



# Technical Appendix 10: Arboricultural Impact Assessment

Kingston Solar Farm

21/12/2021



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## INTRODUCTION

### Background

- 10.1. Treeplan has been appointed by Neo Environmental Ltd, on behalf of RES Group (the “Applicant”) to undertake a BS5837 Pre-Development tree survey to inform the design of a proposed 49.9 MW solar farm with associated infrastructure (the “Proposed Development”) on lands circa 1.3km south of Gotham and c. 0.75km northwest of East Leake, Nottinghamshire (the “Application Site”).
- 10.2. The tree survey and this Arboricultural Impact Assessment (AIA) follow guidelines contained in *British Standard 5837:2012 Trees in relation to design, demolition and construction* (hereafter BS 5837).
- 10.3. Please refer to **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

### Development Description

- 10.4. The Proposed Development will consist of the construction of a 49.9MW solar farm with bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, two temporary construction compounds, substation and all ancillary grid infrastructure and associated works.
- 10.5. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

### Site Description

- 10.6. The Application Site is located on lands circa 1.3km south of Gotham and c. 0.75km northwest of East Leake, Nottinghamshire; the approximate centre point of which is Grid Reference E453185, N328739. Comprising 16 agricultural fields and additional ancillary areas, the Application Site measures c. 80.65 hectares (ha) in total, with only c. 55.65 hectares accommodating the solar arrays themselves. See **Figure 1 of Volume 2: Planning Application Drawings** for details.
- 10.7. The Proposed Development Site is split into two sections, north and south, by an area of woodland, Leake New Wood. Both sections lie on elevated, gently undulating land ranging between 87 – 96m AOD. The northern section extends across several rectilinear agricultural fields largely contained by existing mixed woodland providing good screening for the wider area. These include Gotham Wood to the north, Cuckoo Bush to the east, Leake New Wood to the south and Crownend Wood to the west. The southern section is also surrounded by pockets of woodland including Oak Wood, Crow Wood and Ash Spinney.

- 10.8. The Application Site is in an area with an existing industrial presence with a telecoms mast located on the southwestern boundary of Field 7, a wood pole line along the boundary between Fields 7 and 8 and within the southern section of Fields 4 and 5 and overhead lines located along the southern boundary of Field 16 and the eastern boundary of Field 15 (See **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).
- 10.9. The surrounding area is semi-rural in nature with the site being surrounded by agricultural fields and woodland in most directions. The area is however punctuated by individual farmsteads and Rushcliffe Golf Club is located on the eastern boundary of Field 15 in the southern section of the site. There are also various industrial brownfield sites within the locality including Charnwood Truck Services located directly southwest of Field 4. Additionally, there is a large-scale power station located beyond the A453, circa 1.58km north of the site which can currently be seen from Bridleway 12.
- 10.10. Recreational routes include a number of Bridleways (BW) which cross or abut the Site providing connectivity to the wider Kingston Estate. These include Gotham BW No. 10, 11 and 12 and West Leake BW's No. 5 and 13. West Leake BW No. 5, also known as the Midshires Way, is also a Long-Distance Walking Association (LDWA) Route bordering the southern boundary of Fields 15 and 16. While there are several field drains throughout the Application Site, it lies entirely within Flood Zone 1, an area described as having a "Low probability" of flooding.
- 10.11. The Application Site will be accessed from Wood Lane, which is an unadopted road. Delivery vehicles will exit the M1 at junction 24, signposted A453 Nottingham (S), onto the A453 and travel in a northeast direction for approximately 4.3km, before taking the exit onto West Leake Lane. This road will be travelled on in a southern direction for approximately 1.5km, before turning left onto Kegworth Road. Vehicles will travel northeast along this road for approximately 1.3km before turning right into Wood Lane.

## Statement of Authority

- 10.12. The author of this report is Ross Cannon of Treeplan Arboricultural Consultants. Ross has been working and studying within the field of arboriculture since 1999, first as a tree surgeon and latterly in an advisory capacity. Having been awarded a National Diploma in Urban Forestry and the Arboricultural Associations Technicians Certificate, Ross has been involved in various large-scale tree condition and management surveys and has carried out numerous tree inspections. Ross has worked as a tree surgeon, tree surveyor, Arboricultural officer and trees and woodland officer throughout his career and became a Technical Member of the Arboricultural Association in 2011. He now undertakes independent tree consultancy services. Conclusions and recommendations of this report are based on site observations and professional experience.

## Documents and Information Supplied

- Topographic Survey (Figure 4.2 of Technical Appendix 4: Volume 3)
- Infrastructure Layout provided by Neo Environmental Limited reference 04533-RES-LAY-DR-XX-001 rev 5 dated 2021-11-08 (Figure 5 of Volume 2: Planning Application Drawings)
- Swept Path Analysis provided by Neo Environmental Limited reference NEO 00763\_0321\_a Figure 5.2 rev A dated 10 November 2021 (Figure 5.2 of Volume 3, Technical Appendix 5: CTMP).
- Visibility Splay provided by Neo Environmental Limited reference NEO 00763\_0301\_A Figure 5.3 Rev A dated 8 September 2021 (Figure 5.3 of Volume 3, Technical Appendix 5: CTMP).

## Surveying Methodology & Report Limitations

10.13. A summary of the survey methodology and report limitations are included in **Appendix 10C**.

## Plans Accompanying This Report

10.14. Associated plans are found in **Appendix 10A**.

- Tree Constraints Plan (Figure 10.1)
- Arboricultural Impact Plan Rev 3 (Figure 10.2).

## TREE SURVEY

10.15. A survey was undertaken on the 3rd April 2021 in accordance with section 4.4.2.5 of BS 5837. The following information was recorded and can be found summarised in **Appendix 10B**:

- A sequential tree (or group of trees) number
- Species
- Height
- Stem diameter(dbh) at 1.5m above ground level
- Root protection area as a radius
- Canopy/branch spread at the four cardinal compass points
- Canopy height above ground
- Height of first significant branch and direction of growth
- Age class
- Tree Health
- Condition (tree) comments
- Management
- BS Retention category

### Tree Categorisation

10.16. Section 4.5.2 of BS 5837 states 'The purpose of the tree categorisation method, which should be applied by an arboriculturist, is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring'.

10.17. There are four retention category's, U, A, B and C

- **Category U – Trees in such poor condition** that they cannot realistically be retained in the context of the current land use for greater than 10 years.
- **Category A – Trees of high quality** with an estimated life expectancy of at least 40 years.

- Category B – Trees of moderate quality with an estimated life expectancy of at least 20 years.
- Category C – Trees of low quality with an estimated life expectancy of at least 10 years, or young trees with a stem diameter of less than 150mm.

10.18. Category U trees are those that should be removed in the short term and should not be considered further in the planning process unless there is ecological/habitat value. All other category trees are material considerations in the planning process.

## TREE CONSTRAINTS

### Above Ground Constraints – Tree Trunk and Canopy

- 10.19. The trees current canopy/crown spread is marked on plans to aid site design. Consideration needs to be made to the following pre-development:
- Mature height and spread
  - Species characteristics such as evergreen or deciduous, honeydew (sap) drip, fruit fall
  - Shade potential
  - Potential incompatibilities between layout and trees proposed for retention
  - Working/access space needed for construction phase
  - Protection of tree canopies from machinery impact or scaffold clearance
  - Infrastructure requirements- easements, lighting, solar collectors, CCTV

### Below Ground Constraints – Root Protection Area

- 10.20. BS 5837 states a 'root protection area (RPA) is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority'.
- 10.21. For single stems the RPA is calculated as an area equivalent to a circle with a radius 12 times the stem diameter.
- 10.22. The RPA is plotted on plans as a circle, but where pre-existing site conditions are considered to have altered the rooting area a polygon can be produced.
- 10.23. The default position is that proposed structures should be located outside the RPA's of retained trees unless a sound arboricultural judgement can be made to support an incursion taking in to account pre-development ground conditions.
- 10.24. If utility operations within the RPA are proposed consideration should be given to NJUG4 (National Joint Utilities Group Volume 4 (Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees)).

## TREE AND SITE APPRAISAL

### Tree Details

10.25. See the Tree Constraints Plan & Tree Schedule in **Appendix 10A and 10B**.

- Details for 111 items were recorded – individual trees, hedges, groups or distinct woodland
- Most items were mature in age, however some of the woodland areas are plantation type plantings of early mature age
- Most of the recorded trees have seen little maintenance, perhaps some historical removal of low branches for machinery clearance. Most of the hedges have seen cyclical maintenance – mechanical/tractor side arm flailing of sides and tops

### Site Appraisal

10.26. A desktop search at <https://www.rushcliffe.gov.uk/> did not confirm or otherwise the presence of site trees being the subject of a Tree Preservation Order (TPO) or within a Conservation Area.. Clients and contractors should independently confirm protective status prior to any construction works.

10.27. The Application Site is currently arable fields with hedges and blocks of woodland as boundary features (see **Plates 1 and 2** overleaf).

10.28. Soils within the cultivated areas will have seen historical and cyclical heavy machinery movements and deep ploughing. This will have impacted where adjacent tree roots can proliferate. Between the cultivated areas and many of the hedges, groups or woodland blocks which make up the boundary features, a strip of grass is found. The tree features will have grown and adapted to this environment. Root Protection Areas have in the main been retained as circular, dependent on cultivation history, some roots may be found below the plough zone. Images below indicate the typical field boundaries and the historic tracks from machinery movements.



Plate 1: Typical Field Boundaries



Plate 2: Typical Field Boundaries





## ARBORICULTURAL IMPACT ASSESSMENT

10.29. See the Arboricultural Impact Assessment Plan (Figure 10.2 of Appendix 10A).

### Above Ground Impacts – Tree Stems and Canopy

10.30. A number of hedge sections, one woodland edge and two trees need to be removed / pruned in order to enable installation of new / widening of access roads and tracks for build and maintenance and to accommodate the new Permissive Path (see Figure 1.14 of TA 1 of Vol 3: LVA for further details) – see Table 10-1 below and labels on the Arboricultural Impact Plan in Appendix 10A.

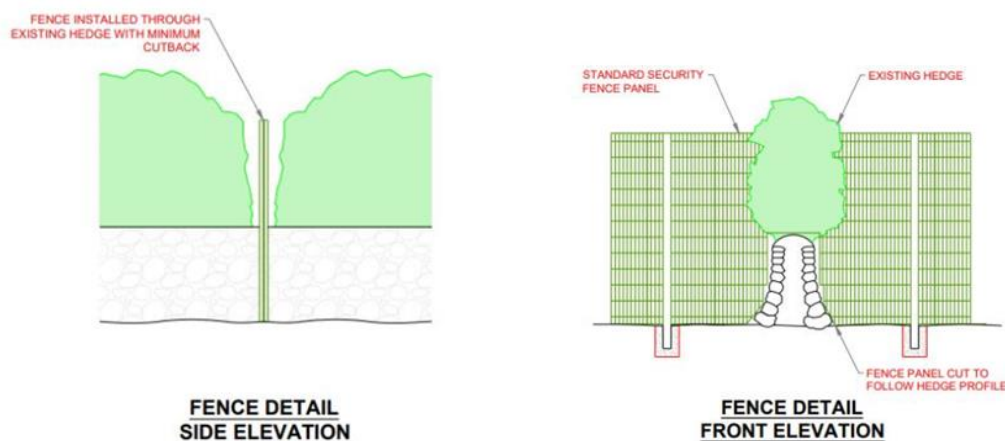
10.31. It is considered that these items can be removed/ pruned without detriment to the amenity of the area, keeping in line with Policy 16 of the Rushcliffe Borough Council Local Plan Part 1.

Table 10-1: Tree & Hedge Removal/ Pruning Required in Order to Enable Proposed Development

Tree/Hedge Number	BS Retention Category	Tree Type	Distance Removed (m)	Reason Removed/ Pruned	Amenity Value
1.4	B	Hawthorn Hedge 1 x 11m to be trimmed & 1 x 152m to be removed and re-aligned  1 x 2m & 1 x 9m to be re-aligned to widen site access to ensure the largest construction vehicle can access the site.			Medium
2.7	B	Hawthorn	7	Access Track	Low
3.3	B	Hawthorn	7	Access Track	Low
3.7	B	Hawthorn	17	Access Track	Low
4.9	B	Hawthorn	7	Access Track	Low
5.1	B	Hawthorn	7	Access Track	Low
5.2	B	Hawthorn	15	Access Track and Permissive Path	Low
5.9	B	Hawthorn	13.5	Access Track and Permissive Path	Low
6.1	A/B	Self-seeded Sycamore, Ash approx. 15m length to access woodland ride			Low

6.2	B	Hawthorn	9.5	Access Track and Permissive Path	Low
6.8	B	Hawthorn	7	Permissive Path	Low
6.9	B	Hawthorn	15.5	Access Track and Permissive Path	Low
8.1	B	Scrub/hedge	3 x 10m	Access Track	Low
8.4	B	Hawthorn	2	Access Track	Low
8.5	B	Hawthorn	10 NW 16 SE	Access Track	Low
8.6	B	Hawthorn	8	Access Track	Low
10.2	B	Hawthorn	7	Access Track	Low
11.3	B	Hawthorn	6	Access Track	Low
11.4	A	Sycamore	0	Crown lift to SE for Access Track	Low
11.5	C	Ash	0	Crown lift to NW for Access Track	Low

10.32. Where fencing is required through the footprint of an existing hedge, the hedge will be pruned to the absolute minimum, only to enable the installation of the fences (See **Excerpt 10-1** below). The hedges found throughout the Application Site are mostly Hawthorn and will tolerate pruning.

**Excerpt 10-1: Example of fencing through an existing hedge.**

- 10.33. Most of the recorded trees, groups and woodlands have reached an age where growth both in height and spread will be minimal. Some have the potential for further height and lateral growth in the future, but where this is found, pruning can be undertaken without detriment to these tree's health, longevity or the amenity of the area as and when required in future decades. The Application Site, if left to current arable use would still require cyclical pruning of hedges and edge trees. Should the development contractor require additional low branch removal pruning, then as long as this is undertaken following recommendations in *BS3998 Tree Work Recommendations*, the retained trees should not be unduly impacted.

**Shade**

- 10.34. Where the solar panels are found to the immediate north of a woodland or group of trees, they may receive less sunlight than other areas of the Application Site. The solar arrays are on the whole set far enough back from these features. Most of the surveyed trees, groups and woodlands are deciduous so shade, where/ if found will only be an issue in summer months when the trees are in leaf. As such tree shade cast should not be a significant issue. Typical shade casts have been shown on the Arboricultural Impact Plan in **Appendix 10A**.

**Species Specific Considerations**

- 10.35. The solar arrays are on the whole are set far enough back from the recorded trees, groups and woodlands so direct leaf and seed fall will not be an issue to the scale of development. Solar panels closest to trees, groups and woodlands however may require cleaning/ clearing at more regular intervals than elsewhere. Species that deposit sticky 'honey-dew' due to the actions of aphids include Lime and Sycamore, however these two trees do not make up a significant proportion of the site trees and therefore, it is not anticipated that this will be a significant issue.

### Development Access and Clearance from Tree Canopies

- 10.36. As indicated in the images above, the periphery of most cultivated areas have grassed areas, some include an access track used by heavy machinery. The proposed fencing on the whole will be located in the cultivated areas with all significant ground works then being undertaken inside this fence line. As such, installation of the boundary fence will not be detrimental to the health or longevity of the trees, groups or woodlands.
- 10.37. Trees 11.4 and 11.5 will require pruning or crown lift for access track clearance. Should the development contractor require additional low branch removal pruning, then as long as that pruning is undertaken following recommendations in *British Standard 3998:2010 Tree Work – Recommendations* the retained trees should not be unduly impacted.

## Below Ground Impacts – Roots and Rooting Area

- 10.38. Hedge section or trees that need to be removed and / or re-aligned due to total loss of rooting area are listed in **Table 10-1** above.
- 10.39. Much of the development will take place within the previously cultivated areas. As such plant/ machinery movements within these areas will be less detrimental than any previous deep ploughing.
- 10.40. The cable route between the northern and southern sections of the Application Site will traverse through woodland (West Leake Hills & Leake New Wood; consisting of hard and soft wood plantations) along an existing ride – see **Plates 3 and 4** overleaf. This ride has seen historic vehicle use in woodland establishment, maintenance, and timber harvesting. As such it is considered plant/ machinery movements to enable excavation and installation of the cable route can be undertaken without detriment to the adjacent planting blocks.



Plate 3: Site of Proposed Cable Route through West Leake Hills & Leake New Wood



Plate 4: Site of Proposed Cable Route through West Leake Hills & Leake New Wood





- 10.41. Trees 11.4 and 11.5 will see the installation of an access track within their rooting areas, (see labelled area of Arboricultural Impact Plan in **Appendix 10A**). These trees have an existing hard standing drive to their east and a cultivated field to their west. It is recommended that ground levels here are not lowered for track installation, but a no-dig three-dimensional cellular confinement system is used within the root protection area (see recommendation in section 10.47 below). These no-dig products (provide a sub-base with no-fines infill) will ensure previously uncultivated soils beneath are not compacted or degraded by initial installation or on-going works at the development site.
- 10.42. Infrastructure requirements - easements, lighting, CCTV can be routed without detriment to any retained tree rooting areas.
- 10.43. Tree work should be undertaken following guidance found in *British Standard 3998:2010 Tree Work – Recommendations*.

### Contractor/Construction Operations & Equipment

- 10.44. Contractor parking, storage of materials, cabins and facilities will utilise the proposed hard standing areas of the Proposed Development.
- 10.45. Access from public highways will utilise existing vehicle routes, although some upgrade to the visibility splays of the access point on Kegworth Road to the north is required and is shown on the Arboricultural Impact Plan and in **Table 10-1** above.

### Impact on Amenity

- 10.46. The impact of the hedge/ tree loss on the wider amenity of the area is considered to be **Low to none on site**, with some initial impact to the north (Hedge1.4), **although this hedge will be replanted where practicable, or replaced if required.**

## TREE PROTECTION AND SITE RECOMMENDATIONS

### Tree/ Ground Protection – Generic Precautions

10.47. These general precautions **must** be followed within **unsurfaced** Root Protection Areas (RPAs) of **retained** trees (not in cultivated areas) during the construction phase unless deemed to be of no arboricultural impact as above or subject to methodology below:

- No soil disturbance, including compaction
- No change in the soil level, by stripping or filling unless stated below
- No excavation, without prior discussion with the Project Arboriculturist and/ or the Local Planning Authority
- No redirection of surface water runoff into or out of the RPA
- No temporary buildings, sheds, or offices, without prior discussion with the Project Arboriculturist and/or the Local Planning Authority
- No storage of materials or fuel
- No dumping of materials, whether into a skip or onto the ground
- No fires within 10m of the RPA or tree canopy, whichever is greater
- No refuelling of mechanical equipment
- No storage or mixing of cement
- No washing of cement mixers within or uphill of the RPA
- Follow the guidance contained within the National Joint Utilities Group Volume 4 (*Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (Issue 2, 2007); [www.njug.org.uk](http://www.njug.org.uk) ) when installing underground services inside or other excavation in the RPA of a tree
- The use of temporary tree protective fencing over the whole site would be uneconomical given the scale of the development. Instead, wooden posts driven into the ground around key trees/features/RPA peripheries would be appropriate.



## Tree Work Recommendations, Management and Standards

- 10.48. A tree work schedule is included in **Appendix 10B** in the 'Management' column.
- 10.49. All tree work should be carried out in accordance with *BS 3998 2010 "Recommendations for tree work"* by a competent, qualified arborist.
- 10.50. Contractor vehicles and plant should only park outside of retained trees RPA's.
- 10.51. Tree stumps can be removed by excavation
- 10.52. In reference to the installation of an access track adjacent trees 11.4 and 11.5 - BS5837 recommends the use of no-dig, three-dimensional cellular confinement systems with no-fines in-fill such as, but not limited to –

<http://www.geosyn.co.uk/news/cellwebtrp-the-no-1-system>

<https://greenfix.co.uk/geoweb/geoweb-tree-root-protection.html>

## Bird and Bat Activity

- 10.53. Consideration should be made with regards to bird and bat activity. This is covered in Technical **Appendix 2: Ecological Assessment of Volume 3**.
- 10.54. All bird's nests are protected when in use, bat roosts are protected whether in use or not. Bats are fully protected under Schedule 5 of the Wildlife & Countryside Act 1981 and the Countryside and Rights of Way Act 2000.

## CONCLUSIONS

- 10.55. It is considered that following recommendations in *British Standard 5837:2012 Trees in relation to design, demolition and construction*, the Proposed Development can be undertaken **without detriment to the health and longevity of the retained trees or the amenity of the area.**

## APPENDICES

### Appendix 10A- Figures

- Figure 10.1 – Tree Constraints Plan
- Figure 10.2 – Tree Protection Plan

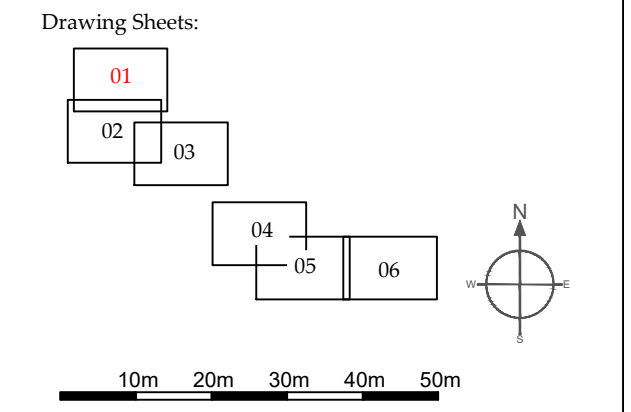
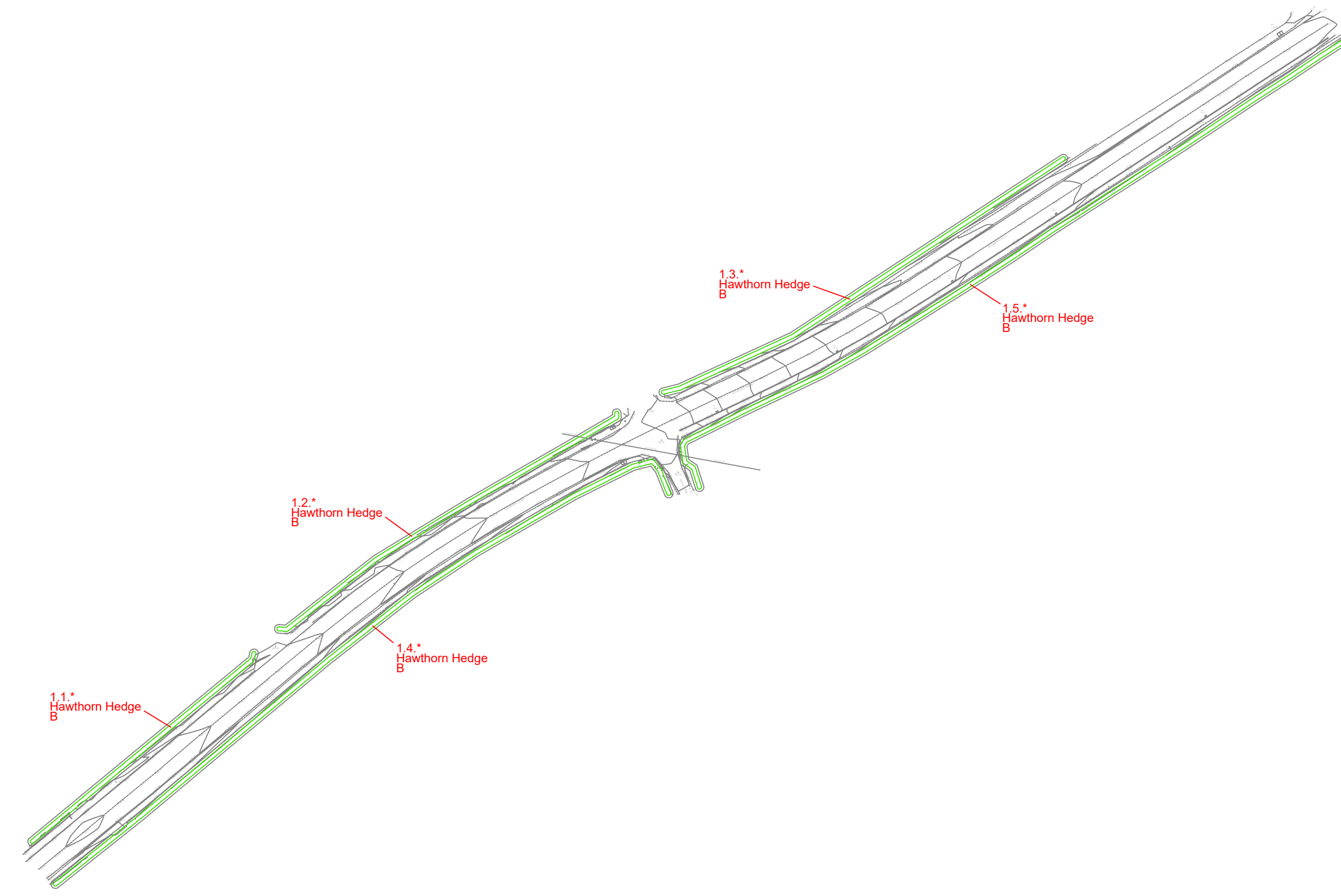
### Appendix 10B – Tree Schedule

### Appendix 10C – Survey Methodology, Tree Risk Assessment and Report Limitations

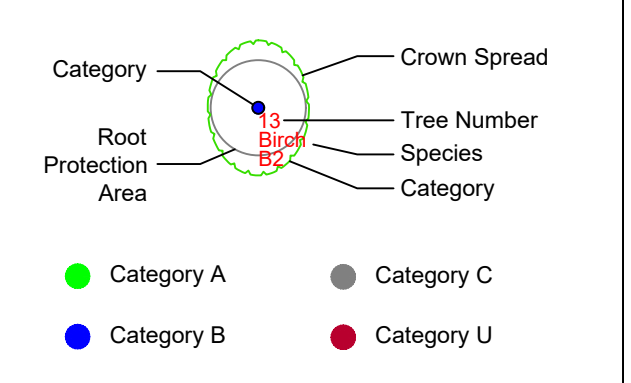


## Appendix 10A: Figures

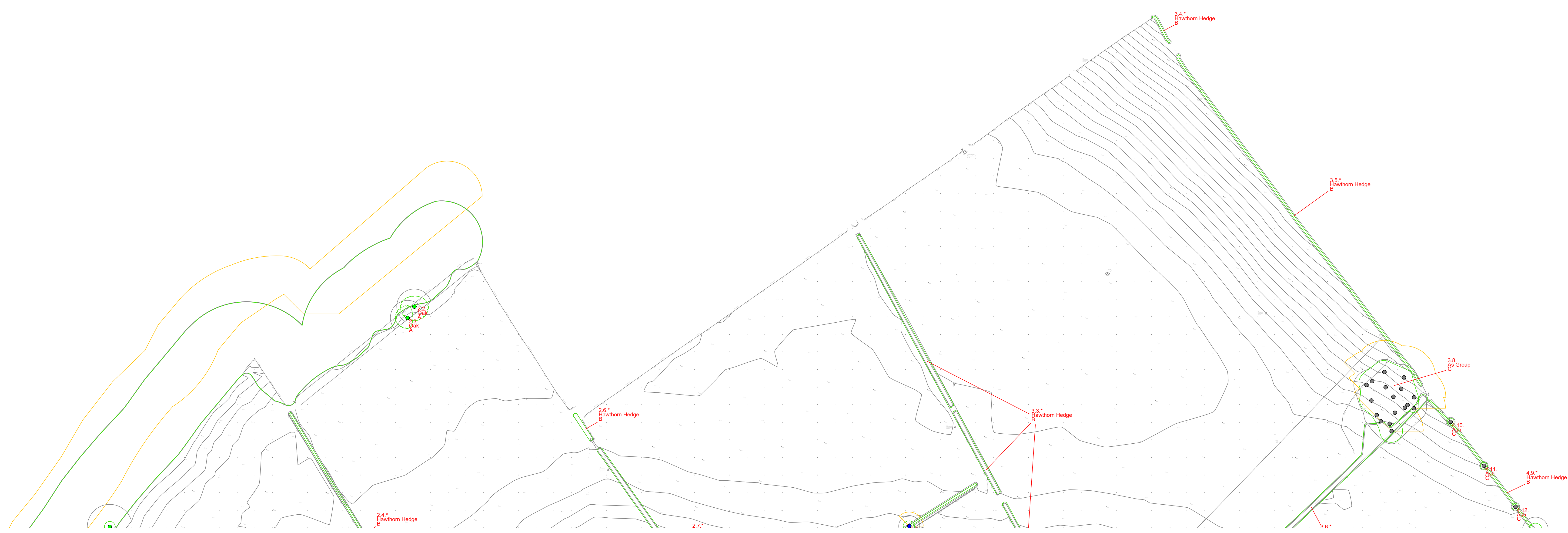




**Key**



AM PM  
 Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837: 2012.  
 \*An indication of potential direct obstruction of sunlight from the centre of the stem equal to the height of the tree, drawn from due north-west to due east, indicating the shadow pattern through the main part of the day.\*  
 NOTE: Treegroup numbers marked with an \* have approximate locations.



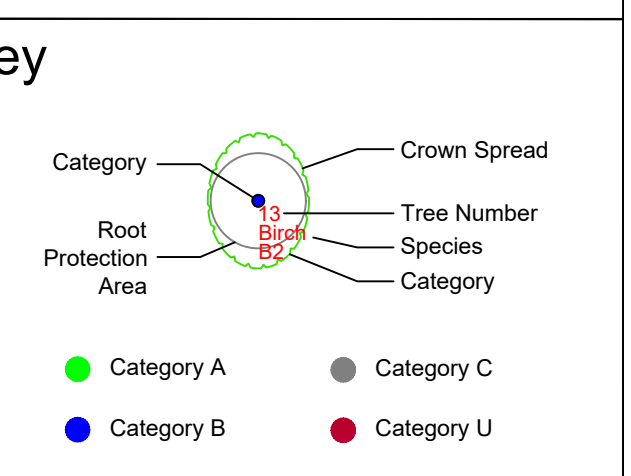
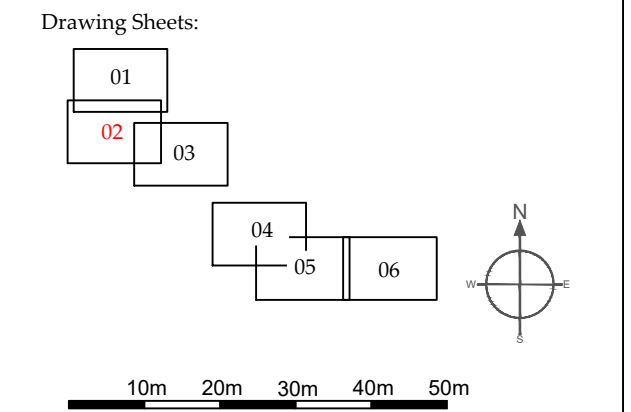
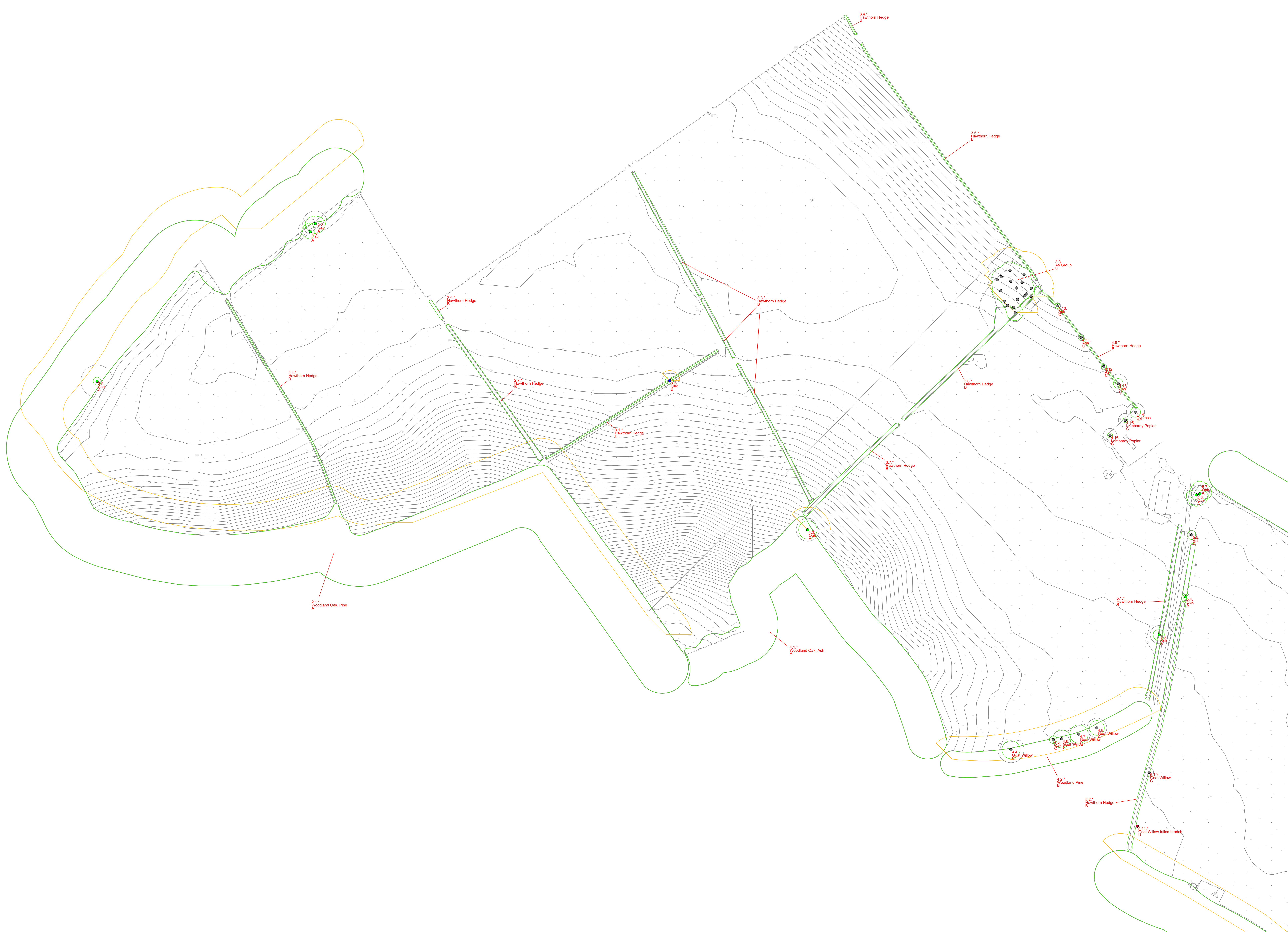
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**Project:** Kingston Solar Farm  
**Client:** RES Group  
**Drawing:** Tree Constraints Plan  
**Project No.:** - NEO00763  
**Drawing No.:** - 10A.1  
**Drawn:** DB **Checked:** RC **Approved:** -  
**Scale:** 1:1000 @ A0 **Revision:**  
**Date:** April 2021





AM

Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837:2012

\*An indication of potential direct obstruction of sunlight can be illustrated by plotting a segment, with a radius from the centre of the stem equal to the height of the tree, drawn from due north-west to due east, indicating the shadow pattern through the main part of the day.\*

NOTE: Treegroup numbers marked with an \* have approximate locations.

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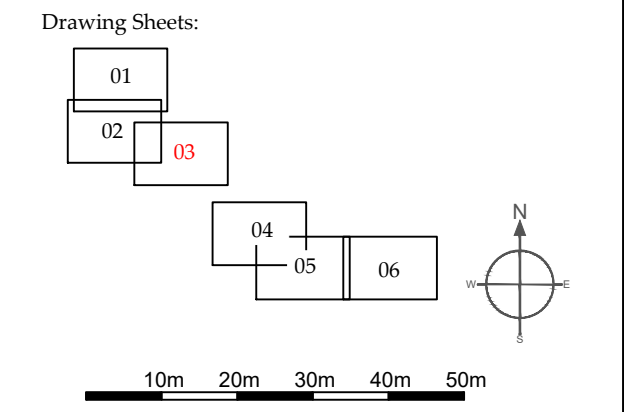
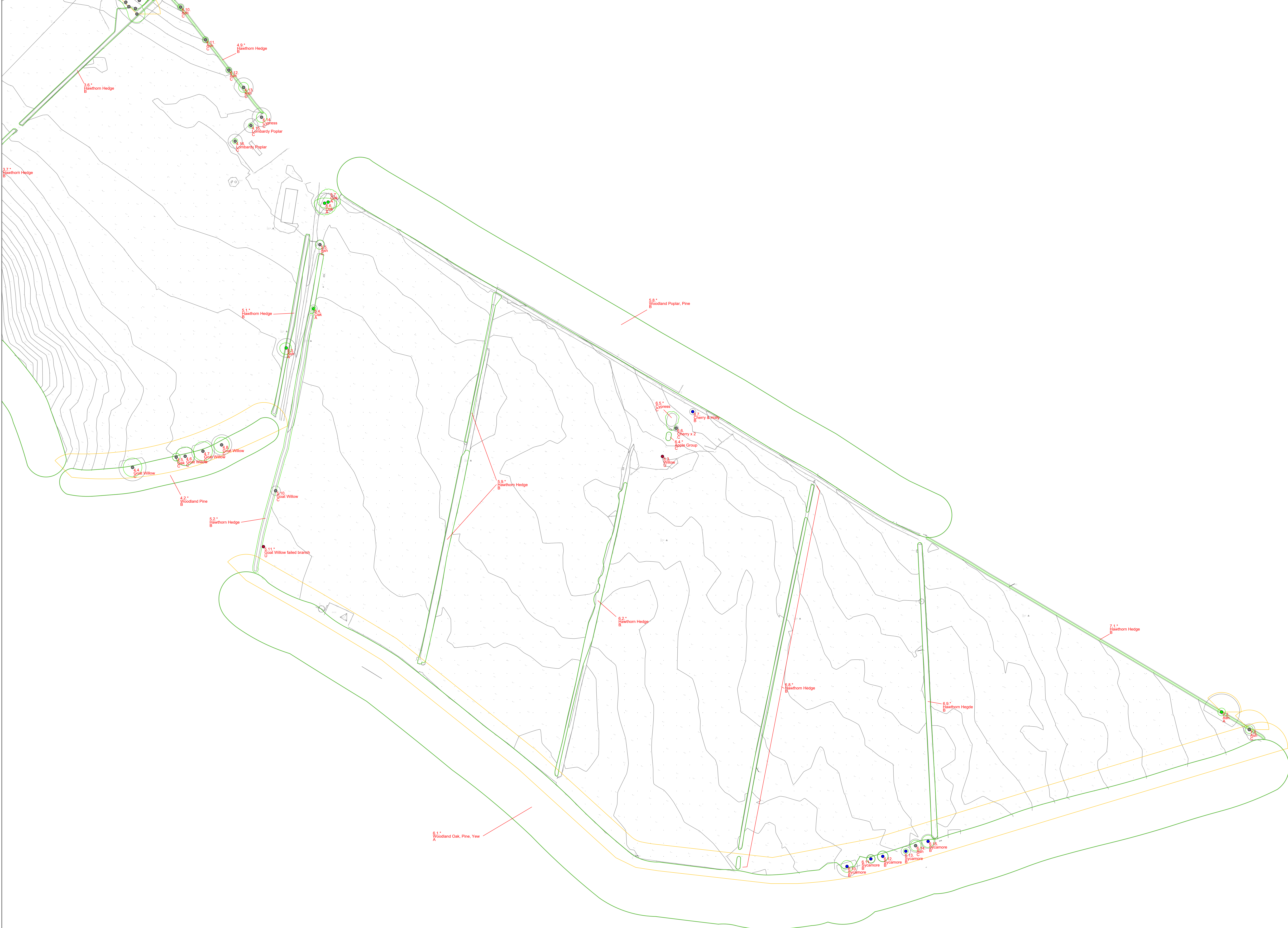
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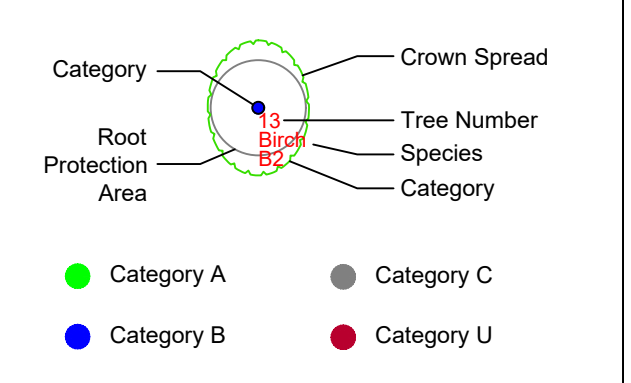
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 Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837:2012  
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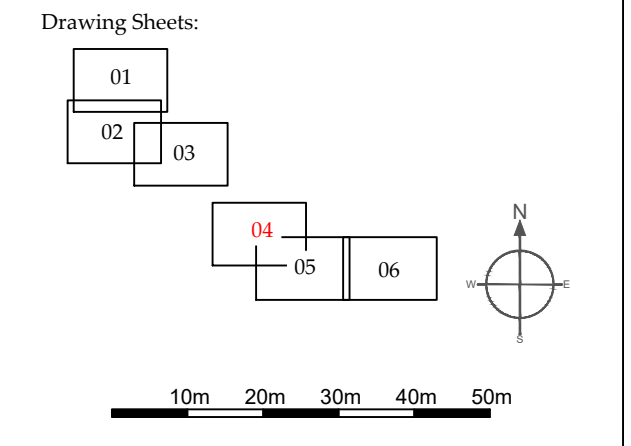
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**Project:** Kingston Solar Farm  
**Client:** RES Group  
**Drawing:** Tree Constraints Plan  
**Project No.:** - NEO00763  
**Drawing No.:** - 10A.1  
**Drawn:** DB **Checked:** RC **Approved:** -  
**Scale:** 1:1000 @ A0 **Revision:**  
**Date:** April 2021





### Key

- Category
- Tree Number
- Species
- Category
- Category A
- Category B
- Category C
- Category U

AM

Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837:2012

\*An indication of potential direct obstruction of sunlight can be illustrated by plotting a segment, with a radius from the centre of the stem equal to the height of the tree, drawn from due north-west to due east, indicating the shadow pattern through the main part of the day.

NOTE: Treegroup numbers marked with an \* have approximate locations.

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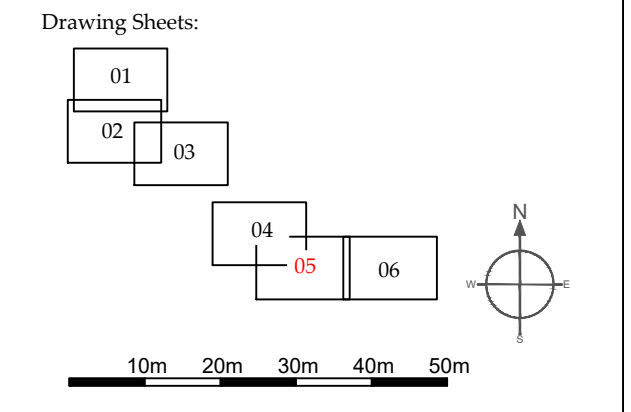
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**Drawn:** DB **Checked:** RC **Approved:** -  
**Scale:** 1:1000 @ A0 **Revision:**  
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**Key**

- Category
- Crown Spread
- Tree Number
- Species
- Category
- Category A
- Category B
- Category C
- Category U

AM PM

Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837:2012

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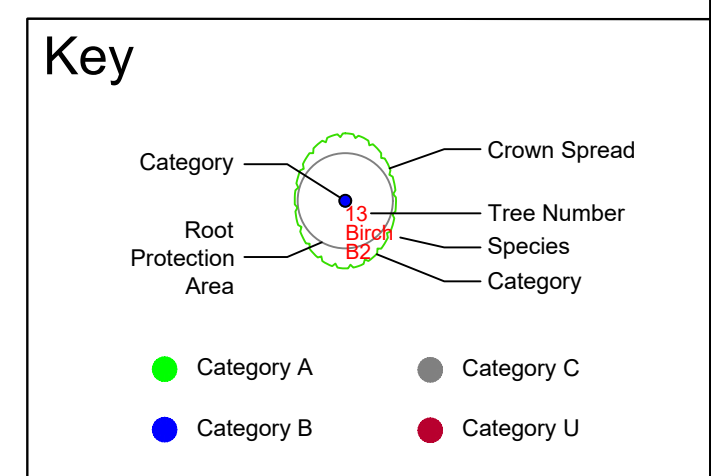
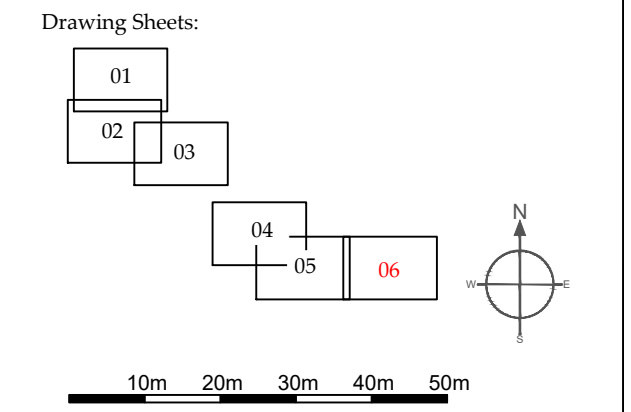
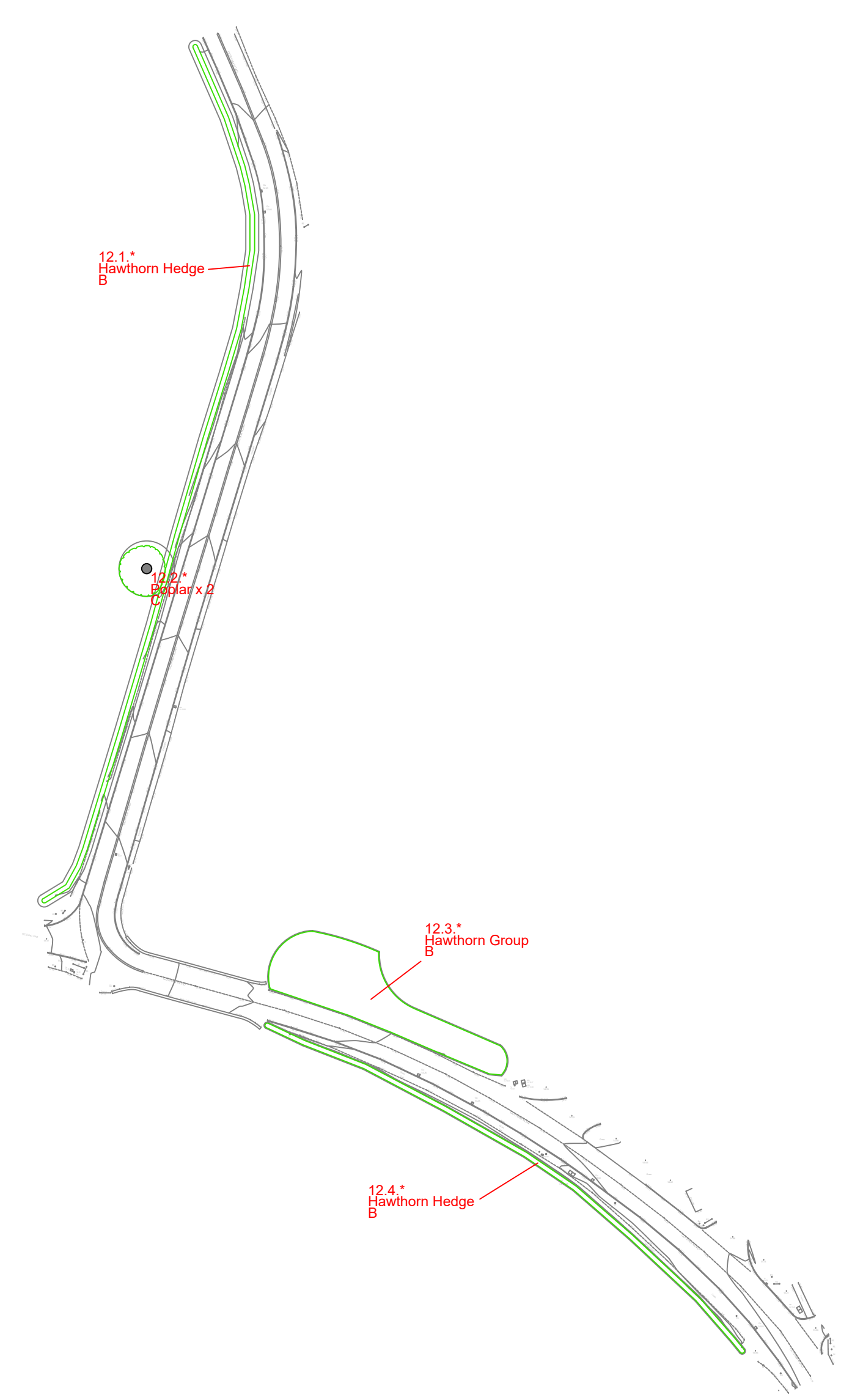
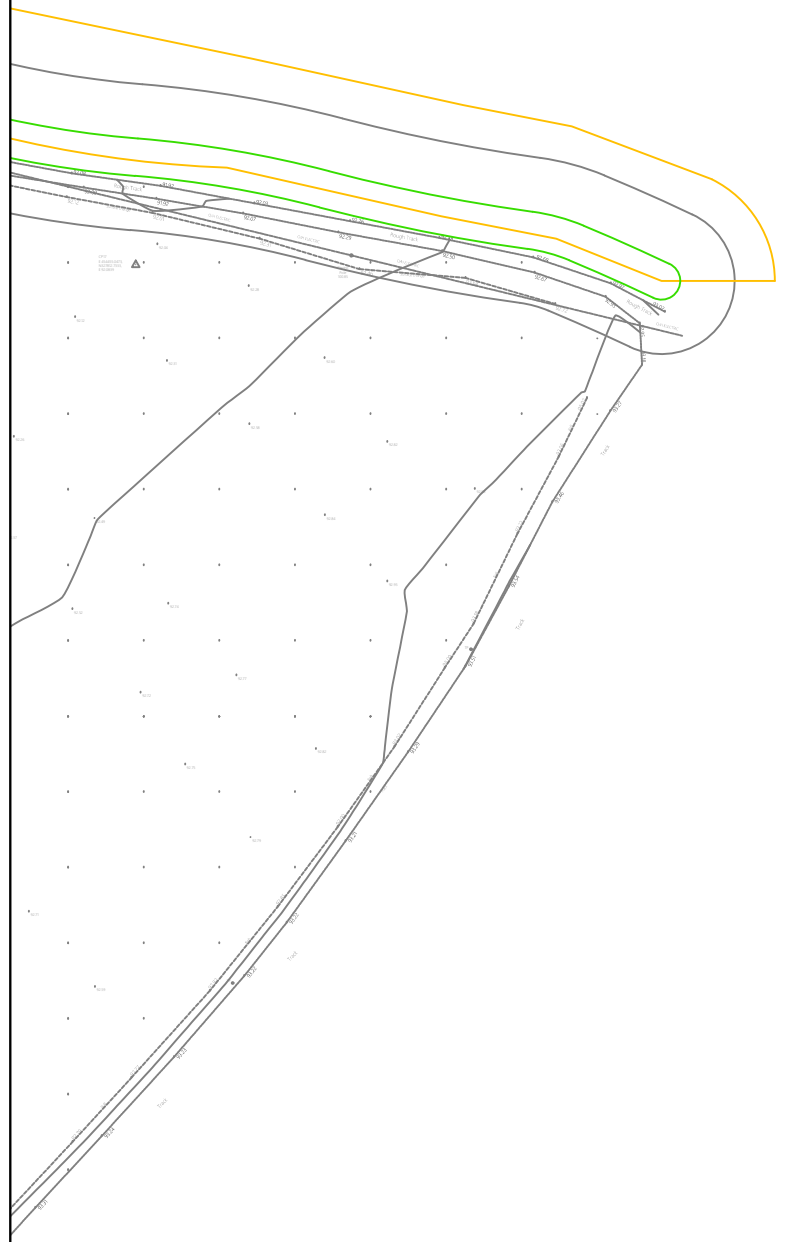
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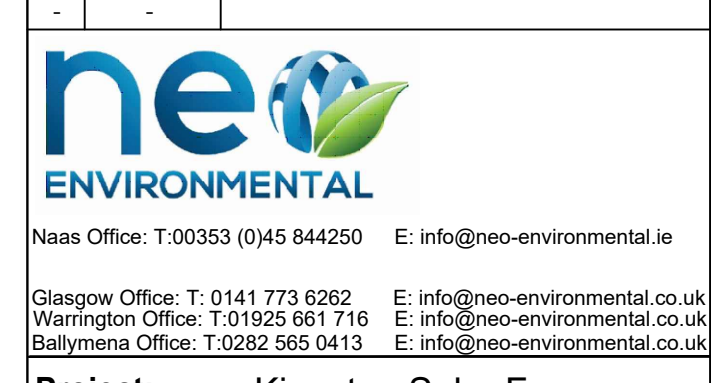
Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837: 2012

\*An indication of potential direct obstruction of sunlight from the centre of the stem equal to the height of the tree, drawn from due north-west to due east, indicating the shadow pattern through the main part of the day.\*

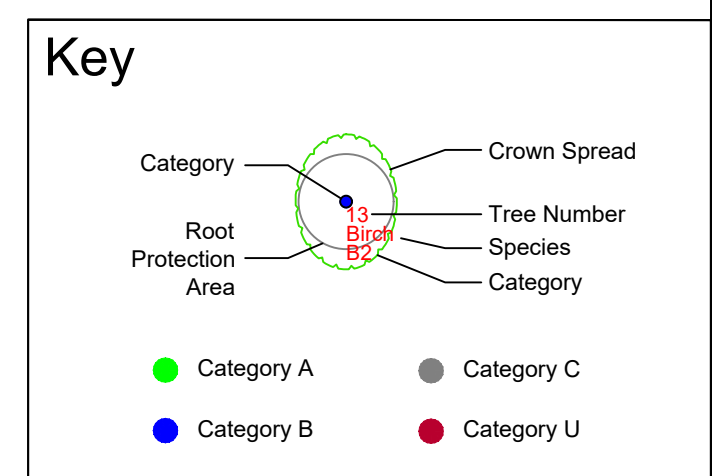
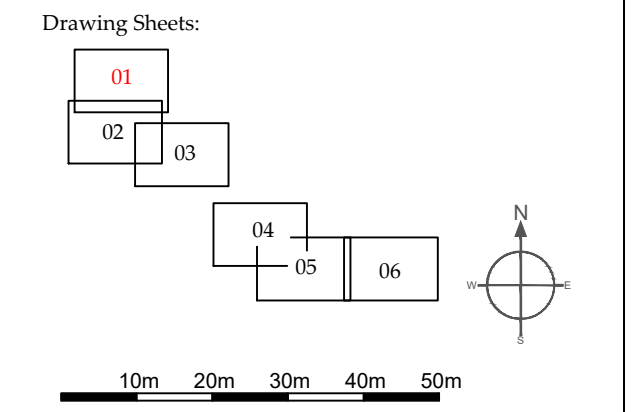
NOTE: Treegroup numbers marked with an \* have approximate locations.

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**Drawing:** Tree Constraints Plan  
**Project No.:** - NEO00763  
**Drawing No.:** - 10A.1  
**Drawn:** DB **Checked:** RC **Approved:** -  
**Scale:** 1:1000 @ A0 **Revision:**  
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Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837:2012

\*An indication of potential direct obstruction of sunlight can be illustrated by plotting a segment, with a radius from the centre of the stem equal to the height of the tree, drawn from due north-west to due east, indicating the shadow pattern through the main part of the day.\*

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Hedge Section to be removed for Access Track

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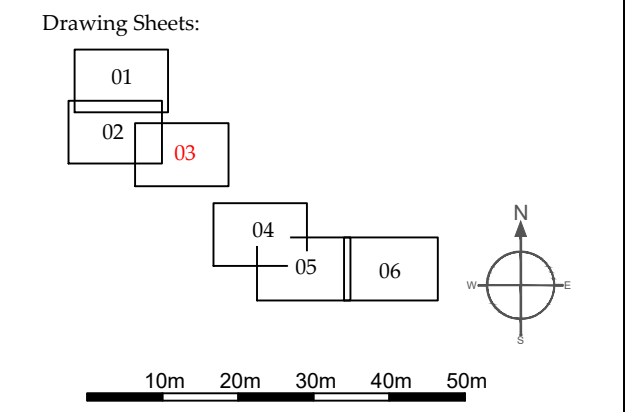
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**Date:** November 2021

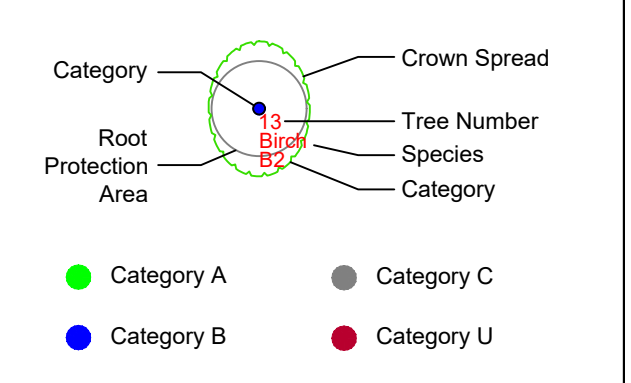




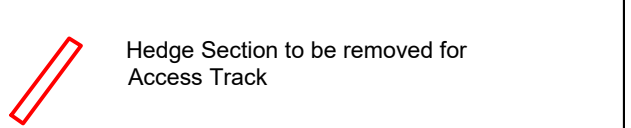




**Key**



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 Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837:2012  
 \*An indication of potential direct obstruction of sunlight from the centre of the stem equal to the height of the tree, drawn from due north-west to due east, indicating the shadow pattern through the main part of the day.\*  
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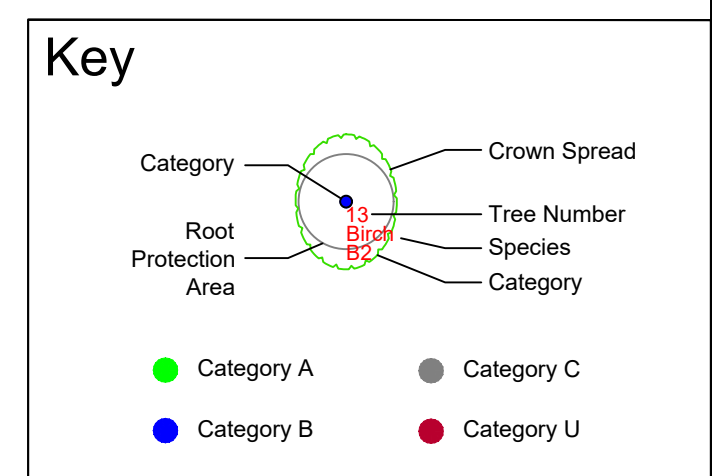
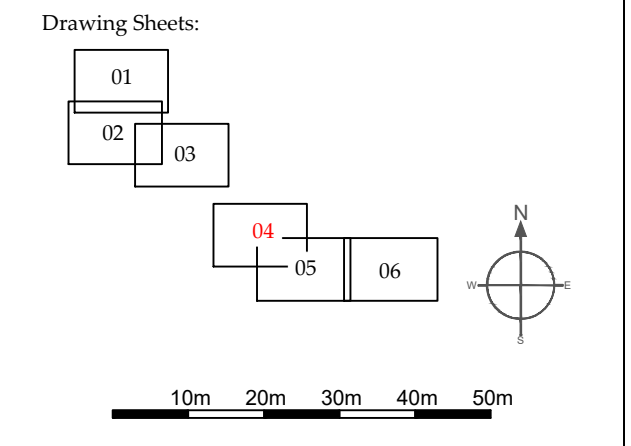
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**Client:** RES Group  
**Drawing:** Arboricultural Impact Assessment  
**Project No.:** - NEO00763  
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**Drawn:** DB **Checked:** RC **Approved:** -  
**Scale:** 1:1000 @ A0 **Revision:**  
**Date:** November 2021

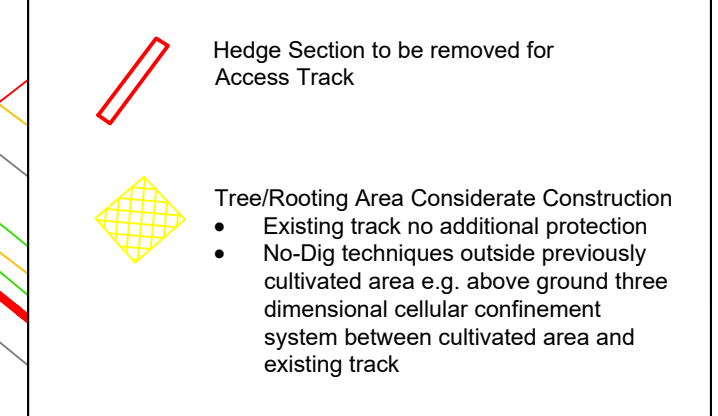




Approximate sweep of shade cast by trees in midsummer, plotted as per description in BS5837:2012

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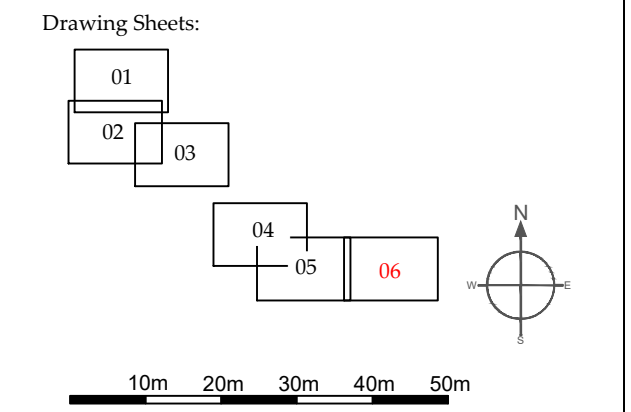
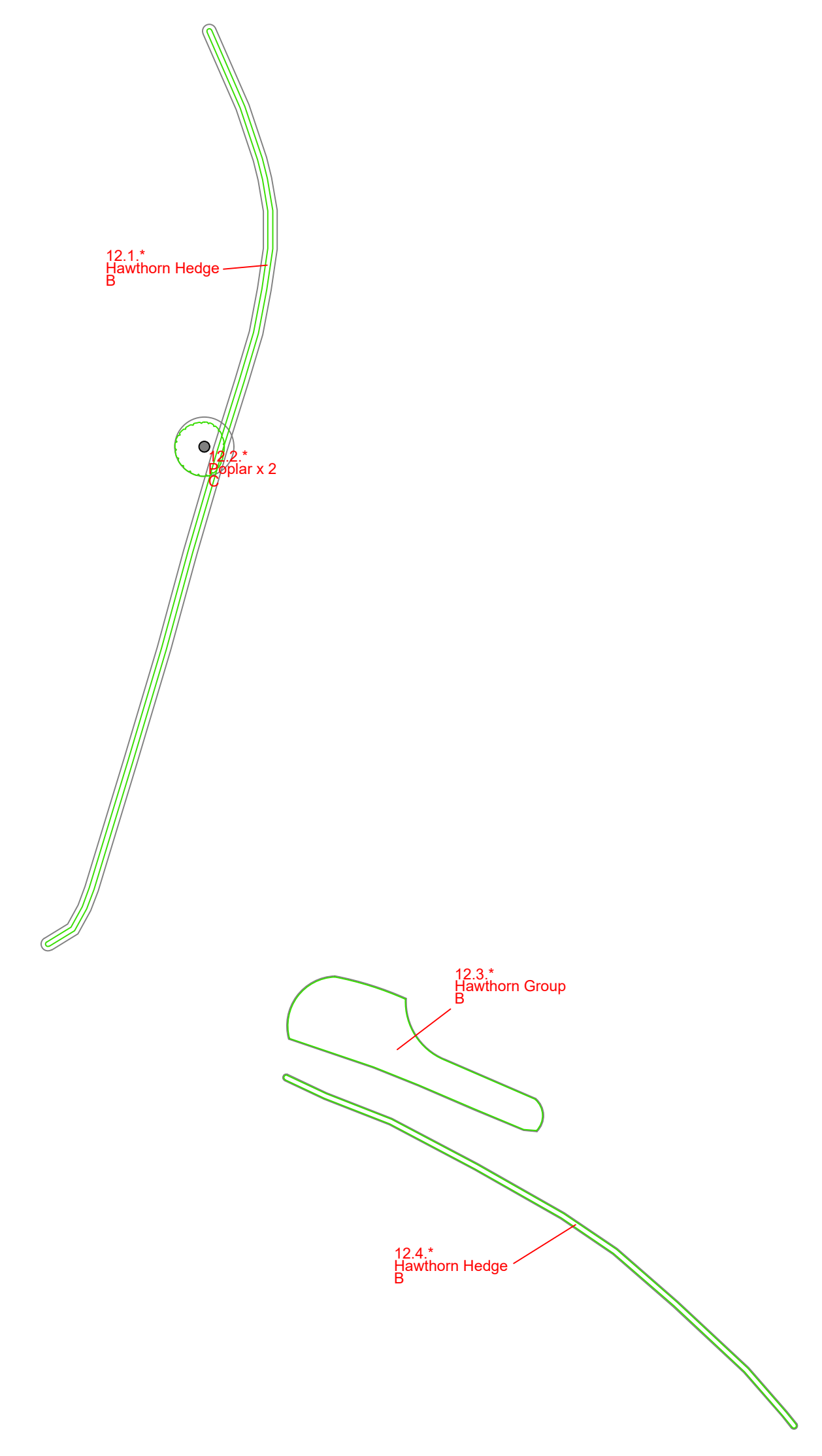
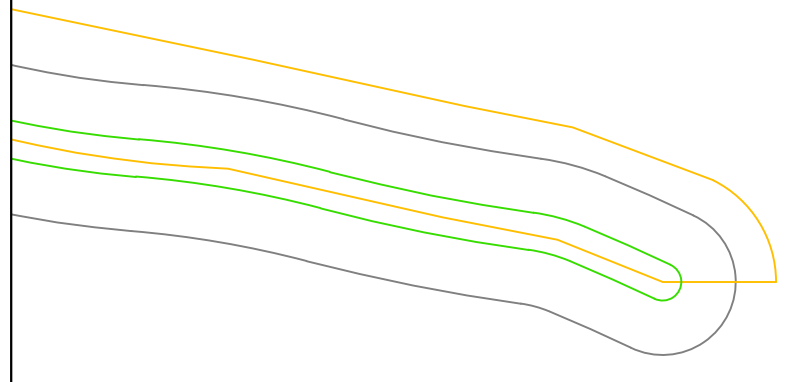
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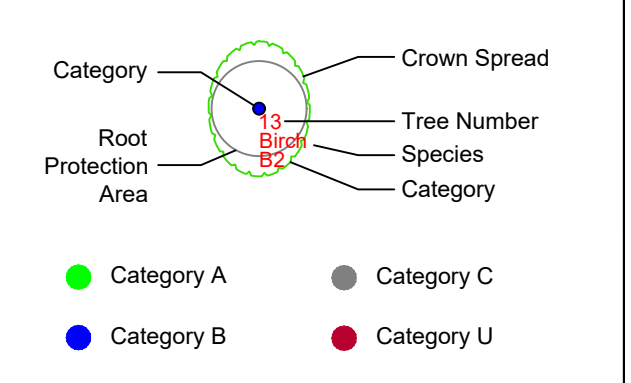








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 NOTE: Treegroup numbers marked with an \* have approximate locations.

Hedge Section to be removed for Access Track

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**Drawing No.:** - 10A.2 Rev 3  
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## Appendix 10B: Tree Schedule



# 1. TREE SCHEDULE

1.1. A tree survey was undertaken on the 3rd of April 2021 in accordance with section 4.4.2.5 of BS 5837. The following information was recorded. Measurements should be considered estimates.

- A sequential tree (or group of trees) number
- Species
- Height
- Stem diameter(dbh) at 1.5m above ground level
- Root protection area as a radius
- Canopy/branch spread at the four cardinal compass points
- Canopy height above ground
- Height of first significant branch and direction of growth
- Age class
- Tree Health
- Condition (tree) comments
- Management
- BS Retention category

Tree Number	Tree Name (species)	Height (m)	Calculated Stem Diameter (mm)	Root Protection Area (Radius, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy (m)	First Branch (m)	Age Class	Health	Comment	Management	BS Category
1.1.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
1.2.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
1.3.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
1.4.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	If permission given remove two sections (1 x 11m, 1 x 152m) and re-plant. Trim two sections (1 x 2m, 1 x 9m) for site access and sight lines	B
1.5.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
2.1.	Woodland Oak, Pine	20	650	7.80	as	plan			3.5	3	M	G	Predominantly Oak woodland	None	A
2.2.	Oak	18	700	8.40	6	8	8	8	3.5	6	M	G	Individual growing on field edge	None	A
2.3.	Oak	14	620	7.44	7	6	3	7	5	6	M	G	Individual growing on field edge	None	A
2.4.	Hawthorn Hedge	1.5	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
2.5.	Ash	12	1000	12.00	as	plan			0	3	OM	F	Veteran, numerous historic failures	None	A
2.6.	Hawthorn Hedge	1.5	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
2.7.	Hawthorn Hedge	1.5	90	1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
3.1.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
3.2.	Oak	8	500	6.00	3	3	3	3.5	3	2	M	G	Numerous failures and pruning events, hedgerow tree	None	B
3.3.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B

Tree Number	Tree Name (species)	Height (m)	Calculated Stem Diameter (mm)	Root Protection Area (Radius, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy (m)	First Branch (m)	Age Class	Health	Comment	Management	BS Category
3.4.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
3.5.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
3.6.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
3.7.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
3.8.	Ash Group	18	600	7.20	as	plan			2	4	M	F	Group of similar aged trees, all with sparse canopies consistent with 'ash dieback disease'	None	C
4.1.	Woodland Oak, Ash	20	700	8.40	as	plan			2	3	M	G	Mature woodland, hawthorn to edge	None	A
4.2.	Woodland Pine	18	350	4.20	as	plan			4	4	EM	G	Plantation 8m from field boundary	None	B
4.3.	Oak	18	750	9.00	as	plan			2	3	M	G	Hedgerow tree	None	A
4.4.	Goat Willow	11	800	9.60	as	plan			3	2	M	G	Hedgerow tree	None	C
4.5.	Oak	4	250	3.00	as	plan			2	2	EM	G	Hedgerow tree	None	C
4.6.	Goat Willow	12	600	7.20	as	plan			3	2	M	G	Hedgerow tree	None	C
4.7.	Goat Willow	12	700	8.40	as	plan			3	2	M	G	Hedgerow tree	None	C
4.8.	Goat Willow	12	650	7.80	as	plan			3	3	M	G	Hedgerow tree	None	C
4.9.	Hawthorn Hedge	2.5	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B

Tree Number	Tree Name (species)	Height (m)	Calculated Stem Diameter (mm)	Root Protection Area (Radius, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy (m)	First Branch (m)	Age Class	Health	Comment	Management	BS Category
4.10.	Ash	8	212	2.55	as	plan			2	2	EM	F	Hedgerow tree	None	C
4.11.	Ash	8	200	2.40	as	plan			2	2	EM	F	Hedgerow tree	None	C
4.12.	Ash	9	200	2.40	as	plan			2	2	EM	F	Hedgerow tree	None	C
4.13.	Ash	10	600	7.20	as	plan			4	4	M	F	Hedgerow tree	None	C
4.14.	Cypress	12	600	7.20	4	4	4	4	1	1	M	G	Garden tree, not fully inspected	None	C
4.15.	Lombardy Poplar	12	450	5.40	2	2	2	2	2	2	EM	G	Garden tree, not fully inspected	None	C
4.16.	Lombardy Poplar	12	450	5.40	2	2	2	2	2	2	EM	G	Garden tree, not fully inspected	None	C
5.1.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
5.2.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
5.3.	Ash	9	600	7.20	4	5	4	5	4	3	OM	F	Hedgerow tree	None	A
5.4.	Oak	6	250	3.00	as	plan			2	2	EM	G	Hedgerow tree	None	A
5.5.	Ash	10	300	3.60	as	plan			2	2	EM	F	Hedgerow tree	None	C
5.6.	Oak	12	650	7.80	4	9	9.5	8	2	3	M	G	Hedgerow tree	None	A
5.7.	Oak	12	550	6.60	10	5	9.5	8	2	3	M	G	Hedgerow tree	None	A
5.8.	Woodland Poplar, Pine	15	500	6.00	as	plan			0	0	EM	G	Woodland	None	B
5.9.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
5.10.	Goat Willow	7	300	3.60	as	plan			0	0	M	G	Hedgerow tree	None	C
5.11.	Goat Willow failed branch	8	300	3.60	as	plan			0	0	M	G	Hedgerow tree	None	U

Tree Number	Tree Name (species)	Height (m)	Calculated Stem Diameter (mm)	Root Protection Area (Radius, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy (m)	First Branch (m)	Age Class	Health	Comment	Management	BS Category
6.1.	Woodland Oak, Pine, Yew	20	600	7.20	as	plan			0	0	M	G	Woodland	If permission given remove section for utility installation	A
6.2.	Hawthorn Hedge	2		1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
6.3.	Willow	12	900	10.80	as	plan			1	2	M	F	Likely historic planted feature, poor condition	None	U
6.4.	Apple Group	4	150	1.80	as	plan			0.5	0.5	M	G	Likely historic planted feature	None	C
6.5.	Cypress	4	300	3.60	as	plan			0	0	M	G	Likely historic planted feature	None	C
6.6.	Cherry x 2	6	150	1.80	as	plan			0.5	0.5	M	G	Likely historic planted feature	None	C
6.7.	Cherry & Holly	7	200	2.40	as	plan			0.5	0.5	M	G	Likely historic planted feature	None	B
6.8.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	None/ possibly widen existing gap	B
6.9.	Hawthorn Hegde	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
6.10.	Sycamore	14	566	6.79	as	plan			6	4	M	G	Hedgerow tree	None	B
6.11.	Sycamore	9	280	3.36	as	plan			5	5	EM	G	Hedgerow tree	None	B
6.12.	Sycamore	11	350	4.20	as	plan			5	5	EM	G	Hedgerow tree	None	B
6.13.	Sycamore	9	300	3.60	as	plan			5	5	EM	G	Hedgerow tree	None	B
6.14.	Ash	13	420	5.04	as	plan			5	5	EM	G	Hedgerow tree	None	C
6.15.	Sycamore	12	450	5.40	as	plan			4	4	EM	G	Hedgerow tree	None	B
7.1.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
7.2.	Ash	15	1000	12.00	as	plan			2	2	OM	F	Hedgerow tree	None	A
7.3.	Ash	15	360	4.32	as	plan			2	2	M	F	Hedgerow tree	None	C
8.1.	Woodland Pine	15	400	4.80	as	plan			3	6	EM	G	Plantation woodland	If permission given/ required remove extreme southern corner scrub/ hedge	B



Tree Number	Tree Name (species)	Height (m)	Calculated Stem Diameter (mm)	Root Protection Area (Radius, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy (m)	First Branch (m)	Age Class	Health	Comment	Management	BS Category
8.2.	Woodland Mixed Broadleaved	15	300	3.60	as	plan			3	3	EM	G	Plantation woodland	None	B
8.3.	Woodland Mixed Broadleaved	20	500	6.00	as	plan			2	4	M	G	Woodland	None	A
8.4.	Hawthorn Hedge	2.5	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
8.5.	Hawthorn Hedge	2.5	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	If permission given remove two sections for access track installation	B
8.6.	Hawthorn Hedge	2.5	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
8.7.	Ash Group	7	300	3.60	as	plan			1	2	EM	F	Hedgerow tree	None	C
8.8.	Woodland Pine	15	300	3.60	as	plan			3	5	EM	G	Plantation woodland	None	B
9.1.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
9.2.	Hawthorn, Ash, Oak Group	12	400	4.80	as	plan			0	0	M	G	Field boundary feature	None	A
9.3.	Hawthorn, Ash, Oak Group	15	600	7.20	as	plan			0	0	M	G	Field boundary feature	None	A
10.1.	Woodland Sycamore, Ash	18	500	6.00	as	plan			0	0	M	G	Woodland	None	A
10.2.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B

Tree Number	Tree Name (species)	Height (m)	Calculated Stem Diameter (mm)	Root Protection Area (Radius, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy (m)	First Branch (m)	Age Class	Health	Comment	Management	BS Category
10.3.	Woodland Oak, Ash, Yew	20	700	8.40	as	plan			0	0	M	G	Field boundary feature	None	B
10.4.	Chestnut	15	700	8.40	8	8	6	8	2	2	M	G	Likely historic planted feature	None	B
10.5.	Oak	18	1200	14.40	13.5	13.5	13.5	12	5	4	M	G	Likely historic planted feature	None	A
10.6.	Hawthorn Hedge	4	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
10.7.	Woodland Oak, Yew, Pine	20	900	10.80	as	plan			0	0	M	G	Woodland	None	A
10.8.	Hawthorn Hedge	3	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
10.9.	Hawthorn Hedge	4	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
10.10.	Woodland Oak, Ash	20	900	10.80	as	plan			0	0	M	G	Woodland	None	A
11.1.	Woodland Hardwood Plantation	15	250	3.00	as	plan			4	4	EM	G	Plantation Woodland	None	B
11.2.	Woodland Oak, Ash	20	900	10.80	as	plan			2	2	M	G	Woodland	None	A
11.3.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	If permission given remove section for access track installation	B
11.4.	Sycamore	12	400	4.80	as	plan			2	2	EM	G	Hedgerow tree	If permission given crown lift to 6m to SE for access track installation	A
11.5.	Ash	13	650	7.80	as	plan			2	2	M	F	Hedgerow tree	If permission given crown lift to 6m to NW for access track installation	C
11.6.	Sycamore	7	300	3.60	as	plan			1	1	EM	G	Hedgerow tree	None	B
11.7.	Sycamore	9	400	4.80	as	plan			1	1	EM	G	Hedgerow tree	None	A
11.8.	Ash	10	500	6.00	as	plan			2	2	M	F	Hedgerow tree	None	C
11.9.	Sycamore	9	550	6.60	as	plan			2	2	EM	G	Hedgerow tree	None	A

Tree Number	Tree Name (species)	Height (m)	Calculated Stem Diameter (mm)	Root Protection Area (Radius, m)	North (m)	South (m)	East (m)	West (m)	Low Canopy (m)	First Branch (m)	Age Class	Health	Comment	Management	BS Category
11.10.	Sycamore	9	450	5.40	as	plan			2	2	EM	G	Hedgerow tree	None	A
11.11.	Ash	18	1250	15.00	as	plan			2	4	OM	F	Hedgerow tree	None	A
11.12.	Hawthorn Hedge	2	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
11.13.	Hawthorn Hedge	2.5	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
11.14.	Sycamore	9	500	6.00	as	plan			3	3	EM	G	Hedgerow tree	None	A
11.15.	Sycamore	8	400	4.80	as	plan			3	3	EM	G	Hedgerow tree	None	A
11.16.	Hawthorn Hedge	2	90	1.08	0.5	0.5	0.5	0.5	0	0	M	G	Field boundary feature	None	B
11.17.	Ash	8	500	6.00	as	plan			2	2	M	F	Hedgerow tree	None	A
11.18.	Ash	12	1000	12.00	as	plan			2	2	OM	F	Hedgerow tree	None	C
11.19.	Ash	9	500	6.00	as	plan			2	2	M	F	Hedgerow tree	None	A
11.20.	Ash	12	730	8.76	as	plan			2	2	M	F	Hedgerow tree	None	A
11.21.	Hawthorn Hedge	3	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B
12.1.	Hawthorn Hedge	5	120	1.44	as	plan			0	0	M	G	Field boundary feature	None	B
12.2.	Poplar x 2	13	500	6.00	5	6	4	6	2	2	EM	G	Landscape planting	None	C
12.3.	Hawthorn Group	4	90	1.08	as	plan			0	0	M	G	Boundary feature	None	B
12.4.	Hawthorn Hedge	5	90	1.08	as	plan			0	0	M	G	Field boundary feature	None	B



# Appendix 10C: Survey Methodology, Tree Risk Assessment & Report Limitations



## APPENDIX 10C: SURVEY METHODOLOGY, TREE RISK ASSESSMENT AND REPORT LIMITATIONS

- 1.1. Trees were inspected using the 'Visual Tree Inspection' methodology (Mattheck). No decay detection equipment was used.
- 1.2. Methodology of survey is in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendation and is not a tree hazard, tree risk or subsidence/subsidence potential survey.
- 1.3. Horizontal and vertical measurements were taken using laser rangefinder, which were considered accurate enough for the purpose of this report.
- 1.4. Maps and plans are for illustrative purposes only to inform site design and planning requirements. All maps and plans to be checked by client and contractor for any discrepancies.
- 1.5. Trees are living and dynamic structures subject to extreme weather, vandalism, physical, chemical and biological changes that can quickly have an impact on a tree's condition and its growing environment. As such, even with robust tree inspections unforeseen changes, hidden defects and resulting structural failures can occur. All trees have a tolerance to the expected weather at a site they have grown in, but even then, healthy defect free trees can still fail in extremes of weather.
- 1.6. Tree condition comments only relate to the day the tree was inspected, this report is valid for one year from the date given on the front page or in the header or footer under normal weather conditions and site conditions.
- 1.7. The validity of this report ceases:
  - after a significant weather event, such as but not limited to severe winds, extremes in temperature, floods and drought not normal for the area.
  - after an outbreak of a virulent pest or disease which the author cannot foresee.
  - if pruning or works recommended are not undertaken to British Standard 3998:2010 or to the specification recommended in the report.
  - if groundwork operations/level changes or use are/have been undertaken, that I was not aware of, within the vicinity of the trees that could alter their rooting environments, such as but not limited to underground utility work that doesn't meet the recommendations in NJUG 10 or British Standard 5837:2012 or their successors.
  - significant change in on or off-site conditions, such as, but not limited to adjacent tree/building removal, ground/surface water alteration.

## Technical Appendix 10: Appendix 10C

- 1.8. No attempt has been made to assess soil subsidence/heave risk potential, nor should any be construed.
- 1.9. This survey and report are for the recipient(s) named in the Introduction only; any third-party relying on the contents of this report does so entirely at their own risk. It is recommended that the trees are inspected at least every year or after any significant weather event by a suitably qualified and insured Arboricultural consultant.





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