas (RPAs) will not be affected. It is however recommended that a protective barrier is established along the development boundary, to prevent accidental access close to this tree and hedgerow, as well as other tree/hedgerows outside the development area (see section 4.0 below).

### 3.3 Effects of proposed tree losses

The proposed development will result in the loss of approximately 40 mostly mature/over mature trees (including Groups 1 & 2). While this includes a number of high-quality specimen (i.e. T5864, T5866 & T5867), the majority of trees / tree groups were assessed as being of moderate quality in arboricultural terms. Some trees are in decline (i.e. T5863 & T5865), some are still young (i.e. T5869 & T 5870) and Group 2 consists of willow, which are known to be a short-lived species. One high-quality tree recorded (i.e. 5862) will be retained, as it is located outside the development area.

The development will further result in the loss of a substantial length of hedgerows. These are typically dominated by hawthorn and blackthorn, with a dense undergrowth of bramble, all of which are common species in Irish hedgerows.

In compensation for the loss of trees / shrubs, the proposed development contains considerable proposals for native tree / shrub planting in both the internal formally designed open spaces, as well as the larger informal open spaces along the northern and eastern boundaries. In the larger spaces, groups of trees / small woodland areas are proposed. Tree species proposed include native alder, birch and rowan.

Considering the mostly moderate arboricultural quality assigned to trees / shrubs present on site, as well as the retention of the mature line of trees along the western boundary and proposed native tree planting within the new development, the loss of these trees is not considered significant.

## 4.0 Tree Protection Measures

The following Tree Protection Measures should be implemented for the trees / shrubs to be retained, in order to ensure their successful conservation. The extent of the relevant areas is highlighted as Areas 1-4 on Drawing T1 in Appendix 02 of this report.

### 4.1 Protection of Areas 1 & 2 to be retained

The full extent of the RPA of Group 3 and Group 4, as well as the outlines of Hedge 13 and the section of Scrub 5 to be retained are to be enclosed by a protective barrier. The barrier must be installed prior to any other works being carried out on site and must be sturdy enough to prevent access into the RPA by people and machinery. Further to that, no material is to be stored within this area.

Prior to the removal of any trees within Group 3 to facilitate the temporary construction site access, a suitably qualified arborist should be consulted to identify an appropriate location, which would result in minimal tree loss, while the RPAs of the trees to be retained are protected. As mentioned before, we recommend that the ownership of the trees is confirmed, and the owner's consent sought, prior to the removal of any trees in this area.

Further to that, in agreement with the tree owner, a detailed assessment of the structural condition of all trees to be retained along the western boundary is recommended, including an assessment of the need for the removal of deadwood overhanging publicly accessible areas and appropriate formative pruning. This is to ensure the safety of road users, as well as the users of the cycle path and footpath to be constructed in the vicinity of these trees.

A tree management plan should be prepared and implemented, as part of the future maintenance of the green spaces within the site. Advice from a suitably qualified arborist should be sought.

### 4.2 Protection of Area 3 to be retained

Prior to any works being carried out, Scrub Area 3 is to be assessed on site, taking account of any rubble stockpiles within the area, which will be removed as part of the landscape works in this area. Any sections of Scrub 3, which are found suitable for retention are to be enclosed by a protective barrier. The barrier must be sturdy enough to prevent access into the scrub area by people and machinery. Further to that, no material is to be stored within this area.

A scrub management plan should be prepared and implemented, as part of the future maintenance of the green spaces within the site. Advice from a suitably qualified arborist should be sought.

### 4.3 Protection of Area 4 to be retained

Prior to any works being carried out the section of Hedge 3 within the development site is to be assessed, taking account of the location of the proposed cycle path and footpath crossing and housing units nearby. If it is possible to retain a suitable/viable section of the existing hedge (within the development boundary) this is to be enclosed by a protective barrier. The barrier must be sturdy enough to prevent access into the scrub area by people and machinery. Further to that, no material is to be stored within this area.

A hedge management plan should be prepared and implemented, as part of the future maintenance of the green spaces within the site. Advice from a suitably qualified arborist should be sought.

#### 4.4 Protection of vegetation to north and east the development site

A protective barrier should be installed along the northern and eastern development boundary, prior to any works taking place, in order to prevent access into the neighbouring agricultural fields and thereby protect all trees / hedgerows / scrub areas outside the development area. This is of particular importance with regard to T5862, which is located just over 20m to the north-east of the boundary and is of high quality.

### 5.0 Summary and Recommendations

The vast majority of the existing tree / shrub population within the development boundary will have to be removed to facilitate the proposed high density development. While some trees of high arboricultural quality were identified, the majority of trees to be removed were categorised as being of moderate quality. Considering the retention of mature trees along the western boundary and proposed native tree planting, forming part of the landscape proposals for the development, the overall loss of trees is not considered significant.

The protection of all trees/shrubs to be retained must be ensured by the installation of sturdy protective barriers (outside the RPAs in the case of trees), prior to any construction works taking place.

Recommendations for the future management of trees / hedgerows / scrub areas are made.

## APPENDIX 01

# TREE SURVEY SCHEDULE

## Tree Survey Schedule: Site at Ballykeeffe, Raheen, Limerick, 23.09.2021

### Clarifications (refer to Table Appendix 1-A)

- (\*1) Tree No: Ten trees were tagged and surveyed individually. Due to difficulties accessing some of the stems, the tags were attached on different sides of each of the trees. An indication of the location is provided underneath the Tree No. (e.g. NW = North-west side of the stem). Four groups of trees were identified, but not tagged. Also 13 hedgerows were recorded. Refer to Drawing T1 – Tree Survey Plan for the location of the individually tagged trees (i.e. T5861-5870), the tree groups (G1-G4) and Hedgerows (Hedge 1-13).
- (\*2) Stem diameter: As per Annex C of BS5837:2012: measured at 1.5m above highest adjacent ground; 'MS' = multi-stemmed tree; combined diameter and Root Protection Area (RPA) calculated, as per section 4.6.1 of BS5837:2012.
- (\*3) Branch spread: Taken at the four cardinal points.
- (\*4) Life stage: NP = newly planted (i.e. within 3 years of planting);  
Y = young (i.e. within first third of its life expectancy);  
MA = middle aged (i.e. within the second third of its l. e.);  
M = mature (i.e. within the final third of its l. e.);  
OM = over mature (i.e. tree in decline).
- (\*5) Category grading: Tree categories U, A, B or C and criteria 1, 2 or 3, as per Table 1 of BS5837:2012

# denotes estimated measurement, due to inaccessibility.

**Species in bold** denotes dominant species in hedgerows.

### Glossary (copied from Section 3 – Terms and definitions of BS3998:2010 Tree work – Recommendations)

- Crown: main foliage-bearing part of a tree.
- Co-dominant: upward growing stem/branch with a similar height and disposition as another stem/branch. *NOTE Where such stems/branches arise from the same union, their stability or the integrity of the attachment of the stems/branches could be compromised.*
- Stem: principal above-ground structural component of a tree that supports the branches.



**Table Appendix 1-A – Survey Schedule**

Tree No (*1)	Species (Common and Scientific Name)	Height in m	Stem dia. in mm (*2)	Branch spread in m (*3)	Life stage (*4)	General Observations	Category grading (*5)
T5861 (N)	Hawthorn <i>Crataegus monogyna</i>	8	MS: 600# (#Combined) <b>RPA: circle with radius of 7.2m</b>	N 3 E 4 S 3.5 W 4	M	Tree placed in category B, as of moderate quality and good example of species, but lacking special qualities to merit Category A designation. Stem and area around base overgrown with ivy and bramble, hence exact measurements and assessment of structural condition not possible. Healthy crown. Canopy 0.5m above ground.	B1
T5862 (W)	Ash <i>Fraxinus excelsior</i>	18	MS: 360, 340, 290, 180, 400, 240, 300, 360, 190, 270 (Combined: 930) <b>RPA: circle with radius of 11.2m</b>	N 11 E 12 S 12 W 11	M	Tree placed in category A, as of high quality and very good example of species, in particular in light of Ash Dieback. Multiple co-dominant stems from base, however no obvious structural defects. Healthy crown, some minor deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	A1
T5863 (W)	Pedunculate oak <i>Quercus robur</i>	13#	700# <b>RPA: circle with radius of 8.4m</b>	N 8# E 6# S 5 W 3	OM	Tree placed in category B, as of moderate quality and of material conservation value. Stem overgrown with ivy, hence exact measurements and assessment of structural condition not possible. Sparse crown with a lot of deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	B3
T5864 (W)	Ash	14	MS: 640, 320, 270, 620 (Combined: 980) <b>RPA: circle with radius of 11.8m</b>	N 10 E 7# S 9 W 9	M	Tree placed in category A, as of high quality and very good example of species, in particular in light of Ash Dieback. Co-dominant stems leaning out from base, however no obvious structural defects. Healthy crown, some minor deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	A1

Tree No (*1)	Species (Common and Scientific Name)	Height in m	Stem dia. in mm (*2)	Branch spread in m (*3)	Life stage (*4)	General Observations	Category grading (*5)
T5865 (NW)	Lime <i>Tilia sp.</i>	9	1300# <i>RPA: circle with radius of 15m</i>	N 6 E 7 S 4 W 4	OM	Tree placed in category B, as of moderate quality, due to structural defects and with material conservation value. Stem covered by epicormic growth, hence exact measurements and clear assessment of structural condition not possible. It seems that the main stem or a number of large branches have failed at approx. 4m height previously and crown is now much smaller, formed by small branches, possibly with weak attachments. A fungal fruiting body ( <i>Ganoderma sp</i> ) is present at the base (W). Moderately healthy crown with a lot of deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	B3
T5866 (E)	Sycamore <i>Acer pseudoplatanus</i>	12	MS: 660, 520 (Combined: 840) <i>RPA: circle with radius of 10.0m</i>	N 7 E 7 S 7 W 7	M	Tree placed in category A, as of high quality and very good example of species. Co-dominant stems from base, however no obvious structural defects. Healthy crown, some minor deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	A1
T5867 (SW)	Ash	15	MS: 550, 550 (Combined: 780) <i>RPA: circle with radius of 9.4m</i>	N 7 E 7 S 5.5 W 6	M	Tree placed in category A, as of high quality and very good example of species, in particular in light of Ash Dieback. Co-dominant stems. No obvious structural defects, but part of stem obscured by ivy. Healthy crown, some minor deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	A1

Tree No (*1)	Species (Common and Scientific Name)	Height in m	Stem dia. in mm (*2)	Branch spread in m (*3)	Life stage (*4)	General Observations	Category grading (*5)
T5868 (NE)	White willow <i>Salix alba</i>	14	300 <i>RPA: circle with radius of 3.6m</i>	N 5 E 4 S 4 W 2	MA	Tree placed in category B, as of moderate quality and good example of species, but lacking special qualities to merit Category A designation. Tree leaning slightly to the east, away from the trees along the adjoining road, but no obvious structural defects. Moderately healthy crown, with little deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	B1
T5869 (NE)	White willow	12	130 <i>RPA: circle with radius of 1.6m</i>	N 2.5 E 2 S 1.5 W 1	Y	Tree placed in category C, as diameter below 150mm and unremarkable tree. Tree leaning slightly to the east, but no obvious structural defects. Moderately healthy, sparse crown, with some deadwood. Canopy 1.5m above ground (browsed to that height by cattle).	C1
T5870 (NE)	Sycamore	4.5	MS: 100, 100 (Combined: 140) <i>RPA: circle with radius of 1.7m</i>	N 2 E 2.5 S 3 W 2.5	Y	Tree placed in category C, as diameter below 150mm and unremarkable tree. Tree leaning slightly to the north, with two entwined stems. Small crown with healthy leaves and small branches to the ground.	C1
G1	2 x ash 2 x beech <i>(Fagus sylvatica)</i> 10 x sycamore	15 (mean)	300-1000	Ca. 20m x 60m area covered	M	Group placed in category B, as of moderate quality and situated so as to make little visual contribution to the wider locality. Dense group of trees of different sizes with interlocking crowns. Some smaller defects and deadwood present. Generally healthy crowns.	B2
G2	Ca. 10 white willow	Up to 17	300-500#	Ca. 35m x 9m area covered	M	Group placed in category C, as of low quality and offering temporary landscape benefit, due to short-lived nature of species. Line of trees with interlocking, generally healthy, crowns.	C2

Tree No (*1)	Species (Common and Scientific Name)	Height in m	Stem dia. in mm (*2)	Branch spread in m (*3)	Life stage (*4)	General Observations	Category grading (*5)
G3	40 + trees, including: Ash Birch ( <i>Betula sp.</i> ) Larch ( <i>Larix sp.</i> ) Rowan ( <i>Sorbus aucuparia</i> ) Sycamore Willow ( <i>Salix sp.</i> )	8-17	100-400#	Ca. 235m along the R510 and 6-8m wide.	M	Group placed in category B, as of moderate quality and situated so as to make little visual contribution to the wider locality. Dense line of trees of different sizes. Often multi-stemmed and individual trees lost, due to interlocking crowns. Several sections of single-species, resulting in sections of distinctive differing heights and overall irregular appearance. Generally healthy crowns.	B2
G4	9 x oak ( <i>Quercus sp.</i> )	5-7	200-400#	Ca. 85m long and 6-10m wide.	MA	Group placed in category B, as of moderate quality and situated so as to make little visual contribution to the wider locality. Row of individual oak on a ca. 2m high earth embankment with dense understorey of guelder-rose (refer to Hedge 13). Therefore, base of trees overgrown and inaccessible for closer inspection. Generally healthy crowns.	B2
Hedge 1	<b>Blackthorn</b> ( <i>Prunus spinosa</i> ) Bramble ( <i>Rubus fruticosus</i> ) Dog rose ( <i>Rosa canina</i> ) <b>Hawthorn</b> Elder ( <i>Sambucus nigra</i> ) Ivy ( <i>Hedera helix</i> ) Sycamore	6-7	100-300#	Up to 14m wide.		Remnant of previously longer and wider hedgerow. Width/length reduced, due to neighbouring construction works. Some dead trees present.	N/A

Tree No (*1)	Species (Common and Scientific Name)	Height in m	Stem dia. in mm (*2)	Branch spread in m (*3)	Life stage (*4)	General Observations	Category grading (*5)
Hedge 2	Blackthorn Bramble Hawthorn <b>Hazel</b> ( <i>Corylus avellana</i> ) Ivy	4-5	100#-370	Up to 14m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Some of the shrubs/trees over mature/declining.	N/A
Hedge 3	<b>Blackthorn</b> Bramble <b>Hawthorn</b> Hazel Ivy	4-5	100-300#	Up to 16m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Dense band of bramble on southside of hedgerow.	N/A
Hedge 4	Blackthorn Bramble <b>Hawthorn</b> Ivy	4-7	100-300#	Up to 17m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Dense undergrowth of bramble.	N/A
Hedge 5	Blackthorn Bramble <b>Hawthorn</b>	4-5	100-300#	Up to 18m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Dense undergrowth of bramble and nettle ( <i>Urtica dioica</i> ).	N/A
Hedge 6	Blackthorn Elder <b>Elm</b> ( <i>Ulmus sp.</i> ) Hawthorn	5-8	100-300#	Up to 18m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Dense undergrowth of bramble and nettle.	N/A

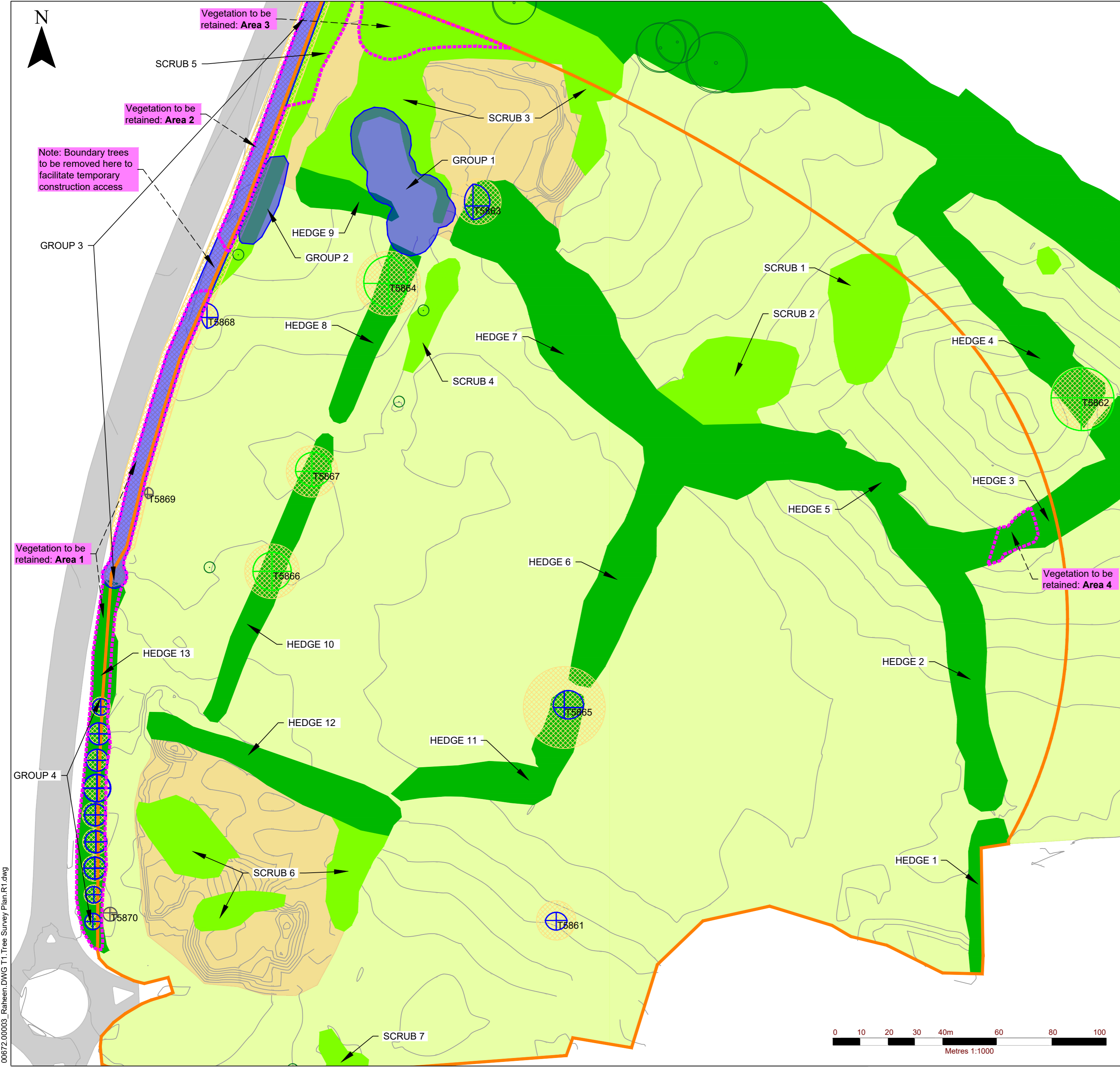
Tree No (*1)	Species (Common and Scientific Name)	Height in m	Stem dia. in mm (*2)	Branch spread in m (*3)	Life stage (*4)	General Observations	Category grading (*5)
Hedge 7	Ash <b>Blackthorn</b> Bramble Hawthorn Hazel Ivy Elm Sycamore	4-6	100-300#	Up to 30m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Some of the shrubs/trees over mature/declining. Blackthorn dominant along southern edge. Dense band of bramble on northside, resulting in extreme width of hedgerow.	N/A
Hedge 8	Blackthorn <b>Hawthorn</b> Ivy	5-6	100-300#	Up to 10m wide.		Single hedge line. Unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees.	N/A
Hedge 9	Bramble <b>Elm (<i>Ulmus sp.</i>)</b> <b>Hawthorn</b> Ivy	5-6	100-300#	Up to 10m wide.		Single hedge line. Unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees.	N/A
Hedge 10	Blackthorn <b>Hawthorn</b> Ivy	5-6	100-300#	Up to 10m wide.		Single hedge line. Unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees.	N/A
Hedge 11	Bramble <b>Elm (<i>Ulmus sp.</i>)</b> Dog rose <b>Hawthorn</b> Ivy Lime	5-6	100-300#	Up to 14m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Dense undergrowth of bramble and nettle.	N/A
Hedge 12	Bramble Elm ( <i>Ulmus sp.</i> ) Elder <b>Hawthorn</b> Ivy	5-6	100-300#	Up to 14m wide.		Double hedge line, one row planted on stone ditch, one ca. 2m to one side. Hedgerow unmaintained for years, hence made up from tall, widely spreading, gappy shrubs/small trees. Dense undergrowth of bramble and nettle.	N/A

Tree No (*1)	Species (Common and Scientific Name)	Height in m	Stem dia. in mm (*2)	Branch spread in m (*3)	Life stage (*4)	General Observations	Category grading (*5)
Hedge 13	Bramble Butterfly bush ( <i>Buddleja sp.</i> ) <b>Guelder-rose</b> ( <i>Viburnum opulus</i> ) Hawthorn Rowan Willow	2-3	N/A	Up to 9m wide.		Dense mass of guelder-rose on ca. 2m high earth embankment. Some incidental other species.	N/A

## APPENDIX 02

# DRAWING T1 – TREE SURVEY PLAN





**INDIVIDUAL TREES SURVEYED**

5861: Hawthorn (*Crataegus monogyna*)  
 5862: Ash (*Fraxinus excelsior*)  
 5863: Pedunculate oak (*Quercus robur*)  
 5864: Ash (*Fraxinus excelsior*)  
 5865: Lime (*Tilia* sp.)  
 5866: Sycamore (*Acer pseudoplatanus*)  
 5867: Ash (*Fraxinus excelsior*)  
 5868: Willow (*Salix* sp.)  
 5869: Willow (*Salix* sp.)  
 5870: Sycamore (*Acer pseudoplatanus*)

**TREE GROUPS**

**Group 1 (ca. 15 trees):**  
 Ash (*Fraxinus excelsior*)  
 Beech (*Fagus sylvatica*)  
 Sycamore (*Acer pseudoplatanus*)

**Group 2 (ca. 10 trees):**  
 Willow (*Salix* sp.)

**Group 3 (40+ trees):**  
 Ash (*Fraxinus excelsior*)  
 Birch (*Betula* sp.)  
 Larch (*Larix* sp.)  
 Rowan (*Sorbus aucuparia*)  
 Sycamore (*Acer pseudoplatanus*)  
 Willow (*Salix* sp.)

**Group 4 (9 trees):**  
 Pedunculate oak (*Quercus robur*)

**HEDGEROWS**  
 # Denotes typically dominating species

**Hedge 1-12:**  
 Ash (*Fraxinus excelsior*)  
 Blackthorn (*Prunus spinosa*) #  
 Bramble (*Rubus fruticosus*)  
 Dog rose (*Rosa canina*)  
 Elder (*Sambucus nigra*)  
 Elm (*Ulmus* sp.)  
 Hawthorn (*Crataegus monogyna*) #  
 Hazel (*Corylus avellana*) #  
 Ivy (*Hedera helix*)  
 Sycamore (*Acer pseudoplatanus*)

**Hedge 13:**  
 Bramble (*Rubus fruticosus*)  
 Butterfly bush (*Buddleja davidii*)  
 Guelder rose (*Viburnum opulus*) #  
 Hawthorn (*Crataegus monogyna*)  
 Rowan (*Sorbus aucuparia*)  
 Willow (*Salix* sp.)

**SCRUB AREAS**

**Scrub 1-7:**  
 Blackthorn (*Prunus spinosa*)  
 Bramble (*Rubus fruticosus*)  
 Butterfly bush (*Buddleja davidii*)  
 Dog rose (*Rosa canina*)  
 Elder (*Sambucus nigra*)  
 Elm (*Ulmus* sp.)  
 Guelder rose (*Viburnum opulus*)  
 Hawthorn (*Crataegus monogyna*)  
 Hazel (*Corylus avellana*)  
 Ivy (*Hedera helix*)  
 Nettle (*Urtica dioica*)  
 Sycamore (*Acer pseudoplatanus*)  
 Willow (*Salix* sp.)

**NOTES**

1. Tree Survey Drawing based on topographical survey provided by Erkina Surveys in November 2021.
3. The tree survey was carried out on 23rd September 2021 in sunny, dry conditions.
4. Refer to the Tree Survey and Arboricultural Assessment report for the Tree Survey Schedule and General Recommendations.
5. This drawing was originally produced to be printed in colour. B&W copies may not accurately portray the findings.

**LEGEND**

- BOUNDARY WITHIN WHICH CONSTRUCTION WORKS WILL TAKE PLACE
- IMPROVED GRASSLAND AREAS
- AREAS OF DISTURBED GROUND
- EXISTING CONTOURS
- TREES, SCRUB, HEDGEROWS TO BE RETAINED - NOTE: ALL OTHER VEGETATION WITHIN THE ORANGE LINE BOUNDARY WILL BE REMOVED TO FACILITATE THE DEVELOPMENT

**TREE DETAILS**  
 (NOTE: IN ACCORDANCE WITH BS 5837:2012)

- CATEGORY A TREES (TREE NUMBER & BRANCH SPREAD)
- CATEGORY B TREES (TREE NUMBER & BRANCH SPREAD)
- CATEGORY C TREES (TREE NUMBER & BRANCH SPREAD)
- CATEGORY B TREE GROUPS (BRANCH SPREAD - TREES NOT INDIVIDUALLY SURVEYED)
- ROOT PROTECTION AREA (RPA)

**VEGETATION AREAS**  
 (NOTE: TREES NOT INDIVIDUALLY SURVEYED SEE SPECIES LIST TO THE LEFT)

- TREES NOT MEETING BS5837 CRITERIA OR OUTSIDE AREA AFFECTED BY DEVELOPMENT
- HEDGEROWS
- SCRUB AREAS

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**TREE SURVEY PLAN**

**DRAWING T1**

Scale: 1:1,000 @ A2 Date: DECEMBER 2021

00672.00003\_Raheen.DWG T1.Tree Survey Plan.R1.dwg

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